Trinity Consultants
9737 Great Hills Trl, Ste 340, Austin, TX 78759 / P 512.349.5800 / **trinityconsultants.com**

June 26, 2026

Permit Programs Manager
NMED Air Quality Bureau
525 Camino de los Marques, Suite 1
Santa Fe, NM 87505

RE: Application for NSR Permit Significant Revision
Frontier Field Services, LLC – Dagger Draw Gas Plant

Dear Permit Programs Manager:

On behalf of Frontier Field Services, LLC, we are submitting this application for an NSR Permit significant revision pursuant to NMAC 20.2.72.219.D(1) for the Dagger Draw Gas Plant. The Dagger Draw Gas Plant is a natural gas processing plant located approximately 9 miles south of Artesia, New Mexico in Eddy County. The Dagger Draw Gas Plant is currently authorized to operate under NSR Permit No.0001-M13-R3.

The format and content of this application are consistent with the Bureau's current policy regarding NSR applications; it is a complete application package using the most current application forms. Enclosed is one hard copy and one working copy of the application, including the original certification page, electronic files, and an application check.

Please feel free to contact me at (512) 484-4478 or by email at dawna.allen@trinityconsultants.com if you have any questions regarding this application. Alternatively, you may contact Molly Greer with Frontier Field Services, LLC at (432) 236-0033 or by email at mgreer@kinetik.com.

Sincerely,

TRINITY CONSULTANTS



Dawna L. Allen
Managing Consultant

cc: Molly Greer (Frontier Field Services, LLC)

Trinity Project File 254404.0535

NMED AIR QUALITY
NSR PERMIT
SIGNIFICANT REVISION APPLICATION

FRONTIER FIELD SERVICES, LLC
DAGGER DRAW GAS PLANT

Prepared By:

Dawna L. Allen – Managing Consultant

TRINITY CONSULTANTS
9327 Great Hills Trl, Ste 340
Austin, TX 78759
(512) 238-2336
trinityconsultants.com

June 2026

Project 254404.0535

Trinity Consultants

Air Permit Application
Compliance History Disclosure Form

Pursuant to Subsection 74-2-7(S) of the New Mexico Air Quality Control Act ("AQCA"), NMSA §§ 74-2-1 to -17, the New Mexico Environment Department ("Department") may deny any permit application or revoke any permit issued pursuant to the AQCA if, within ten years immediately preceding the date of submission of the permit application, the applicant met any one of the criteria outlined below. In order for the Department to deem an air permit application administratively complete, or issue an air permit for those permits without an administrative completeness determination process, the applicant must complete this Compliance History Disclosure Form as specified in Subsection 74-2-7(P). An existing permit holder (permit issued prior to June 18, 2021) shall provide this Compliance History Disclosure Form to the Department upon request.

Permittee/Applicant Company Name		**Expected Application Submittal Date**
Frontier Field Services, LLC		June 26, 2026
Permittee/Company Contact	**Phone**	**Email**
Molly Greer	432-236-0033	mgreer@kinetik.com

	Within the 10 years preceding the expected date of submittal of the application, has the permittee or applicant:	
1	Knowingly misrepresented a material fact in an application for a permit?	☐ Yes ☒ No
2	Refused to disclose information required by the provisions of the New Mexico Air Quality Control Act?	☐ Yes ☒ No
3	Been convicted of a felony related to environmental crime in any court of any state or the United States?	☐ Yes ☒ No
4	Been convicted of a crime defined by state or federal statute as involving or being in restraint of trade, price fixing, bribery, or fraud in any court of any state or the United States?	☐ Yes ☒ No
5a	Constructed or operated any facility for which a permit was sought, including the current facility, without the required air quality permit(s) under 20.2.70 NMAC, 20.2.72 NMAC, 20.2.74 NMAC, 20.2.79 NMAC, or 20.2.84 NMAC?	☐ Yes ☒ No
5b	If "No" to question 5a, go to question 6. If "Yes" to question 5a, state whether each facility that was constructed or operated without the required air quality permit met at least one of the following exceptions: a. The unpermitted facility was discovered after acquisition during a timely environmental audit that was authorized by the Department; or b. The operator of the facility estimated that the facility's emissions would not require an air permit, **and** the operator applied for an air permit within 30 calendar days of discovering that an air permit was required for the facility.	☐ Yes ☐ No
6	Had any permit revoked or permanently suspended for cause under the environmental laws of any state or the United States?	☐ Yes ☒ No
7	For each "yes" answer, please provide an explanation and documentation.	

KINETIK Kinetik Holdings LP

Company Number: 42

CHECK NUMBER: 42001694

PAY DATE	SUPPLIER NO.	SUPPLIER NAME	CHECK TOTAL
Jan 22, 2026	11231	NEW MEXICO ENVIRONMENT DEPT - AQB	$500.00

Invoice Date	Invoice No.	Invoice / Credit Memo Invoice Description	Gross	Discount	Net
01/13/2026	2026.01.13 Daggar Draw		$500.00	$0.00	$500.00
		Totals	$500.00	$0.00	$500.00

THE FACE OF THIS CHECK IS PRINTED BLUE-THE BACK CONTAINS A SIMULATED WATERMARK

KINETIK Kinetik Holdings LP
Company Number: 42

Bank of America 32-1/1110

Check Number: 0042001694
Check Date : Jan 22, 2026

Five Hundred Dollars Only**********

PAY (USD)	$500.00

Pay To The Order Of
NEW MEXICO ENVIRONMENT DEPT - AQB
525 CAMINO DE LOS MARQUEZ
SUITE 1
SANTA FE, NM 87505-1816

Authorized Signature

⑈004200169⑈ ⑆111000012⑆ 445168097⑧

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		

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.

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: ☐ 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.: 42001694 in the amount of $500

☒ 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.

☒ I acknowledge there is an annual fee for permits in addition to the permit review fee: www.env.nm.gov/air-quality/permit-fees-2/.

☐ This facility qualifies for the small business fee reduction per 20.2.75.11.C. NMAC. The full $500.00 filing fee is included with this application and I understand the fee reduction will be calculated in the balance due invoice. The Small Business Certification Form has been previously submitted or is included with this application. (Small Business Environmental Assistance Program Information: www.env.nm.gov/air-quality/small-biz-eap-2/.)

Citation: Please provide the **low level citation** under which this application is being submitted: **20.2.72.219.D(1)(a) 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: 211	Updating Permit/NOI #: NSR-0001-M13-R3
1	Facility Name: Dagger Draw Gas Plant	Plant primary SIC Code (4 digits): 1311	
		Plant NAIC code (6 digits): 211120	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): 278 Pipeline Rd, Artesia, NM 88210		
2	Plant Operator Company Name: Frontier Field Services, LLC	Phone/Fax: (432) 789-1333	

a	Plant Operator Address: 303 Veterans Airpark Ln, Suite 2000, Midland, Texas 79705	
b	Plant Operator's New Mexico Corporate ID or Tax ID: 2343077	
3	Plant Owner(s) name(s): Frontier Field Services, LLC	Phone/Fax: (432) 789-1333
a	Plant Owner(s) Mailing Address(s): 303 Veterans Airpark Ln, Suite 2000, Midland, Texas 79705	
4	Bill To (Company): Frontier Field Services, LLC	Phone/Fax: (432) 789-1333
a	Mailing Address: 303 Veterans Airpark Ln, Suite 2000, Midland, Texas 79705	E-mail: mgreer@kinetik.com
5	☒ Preparer: Dawna L. Allen ☒ Consultant: Trinity Consultants - Austin	Phone/Fax: (512) 484-4478
a	Mailing Address: 9737 Great Hills Trl #340, Austin, TX 78759	E-mail: dawna.allen@trinityconsultants.com
6	Plant Operator Contact: Jeff Holder	Phone/Fax: (575) 810-6120
a	Address: 278 Pipeline Road, Artesia, New Mexico 88210	E-mail: jholder@kinetik.com
7	Air Permit Contact: Molly Greer	Title: Environmental Project Manager
a	E-mail: mgreer@kinetik.com	Phone/Fax: (432) 236-0033
b	Mailing Address: 303 Veterans Airpark Ln, Suite 2000, Midland, Texas 79705	
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: N/A
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: NSR-0001-M13-R3
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: 3.75 MMSCF	Daily: 90 MMSCF	Annually: 32,850 MMSCF
b	Proposed	Hourly: 3.13 MMSCF	Daily: 75 MMSCF	Annually: 27,375 MMSCF
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: 3.75 MMSCF	Daily: 90 MMSCF	Annually: 32,850 MMSCF
b	Proposed	Hourly: 3.13 MMSCF	Daily: 75 MMSCF	Annually: 27,375 MMSCF

Section 1-D: Facility Location Information

1	Latitude (decimal degrees): 32.714621°	Longitude (decimal degrees): -104.403166°	County: Eddy	Elevation (ft): 3,465
2	UTM Zone: ☐ 12 or ☒ 13	Datum: ☒ NAD 83 ☐ WGS 84		
a	UTM E (in meters, to nearest 10 meters): 555,933 m E	UTM N (in meters, to nearest 10 meters): 3,619,808 m N		
3	Name and zip code of nearest New Mexico town: Artesia, NM 88210			
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From Artesia, NM head south on Highway 285 for 9.2 miles then turn right onto West Kincaid Ranch Rd and continue west for 2.9 miles to facility.			
5	The facility is 9.2 (distance) miles south (direction) of Artesia (nearest town).			
6	Land Status of facility (check one): ☒ Private ☐ Indian/Pueblo ☐ Government ☐ BLM ☐ Forest Service ☐ Military			
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: Municipalities: Artesia, NM Counties: Eddy County Indian tribes: None			
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/air-quality/modeling-publications/)? ☐ 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: Carlsbad Caverns National Park			
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 57.05 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: 1,158 m			
12	Method(s) used to delineate the Restricted Area: Continuous Fencing "**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? ☒ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility?			

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	($\frac{\text{hours}}{\text{year}}$): 8760	
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: 10/26/2026 or upon permit issuance				
4	Month and year of anticipated construction completion: 10/26/2026 or upon permit issuance				
5	Month and year of anticipated startup of new or modified facility: 10/26/2026 or upon permit issuance				
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:		
a	If yes, NOV date or description of issue: 1/14/2025		NOV Tracking No: FRO-0211-2301 and FRO-0211-2401
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: N/A		
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): Bryan Graham		Phone: (832)444-7239
a	R.O. Title: Vice President of Operations	R.O. e-mail: bgraham@kinetik.com	
b	R. O. Address: 303 Veterans Airpark Ln, Suite 2000, Midland, TX 79705		
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC): N/A		Phone: N/A
a	A. R.O. Title: N/A	A. R.O. e-mail: N/A	
b	A. R. O. Address: N/A		
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.): Kinetik Holdings, LLC		
a	Address of Parent Company: 2700 Post Oak Blvd, Suite 300, Houston, TX 77056		
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: Rebecca Moore (713)540-2081 Jeff Holder (575)513-0486		

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: None.

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__Dawna L. Allen_____,
Email__dawna.allen@trinityconsultants.com_____ Phone number _(512)484-4478_____.

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 #	Manufacturer'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 Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
FL-1	Acid Gas Flare	John Zink	N/A	63568	Unknown	Unknown	2005 2005	FL-1 FL-1	31000205	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit X To Be Modified ☐ To be Replaced	N/A	N/A
FL-2	Process Flare	Mission	MAF 1250	765-2	Unknown	Unknown	7/1/2023 10/1/2023	FL-2 FL-2	31000205	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit X To Be Modified ☐ To be Replaced	N/A	N/A
VCU-1	Vapor Combustor	Rush Industries	BGR-18LP	TBD[5]	Unknown	Unknown	2026 2026	VCU-1 VCU-1	31000205	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ENG-1	Compressor Engine	Caterpillar	G3606LE	4ZS01112	1775 hp	1775 hp	1/22/2009 1/22/2009	CAT-1 ENG-1	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified X To be Replaced	4SLB	N/A
ENG-2	Compressor Engine	Caterpillar	G3606LE	4ZS/ 3XF00268	1775 hp	1775 hp	6/13/2000 6/13/2000	CAT-2 ENG-2	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified X To be Replaced	4SLB	N/A
ENG-3	Compressor Engine	Caterpillar	G3606LE	4ZS00930	1775 hp	1775 hp	1/16/2008 1/16/2008	CAT-3 ENG-3	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified X To be Replaced	4SLB	N/A
ENG-4	Compressor Engine	Caterpillar	G3606LE	TBD[5]	1775 hp	1775 hp	>01/07/2010 TBD[5]	CAT-4 ENG-4	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified X To be Replaced	4SLB	N/A
WAU-1	Compressor Engine	Waukesha	L7044	5283704174	1680 hp	1680 hp	7/1/2010 TBD[5]	NSCR-1 WAU-1	20200253	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional X Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	ENG-1
WAU-2	Compressor Engine	Waukesha	L7044	5283704176	1680 hp	1680 hp	7/1/2010 TBD[5]	NSCR-2 WAU-2	20200253	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional X Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	ENG-2
WAU-3	Compressor Engine	Waukesha	P9394	TBD[5]	2390 hp	2390 hp	1/16/2008 1/16/2008	NSCR-3 WAU-3	20200253	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional X Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	ENG-3
WAU-4	Compressor Engine	Waukesha	P9394	TBD[5]	2390 hp	2390 hp	>01/07/2010 TBD[5]	NSCR-4 WAU-4	20200253	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional X Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	ENG-4
Ajax 1	AGI Compressor Engine	AJAX	DPC-2804 LE	84174	800 hp	800 hp	1997 6/1/2022	N/A Ajax 1	20200254	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	2SLB	N/A
Ajax 2	AGI Compressor Engine	AJAX	DPC-2804 LE	84296	800 hp	800 hp	1997 6/1/2022	N/A Ajax 2	20200254	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	2SLB	N/A
H-1	Hot Oil Heater	Tulsa	H-101	MJ21-690	41.95 MMBtu/Hr	41.95 MMBtu/Hr	1/21/2025 6/15/2025	N/A H-1	31000404	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit X To Be Modified ☐ To be Replaced	N/A	N/A
H-2	TEG Regen Heater	Exterran	SB36-16	1104-60A	1.5 MMBtu/Hr	1.5 MMBtu/Hr	1/25/2010 1/25/2010	N/A H-2	31000228	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit X To Be Modified ☐ To be Replaced	N/A	N/A
H-3	Molecular Sieve Regen Heater	Heatec	HCI-2010-25-G	HI11-121	3.18 MMBtu/Hr	3.18 MMBtu/Hr	1/25/2010 1/25/2010	N/A H-3	31000229	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit X To Be Modified ☐ To be Replaced	N/A	N/A
H-6	Backup Hot Oil Heater	Parmac	Unknown	Unknown	19.5 MMBtu/Hr	19.5 MMBtu/Hr	8/1/2022 8/1/2022	N/A H-6	31000404	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer'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 Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
DEHY-1	TEG Dehydrator Still Vent	ARC	Unknown[6]	Unknown[6]	90 MMscfd	75 MMscfd	1/25/2010 1/25/2010	BTEX VCU-1	31000227	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit X To Be Modified ☐ To be Replaced	N/A	N/A
DEHY-2	TEG Dehydrator	Rama	Unknown	2138	40 MMscfd	40 MMscfd	5/21/1999 5/21/1999	BTEX FL-2	31000227	☐ Existing (unchanged) X To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
AU-1	Amine Unit	Energy Fabrication Corp	WRT-1HT	TEF-247	90 MMSCFD	75 MMSCFD	1/25/2010 1/25/2010	AGI well AGI well	31000201	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit X To Be Modified ☐ To be Replaced	N/A	N/A
FUG	Fugitive Emissions	N/A	N/A	N/A	N/A	N/A	1/25/2010 1/25/2010	N/A N/A	31088811	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FL-1 SSM	Startup/Shutdown/ Maintenance	N/A	N/A	N/A	N/A	N/A	N/A N/A	FL-1 FL-1	31000205	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit X To Be Modified ☐ To be Replaced	N/A	N/A
FL-2 SSM	Startup/Shutdown/ Maintenance	N/A	N/A	N/A	N/A	N/A	N/A N/A	FL-2 FL-2	31000205	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit X To Be Modified ☐ To be Replaced	N/A	N/A
SSM	Startup/Shutdown/ Maintenance	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	N/A	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
C-WAU1	Residue Compressor	Ariel	JGD/4	F-33613	1775 hp	1775 hp	5/21/2010 5/21/2010	N/A N/A	31000313	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
C-WAU2	Residue Compressor	Ariel	JGD/4	F-33286	1775 hp	1775 hp	3/12/2010 3/12/2010	N/A N/A	31000313	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
C-WAU3	Residue Compressor	TBD[5]	TBD[5]	TBD[5]	TBD[5]	TBD[5]	TBD[5] TBD[5]	N/A N/A	31000313	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
C-WAU4	Residue Compressor	TBD[5]	TBD[5]	TBD[5]	TBD[5]	TBD[5]	TBD[5] TBD[5]	N/A N/A	31000313	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
C-Ajax1	AGI Compressor	AJAX	DPC-2804 LE	84174	800 hp	800 hp	1997 1997	N/A N/A	31000313	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
C-Ajax2	AGI Compressor	AJAX	DPC-2804 LE	84296	800 hp	800 hp	1997 1997	N/A N/A	31000313	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
AGC-0	AGI Compressor	Ariel	JGA/6	F-12861	200 hp	200 hp	1/1/2005 1/1/2005	N/A N/A	31000313	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
D-1	Electric Compressor	Ingersoll Rand	RDS	YRS-1413	2500 HP	2500 HP	1980 1/1/2005	N/A N/A	31000313	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	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.

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.

[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

[5] This unit is not yet installed

[6] Unit is assembled in the field; there is no specific model, or serial number.

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 https://www.env.nm.gov/wp-content/uploads/sites/2/2017/10/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
TK-1	Amine	N/A	TBD 5819 & 5820	150 bbl	20.2.72.202.B.2 N/A	TBD 3/1/2021	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-2	TEG	N/A	N/A N/A	23.8 bbl	20.2.72.202.B.2 N/A	TBD 3/1/2021	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-3	Lube Oil	N/A	N/A N/A	75 bbl	20.2.72.202.B.2 N/A	N/A N/A	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-4	Waste Water	N/A	N/A N/A	100 bbl	20.2.72.202.B.2 N/A	N/A N/A	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-5	Lube Oil	N/A	N/A N/A	11.8 bbl	20.2.72.202.B.2 N/A	N/A N/A	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-6	Methanol	N/A	N/A N/A	23.8 bbl	20.2.72.202.B.5 N/A	N/A N/A	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-7	Methanol	N/A	N/A N/A	17.9 bbl	20.2.72.202.B.5 N/A	N/A N/A	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-8	Lube Oil	N/A	N/A N/A	11.8 bbl	20.2.72.202.B.2 N/A	N/A N/A	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-9	AGR Waste Water	N/A	N/A N/A	210 bbl	20.2.72.202.B.2 N/A	N/A N/A	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-10	RO Water	N/A	N/A N/A	400 bbl	20.2.72.202.B.2 N/A	N/A N/A	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-11 through TK-13	RO Water	N/A	N/A N/A	210 bbl	20.2.72.202.B.2 N/A	N/A N/A	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-14	RO Water	N/A	N/A N/A	120 bbl	20.2.72.202.B.2 N/A	N/A N/A	X Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-15	AGR Solvent	N/A	N/A N/A	90 bbl	20.2.72.202.B.2 N/A	N/A N/A	X Existing (unchanged) ☐ To be Removed ☐ 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 12, 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
FL-1	Acid Gas Flare	2005	VOC, HAP	AGI System, AU-1	98%	Design Specification
FL-2	Process Flare	10/1/2023	VOC, HAP	Facility, DEHY-1	98%	Design Specification
AGI Well	Acid Gas Injection unit for Amine Unit control	2006	H_2S	Amine Unit	100%	Design Specification
NSCR-1	Non-Selective Catalytic Reduction	7/1/2010	NOx, CO, VOC, HCHO	WAU-1	NOX: 97% CO: 96% VOC: 50% HCHO: 88%	Catalyst Guarantee
NSCR-2	Non-Selective Catalytic Reduction	7/1/2010	NOx, CO, VOC, HCHO	WAU-2		
NSCR-3	Non-Selective Catalytic Reduction	TBD[2]	NOx, CO, HCHO	WAU-3	NOX: 96% CO: 93% HCHO: 50%	Catalyst Guarantee
NSCR-4	Non-Selective Catalytic Reduction	TBD[2]	NOx, CO, HCHO	WAU-4		
VCU-1	Vapor Combustor	2026	VOC, HAP	DEHY-1	98%	Design Specification

[1] List each control device on a separate line. For each control device, list all emission units controlled by the control device.
[2] This unit is not yet installed

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

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
WAU-1	49.26	215.76	41.48	181.69	1.52	6.65	0.01	0.03	0.26	1.13	0.26	1.13	0.26	1.13	-	-	-	-
WAU-2	49.26	215.76	41.48	181.69	1.52	6.65	0.01	0.03	0.26	1.13	0.26	1.13	0.26	1.13	-	-	-	-
WAU-3	64.49	282.48	35.72	156.47	2.42	10.59	0.01	0.04	0.32	1.42	0.32	1.42	0.32	1.42	-	-	-	-
WAU-4	64.49	282.48	35.72	156.47	2.42	10.59	0.01	0.04	0.32	1.42	0.32	1.42	0.32	1.42	-	-	-	-
Ajax 1	3.53	15.45	4.06	17.77	1.90	8.34	0.00	0.02	0.30	1.33	0.30	1.33	0.30	1.33	-	-	-	-
Ajax 2	3.53	15.45	4.06	17.77	1.90	8.34	0.00	0.02	0.30	1.33	0.30	1.33	0.30	1.33	-	-	-	-
H-1	1.68	7.37	1.71	7.48	0.11	0.48	0.02	0.11	0.11	0.50	0.11	0.50	0.11	0.50	-	-	-	-
H-2	0.15	0.64	0.12	0.54	0.01	0.04	0.00	0.00	0.01	0.05	0.01	0.05	0.01	0.05	-	-	-	-
H-3	0.31	1.37	0.26	1.15	0.02	0.08	0.00	0.01	0.02	0.10	0.02	0.10	0.02	0.10	-	-	-	-
H-6	1.91	0.84	1.61	0.70	0.11	0.05	0.01	0.01	0.15	0.06	0.15	0.06	0.15	0.06	-	-	-	-
DEHY-1	-	-	-	-	73.73	322.95	-	-	-	-	-	-	-	-	0.01	0.05	-	-
AU-1	-	-	-	-	53.79	109.34	-	-	-	-	-	-	-	-	4140.46	73.54	-	-
FL-1	0.013	0.058	0.113	0.496	0.017	0.073	0.000	0.001	-	-	-	-	-	-	0.000	0.000	-	-
FL-2	0.028	0.124	0.057	0.249	0.017	0.073	0.000	0.001	-	-	-	-	-	-	0.000	0.000	-	-
VCU-1	0.002	0.007	0.003	0.014	0.001	0.004	0.000	0.000	-	-	-	-	-	-	0.000	0.000	-	-
FUG	-	-	-	-	2.76	12.09	-	-	-	-	-	-	-	-	0.15	0.66		
Totals	238.65	1037.77	166.39	722.48	142.24	496.33	0.08	0.31	2.06	8.46	2.06	8.46	2.06	8.46	4140.62	74.25	-	-

[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).

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
WAU-1	1.22	5.35	1.44	6.33	0.09	0.41	0.01	0.03	0.26	1.13	0.26	1.13	0.26	1.13	-	-		
WAU-2	1.22	5.35	1.44	6.33	0.09	0.41	0.01	0.03	0.26	1.13	0.26	1.13	0.26	1.13	-	-		
WAU-3	2.63	11.54	2.63	11.54	2.29	10.01	0.01	0.04	0.32	1.42	0.32	1.42	0.32	1.42	-	-		
WAU-4	2.63	11.54	2.63	11.54	2.29	10.01	0.01	0.04	0.32	1.42	0.32	1.42	0.32	1.42	-	-		
Ajax 1	3.53	15.45	4.06	17.77	1.90	8.34	0.00	0.02	0.30	1.33	0.30	1.33	0.30	1.33	-	-		
Ajax 2	3.53	15.45	4.06	17.77	1.90	8.34	0.00	0.02	0.30	1.33	0.30	1.33	0.30	1.33	-	-		
H-1	1.68	7.37	1.71	7.48	0.11	0.48	0.02	0.11	0.11	0.50	0.11	0.50	0.11	0.50	-	-		
H-2	0.15	0.64	0.12	0.54	0.01	0.04	0.00	0.00	0.01	0.05	0.01	0.05	0.01	0.05	-	-		
H-3	0.31	1.37	0.26	1.15	0.02	0.08	0.00	0.01	0.02	0.10	0.02	0.10	0.02	0.10	-	-		
H-6	1.91	0.84	1.61	0.70	0.11	0.05	0.01	0.01	0.15	0.06	0.15	0.06	0.15	0.06	-	-		
DEHY-1	100% of emissions from the flash tank are captured and routed to inlet. Regenerator emissions are captured and routed to the VCU (VCU-1). Emissions are represented at VCU-1.																	
AU-1	Amine Acid Gas to AGI Well. Amine Acid Gas SSM routed to FL-1 SSM. Amine Flash Gas routed to Inlet or FL-2 SSM.																	
FL-1	0.01	0.06	0.11	0.50	0.02	0.07	0.00	0.00	-	-	-	-	-	-	0.00	0.00		
FL-2	0.10	0.44	0.20	0.87	0.05	0.24	0.00	0.00	-	-	-	-	-	-	0.00	0.00		
VCU-1	0.14	0.60	0.27	1.20	0.42	1.84	0.01	0.05	-	-	-	-	-	-	0.00	0.00		
FUG	-	-	-	-	2.76	12.09	-	-	-	-	-	-	-	-	0.15	0.66		
Totals	**19.07**	**75.99**	**20.55**	**83.70**	**12.06**	**52.39**	**0.09**	**0.36**	**2.06**	**8.46**	**2.06**	**8.46**	**2.06**	**8.46**	**0.150**	**0.657**	**0**	**0**

[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 it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

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
SSM	-	-	-	-	22.66	6.20	-	-	-	-	-	-	-	-	-	-	-	-
FL-2 SSM	344.82	43.27	688.39	86.39	544.70	68.24	33.20	14.01	-	-	-	-	-	-	0.35	0.15	-	-
FL-1 SSM	2.89	0.76	24.78	6.54	2.95	0.79	930.96	228.09	-	-	-	-	-	-	9.91	2.43	-	-
Totals	**347.71**	**44.04**	**713.17**	**92.93**	**570.32**	**75.24**	**964.16**	**242.09**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**10.26**	**2.58**	**0.00**	**0.00**

[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)			
WAU-1	WAU-1	Vertical	No	22	1,209	155	61	10	144.18	1.17
WAU-2	WAU-2	Vertical	No	22	1,209	155	61	10	144.18	1.17
WAU-3	WAU-3	Vertical	No	24	1,106	178	77	10	165.89	1.17
WAU-4	WAU-4	Vertical	No	22	1,106	178	77	10	165.89	1.17
Ajax 1	Ajax 1	Vertical	No	20.1	515	104	41	10	64.90	1.40
Ajax 2	Ajax 2	Vertical	No	20.1	515	104	41	10	64.90	1.40
H-1	H-1	Vertical	Yes	30.0	600	391	195	10	55.3	3.00
H-2	H-2	Vertical	Yes	14	600	14	7	10	7.91	1.50
H-3	H-3	Vertical	Yes	25	600	30	15	10	16.76	1.50
H-6	H-6	Vertical	No	17	600	202	90	10	36.05	2.67
FL-1	AGI System, AU-1	Vertical	No	200	1,832	16	3	10	29.02	0.83
FL-2	Facility, DEHY-1	Vertical	No	100	1832	584	117	10	267.7	1.67
VCU-1	DEHY-1	Vertical	No	20	1832	26	5	10	14.47	1.50

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		Formaldehyde ☑ HAP		Acetaldehyde ☑ HAP		Acrolein ☑ HAP		n-Hexane HAP		Benzene HAP		Toluene ☑ HAP		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
WAU-1	WAU-1	0.16	0.71	0.02	0.08	0.04	0.16	0.03	0.15	0.00	0.00	0.02	0.09	0.01	0.03				
WAU-2	WAU-2	0.16	0.71	0.02	0.08	0.04	0.16	0.03	0.15	0.00	0.00	0.02	0.09	0.01	0.03				
WAU-3	WAU-3	0.31	1.37	0.13	0.58	0.05	0.20	0.04	0.19	0.00	0.00	0.03	0.12	0.01	0.04				
WAU-4	WAU-4	0.31	1.37	0.13	0.58	0.05	0.20	0.04	0.19	0.00	0.00	0.03	0.12	0.01	0.04				
Ajax 1	Ajax 1	1.17	2.82	0.53	2.32	0.05	0.23	0.03	0.14	0.01	0.03	0.00	0.01	0.00	0.01				
Ajax 1	Ajax 2	1.17	2.82	0.53	2.32	0.05	0.23	0.03	0.14	0.01	0.03	0.00	0.01	0.00	0.01				
H-1	H-1	0.08	0.34	0.00	0.01	0.00	0.00	0.00	0.00	0.07	0.32	0.00	0.00	0.00	0.00				
H-2	H-2	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00				
H-3	H-3	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00				
H-6	H-6	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.00				
FL-2	DEHY-1	100% of emissions from the flash tank are captured and routed to inlet. Regenerator emissions are captured and routed to the VCU (VCU-1). Emissions are represented at VCU-1.																	
N/A	AU-1	Amine Acid Gas to AGI Well. Amine Acid Gas SSM routed to FL-1 SSM. Amine Flash Gas routed to Inlet or FL-2 SSM.																	
FL-1	FL-1	0.01	0.03	-	-	-	-	-	-	0.01	0.03	0.00	0.00	0.00	0.00				
FL-1 SSM	FL-1 SSM	1.27	0.34	0.00	0.00	0.00	0.00	0.00	0.00	1.21	0.32	0.04	0.01	0.02	0.00				
FL-2	FL-2	0.02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.09	0.00	0.00	0.00	0.00				
FL-2 SSM	FL-2 SSM	14.44	1.82							8.00	1.00	4.24	0.54	1.83	0.23				
VCU-1	VCU-1	0.18	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.11	0.12	0.51	0.03	0.15				
N/A	FUG	0.57	2.51	-	-	-	-	-	-	0.05	0.21	0.53	2.31	0.44	1.91				
N/A	SSM	-	-	-	-	-	-	-	-	-	-	-	-						
Totals:		**19.90**	**15.74**	**1.36**	**5.97**	**0.27**	**1.19**	**0.22**	**0.97**	**9.44**	**2.19**	**5.02**	**3.80**	**2.35**	**2.46**				

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 (MMSCF/HR)	Annual Usage (MMSCF/YR)	% Sulfur	% Ash
WAU-1	Natural Gas	Pipeline Quality Natural Gas	1029.80	0.013	112.63	0.2 grains/100 scf	N/A
WAU-2	Natural Gas	Pipeline Quality Natural Gas	1029.80	0.013	112.63	0.2 grains/100 scf	N/A
WAU-3	Natural Gas	Pipeline Quality Natural Gas	1029.80	0.016	141.79	0.2 grains/100 scf	N/A
WAU-4	Natural Gas	Pipeline Quality Natural Gas	1029.80	0.016	141.79	0.2 grains/100 scf	N/A
Ajax 1	Natural Gas	Pipeline Quality Natural Gas	1029.80	0.0061	53.44	0.2 grains/100 scf	N/A
Ajax 2	Natural Gas	Pipeline Quality Natural Gas	1029.80	0.0061	53.44	0.2 grains/100 scf	N/A
H-1	Natural Gas	Pipeline Quality Natural Gas	1029.80	0.041	356.85	0.2 grains/100 scf	N/A
H-2	Natural Gas	Pipeline Quality Natural Gas	1029.80	0.0015	12.76	0.2 grains/100 scf	N/A
H-3	Natural Gas	Pipeline Quality Natural Gas	1029.80	0.0031	27.05	0.2 grains/100 scf	N/A
H-6	Natural Gas	Pipeline Quality Natural Gas	1029.80	0.0189	16.59	0.2 grains/100 scf	N/A
FL-1	Natural Gas (pilot & Purge Gas)	Pipeline Quality Natural Gas	1029.80	0.0002	1.75	0.2 grains/100 scf	N/A
FL-2	Natural Gas (pilot & Purge Gas)	Pipeline Quality Natural Gas	1029.80	0.0007	6.13	0.2 grains/100 scf	N/A
VCU-1	Natural Gas (pilot & Purge Gas)	Pipeline Quality Natural Gas	1029.80	0.00001	0.10	0.2 grains/100 scf	N/A

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)
N/A - All Tanks are exempt at this facility.									

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**			
N/A - All Tanks are exempt at this facility.													

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
FX: Fixed Roof	**Mechanical Shoe Seal**	**Liquid-mounted resilient seal**	**Vapor-mounted resilient seal**	**Seal Type**	**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)**
Acid Gas	H_2S & Natural Gas	Gas	75 MMSCFD	Sweet Natural Gas	Natural Gas	Gas	75 MMSCFD

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 - This facility does not have CEMS Equipment									

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
N/A - This facility does not have Parametric Emissions Measurement Equipment								

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**	**265**	**28**	**22,800**	**footnote 3**										
WAU-1	**mass GHG**	1,549	0.003	0.03	-										1,549	
	CO_2e	1,549	0.77	0.82	-											1,550
WAU-2	**mass GHG**	1,549	0.003	0.03	-										1,549	
	CO_2e	1,549	0.77	0.82	-											1,550
WAU-3	**mass GHG**	8,540	0.016	0.16	-										8,540	
	CO_2e	8,540	4.27	4.51	-											8,549
WAU-4	**mass GHG**	8,540	0.016	0.16	-										8,540	
	CO_2e	8,540	4.27	4.51	-											8,549
Ajax 1	**mass GHG**	3,218	0.01	0.06	-										3,218	
	CO_2e	3,218	1.61	1.70	-											3,221
Ajax 2	**mass GHG**	3,218	0.01	0.06	-										3,218	
	CO_2e	3,218	1.61	1.70	-											3,221
H-1	**mass GHG**	21,487	0.04	0.40	-										21,488	
	CO_2e	21,487	10.73	11.34	-											21,510
H-2	**mass GHG**	768.32	0.001	0.01	-										768	
	CO_2e	768.32	0.38	0.41	-											769.113
H-3	**mass GHG**	1,629	0.003	0.03	-										1,629	
	CO_2e	1,629	0.81	0.86	-											1,631
H-6	**mass GHG**	998.82	0.002	0.02											999	
	CO_2e	999	0.50	0.53												999.847
FL-1	**mass GHG**	105.55	0.000	0.00	-										105.55	
	CO_2e	105.55	0.05	0	-											106
FL-2	**mass GHG**	369.43	0.00	2.24	-										372	
	CO_2e	369.43	0.18	62.81	-											432.426
VCU-1	**mass GHG**	509.25	0.001	1.77	-										511.03	
	CO_2e	509.25	0.25	50	-											559
FL-1 SSM	**mass GHG**	1569.97	0.002	7.18	-										1577.15	
	CO2e	1569.97	0.64	201	-											1,772
FL-2 SSM	**mass GHG**	36717.09	0.069	259.41	-										36976.56	
	CO_2e	36717.09	18.32	7,263	-											43,999
FUG	**mass GHG**	0.00	0.000	16.38	-										16.38	
	CO_2e	0.00	0.00	459	-											459
SSM	**mass GHG**	0.00	0.000	4.59	-										4.59	
	CO_2e	0.00	0.00	128	-											128
Total	**mass GHG**	90,768	0.17	293	0										91,061	
	CO_2e	90,768	45	8,191	0											99,004.26

[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.

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.

Application Summary:
Frontier Field Services, LLC (Frontier) owns and operates the Dagger Draw Gas Plant (Dagger Draw), located approximately 9.2 miles southwest of Artesia, New Mexico in Eddy County. Dagger Draw is currently permitted under NSR permit 0001-M13-R3. With the issuance of NSR permit 0001-M13, Title V permitting requirements were triggered and Title V permit No. P-157-R4 is currently in process with NMED.

Frontier is submitting this application as a significant revision application to NSR permit 0001-M13-R3 pursuant to 20.2.72.219.D(1)(a) NMAC for the existing Dagger Draw facility. With this significant revision, Frontier is requesting the following changes:

- Update of multiple emission sources as a result of an updated ProMax for the amine and dehy section of the plant (AU-1, DEHY-1) with optimized operations.
    - Max gas input to the station will be reduced to 75 MMSCFD from 90 MMSCFD.
    - Increase in inlet gas composition for H2S and CO2 to reflect increased inlet gas composition. Update of other component speciation in inlet gas consistent with recent inlet gas sample.
- Update of emissions from Process Flare (FL-2 and FL-2 SSM)
    - The amine flash is returned to inlet instead of flared at FL-2 during normal operations; the stream will now be flared 876 hours per year as FL-2 SSM.
    - The dehy flash is returned to inlet instead of flared at FL-2 during normal operations; the stream will now be flared at 250 hours per year as FL-2 SSM.
    - Increase of Dehy Inlet SSM Flaring from 175 hours to 250 hours at FL-2 SSM.
    - Update stream characteristics of these SSM streams to FL-2 per the updated ProMax
    - Update the NOx emission factor per TCEQ high/low Btu content to the higher NOx factor.
    - Remove particulate matter emissions from this elevated flare, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.
- Add vapor combustor (VCU-1) for control of DEHY-1 still column stream
    - DEHY-1 still column will be routed to VCU-1.
- Update of emissions from Acid Gas Flare (FL-1 and FL-1 SSM)
    - Update FL-1 SSM with updated acid gas composition consistent with ProMax.
    - Update the CO emission factor per TCEQ high/low Btu content to the higher CO factor.
    - Increased annual number of hours of FL-1 SSM flaring from 425 hours up to 490 hours.

  - Remove particulate matter emissions from this elevated flare, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.
- Update the heat duty of the hot oil heater (H-1) from 32.7 MMBtu/hr to 41.95 MMBtu/hr. Update emissions for H-1 based on installation of a low-emissions burner for compliance with 20.2.50 requirements.
- Update the sulfur gas content of facility heaters (H-1, H-2, H-3) to a lower sulfur content, consistent with the AP-42 factor and the low sulfur fuel gas fired by these heaters.
- Add a backup hot oil heater operating a maximum of 876 hours/year (H-6). Hot oil heater H-6 will not operate at the same time as hot oil heater H-1. H-6 was previously H-1 before it was replaced with a new low emissions hot oil heater earlier in 2025.
- Replace compressor engines ENG-1 and ENG-3 with Waukesha L7044 units (WAU-1 and WAU-2)
- Replace compressor engines ENG-2 and ENG-4 with Waukesha P9394GSI units (WAU-3 and WAU-4)
- Update FUG emissions to reflect the updated stream compositions.
- Update the Table 2-A information for multiple units and to reflect make/model/serial numbers as needed: Heater make/model information, removal of DEHY-2 which is no longer onsite, AU-1 make/model/serial, added compressor units as individual units.
- Request to reduce the frequency of the total sulfur extended analysis showing mercaptans. In the supporting information provided with this application, the levels of mercaptans is very low; therefore, Frontier is requesting to reduce the frequency of this type of sampling analysis. Further information is provided in Section 20.

The proposed PTE for the site is as follows:

NO_X (TPY)	CO (TPY)	VOC (TPY)	SO_2 (TPY)	PM_{10} (TPY)	$PM_{2.5}$ (TPY)	Total HAP (TPY)	Single HAP (TPY)
120.03	176.63	115.54	242.45	8.46	8.46	15.74	5.97

Process Summary and SSM Overview:
Dagger Draw Gas Plant has a total capacity of 75 MMSCFD of natural gas and utilizes an amine sweetening unit to remove hydrogen sulfide (H_2S) and carbon dioxide (CO_2) from raw natural gas, followed by dehydration to eliminate moisture. The sweetened dry gas then enters cryogenic unit, where it is cooled to separate natural gas liquids (NGLs) from the gas stream and transported in a sales line.

Flares (Unit ID: FL-1 SSM and FL-2 SSM) control startup, shutdown, maintenance, and upset conditions at the facility. SSM emissions from the flares result from maintenance activities per manufacturer recommendations or other preventative measures. SSM flaring occurs from sources that include: off spec gas flaring and AGI compressor downtime during which acid gas is flared. Additional vented SSM emissions result from equipment blowdowns. A full description is included in Section 10 and the emissions calculations.

The facility is not a new major stationary source under the new source review requirements of the FCAA, Part C (PSD). The facility is located in Eddy County, New Mexico, an area that is classified as attainment or unclassified with the National Ambient Air Quality Standards (NAAQS) for all pollutants. Oil and gas production operations are not a listed source category under 40 CFR §52.21(b)(1); therefore, the facility would be considered a major source if criteria pollutant emissions are greater than or equal to the major source threshold of 250 tpy for each pollutant. The maximum annual emission rates for each criteria pollutant are less than 250 tpy. Therefore, the facility will remain a minor source as defined in the rules, and PSD review is not triggered.

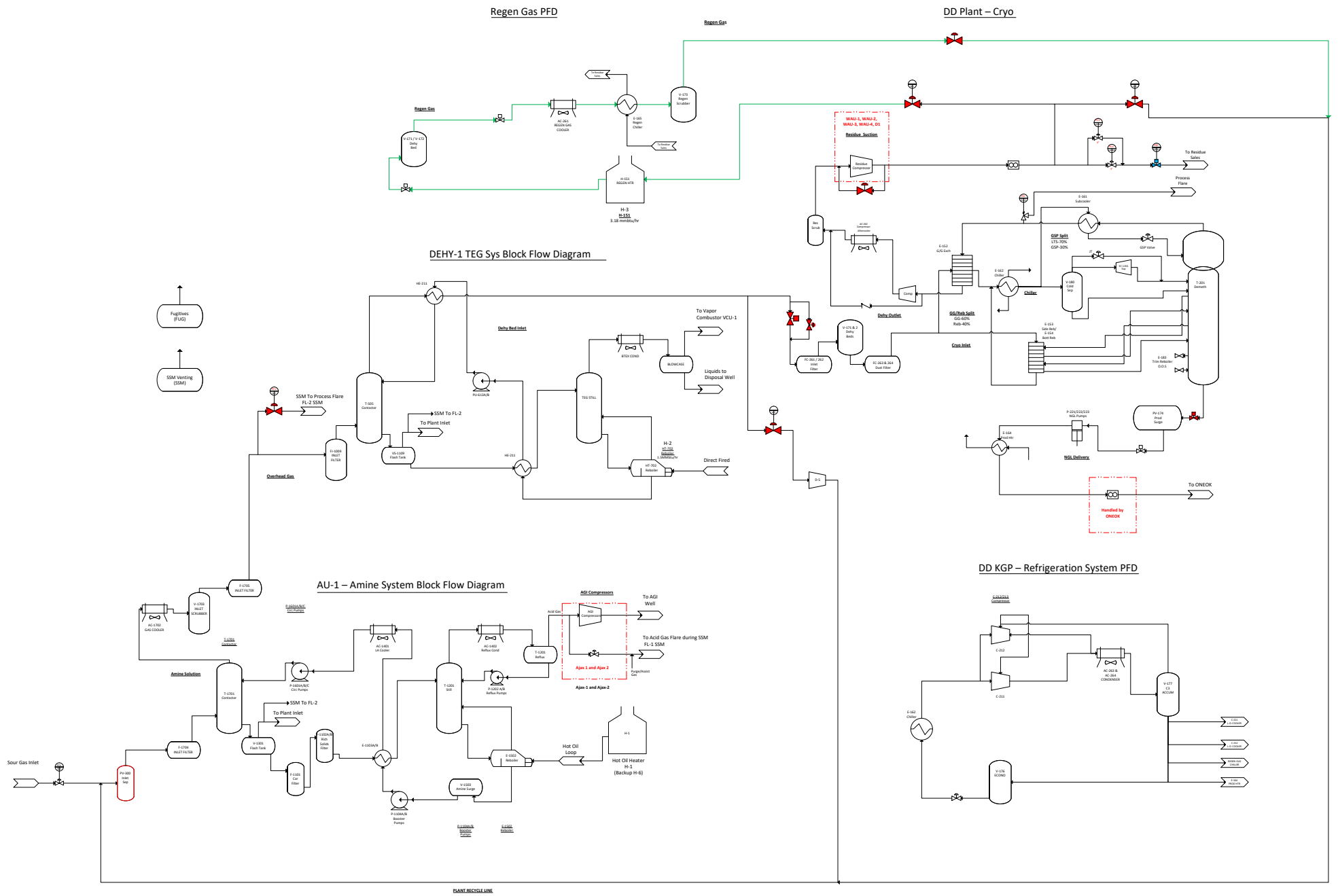
Section 4

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 of the facility is attached.

DAGGER DRAW GAS PLANT - PROCESS FLOW DIAGRAM



Trinity Consultants	**DAGGER DRAW GAS PLANT** PROCESS FLOW DIAGRAM

Drawn By	Start Date	Rev. Date	DWG Name	Rev. No.
TVP	02/05/26	06/25/26	PFD	3

KINETIK\DAGGER DRAW\254404.0535

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 attached.

551900 m E

552000 m E

552100 m E

552200 m E

552300 m E

PLANT NORTH

3620000 m N

3619900 m N

3619800 m N

3619700 m N

3619600 m N

3619500 m N

FENCE LINE

FL-2

VCU-1

H-2

H-3

H-1

H-6

AJAX-2

AJAX-1

AGI COMPRESSION
QTY 2 AJAX

PIPERACK

NEC ELECTRICAL
CLASS 1 DIV 2

GATE

PIPELINE RD

WELDING AREA
NO HOT WORK PERMIT REQUIRED

T.W.

ACID GAS TO FLARE

FL-1

WAU-1

WAU-2

WAU-3

WAU-4

PUMP
SHOP

OFFICE

DEGREASER/SOAP

MCC/CONTROL
ROOM

CONTRACTOR
PUMPS

DELMONE
BUILDING

CONTAINMENT

STORAGE
TANKS

STORAGE
BUILDING

R.O
STORAGE
TANK

SLOP
TANK

FILTER
BIN
AREA

SEPTIC

W KINCAID RANCH RD

Emission Point Number	Name
AJAX-1	AGI Compressor Engine
AJAX-2	AGI Compressor Engine
FL-1	Acid Gas Flare
FL-2	Process Flare
H-1	Hot Oil Heater
H-2	TEG Regen Heater (for dehy)
H-3	Mol Sieve Regen Heater
H-6	Hot Oil Heater (backup)
VCU-1	BTEX Combustor
WAU-1	Compressor Engine
WAU-2	Compressor Engine
WAU-3	Compressor Engine
WAU-4	Compressor Engine

0 25 50 100

SCALE IN METERS

Trinity Consultants

DAGGER DRAW GAS PLANT

ARTESIA, NM, EDDY COUNTY

Drawn By	Start Date	Rev. Date	DWG Name	Rev. No.
AMV	02/05/26	05/22/26	PLOT	3

KINETIK\DAGGER DRAW\254404.0535

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.

TEG Dehydrators (Unit DEHY-1)
Emission rates were calculated using BR&E Promax (gas processing analysis/simulation program) the simulated throughput for the facility was set at a combined total of 75 MMSCFD. A copy can be found in Section 7 of this application. The dehydrator flash is routed back to the process, and the still vent emissions are controlled by a BTEX condenser and then the vapor combustion unit (Unit VCU-1).

Amine Unit (Unit AU-1)
Emission rates were calculated using BR&E Promax (gas processing analysis/simulation program) based on a combined maximum throughput of 75 MMSCFD for the facility. The ProMax report can be found in Section 7 of this application. The Amine unit flash tank emissions are collected and sent to a low-pressure inlet of the facility and the regenerator emissions are sent to the AGI system. The amine unit flash tank emissions are routed to the facility Process Flare (Unit FL-2) during an SSM scenario if there are issues routing the stream to the plant inlet. The system has no vent to the atmosphere.

Compressor Engines (Units WAU-1, WAU-2, WAU-3, WAU-4, Ajax 1 and Ajax 2)
Emission factors for NOx, CO, VOC, and HCHO are based on manufacturer data and/or catalyst specification. For WAU-1, WAU-2, WAU-3 and WAU-4, non-selective catalytic reduction for NOx, CO, VOC, and HCHO are based on vendor guarantees. The Ajax 1 and Ajax 2 are 2 stroke lean burn engines and emissions are based on manufacturer data with no catalyst control.

Emission rates for TSP, PM_{10}, $PM_{2.5}$, SO_2, and remaining HAP were calculated using emission factors from AP-42 Chapter 3.2, Natural Gas-fired Reciprocating Engines, Table 3.2-3 for four stroke rich burn engines, and Table 3.2-1 for two stroke lean burn engines. PM_{10} and $PM_{2.5}$ emissions are set equal to PM emissions as a conservative measure where it was assumed PM(Total) = PM (filterable) + PM (condensable). SO_2 emissions were calculated based on the units' fuel consumption and AP-42 assumptions of fuel sulfur. GHG emissions were calculated using 40 CFR 98 Subpart C Tier 1.

Fugitives (Unit FUG)
Fugitives for the facility were calculated using the as-built component counts from LDAR testing and emission factors from EPA/API for oil and gas production facilities. The gas composition and liquids composition are used to estimate emissions of VOC, HAP, and H2S.

Hot oil heater (Unit H-1)
Emission rates for NOx, CO, VOC, and PM were calculated using manufacturer specification sheets. PM_{10} and $PM_{2.5}$ emissions are set equal to PM emissions as a conservative measure. GHG emissions were calculated using 40 CFR 98 Subpart C Tier1.

Reboiler, Mol Sieve Regenerator, and Hot Oil heater (Units H-2, H-3, and H-6)
Emission rates for NOx, CO, VOC, and PM were calculated using AP-42 Chapter 1.4, Natural Gas Combustion, Tables 1.4-1, 1.4-2, and 1.4-3. PM_{10} and $PM_{2.5}$ emissions are set equal to PM emissions as a conservative measure where it was assumed PM(Total) = PM (filterable) + PM (condensable). SO_2 emissions were calculated based on the units' fuel consumption and AP-42 assumptions of fuel sulfur. GHG emissions were calculated using 40 CFR 98 Subpart C Tier1.

Flares and Vapor Combustors:
CO and NOx emission factors are from TCEQ Air Permit Technical Guidance for Flares and Vapor Oxidizers, for the respective high or low btu stream. SO_2 emissions assume 100% conversion of H_2S to SO_2. A destruction efficiency of 98% VOC and H2S is used for the flares and the combustor VCU-1.

Acid Gas Flare (Unit FL-1)
The Acid Gas Flare is used in SSM/malfunction/emergency events for acid gas flaring during compressor downtime of acid gas injection system for < 500 hours per year (490 hrs). The acid gas stream composition is determined via ProMax modeling. Pilot emissions are included for the facility flare, assuming year-round operation of the flare pilot. A copy of the flare calculations is provided in this section.

Process Flare (Unit FL-2)
The Process Flare is used in SSM events. Pilot emissions are included for the process flare, assuming year-round operation of the flare pilot. A copy of the flare pilot calculation is provided in this section.

SSM emissions: In the event there is an issue routing the amine flash tank stream back to inlet, the stream may instead be flared during an SSM scenario at FL-2 for up to 876 hours per year. In the event there is an issue routing the dehy flash tank stream back to inlet, the stream may instead be flared during an SSM scenario at FL-2 for up to 250 hours per year. In the event the amine unit is off spec, the inlet gas to the dehy may be briefly flared during an SSM scenario for up to 250 hours per year. Each of these SSM streams may occur within the same hour and are characterized with ProMax modeling.

Vapor Combustor (Unit VCU-1)
The vapor combustor is used to control DEHY-1 still column emissions. Pilot and purge emissions are included for the vapor combustor, assuming year-round operation of the combustor pilot. A copy of the vapor combustor calculation is provided in this section.

Routine or predictable emissions during Startup, Shutdown and Maintenance (SSM):
Frontier Field Services, LLC represents 6.2 tpy of VOC associated with equipment blowdowns that will occur at this facility.

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)

Frontier Field Services, LLC.
Dagger Draw Gas Plant
Emission Summary

Uncontrolled Emissions

Unit	NO_x		CO		VOC		SO_x		PM_{10}		$PM_{2.5}$		H_2S	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
WAU-1	49.26	215.76	41.48	181.69	1.52	6.65	0.01	0.03	0.26	1.13	0.26	1.13	-	-
WAU-2	49.26	215.76	41.48	181.69	1.52	6.65	0.01	0.03	0.26	1.13	0.26	1.13	-	-
WAU-3	64.49	282.48	35.72	156.47	2.42	10.59	0.01	0.04	0.32	1.42	0.32	1.42	-	-
WAU-4	64.49	282.48	35.72	156.47	2.42	10.59	0.01	0.04	0.32	1.42	0.32	1.42	-	-
Ajax 1	3.53	15.45	4.06	17.77	1.90	8.34	0.00	0.02	0.30	1.33	0.30	1.33	-	-
Ajax 2	3.53	15.45	4.06	17.77	1.90	8.34	0.00	0.02	0.30	1.33	0.30	1.33	-	-
H-1	1.68	7.37	1.71	7.48	0.11	0.48	0.02	0.11	0.11	0.50	0.11	0.50	-	-
H-2	0.15	0.64	0.12	0.54	0.01	0.04	0.00	0.00	0.01	0.05	0.01	0.05	-	-
H-3	0.31	1.37	0.26	1.15	0.02	0.08	0.00	0.01	0.02	0.10	0.02	0.10	-	-
H-6	1.91	0.84	1.61	0.70	0.11	0.05	0.01	0.01	0.15	0.06	0.15	0.06	-	-
DEHY-1	-	-	-	-	73.73	322.95	-	-	-	-	-	-	0.01	0.05
AU-1	-	-	-	-	53.79	109.34	-	-	-	-	-	-	4140.46	73.54
FL-1 (pilot only)	0.013	0.06	0.11	0.50	0.02	0.07	1.35E-04	5.93E-04	-	-	-	-	7.21E-05	0.00
FL-1 SSM	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FL-2	0.028	0.124	0.057	0.25	0.02	0.07	1.35E-04	5.93E-04	-	-	-	-	1.44E-06	0.00
FL-2 SSM	-	-	-	-	27155.68	3394.46	-	-	-	-	-	-	0.90	0.11
VCU-1	0.002	0.007	0.003	0.01	0.00	0.00	7.45E-06	3.26E-05	-	-	-	-	7.93E-08	3.47E-07
FUG	-	-	-	-	2.76	12.09	-	-	-	-	-	-	0.15	0.66
SSM	-	-	-	-	22.66	6.20	-	-	-	-	-	-	-	-
Total	**238.65**	**1037.77**	**166.39**	**722.48**	**27320.58**	**3897.00**	**0.082**	**0.31**	**2.06**	**8.46**	**2.06**	**8.46**	**4141.52**	**74.36**

Controlled Emissions

Unit	NO_x		CO		VOC*		SO_x		PM_{10}		$PM_{2.5}$		H_2S	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
WAU-1	1.22	5.35	1.44	6.33	0.09	0.41	0.01	0.03	0.26	1.13	0.26	1.13	-	-
WAU-2	1.22	5.35	1.44	6.33	0.09	0.41	0.01	0.03	0.26	1.13	0.26	1.13	-	-
WAU-3	2.63	11.54	2.63	11.54	2.29	10.01	0.01	0.04	0.32	1.42	0.32	1.42	-	-
WAU-4	2.63	11.54	2.63	11.54	2.29	10.01	0.01	0.04	0.32	1.42	0.32	1.42	-	-
Ajax 1	3.53	15.45	4.06	17.77	1.90	8.34	0.00	0.02	0.30	1.33	0.30	1.33	-	-
Ajax 2	3.53	15.45	4.06	17.77	1.90	8.34	0.00	0.02	0.30	1.33	0.30	1.33	-	-
H-1	1.68	7.37	1.71	7.48	0.11	0.48	0.02	0.11	0.11	0.50	0.11	0.50	-	-
H-2	0.15	0.64	0.12	0.54	0.01	0.04	0.00	0.00	0.01	0.05	0.01	0.05	-	-
H-3	0.31	1.37	0.26	1.15	0.02	0.08	0.00	0.01	0.02	0.10	0.02	0.10	-	-
H-6	1.91	0.84	1.61	0.70	0.11	0.05	0.01	0.01	0.15	0.06	0.15	0.06	-	-
DEHY-1	100% of emissions from the flash tank are captured and routed to inlet. Regenerator emissions are captured and routed to the VCU (VCU-1). Emissions are represented at VCU-1.													
AU-1	Amine Acid Gas to AGI Well. Amine Acid Gas SSM routed to FL-1 SSM. Amine Flash Gas routed to Inlet or FL-2 SSM.													
FL-1 (pilot only)	0.013	0.058	0.113	0.496	0.017	0.073	0.0001	0.001	-	-	-	-	0.00007	0.0003
FL-1 SSM**	2.89	0.76	24.78	6.54	2.95	0.79	930.96	228.09	-	-	-	-	9.91	2.43
FL-2	0.10	0.44	0.20	0.87	0.05	0.24	0.00	0.00	-	-	-	-	5.04E-06	2.21E-05
FL-2 SSM **	344.82	43.27	688.39	86.39	544.70	68.24	33.20	14.01	-	-	-	-	0.35	0.15
VCU-1	0.14	0.60	0.27	1.20	0.42	1.84	0.01	0.05	-	-	-	-	1.11E-04	4.84E-04
FUG	-	-	-	-	2.76	12.09	-	-	-	-	-	-	0.15	0.66
SSM	-	-	-	-	22.66	6.20	-	-	-	-	-	-	-	-
Total	**366.78**	**120.03**	**733.72**	**176.63**	**582.37**	**127.63**	**964.25**	**242.45**	**2.06**	**8.46**	**2.06**	**8.46**	**10.41**	**3.23**
Totals w/o Fugitives	**366.78**	**120.03**	**733.72**	**176.63**	**579.61**	**115.54**	**964.25**	**242.45**	**2.06**	**8.46**	**2.06**	**8.46**	**10.26**	**2.58**

*Engine VOC includes formaldehyde and acetaldehyde.

** For modeling purposes, FL-1 SSM and FL-2 SSM do not occur simultaneously.

Frontier Field Services, LLC.
Dagger Draw Gas Plant
Emission Summary

Uncontrolled Emissions	Uncontrolled HAP Emissions													
	Total HAP		Formaldehyde		Acetaldehyde		Acrolein		n-hexane		Benzene		Toluene	
Unit	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
WAU-1	0.33	1.44	0.19	0.81	0.04	0.16	0.03	0.15	0.00	0.00	0.02	0.09	0.01	0.03
WAU-2	0.33	1.44	0.19	0.81	0.04	0.16	0.03	0.15	0.00	0.00	0.02	0.09	0.01	0.03
WAU-3	0.44	1.95	0.26	1.15	0.05	0.20	0.04	0.19	0.00	0.00	0.03	0.12	0.01	0.04
WAU-4	0.44	1.95	0.26	1.15	0.05	0.20	0.04	0.19	0.00	0.00	0.03	0.12	0.01	0.04
Ajax 1	0.64	2.82	0.53	2.32	0.05	0.23	0.03	0.14	0.01	0.03	0.00	0.01	0.003	0.01
Ajax 2	1.17	5.14	0.53	2.32	0.05	0.23	0.03	0.14	0.01	0.03	0.00	0.01	0.003	0.01
H-1	0.08	0.34	0.00	0.01	0.00	0.00	0.00	0.00	0.07	0.32	0.00	0.00	0.00	0.00
H-2	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
H-3	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00
H-6	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.00
DEHY-1	17.82	78.04	0	0	0	0	0	0	1.50	6.58	11.30	49.50	4.32	18.93
AU-1	26.45	7.41	0	0	0	0	0	0	0.19	0.75	17.71	4.65	7.31	1.72
FL-1 (pilot only)	0.0060	0.0264	-	-	-	-	-	-	0.0060	0.0264	0.0000	0.0000	0.00	0.00
FL-1 SSM	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FL-2	0.0060	0.0264	-	-	-	-	-	-	0.0060	0.0264	0.0000	0.0000	0.00	0.00
FL-2 SSM	710.38	88.80	-	-	-	-	-	-	398.63	49.83	205.48	25.68	88.28	11.04
VCU-1	0.000	0.0015	-	-	-	-	-	-	0.000	0.0015	-	-	-	-
FUG	0.57	2.51	-	-	-	-	-	-	0.05	0.21	0.53	2.31	0.44	1.91
SSM	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**758.72**	**191.93**	**1.96**	**8.58**	**0.272**	**1.191**	**0.222**	**0.972**	**400.51**	**57.86**	**235.11**	**82.58**	**100.39**	**33.77**

Controlled Emissions	Controlled HAP Emissions													
	Total HAP		Formaldehyde		Acetaldehyde		Acrolein		n-hexane		Benzene		Toluene	
Unit	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
WAU-1	0.16	0.71	0.02	0.08	0.04	0.16	0.03	0.15	0.00	0.00	0.02	0.09	0.01	0.03
WAU-2	0.16	0.71	0.02	0.08	0.04	0.16	0.03	0.15	0.00	0.00	0.02	0.09	0.01	0.03
WAU-3	0.31	1.37	0.13	0.58	0.05	0.20	0.04	0.19	0.00	0.00	0.03	0.12	0.01	0.04
WAU-4	0.31	1.37	0.13	0.58	0.05	0.20	0.04	0.19	0.00	0.00	0.03	0.12	0.01	0.04
Ajax 1	1.17	2.82	0.53	2.32	0.05	0.23	0.03	0.14	0.01	0.03	0.00	0.01	0.003	0.01
Ajax 2	1.17	2.82	0.53	2.32	0.05	0.23	0.03	0.14	0.01	0.03	0.00	0.01	0.003	0.01
H-1	0.08	0.34	0.00	0.01	0.00	0.00	0.00	0.00	0.07	0.32	0.00	0.00	0.000	0.00
H-2	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.000	0.00
H-3	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.000	0.00
H-6	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00	0.000	0.00
DEHY-1	100% of emissions from the flash tank are captured and routed to inlet. Regenerator emissions are captured and routed to the VCU (VCU-1). Emissions are represented at VCU-1.													
AU-1	Amine Acid Gas to AGI Well. Amine Acid Gas SSM routed to FL-1 SSM. Amine Flash Gas routed to Inlet or FL-2 SSM.													
FL-1 (pilot only)	0.006	0.026	-	-	-	-	-	-	0.006	0.026	0.000	0.000	0.000	0.00
FL-1 SSM**	1.27	0.34	0.00	0.00	0.00	0.00	0.00	0.00	1.21	0.32	0.04	0.01	0.017	0.00
FL-2	0.02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.09	0.00	0.00	0.000	0.000
FL-2 SSM **	14.44	1.82	0.00	0.00	0.00	0.00	0.00	0.00	8.00	1.00	4.24	0.54	1.827	0.23
VCU-1	0.18	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.11	0.12	0.51	0.033	0.15
FUG	0.57	2.51							0.05	0.21	0.53	2.31	0.435	1.907
SSM	-	-							-	-	-	-	-	-
Total	**19.90**	**15.74**	1.36	5.97	0.27	1.19	0.22	0.97	9.44	2.19	5.02	3.80	2.35	2.46
Totals w/o Fugitives	**19.90**	**15.74**	1.36	5.97	0.27	1.19	0.22	0.97	9.44	2.19	5.02	3.80	2.35	2.46

** For modeling purposes, FL-1 SSM and FL-2 SSM do not occur simultaneously.

Laboratory Analyses

All emission calculations in this application are based upon site-specific laboratory analyses of the gas and liquids handled at this site.

Produced Gas Sample

Sample Information	
Site	Dagger Draw
Sample Type	Site-Specific Sample
Date Sampled	10/12/2022
Point in Process	Meter Run
Temperature (°F)	89
Pressure (psig)	873
Used for	Pilot/purge
Notes	

Composition:

Component	Molecular Weight (lb/lb-mole)	Mole %	Weight %
Hydrogen Sulfide	34.08	0.0004	0.0007
Carbon Dioxide	44.01	0.0257	0.0607
Nitrogen	28.01	7.4012	11.1141
Methane (C1)	16.04	86.0245	73.9753
Ethane (C2)	30.07	3.9866	6.4267
Propane (C3)	44.10	1.0435	2.4671
Isobutane (i-C4)	58.12	0.1821	0.5674
n-Butane (n-C4)	58.12	0.3714	1.1574
Isopentane (i-C5)	72.15	0.1434	0.5546
n-Pentane (n-C5)	72.15	0.1598	0.6179
Cyclopentane	70.10	0.0000	0.0000
Other Hexanes (C6)	86.18	0.6619	3.0581
Cyclohexane	84.16	0.0000	0.0000
Heptanes (C7)	100.20	0.0000	0.0000
Methylcyclohexane	98.19	0.0000	0.0000
Octanes Plus (C8+)	127.48	0.0000	0.0000
Nonanes (C9)	128.26	0.0000	0.0000
Decanes Plus (C10+)	142.29	0.0000	0.0000
Benzene	78.11	0.0000	0.0000
Toluene	92.14	0.0000	0.0000
Ethylbenzene	106.17	0.0000	0.0000
Xylenes	106.17	0.0000	0.0000
n-Hexane	86.18	0.0000	0.0000
2,2,4 - Trimethylpentane	114.23	0.0000	0.0000
Totals:		100.000	100.0000

Equations used:

A. *(Component Weight %) = (Component Mole %) x (Component Molecular Weight, lb/lb-mole) / (Total Molecular Weight, lb/lb-mole)*

Other sample properties are shown in the table below:

Property	Value
Molecular Weight (lb/lb-mole)	18.7
VOC (Wt%)	8.42
HHV (Btu/scf)	1,029.8

Laboratory Analyses

Amine Train Inlet Gas

Sample Information	
Site	Dagger Draw
Sample Type	Site-Specific Sample
Date Sampled	4/16/2025
Point in Process	Inlet
Temperature (°F)	91
Pressure (psig)	850
Used for	Amine Inlet
Notes	The following components were edited compared to the lab analysis: - CO2 and H2S were increased to account for worst case characteristics of future anticipated inlet gas - Octanes includes octanes, nonanes and decanes - Heptanes divided evenly between i-Heptane and n-Heptane - Other Hexanes consists of cyclohexane and iso-hexane - Methane was reduced slightly to normalize the overall mol% to 100%

Composition:

Component	Molecular Weight (lb/lb-mole)	Mole %	Weight %
Helium	4.00	0.0463	0.0089
N2	28.01	1.9582	2.6230
CO2	44.01	2.6963	5.6747
O2	16.00	0.0684	0.0523
Hydrogen Sulfide	34.08	1.4757	2.4050
Methane	16.04	78.1175	59.9213
Ethane	30.07	9.3786	13.4865
Propane	44.10	3.8214	8.0592
i-Butane	58.12	0.5025	1.3967
n-Butane	58.12	1.0519	2.9237
i-Pentane	72.15	0.2686	0.9268
n-Pentane	72.15	0.2413	0.8326
Neopentane	72.15	0.0000	0.0000
n-Hexane	86.18	0.0562	0.2316
i-Hexane	86.18	0.0638	0.2629
Benzene	78.11	0.0347	0.1296
Cyclohexane	84.16	0.0425	0.1711
i-Heptane	100.20	0.0600	0.2873
n-Heptane	100.20	0.0600	0.2873
Toluene	92.14	0.0126	0.0555
Octane	127.48	0.0415	0.2530
Ethylbenzene	106.17	0.0009	0.0046
m-Xylene	106.17	0.0013	0.0066
Totals:		100.0000	100.0000

Equations used:

A. *(Component Weight %) = (Component Mole %) x (Component Molecular Weight, lb/lb-mole) / (Total Molecular Weight, lb/lb-mole)*

Other sample properties are shown in the table below:

Property	Value
Molecular Weight (lb/lb-mole)	20.33
VOC (Wt%)	15.83
HHV (Btu/scf)	1,058.8

Waukesha Engines

Emission unit number(s):	WAU-1, WAU-2
Source description:	Waukesha L7044
Manufacturer:	Waukesha
Model:	L7044
Type:	4SRB
Emission Control:	NSCR
Number of Engines:	2
Horsepower (HP):	1680
Max Engine RPM:	1200
Fuel Consumption (Btu/hp-hr):	7881
Annual Operating Hours:	8760

Stack Parameters:	WAU-1	WAU-2
Height (ft):	21.6	21.6
Diameter (ft):	1.17	1.17
Temperature (°F):	1,209	1,209
Flow (ACFM):	9,301	9,301
Velocity (ft/s):	144.18	144.18

Fuel Parameters	All Engines	
Fuel Type:	Natural Gas	
Fuel LHV:	1029.8	Btu/scf
Fuel Sulfur Content:	0.002	grains/dscf
Hourly Fuel Flow Rate:	0.013	MMSCF/hr
Annual Fuel Flow Rate:	112.63	MMSCF/yr

Emissions	NOx		CO		VOC		TSP/PM10/PM2.5		SO2	
Uncontrolled Emission Factor:	13.3	g/hp-hr	11.2	g/hp-hr	0.35	g/hp-hr	0.01941	lb/MMBtu	0.000588	lb/MMBtu
Uncontrolled Emissions:	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
	49.26	215.76	41.48	181.69	1.30	5.68	0.26	1.13	0.01	0.03
Control Efficiency:	97.5%		96.5%		97%		0%		0%	
Controlled Emission Factor:	0.33	g/hp-hr	0.39	g/hp-hr	0.01	g/hp-hr	0.01941	lb/MMBtu	0.000588	lb/MMBtu
Controlled Emissions:	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
	1.22	5.35	1.44	6.33	0.04	0.16	0.26	1.13	0.01	0.03

Emissions basis:
NOx, CO, VOC, and formaldehyde - manufacturer specifications
PM, SO2, and remaining HAPs - AP-42, Chapter 3, Table 3.2-3

	Hazardous Air Pollutants																	
Emissions	Formaldehyde		Benzene		Acetaldehyde		Acrolein		Ethylbenzene		Methanol		Toluene		Xylene		Total HAPs	
Uncontrolled Emission Factor:	0.05	g/hp-hr	0.00158	lb/MMBtu	0.00279	lb/MMBtu	0.00263	lb/MMBtu	0.0000248	lb/MMBtu	0.00306	lb/MMBtu	0.000558	lb/MMBtu	0.000195	lb/MMBtu	Uncontrolled	
Uncontrolled Emissions:	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
	0.19	0.81	0.02	0.09	0.04	0.16	0.03	0.15	0.000	0.00	0.04	0.18	0.01	0.03	0.00	0.01	0.33	1.44
Control Efficiency:	90%		0%		0%		0%		0%		0%		0%		0%			
Controlled Emission Factor:	0.01	g/hp-hr	0.00158	lb/MMBtu	0.00279	lb/MMBtu	0.00263	lb/MMBtu	0.0000248	lb/MMBtu	0.00306	lb/MMBtu	0.000558	lb/MMBtu	0.000195	lb/MMBtu	Controlled	
Controlled Emissions:	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
	0.02	0.08	0.02	0.09	0.04	0.16	0.03	0.15	0.000	0.00	0.04	0.18	0.01	0.03	0.00	0.01	0.16	0.71

GHG Emissions Calculations	CO2		N2O		Methane	
Emission Factor:	53.06	kg/MMBtu	0.0001	kg/MMBtu	0.001	kg/MMBtu
Calculated Emissions:	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
	1548.77	6783.62	0.00	0.01	0.03	0.13

GHG Emissions Factors from 40 CFR Part 98, Subpart C

Waukesha Engines

Emission unit number(s):	WAU-3, WAU-4
Source description:	Waukesha P9394
Manufacturer:	Waukesha
Model:	P9394 GSI
Type:	4SRB
Emission Control:	NSCR
Number of Engines:	2
Horsepower (HP):	2390
Max Engine RPM:	1200
Fuel Consumption (Btu/hp-hr):	6974
Annual Operating Hours:	8760

Stack Parameters:	WAU-3	WAU-4
Height (ft):	24.0	24.0
Diameter (ft):	1.17	1.17
Temperature (°F):	1,106	1,106
Flow (ACFM):	10,701	10,701
Velocity (ft/s):	165.89	165.89

Fuel Parameters	All Engines	
Fuel Type:	Natural Gas	
Fuel LHV:	1029.8	Btu/scf
Fuel Sulfur Content:	0.002	grains/dscf
Hourly Fuel Flow Rate:	0.016	MMSCF/hr
Annual Fuel Flow Rate:	141.79	MMSCF/yr

Emissions	NOx		CO		VOC		TSP/PM10/PM2.5		SO2	
Uncontrolled Emission Factor:	12.24	g/hp-hr	6.78	g/hp-hr	0.4	g/hp-hr	0.01941	lb/MMBtu	0.000588	lb/MMBtu
Uncontrolled Emissions:	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
	64.49	282.48	35.72	156.47	2.11	9.23	0.32	1.42	0.01	0.04
Control Efficiency:	96%		93%		0%		0%		0%	
Controlled Emission Factor:	0.5	g/hp-hr	0.5	g/hp-hr	0.4	g/hp-hr	0.01941	lb/MMBtu	0.000588	lb/MMBtu
Controlled Emissions:	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
	2.63	11.54	2.63	11.54	2.11	9.23	0.32	1.42	0.01	0.04

Emissions basis:
NOx, CO, VOC, and formaldehyde - manufacturer specifications
PM, SO2, and remaining HAPs - AP-42, Chapter 3, Table 3.2-3

	Hazardous Air Pollutants																	
Emissions	Formaldehyde		Benzene		Acetaldehyde		Acrolein		Ethylbenzene		Methanol		Toluene		Xylene		Total HAPs	
Uncontrolled Emission Factor:	0.05	g/hp-hr	0.00158	lb/MMBtu	0.00279	lb/MMBtu	0.00263	lb/MMBtu	0.0000248	lb/MMBtu	0.00306	lb/MMBtu	0.000558	lb/MMBtu	0.000195	lb/MMBtu	Uncontrolled	
Uncontrolled Emissions:	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
	0.26	1.15	0.03	0.12	0.05	0.20	0.04	0.19	0.000	0.00	0.05	0.22	0.01	0.04	0.00	0.01	0.44	1.95
Control Efficiency:	50%		0%		0%		0%		0%		0%		0%		0%			
Controlled Emission Factor:	0.025	g/hp-hr	0.00158	lb/MMBtu	0.00279	lb/MMBtu	0.00263	lb/MMBtu	0.0000248	lb/MMBtu	0.00306	lb/MMBtu	0.000558	lb/MMBtu	0.000195	lb/MMBtu	Controlled	
Controlled Emissions:	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
	0.13	0.58	0.03	0.12	0.05	0.20	0.04	0.19	0.000	0.00	0.05	0.22	0.01	0.04	0.00	0.01	0.31	1.37

GHG Emissions Calculations	CO2		N2O		Methane	
Emission Factor:	53.06	kg/MMBtu	0.0001	kg/MMBtu	0.001	kg/MMBtu
Calculated Emissions:	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
	1949.74	8539.86	0.00	0.02	0.04	0.16

GHG Emissions Factors from 40 CFR Part 98, Subpart C

Frontier Field Services, LLC. - Dagger Draw Gas Plant

Engines

Unit: Ajax 1, Ajax 2
Description: Engines
Control Equipment: N/A

Engine Data

Unit:	Ajax 1	Ajax 2
Name:	Ajax 1	Ajax 2
Manufacturer	Ajax	Ajax
Model Number	DPC 2804LE	DPC 2804LE
Rated Horsepower:	800	800
Fuel consumption (Btu/hp-hr):	7,853	7,853
(MMBtu/hr)	6.28	6.28
Hours of operation per year:	8,760	8,760
Total Annual Aggregate heat Input (MMBTU)	55,034	55,034
Engine Type:	2 Stroke, Lean-Burn	2 Stroke, Lean-Burn

Fuel Data

Fuel Type	natural gas	natural gas
Fuel Consumption (BTU/bhp-hr)	7,853	7,853
Fuel sulflur content (grains/scf)	0.02	0.02
Fuel Gas Heat Value (HHV)	1,030	1,030

Method of Emission Control

	Yes/No	Yes/No
NSCR Catalyst	No	No
SCR Catalyst	No	No
JLCC Catalyst	No	No
Parameter Adjustment	No	No
Stratified Charge	No	No
Other (Specify)	Oxidation	Oxidation

Emissions

Ajax 1 Uncontrolled

	Manufacturer Emission Factor	AP-42 Table 3.2-1 2 stroke, lean-burn engine emission factors (lb/MMBtu)	AP-42 Table 3.2-2 4 stroke, lean-burn engine emission factors (lb/MMBtu)	AP-42 Table 3.2-3 4 stroke, rich burn engine emission factors (lb/MMBtu)	appropriate AP-42 factor	Emissions Factor Used	units	Uncontrolled Emissions lb/hr	Emissions tpy
VOC	**0.75**	0.12	0.118	0.0296	0.12	0.75	g/hp-hr	**1.32**	**5.79**
NOx	**2.0**	3.17	4.08	2.21	3.17	2.0	g/hp-hr	**3.53**	**15.45**
CO	**2.3**	0.386	0.317	3.72	0.386	2.3	g/hp-hr	**4.06**	**17.77**
PM_{10}		0.04831	0.0099871	0.01941	0.04831	0.04831	lb/MMBtu	**0.30**	**1.33**
$PM_{2.5}$		0.04831	0.0099871	0.01941	0.04831	0.04831	lb/MMBtu	**0.30**	**1.33**
SO_2 [a]		0.000588	0.000588	0.000588	0.000588	0.000588	lb/MMBtu	**<0.01**	**0.02**
Formaldehyde	**0.3**	0.0552	0.0528	0.0205	0.0552	0.3	g/hp-hr	**0.53**	**2.32**
Benzene		0.00194	0.00044	0.00158	0.00194	0.00194	lb/MMBtu	**0.01**	**0.05**
CO2						53.06	kg/MMBtu		**3,218**
CH4						1.00E-03	kg/MMBtu		**0.06**
N2O						1.00E-04	kg/MMBtu		**0.01**
								Total CO2e (TPY)	**3,221**

Engines

Unit: Ajax 1, Ajax 2
Description: Engines
Control Equipment: N/A

Ajax 1 Controlled

	Manufacturer Emission Factor	AP-42 Table 3.2-1 2 stroke, lean-burn engine emission factors (lb/MMBtu)	AP-42 Table 3.2-2 4 stroke, lean-burn engine emission factors (lb/MMBtu)	AP-42 Table 3.2-3 4 stroke, rich burn engine emission factors (lb/MMBtu)	appropriate AP-42 factor	Emissions Factor Used	units	Controlled Emissions lb/hr	Emissions tpy
VOC	**0.75**	0.12	0.118	0.0296	0.12	0.75	g/hp-hr	**1.32**	**5.79**
NOx	**2.0**	3.17	4.08	2.21	3.17	2.0	g/hp-hr	**3.53**	**15.45**
CO	**2.3**	0.386	0.317	3.72	0.386	2.3	g/hp-hr	**4.06**	**17.77**
PM_{10}		0.04831	0.0099871	0.01941	0.04831	0.04831	lb/MMBtu	**0.30**	**1.33**
$PM_{2.5}$		0.04831	0.0099871	0.01941	0.04831	0.04831	lb/MMBtu	**0.30**	**1.33**
SO_2 [a]		0.000588	0.000588	0.000588	0.000588	0.000588	lb/MMBtu	**<0.01**	**0.02**
Formaldehyde	**0.3**	0.0552	0.0528	0.0205	0.0552	0.3	g/hp-hr	**0.53**	**2.32**
Benzene		0.00194	0.00044	0.00158	0.00194	0.00194	lb/MMBtu	**0.01**	**0.05**
CO2						53.06	kg/MMBtu		**3,218**
CH4						1.00E-03	kg/MMBtu		**0.06**
N2O						1.00E-04	kg/MMBtu		**0.01**
								Total CO2e (TPY)	**3,221**

Ajax 2 Uncontrolled

	Manufacturer Emission Factor	AP-42 Table 3.2-1 2 stroke, lean-burn engine emission factors (lb/MMBtu)	AP-42 Table 3.2-2 4 stroke, lean-burn engine emission factors (lb/MMBtu)	AP-42 Table 3.2-3 4 stroke, rich burn engine emission factors (lb/MMBtu)	appropriate AP-42 factor	emission factor used	units	Uncontrolled Emissions lb/hr	Emissions tpy
VOC	**0.75**	0.12	0.118	0.0296	0.12	0.75	g/hp-hr	**1.32**	**5.79**
NOx	**2.0**	3.17	4.08	2.21	3.17	2.0	g/hp-hr	**3.53**	**15.45**
CO	**2.3**	0.386	0.317	3.72	0.386	2.3	g/hp-hr	**4.06**	**17.77**
PM_{10}		0.04831	0.0099871	0.01941	0.04831	0.04831	lb/MMBtu	**0.30**	**1.33**
$PM_{2.5}$		0.04831	0.0099871	0.01941	0.04831	0.04831	lb/MMBtu	**0.30**	**1.33**
SO_2 [a]		0.000588	0.000588	0.000588	0.000588	0.000588	lb/MMBtu	**<0.01**	**0.02**
Formaldehyde	**0.3**	0.0552	0.0528	0.0205	0.0552	0.3	g/hp-hr	**0.53**	**2.32**
Benzene		0.00194	0.00044	0.00158	0.00194	0.00194	lb/MMBtu	**0.01**	**0.05**
CO2						53.06	kg/MMBtu		**3,218**
CH4						1.00E-03	kg/MMBtu		**0.06**
N2O						1.00E-04	kg/MMBtu		**0.01**
								Total CO2e (TPY)	**3,221**

Ajax 2 Controlled

	Manufacturer Emission Factor	AP-42 Table 3.2-1 2 stroke, lean-burn engine emission factors (lb/MMBtu)	AP-42 Table 3.2-2 4 stroke, lean-burn engine emission factors (lb/MMBtu)	AP-42 Table 3.2-3 4 stroke, rich burn engine emission factors (lb/MMBtu)	appropriate AP-42 factor	emission factor used	units	Controlled Emissions lb/hr	Emissions tpy
VOC	**0.75**	0.12	0.118	0.0296	0.0296	0.75	g/hp-hr	**1.32**	**5.79**
NOx	**2.0**	3.17	4.08	2.21	2.21	2.0	g/hp-hr	**3.53**	**15.45**
CO	**2.3**	0.386	0.317	3.72	3.72	2.3	g/hp-hr	**4.06**	**17.77**
PM_{10}		0.04831	0.0099871	0.01941	0.04831	0.04831	lb/MMBtu	**0.30**	**1.33**
$PM_{2.5}$		0.04831	0.0099871	0.01941	0.04831	0.04831	lb/MMBtu	**0.30**	**1.33**
SO_2 [a]		0.000588	0.000588	0.000588	0.000588	0.000588	lb/MMBtu	**<0.01**	**0.02**
Formaldehyde	**0.3**	0.0552	0.0528	0.0205	0.0205	0.3	g/hp-hr	**0.53**	**2.32**
Benzene		0.00194	0.00044	0.00158	0.00158	0.00158	lb/MMBtu	**0.01**	**0.04**
CO2						53.06	kg/MMBtu		**3,218**
CH4						1.00E-03	kg/MMBtu		**0.06**
N2O						1.00E-04	kg/MMBtu		**0.01**
								Total CO2e (TPY)	**3,221**

Engines

Unit: Ajax 1, Ajax 2
Description: Engines
Control Equipment: N/A

[a] Calculation:

For emission factors in terms of g/hp-hr:

(Emission factor) * (Horsepower) * (Conversion factor)

(g/hp-hr) * (hp) * (1 lb/453.59 g)

For emission factors in terms of lb/MMBtu:

(Emission factor) * (Fuel Consumption) * (Horsepower) * (Conversion factor)

(lb/MMBtu) * (Btu/hp-hr) * (hp) * (1 MMBtu/1,000,000 Btu)

[b] SO_2 emissions are based on AP-42 factor-based emissions considering a 2000 gr/MMscf sulfur content

HAP Emissions

Pollutant	Lean Burning 2 Stroke Engines	Ajax 1	Ajax 1	Ajax 2	Ajax 2
	AP-42 Table 3.2-1, 2000 Emission Factor (lb/MMBtu)	Emissions lb/hr	Emissions tpy	Emissions lb/hr	Emissions tpy
Acetaldehyde	8.36E-03	0.0525	0.2300	0.0525	0.2300
Acrolein	5.14E-03	0.0323	0.1414	0.0323	0.1414
Benzene	4.40E-04	<0.01	0.0121	<0.01	0.0121
Ethylbenzene	3.97E-05	<0.01	<0.01	<0.01	<0.01
Formaldehyde	engine specific	0.5291	2.3175	0.5291	2.3175
Methanol	2.50E-03	0.0157	0.0688	0.0157	0.0688
n-Hexane	1.11E-03	0.0070	0.0305	0.0070	0.0305
Toluene	4.08E-04	<0.01	0.0112	<0.01	0.0112
Xylene	1.84E-04	<0.01	0.0051	<0.01	0.0051
Totals		**0.64**	**2.82**	**0.64**	**2.82**

Frontier Field Services, LLC. - Dagger Draw Gas Plant

Heaters

Unit: H-1, H-2, H-3, H-6
Description: Hot Oil Heater, Reboiler, Mol Sieve Regen Heater, Backup Hot Oil Heater
Control Equipment: None

Background Information

Unit	H-1	H-2	H-3	H-6
Name:	Hot Oil Heater	Dehy Reboiler	Mol Sieve Regen Heater	Backup Hot Oil Heater
Heater/Boiler rating (MMBtu/hr)[1]:	41.95	1.5	3.18	19.5
Rating above is (select from list):	below 100 MMBtu/hp-hr, controlled - low NOx burner	below 100 MMBtu/hp-hr, controlled - low NOx burner	below 100 MMBtu/hp-hr, controlled - low NOx burner	below 100 MMBtu/hp-hr, controlled - low NOx burner
Operating hours/year:	8760	8760	8760	876
Natural Gas Usage (MM Cubic Feet/hr):	0.0407	0.0015	0.0031	0.0189
Natural Gas Heat Value (Btu/scf)[2]:	1030	1030	1030	1030
Fuel Gas Lower Heating Value (Btu/SCF):	1,029.8	1,029.8	1,029.8	1,029.8
Fuel Rate (scf/hr):	40,736	1,457	3,088	18,936
Fuel Rate (scf/yr):	356,847,932	12,759,759	27,050,689	16,587,687
Exhaust Oxygen Content (%):	10			
Moisture content (%):	10			
O2 F factor (dscf/106 Btu):	8,710			
Volume of Exhaust Gas (dscf/hr)[3]:	700,600	25,051	53,109	325,666
Volume of Exhaust Gas (acf/hr):	1,406,948	50,308	106,653	726,672
Volume of Exhaust Gas (acfm):	23,449	838	1,778	12,111
Stack Diameter (ft):	3.00	1.50	1.50	2.67
Stack Temperature (F):	600	600	600	600.00
Stack Velocity (fps):	55.29	7.91	16.76	36.05

[1] Calculated heat release based on LHV basis. Heat duty as provided, or as heat release with guaranteed thermal efficiency.

[2] Heating value for natural gas taken from site specific fuel gas analysis in Lab Analyses

[3] Exhaust gas flow for heaters are based on 40 CFR 60 Appendix A, Method 19.

Heater Emissions[a]

Pollutant	H-2, H-3, H-6 Emission Factor[b,c,d]	H-1 Emission Factor[d,e]	Unit	H-1		H-2		H-3		H-6	
				lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC	5.6	2.7	lb/MMscf	0.11	0.48	0.01	0.04	0.02	0.08	0.11	0.05
NO_x	101.0	41.3	lb/MMscf	1.68	7.37	0.15	0.64	0.31	1.37	1.91	0.84
CO	84.8	41.9	lb/MMscf	1.71	7.48	0.12	0.54	0.26	1.15	1.61	0.70
PM	7.7	2.8	lb/MMscf	0.11	0.50	0.01	0.05	0.02	0.10	0.15	0.06
SO_2[c]	0.61	0.61	lb/MMscf	0.02	0.11	<0.01	<0.01	<0.01	0.01	0.01	0.01
HAPS											
Total HAPs				0.08	0.34	<0.01	0.01	0.01	0.03	0.04	0.02
Arsenic	0.0002		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzene	0.0021		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Beryllium	0.0000		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	0.0011		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium	0.0014		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	0.0001		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorobenzene	0.0012		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Formaldehyde	0.0757		lb/MMscf	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
n-Hexane	1.8173		lb/MMscf	0.07	0.32	<0.01	0.01	0.01	0.02	0.03	0.02
Lead	0.0005		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	0.0004		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	0.0003		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Naphthalene	0.0006		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel	0.0021		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
POM	0.0001		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Toluene	0.0034		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Selenium	0.0000		lb/MMscf	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
GHG											
CO2	53.06		kg/MMBtu	4,906	21,487	175.42	768.32	371.88	1,629	371.88	999
CH4	0.001		kg/MMBtu	0.09	0.40	<0.01	0.01	0.01	0.03	0.01	0.02
N2O	0.0001		kg/MMBtu	0	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

[a] Example Calculations:

Emission rate (lb/hr) = [Emission Factor (lb/MMscf)] / [Natural Gas Heat Content (1,020 Btu/scf)] * [Heater Rating (MMBtu/hr)]

Emission Rate (tpy) = [Emission Rate (lb/hr)] * [Operating Hours per Year (hr/yr)] / [Conversion Factor (2000 lb/ton)]

[b] Criteria pollutant emission factors obtained from AP-42 Natural Gas Combustion, Table 1.4-1, < 100 MMBtu/hr heat input & Table 1.4-2 (7/98). NO_x and CO emission factors converted from Table 1.4-1.

[c] HAP emission factors are taken from AP-42, Chapter 1, Table 1.4-3 (7/98).

[d] SO2 emissions are calculated based on AP-42 factor with fuel gas H_2S content of 2,000 gr/MMscf.

[e] Emission factors from manufacturer specification sheets, converted to lb/MMscf using heat content of fuel

Frontier Field Services, LLC. - Dagger Draw Gas Plant

Glycol Dehydrator

Unit: DEHY-1
Description: Glycol Dehydrators
Control Equipment: Vapor Combustor (Unit VCU-1), Process Flare (Unit FL-2)

Emission Component	Uncontrolled Flash Tank		Uncontrolled Still Column		Total	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Helium	0.00	0.01	7.12E-05	0.00	0.00	0.01
N2	0.33	1.45	7.04E-03	0.03	0.34	1.48
CO2	0.21	0.93	4.75E-02	0.21	0.26	1.14
O2	0.01	0.06	2.74E-04	0.00	0.01	0.06
Hydrogen Sulfide	0.01	0.03	5.34E-03	0.02	0.01	0.05
Methane	27.84	121.94	1.49E+00	6.54	29.33	128.47
Ethane	17.63	77.22	2.16E+00	9.48	19.79	86.70
Propane	16.14	70.71	3.07E+00	13.45	19.22	84.16
i-Butane	3.07	13.44	7.00E-01	3.07	3.77	16.51
n-Butane	9.04	39.58	2.50E+00	10.94	11.53	50.52
i-Pentane	3.23	14.15	1.03E+00	4.51	4.26	18.66
n-Pentane	3.53	15.44	1.16E+00	5.10	4.69	20.54
Neopentane	0.00	0.00	0.00E+00	0.00	0.00	0.00
n-Hexane	1.06	4.66	4.40E-01	1.93	1.50	6.58
i-Hexane	1.01	4.44	4.45E-01	1.95	1.46	6.40
Benzene	5.48	24.02	5.82E+00	25.48	11.30	49.50
Cyclohexane	2.04	8.94	1.08E+00	4.75	3.13	13.69
i-Heptane	1.76	7.69	3.89E-01	1.70	2.14	9.39
n-Heptane	2.16	9.48	4.23E-01	1.85	2.59	11.33
Toluene	2.66	11.65	1.66E+00	7.29	4.32	18.93
Octanes+	2.03	8.90	2.29E-01	1.00	2.26	9.90
Ethylbenzene	0.23	1.01	6.12E-02	0.27	0.29	1.28
m-Xylene	0.31	1.35	9.27E-02	0.41	0.40	1.75
Water	9.58	41.95	1.05E+00	4.61	10.63	46.57
Triethylene Glycol	0.87	3.80	3.30E-10	0.00	0.87	3.80
MDEA	0.00	0.00	3.98E-06	0.00	0.00	0.00
Piperazine	0.00	0.00	1.02E-07	0.00	0.00	0.00
UCARSOL™ AP-814	0.00	0.00	0.00E+00	0.00	0.00	0.00
MEA	0.00	0.00	0.00E+00	0.00	0.00	0.00
DEPG	0.00	0.00	0.00E+00	0.00	0.00	0.00
Methyl Mercaptan	0.00	0.00	0.00E+00	0.00	0.00	0.00
Methanol	0.00	0.00	0.00E+00	0.00	0.00	0.00
Diethylamine	0.00	0.00	0.00E+00	0.00	0.00	0.00
DEA	0.00	0.00	0.00E+00	0.00	0.00	0.00
NMP	0.00	0.00	0.00E+00	0.00	0.00	0.00
Single Oil 1	0.00	0.00	0.00E+00	0.00	0.00	0.00
Total	**110.24**	**482.86**	**23.88**	**104.58**	**134.12**	**587.44**
Total VOC	**54.63**	**239.27**	**19.11**	**83.69**	**73.73**	**322.95**
Total HAP	**9.74**	**42.68**	**8.07**	**35.36**	**17.82**	**78.04**

GHG Emissions[2]	
Pollutant	**Emissions TPY**
CO2	1.14
CH4	128.47
N2O	0.00E+00
CO2e	3,213

Notes

[1] Uncontrolled emissions from the regenerator and flash tank are calculated using BR&E ProMax.

[2] 100% of emissions from the flash tank and regenerator are captured and routed to the process flare (Unit FL-2).

Frontier Field Services, LLC. - Dagger Draw Gas Plant

Amine Units

Unit: AU-1
Description: Amine unit
Control Equipment: AGI Well / SSM FL-1 / SSM FL-2

Emission Component	Uncontrolled Flash Tank		Uncontrolled Acid Gas		Total	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Helium	0.00	0.00	0.00	0.00	0.00	0.00
N2	1.47	6.43	0.04	0.01	1.51	6.44
CO2	58.51	256.26	9629.60	0.51	9688.10	256.77
O2	0.14	0.62	0.01	0.00	0.15	0.62
Hydrogen Sulfide	16.76	73.39	4123.71	0.15	4140.46	73.54
Methane	108.44	474.95	11.94	0.95	120.37	475.90
Ethane	32.16	140.85	6.28	0.28	38.44	141.13
Propane	14.06	61.58	2.35	0.12	16.41	61.70
i-Butane	1.75	7.68	0.24	0.02	2.00	7.70
n-Butane	4.92	21.53	0.97	0.04	5.88	21.58
i-Pentane	0.69	3.02	0.07	0.01	0.76	3.03
n-Pentane	0.80	3.50	0.10	0.01	0.90	3.50
Neopentane	0.00	0.00	0.00	0.00	0.00	0.00
n-Hexane	0.17	0.75	0.02	0.00	0.19	0.75
i-Hexane	0.20	0.89	0.02	0.00	0.23	0.89
Benzene	1.06	4.64	16.65	0.01	17.71	4.65
Cyclohexane	0.51	2.23	0.34	0.00	0.85	2.23
i-Heptane	0.11	0.46	0.01	0.00	0.11	0.46
n-Heptane	0.10	0.44	0.01	0.00	0.11	0.44
Toluene	0.39	1.72	6.92	0.00	7.31	1.72
Octanes+	0.08	0.36	0.01	0.00	0.09	0.36
Ethylbenzene	0.03	0.12	0.41	0.00	0.44	0.12
m-Xylene	0.04	0.17	0.77	0.00	0.80	0.17
Water	7.26	31.79	490.43	0.06	497.69	31.85
Triethylene Glycol	0.00	0.00	0.00	0.00	0.00	0.00
MDEA	0.01	0.03	0.00	0.00	0.01	0.03
Piperazine	0.00	0.00	0.00	0.00	0.00	0.00
UCARSOL™ AP-814	0.00	0.00	0.00	0.00	0.00	0.00
MEA	0.00	0.00	0.00	0.00	0.00	0.00
DEPG	0.00	0.00	0.00	0.00	0.00	0.00
Methyl Mercaptan	0.00	0.00	0.00	0.00	0.00	0.00
Methanol	0.00	0.00	0.00	0.00	0.00	0.00
Diethylamine	0.00	0.00	0.00	0.00	0.00	0.00
DEA	0.00	0.00	0.00	0.00	0.00	0.00
NMP	0.00	0.00	0.00	0.00	0.00	0.00
Single Oil 1	0.00	0.00	0.00	0.00	0.00	0.00
Total	**249.63**	**1093.40**	**14290.87**	**2.19**	**14540.51**	**1095.59**
Total VOC	**24.91**	**109.12**	**28.87**	**0.22**	**53.79**	**109.34**
Total HAP	**1.69**	**7.40**	**24.77**	**0.01**	**26.45**	**7.41**

GHG Emissions[2]	
Pollutant	**Emissions TPY**
CO2	256.77
CH4	475.90
N2O	0.00E+00
CO2e	12,154

Notes

[1] Uncontrolled emissions from the regenerator and flash tank are calculated using BR&E ProMax.

[2] 100% of emissions from the amine unit are controlled. Amine Flash tank is routed to plant inlet or FL-2 during SSM. Acid gas is routed to AGI Well or FL-1 during SSM.

Frontier Field Services, LLC. - Dagger Draw Gas Plant

Acid Gas Flare (FL-1) - Hourly Emissions

Emission Unit: FL-1
Source Description: ACID GAS FLARE

Maximum Hourly Emission Rates and Composition to Flare[a]

Component	Pilot[b]	Purge/Assist SSM	Amine Acid Gas SSM	Total	Destruction Efficiency	Flare Exhaust (controlled)
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(%)	(lb/hr)
Helium	0.00	0.00	0.00	0.00	0%	**0.00**
N2	1.10	219.18	0.00	220.28	0%	**220.28**
CO2	0.01	1.20	1156.51	1157.72	0%	**1157.72**
O2	0.00E+00	0.00E+00	0.00	0.00	0%	**0.00**
Hydrogen Sulfide	7.21E-05	0.01	495.26	495.27	98%	**9.91**
Methane	7.29	1458.83	1.43	1467.56	98%	**29.35**
Ethane	0.63	126.74	0.75	128.13	98%	**2.56**
Propane	0.24	48.65	0.28	49.18	98%	**0.98**
i-Butane	0.06	11.19	0.03	11.28	98%	**0.23**
n-Butane	0.11	0.11	0.12	0.34	98%	**0.01**
i-Pentane	0.05	10.94	0.01	11.00	98%	**0.22**
n-Pentane	0.06	12.19	0.01	12.26	98%	**0.25**
Neopentane	0.00	0.00	0.00	0.00	98%	**0.00**
n-Hexane	0.30	60.31	0.00	60.61	98%	**1.21**
i-Hexane	0.00	0.00	0.00	0.00	98%	**0.00**
Benzene	0.00	0.00	2.00	2.00	98%	**0.04**
Cyclohexane	0.00	0.00	0.04	0.04	98%	**0.00**
i-Heptane	0.00	0.00	0.00	0.00	98%	**0.00**
n-Heptane	0.00	0.00	0.00	0.00	98%	**0.00**
Toluene	0.00	0.00	0.83	0.83	98%	**0.02**
Octanes+	0.00	0.00	0.00	0.00	98%	**0.00**
Ethylbenzene	0.00	0.00	0.05	0.05	98%	**0.00**
m-Xylene	0.00	0.00	0.09	0.09	98%	**0.00**
Water	0.00	0.00	58.90	58.90	0%	**58.90**
Triethylene Glycol	0.00	0.00	0.00	0.00	98%	**0.00**
MDEA	0.00	0.00	0.00	0.00	98%	**0.00**
Piperazine	0.00	0.00	0.00	0.00	0%	**0.00**
UCARSOL™ AP-814	0.00	0.00	0.00	0.00	0%	**0.00**
MEA	0.00	0.00	0.00	0.00	98%	**0.00**
DEPG	0.00	0.00	0.00	0.00	98%	**0.00**
Methyl Mercaptan	0.00	0.00	0.00	0.00	98%	**0.00**
Methanol	0.00	0.00	0.00	0.00	98%	**0.00**
Diethylamine	0.00	0.00	0.00	0.00	98%	**0.00**
DEA	0.00	0.00	0.00	0.00	98%	**0.00**
NMP	0.00	0.00	0.00	0.00	98%	**0.00**
Single Oil 1	0.00	0.00	0.00	0.00	98%	**0.00**
Total	**9.86**	**1949.34**	**1716.33**	**3675.54**	--	**1481.67**
Total VOC	**0.83**	**143.39**	**3.47**	**147.69**	--	**2.95**
Total HAP	**0.30**	**60.31**	**2.97**	**63.58**	--	**1.27**
Heating Value (Btu/scf)	1,030	1,030	219.90	**791**		
Molecular Weight	18.70	18.70	38.80	**24.62**		
Operating Hours	8,760	490	490	**--**		
Mass Flow	9.86	1949.3	1716	**--**		
Volumetric Flow (scf/hr)	200.00	40,000	16,789	**56,988.52**		
Heat Release (MMBtu/hr)	0.21	41.19	3.69	**45.09**		

Criteria Pollutant Emissions from Flare[c]

Component	Emission Rate	Emission Factor	Emission Factor Units
	(lb/hr)		
NO_X	2.89	0.0641	lb/MMBtu
CO	24.78	0.5496	lb/MMBtu
VOC	2.95	--	--
SO_2	930.96	--	--
H_2S	9.91E+00	--	--

Flare Parameters

Flare Destruction Efficiency C3+	98%
H2S molecular weight	34.08
SO2 molecular weight	64.06
H2S Conversion to SO2	100%

Combustion Emissions from FLARE				Totals
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Total NO_x	**0.013**	**2.64**	**0.24**	**2.89**
Total CO	**0.11**	**22.64**	**2.03**	**24.78**
Total SO_2	**1.35E-04**	**2.71E-02**	**930.93**	**930.96**

Footnotes:

[a] Uncontrolled stream composition determined via ProMax. Amine acid gas stream volume estimated for an SSM event which is approximately 12% of the acid gas stream.

[b] Pilot fuel gas emissions are conservatively calculated based on a 200 scfh flow rate.

[c] NOx and CO emission factor from TCEQ Air Permit Technical Guidance for Flares and Vapor Oxidizers, low btu streams. SO2 emissions assume 100% conversion of H2S to SO2.

[d] There are no particulate matter emissions from flares, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.

Flare Effective Diameter (for modeling only):

For modeling purposes, the effective flare diameter is calculated according to TCEQ RG-25, Modeling Guidance Document, 1998 (method not appropriate for enclosed flares).

$$D = \sqrt{(10^{-6} \cdot q_n)} \quad \text{and} \quad qn = q(1 - 0.048 \cdot \sqrt{(MW)})$$

where,
- q = Gross heat release (cal/sec). 252 cal/Btu.
- MW = Weighted (by volume) average molecular weight of the compound being flared
- q_n = Net heat release (cal/sec)
- D = Effective Flare Diameter (meters)

Total Flaring (SSM)

q =	3,156,279.54	cal/sec
MW =	24.62	lb/lb-mole
q_n =	2,404,550.50	cal/sec
D =	1.5507	meters
D =	**5.088**	**feet**

Pilot (normal operations)

q =	14,417.20	cal/sec
MW =	18.70	lb/lb-mole
q_n =	11,424.64	cal/sec
D =	0.1069	meters
D =	**0.351**	**feet**

Frontier Field Services, LLC. - Dagger Draw Gas Plant

Acid Gas Flare (FL-1) - Annual Emissions

Emission Unit: FL-1
Source Description: ACID GAS FLARE

Annual Emission Rates and Composition to Flare[a,b]						
Component	Pilot[b]	Purge SSM	Amine Acid Gas SSM	Total	Destruction Efficiency	Exhaust Stream (controlled)
	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(%)	(ton/yr)
Helium	0.00	0.00	0.00	0.00	0%	**0.00**
N2	4.80	53.70	0.00	58.50	0%	**58.50**
CO2	0.03	0.29	283.35	283.67	0%	**283.67**
O2	0.00	0.00	0.00	0.00	0%	**0.00**
Hydrogen Sulfide	3.16E-04	3.53E-03	121.34	121.34	98%	**2.43**
Methane	31.95	357.41	0.35	389.71	98%	**7.79**
Ethane	2.78	31.05	0.18	34.01	98%	**0.68**
Propane	1.07	11.92	0.07	13.05	98%	**0.26**
i-Butane	0.25	2.74	0.01	2.99	98%	**0.06**
n-Butane	0.50	0.03	0.03	0.56	98%	**0.01**
i-Pentane	0.24	2.68	0.00	2.92	98%	**0.06**
n-Pentane	0.27	2.99	0.00	3.26	98%	**0.07**
Neopentane	0.00	0.00	0.00	0.00	98%	**0.00**
n-Hexane	1.32	14.78	0.00	16.10	98%	**0.32**
i-Hexane	0.00	0.00	0.00	0.00	98%	**0.00**
Benzene	0.00	0.00	0.49	0.49	98%	**0.01**
Cyclohexane	0.00	0.00	0.01	0.01	98%	**0.00**
i-Heptane	0.00	0.00	0.00	0.00	98%	**0.00**
n-Heptane	0.00	0.00	0.00	0.00	98%	**0.00**
Toluene	0.00	0.00	0.20	0.20	98%	**0.004**
Octanes+	0.00	0.00	0.00	0.00	98%	**0.00**
Ethylbenzene	0.00	0.00	0.01	0.01	98%	**0.00**
m-Xylene	0.00	0.00	0.02	0.02	98%	**0.00**
Water	0.00	0.00	14.43	14.43	0%	**14.43**
Triethylene Glycol	0.00	0.00	0.00	0.00	98%	**0.00**
MDEA	0.00	0.00	0.00	0.00	98%	**0.00**
Piperazine	0.00	0.00	0.00	0.00	0%	**0.00**
UCARSOL™ AP-814	0.00	0.00	0.00	0.00	0%	**0.00**
MEA	0.00	0.00	0.00	0.00	98%	**0.00**
DEPG	0.00	0.00	0.00	0.00	98%	**0.00**
Methyl Mercaptan	0.00	0.00	0.00	0.00	98%	**0.00**
Methanol	0.00	0.00	0.00	0.00	98%	**0.00**
Diethylamine	0.00	0.00	0.00	0.00	98%	**0.00**
DEA	0.00	0.00	0.00	0.00	98%	**0.00**
NMP	0.00	0.00	0.00	0.00	98%	**0.00**
Single Oil 1	0.00	0.00	0.00	0.00	98%	**0.00**
Total	**43.19**	**477.59**	**420.50**	**941.28**	--	**368.29**
Total VOC	**3.64**	**35.13**	**0.85**	**39.62**	--	**0.79**
Total HAP	**1.32**	**14.78**	**0.73**	**16.82**	--	**0.34**
Heating Value (Btu/scf)	1,030	1,030	220	**805**		
Molecular Weight	18.70	18.70	38.80	--		
Operating Hours	8,760	490	490	--		
Mass Flow (ton/yr)	43.19	477.59	420.50	941.28		
Volumetric Flow (scf/hr)	200.00	40,000	16,789	--		
Volumetric Flow (MMscf/yr)	1.75	19.60	8.23	**29.58**		
Heat Release (MMBtu/yr)	1,804	20,184	1,809	**23,797**		

Criteria Pollutant Emissions from Flare[c]			
Component	Emission Rate	Emission Factor	Emission Factor Units
	(ton/yr)		
NO_X	0.76	0.0641	lb/MMBtu
CO	6.54	0.5496	lb/MMBtu
VOC	0.79	--	--
SO_2	228.09	--	--
H_2S	2.43	--	--
N2O	0.003	0.0001	kg/MMBtu

HP Flare Parameters	
Flare Destruction Efficiency C3+	98%
H2S molecular weight	34.08
SO2 molecular weight	64.06
H2S Conversion to SO2	100%

Annual Combustion Emissions from Flare				Totals
	(TPY)	(TPY)	(TPY)	(TPY)
Total NO_x	**0.06**	**0.65**	**0.06**	**0.76**
Total CO	**0.50**	**5.55**	**0.50**	**6.54**
Total SO_2	**0.001**	**0.007**	**228.08**	**228.09**

Footnotes:

[a] Uncontrolled stream composition determined via ProMax.

[b] Pilot fuel gas emissions are conservatively calculated based on a 200 scfh flow rate.

[c] NOx and CO emission factor from TCEQ Air Permit Technical Guidance for Flares and Vapor Oxidizers, low btu streams. SO2 emissions assume 100% conversion of H2S to SO2.

[d] There are no particulate matter emissions from flares, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.

Flare Pilot						
GHG Emissions Calculations	**CO2**		**N2O**		**Methane**	
Emission Factor:	53.06	kg/MMBtu	0.0001	kg/MMBtu	0.001	kg/MMBtu
Calculated Emissions:	105.55	tpy	0.0002	tpy	0.002	tpy

Flare SSM						
GHG Emissions Calculations	**CO2**		**N2O**		**Methane**	
Emission Factor:	53.06	kg/MMBtu	0.0001	kg/MMBtu	0.001	kg/MMBtu
Calculated Emissions:	1,569.97	tpy	0.0024	tpy	7.18	tpy

GHG Emissions Factors from 40 CFR Part 98, Subpart C

*CO2 and methane emissions from waste stream added to emissions

Frontier Field Services, LLC. - Dagger Draw Gas Plant

Process Flare (FL-2) - Hourly Emissions

Emission Unit: FL-2, DEHY-1, AU-1

Source Description: Process Flare - pilot, purge, dehy flash tank SSM, amine flash tank SSM, dehy inlet gas SSM

Maximum Hourly Emission Rates and Composition to Flare[a]								
Component	Pilot[b]	Purge	Amine Flash Tank SSM	Dehy Flash Tank SSM	Inlet Gas to Dehy SSM	Total	Destruction Efficiency	Flare Exhaust (controlled)
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(%)	(lb/hr)
Helium	0.00	0.00	0.00	0.00	15.26	1.53E+01	0%	**15.26**
N2	1.10	2.74	1.47	0.33	4,515.79	4,521	0%	**4,521**
CO2	0.01	0.01	58.51	0.21	84.08	142.81	0%	**142.81**
O2	0.00	0.00	0.14	0.01	180.09	1.80E+02	0%	**180.24**
Hydrogen Sulfide	7.21E-05	1.80E-04	16.76	0.007	0.90	17.66	98%	**0.35**
Methane	7.29	18.24	108.44	27.84	103,078.46	103,240	98%	**2,065**
Ethane	0.63	1.58	32.16	17.63	23,184.29	23,236	98%	**464.73**
Propane	0.24	0.61	14.06	16.14	13,859.90	13,891	98%	**277.82**
i-Butane	0.06	0.14	1.75	3.07	2,403.11	2,408	98%	**48.16**
n-Butane	0.11	0.11	4.92	9.04	5,028.80	5,043	98%	**100.86**
i-Pentane	0.05	0.14	0.69	3.23	1,595.09	1,599	98%	**31.98**
n-Pentane	0.06	0.15	0.80	3.53	1,432.75	1,437	98%	**28.75**
Neopentane	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
n-Hexane	0.30	0.75	0.17	1.06	398.63	400.92	98%	**8.02**
i-Hexane	0.00	0.00	0.20	1.01	452.38	453.60	98%	**9.07**
Benzene	0.00	0.00	1.06	5.48	205.48	212.02	98%	**4.24**
Cyclohexane	0.00	0.00	0.51	2.04	293.83	296.38	98%	**5.93**
i-Heptane	0.00	0.00	0.11	1.76	494.57	496.43	98%	**9.93**
n-Heptane	0.00	0.00	0.10	2.16	494.57	496.84	98%	**9.94**
Toluene	0.00	0.00	0.39	2.66	88.28	91.33	98%	**1.83**
Octanes+	0.00	0.00	0.08	2.03	390.28	392.40	98%	**7.85**
Ethylbenzene	0.00	0.00	0.03	0.23	7.43	7.69	98%	**0.15**
m-Xylene	0.00	0.00	0.04	0.31	10.56	10.91	98%	**0.22**
Water	0.00	0.00	7.26	9.58	140.10	156.93	0%	**156.93**
Triethylene Glycol	0.00	0.00	0.00	0.87	0.00	8.68E-01	98%	**1.74E-02**
MDEA	0.00	0.00	0.01	0.00	0.01	2.27E-02	98%	**4.54E-04**
Piperazine	0.00	0.00	0.00	0.00	0.00	1.45E-03	0%	**1.45E-03**
UCARSOL™ AP-814	0.00	0.00	0.00	0.00	0.00	0.00	0%	**0.00**
MEA	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
DEPG	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Methyl Mercaptan	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Methanol	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Diethylamine	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
DEA	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
NMP	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Single Oil 1	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Total	**9.86**	**24.48**	**249.63**	**110.24**	**158,355**	**158,749**	**--**	**8,091**
Total VOC	**0.83**	**1.91**	**24.91**	**54.63**	**27,156**	**27,238**	**--**	**544.76**
Total HAP	**0.30**	**0.75**	**1.69**	**9.74**	**710**	**723**	**--**	**14.46**
Heating Value (Btu/scf)	1,030	1,030	986	1,540	1,189	**1,189**		
Molecular Weight	18.70	18.70	23.56	29.36	20.07	**20.08**		
Operating Hours	8,760	8,760	876	250	250	**--**		
Mass Flow	9.86	24.48	249.63	110.24	158,355	**--**		
Volumetric Flow (scf/hr)	200.00	500.00	4,021	1,425	2,096,237	**2,102,383**		
Heat Release (MMBtu/hr)	0.21	0.51	3.97	2.19	2,493	2,499		

Criteria Pollutant Emissions from Flare [c]			
Component	Emission Rate	Emission Factor	Emission Factor Units
	(lb/hr)		
NO_X	344.92	0.138	lb/MMBtu
CO	688.59	0.2755	lb/MMBtu
VOC	544.76	--	--
SO_2	33.20	--	--
H_2S	0.35	--	--

Flare Parameters	
Flare Destruction Efficiency C3+	98%
H2S molecular weight	34.08
SO2 molecular weight	64.06
Dehy Inlet Gas vol % flared	70%
H2S Conversion to SO2	100%

Combustion Emissions from FLARE						Totals
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Total NO_x	**0.03**	**0.07**	**0.55**	**0.30**	**343.97**	**344.92**
Total CO	**0.06**	**0.14**	**1.09**	**0.60**	**686.7**	**688.6**
Total SO_2	**1.35E-04**	**3.39E-04**	**31.50**	**0.013**	**1.69**	**33.20**

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] Pilot fuel gas emissions are conservatively calculated based on a 200 scfh flow rate.

[c] NOx and CO emission factor from TCEQ Air Permit Technical Guidance for Flares and Vapor Oxidizers, high btu. SO2 emissions assume 100% conversion of H2S to SO2.

[d] There are no particulate matter emissions from flares, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.

Flare Effective Diameter (for modeling only):

For modeling purposes, the effective flare diameter is calculated according to TCEQ RG-25, Modeling Guidance Document, 1998 (method not appropriate for enclosed flares).

$$D = \sqrt{(10^{-6} \cdot q_n)} \quad \text{and} \quad qn = q(1 - 0.048 \cdot \sqrt{(MW)})$$

where, q = Gross heat release (cal/sec)
MW = Weighted (by volume) average molecular weight of the compound being flared
q_n = Net heat release (cal/sec)
D = Effective Flare Diameter (meters)

Just normal operation (excluding SSM stream)

q =	481,641.14	cal/sec
MW =	22.84	lb/lb-mole
q_n =	371,154.09	cal/sec
D =	0.609	meters
D =	**2.00**	**feet**

SSM operation (normal ops + SSM stream)

q =	174,958,186.62	cal/sec
MW =	20.08	lb/lb-mole
q_n =	137,326,644.21	cal/sec
D =	11.719	meters
D =	**38.45**	**feet**

Frontier Field Services, LLC. - Dagger Draw Gas Plant

Process Flare (FL-2) - Annual Emissions

Emission Unit: FL-2, DEHY-1, AU-1

Source Description: Process Flare - pilot, purge, dehy flash tank SSM, amine flash tank SSM, dehy inlet gas SSM

Annual Emission Rates and Composition to Flare[a,b]

Component	Pilot[b]	Purge	Amine Flash Tank SSM	Dehy Flash Tank SSM	Inlet Gas to Dehy SSM	Total	Destruction Efficiency	Exhaust Stream (controlled)
	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(%)	(ton/yr)
Helium	0.00	0.00	0.00	0.00	1.91	1.91	0%	**1.91**
N2	4.80	12.00	0.64	0.04	564.47	581.96	0%	**581.96**
CO2	0.03	0.07	25.63	0.03	10.51	36.25	0%	**36.25**
O2	0.00	0.00	0.06	0.00	22.51	22.57	0%	**2.26E+01**
Hydrogen Sulfide	3.16E-04	7.89E-04	7.34	0.00	0.11	7.45	98%	**0.15**
Methane	31.95	79.87	47.49	3.48	12884.81	13047.60	98%	**260.95**
Ethane	2.78	6.94	14.08	2.20	2898.04	2924.04	98%	**58.48**
Propane	1.07	2.66	6.16	2.02	1732.49	1744.39	98%	**34.89**
i-Butane	0.25	0.61	0.77	0.38	300.39	302.40	98%	**6.05**
n-Butane	0.50	0.50	2.15	1.13	628.60	632.88	98%	**12.66**
i-Pentane	0.24	0.60	0.30	0.40	199.39	200.93	98%	**4.02**
n-Pentane	0.27	0.67	0.35	0.44	179.09	180.82	98%	**3.62**
Neopentane	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
n-Hexane	1.32	3.30	0.08	0.13	49.83	54.66	98%	**1.09**
i-Hexane	0.00	0.00	0.09	0.13	56.55	56.76	98%	**1.14**
Benzene	0.00	0.00	0.46	0.69	25.68	26.83	98%	**0.54**
Cyclohexane	0.00	0.00	0.22	0.26	36.73	37.21	98%	**0.74**
i-Heptane	0.00	0.00	0.05	0.22	61.82	62.09	98%	**1.24**
n-Heptane	0.00	0.00	0.04	0.27	61.82	62.14	98%	**1.24**
Toluene	0.00	0.00	0.17	0.33	11.04	11.54	98%	**0.23**
Octanes+	0.00	0.00	0.04	0.25	48.79	49.08	98%	**0.98**
Ethylbenzene	0.00	0.00	0.01	0.03	0.93	0.97	98%	**0.02**
m-Xylene	0.00	0.00	0.02	0.04	1.32	1.37	98%	**0.03**
Water	0.00	0.00	3.18	1.20	17.51	21.89	0%	**2.19E+01**
Triethylene Glycol	0.00	0.00	0.00	0.11	0.00	0.11	98%	**0.00**
MDEA	0.00	0.00	0.00	0.00	0.00	0.01	98%	**0.00**
Piperazine	0.00	0.00	0.00	0.00	0.00	0.00	0%	**2.91E-04**
UCARSOL™ AP-814	0.00	0.00	0.00	0.00	0.00	0.00	0%	**0.00**
MEA	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
DEPG	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Methyl Mercaptan	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Methanol	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Diethylamine	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
DEA	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
NMP	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Single Oil 1	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Total	**43.19**	**107.22**	**109.34**	**13.78**	**19,794**	**20,068**	-	**1052.65**
Total VOC	**3.64**	**8.34**	**10.91**	**6.83**	**3394.46**	**3424.18**	-	**68.48**
Total HAP	**1.32**	**3.30**	**0.74**	**1.22**	**88.80**	**95.38**	-	**1.91**
Heating Value (Btu/scf)	1,030	1,030	986	1,540	1,189	**1,186**		
Molecular Weight	18.70	18.70	23.56	29.36	20.07	**--**		
Operating Hours	8,760	8,760	876	250	250	**--**		
Mass Flow (ton/yr)	43.19	107.22	109.34	13.78	19,794	20,068		
Volumetric Flow (scf/hr)	200	500	4,021	1,425	2,096,237	**--**		
Volumetric Flow (MMscf/yr)	1.75	4.38	3.52	0.36	524.06	**534.07**		
Heat Release (MMBtu/yr)	1,804	4,511	3,473	549	623,131	**633,467**		

Criteria Pollutant Emissions from Flare[c]

Component	Emission Rate	Emission Factor	Emission Factor Units
	(ton/yr)		
NO_X	43.71	0.138	lb/MMBtu
CO	87.26	0.2755	lb/MMBtu
VOC	68.48	--	--
SO_2	14.01	--	--
H_2S	0.15	--	--
N2O	0.07	0.0001	kg/MMBtu

Flare Parameters

Flare Destruction Efficiency C3+	98%
H2S molecular weight	34.08
SO2 molecular weight	64.06
Dehy SSM hours to flare	250
Dehy Flash Tank SSM hours to flare	250
Amine Flash Tank SSM hours to flare	876
H2S Conversion to SO2	100%

Annual Combustion Emissions from Flare

						Totals
	(TPY)	(TPY)	(TPY)	(TPY)	(TPY)	(TPY)
Total NO_x	**0.12**	**0.31**	**0.24**	**0.04**	**43.00**	**43.71**
Total CO	**0.25**	**0.62**	**0.48**	**0.08**	**85.84**	**87.26**
Total SO_2	**5.93E-04**	**1.48E-03**	**13.79**	**0.002**	**0.21**	**14.01**

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] Pilot fuel gas emissions are conservatively calculated based on a 200 scfh flow rate.

[c] NOx and CO emission factor from TCEQ Air Permit Technical Guidance for Flares and Vapor Oxidizers, high btu. SO2 emissions assume 100% conversion of H2S to SO2.

[d] There are no particulate matter emissions from flares, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.

Flare - Routine

GHG Emissions Calculations	CO2		N2O		Methane	
Emission Factor:	53.06	kg/MMBtu	0.0001	kg/MMBtu	0.001	kg/MMBtu
Calculated Emissions:	369.43	tpy	0.0007	tpy	2.24	tpy

Flare - SSM

GHG Emissions Calculations	CO2		N2O		Methane	
Emission Factor:	53.06	kg/MMBtu	0.0001	kg/MMBtu	0.001	kg/MMBtu
Calculated Emissions:	36,717.09	tpy	0.0691	tpy	259.41	tpy

GHG Emissions Factors from 40 CFR Part 98, Subpart C

*CO2 and methane emissions from waste stream added to emissions

Frontier Field Services, LLC. - Dagger Draw Gas Plant

Vapor Combustion Unit (VCU-1) - Hourly Emissions

Emission Unit: VCU-1, DEHY-1

Source Description: Vapor Combustor - pilot, purge, dehy still column

Maximum Hourly Emission Rates and Composition to Flare[a]						
Component	**Pilot[b]**	**Purge**	**Dehy Still Column**	**Total**	**Destruction Efficiency**	**Flare Exhaust (controlled)**
	(lb/hr)	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(%)**	**(lb/hr)**
Helium	0.00	0.00	7.12E-05	7.12E-05	0%	**0.00**
N2	0.06	2.74	7.04E-03	2.8	0%	**3**
CO2	0.00	0.01	4.75E-02	0.1	0%	**0.06**
O2	0.00	0.00	2.74E-04	0.0	0%	**0.00**
Hydrogen Sulfide	3.96E-06	1.80E-04	5.34E-03	0.0	98%	**0.00**
Methane	0.40	18.24	1.49	20.1	98%	**0**
Ethane	0.03	1.58	2.16	3.8	98%	**0.08**
Propane	0.01	0.61	3.07	3.7	98%	**0.07**
i-Butane	0.00	0.14	0.70	0.8	98%	**0.02**
n-Butane	0.01	0.01	2.50	2.5	98%	**0.05**
i-Pentane	0.00	0.14	1.03	1.2	98%	**0.02**
n-Pentane	0.00	0.15	1.16	1.3	98%	**0.03**
Neopentane	0.00	0.00	0.00	0.0	98%	**0.00**
n-Hexane	0.02	0.75	0.44	1.2	98%	**0.02**
i-Hexane	0.00	0.00	0.45	0.4	98%	**0.01**
Benzene	0.00	0.00	5.82	5.8	98%	**0.12**
Cyclohexane	0.00	0.00	1.08	1.1	98%	**0.02**
i-Heptane	0.00	0.00	0.39	0.4	98%	**0.01**
n-Heptane	0.00	0.00	0.42	0.4	98%	**0.01**
Toluene	0.00	0.00	1.66	1.7	98%	**0.03**
Octanes+	0.00	0.00	0.23	0.2	98%	**0.00**
Ethylbenzene	0.00	0.00	0.06	0.1	98%	**0.00**
m-Xylene	0.00	0.00	0.09	0.1	98%	**0.00**
Water	0.00	0.00	1.05	1.1	0%	**1.05**
Triethylene Glycol	0.00	0.00	3.30E-10	0.0	98%	**6.59E-12**
MDEA	0.00	0.00	3.98E-06	0.0	98%	**7.97E-08**
Piperazine	0.00	0.00	0.00E+00	0.0	0%	**0.00E+00**
UCARSOL™ AP-814	0.00	0.00	0.00E+00	0.0	0%	**0.00**
MEA	0.00	0.00	0.00E+00	0.0	98%	**0.00**
DEPG	0.00	0.00	0.00E+00	0.0	98%	**0.00**
Methyl Mercaptan	0.00	0.00	0.00E+00	0.0	98%	**0.00**
Methanol	0.00	0.00	0.00E+00	0.0	98%	**0.00**
Diethylamine	0.00	0.00	0.00E+00	0.0	98%	**0.00**
DEA	0.00	0.00	0.00E+00	0.0	98%	**0.00**
NMP	0.00	0.00	0.00E+00	0.0	98%	**0.00**
Single Oil 1	0.00	0.00	0.00E+00	0.0	98%	**0.00**
Total	**0.54**	**24.37**	**23.88**	**49**	**--**	**5**
Total VOC	**0.05**	**1.80**	**19.11**	**21**	**--**	**0.42**
Total HAP	**0.02**	**0.75**	**8.07**	**9**	**--**	**0.18**
Heating Value (Btu/scf)	1,030	1,030	2,427	**1,412**		
Molecular Weight	18.70	18.70	47.07	**26.46**		
Operating Hours	8,760	8,760	8,760	**--**		
Mass Flow	0.54	24.37	23.88	**--**		
Volumetric Flow (scf/hr)	11.00	500.00	193	**704**		
Heat Release (MMBtu/hr)	0.01	0.51	0.47	1		

Criteria Pollutant Emissions from Flare [c]			
Component	**Emission Rate**	**Emission Factor**	**Emission Factor Units**
	(lb/hr)		
NO_X	0.14	0.138	lb/MMBtu
CO	0.27	0.2755	lb/MMBtu
VOC	0.42	--	--
SO_2	0.01	--	--
H_2S	0.00	--	--

Flare Parameters	
Flare Destruction Efficiency C3+	98%
H2S molecular weight	34.08
SO2 molecular weight	64.06
H2S Conversion to SO2	100%

Combustion Emissions from FLARE				Totals
	(lb/hr)	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**
Total NO_x	**0.002**	**0.07**	**0.06**	**0.14**
Total CO	**0.003**	**0.14**	**0.13**	**0.3**
Total SO_2	**7.45E-06**	**3.39E-04**	**0.010**	**0.01**

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] Pilot fuel gas emissions are based on 11 scfh flow rate.

[c] NOx and CO emission factor from TCEQ Air Permit Technical Guidance for Flares and Vapor Oxidizers, high btu. SO2 emissions assume 100% conversion of H2S to SO2.

[d] There are no particulate matter emissions from vapor combustor, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.

Frontier Field Services, LLC. - Dagger Draw Gas Plant

Process Flare (FL-2) - Annual Emissions

Emission Unit: VCU-1, DEHY-1

Source Description: Vapor Combustor - pilot, purge, dehy still column

Annual Emission Rates and Composition to Flare[a,b]						
Component	**Pilot[b]**	**Purge**	**Dehy Still Column**	**Total**	**Destruction Efficiency**	**Exhaust Stream (controlled)**
	(ton/yr)	**(ton/yr)**	**(ton/yr)**	**(ton/yr)**	**(%)**	**(ton/yr)**
Helium	0.00	0.00	0.00	0.00	0%	**0.00**
N2	0.26	12.00	0.03	12.29	0%	**12.29**
CO2	0.00	0.07	0.21	0.28	0%	**0.28**
O2	0.00	0.00	0.00	0.00	0%	**1.20E-03**
Hydrogen Sulfide	1.74E-05	7.89E-04	0.02	0.02	98%	**0.00**
Methane	1.76	79.87	6.54	88.16	98%	**1.76**
Ethane	0.15	6.94	9.48	16.57	98%	**0.33**
Propane	0.06	2.66	13.45	16.18	98%	**0.32**
i-Butane	0.01	0.61	3.07	3.69	98%	**0.07**
n-Butane	0.03	0.03	10.94	10.99	98%	**0.22**
i-Pentane	0.01	0.60	4.51	5.12	98%	**0.10**
n-Pentane	0.01	0.67	5.10	5.78	98%	**0.12**
Neopentane	0.00	0.00	0.00	0.00	98%	**0.00**
n-Hexane	0.07	3.30	1.93	5.30	98%	**0.11**
i-Hexane	0.00	0.00	1.95	1.95	98%	**0.04**
Benzene	0.00	0.00	25.48	25.48	98%	**0.51**
Cyclohexane	0.00	0.00	4.75	4.75	98%	**0.09**
i-Heptane	0.00	0.00	1.70	1.70	98%	**0.03**
n-Heptane	0.00	0.00	1.85	1.85	98%	**0.04**
Toluene	0.00	0.00	7.29	7.29	98%	**0.15**
Octanes+	0.00	0.00	1.00	1.00	98%	**0.02**
Ethylbenzene	0.00	0.00	0.27	0.27	98%	**0.01**
m-Xylene	0.00	0.00	0.41	0.41	98%	**0.01**
Water	0.00	0.00	4.61	4.61	0%	**4.61E+00**
Triethylene Glycol	0.00	0.00	0.00	0.00	98%	**0.00**
MDEA	0.00	0.00	0.00	0.00	98%	**0.00**
Piperazine	0.00	0.00	0.00	0.00	0%	**0.00E+00**
UCARSOL™ AP-814	0.00	0.00	0.00	0.00	0%	**0.00**
MEA	0.00	0.00	0.00	0.00	98%	**0.00**
DEPG	0.00	0.00	0.00	0.00	98%	**0.00**
Methyl Mercaptan	0.00	0.00	0.00	0.00	98%	**0.00**
Methanol	0.00	0.00	0.00	0.00	98%	**0.00**
Diethylamine	0.00	0.00	0.00	0.00	98%	**0.00**
DEA	0.00	0.00	0.00	0.00	98%	**0.00**
NMP	0.00	0.00	0.00	0.00	98%	**0.00**
Single Oil 1	0.00	0.00	0.00	0.00	98%	**0.00**
Total	**2.38**	**106.75**	**104.58**	**214**	-	**21.11**
Total VOC	**0.20**	**7.87**	**83.69**	**91.76**	-	**1.84**
Total HAP	**0.07**	**3.30**	**35.36**	**38.74**	-	**0.77**
Heating Value (Btu/scf)	1,030	1,030	2,427	**1,412**		
Molecular Weight	18.70	18.70	47.07	**--**		
Operating Hours	8,760	8,760	8,760	**--**		
Mass Flow (ton/yr)	2.38	106.75	104.58	214		
Volumetric Flow (scf/hr)	11	500	193	**--**		
Volumetric Flow (MMscf/yr)	0.10	4.38	1.69	**6.16**		
Heat Release (MMBtu/yr)	99	4,511	4,093	**8,702**		

Criteria Pollutant Emissions from Flare[c]			
Component	**Emission Rate**	**Emission Factor**	**Emission Factor Units**
	(ton/yr)		
NO_X	0.60	0.138	lb/MMBtu
CO	1.20	0.2755	lb/MMBtu
VOC	1.84	--	--
SO_2	0.05	--	--
H_2S	0.00	--	--
N2O	0.00	0.0001	kg/MMBtu

Flare Parameters	
Flare Destruction Efficiency C3+	98%
H2S molecular weight	34.08
SO2 molecular weight	64.06
H2S Conversion to SO2	100%

Annual Combustion Emissions from Flare				Totals
	(TPY)	**(TPY)**	**(TPY)**	**(TPY)**
Total NO_x	**0.01**	**0.31**	**0.28**	**0.60**
Total CO	**0.01**	**0.62**	**0.56**	**1.20**
Total SO_2	**3.26E-05**	**1.48E-03**	**0.04**	**0.05**

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] Pilot fuel gas emissions are based on 11 scfh flow rate.

[c] NOx and CO emission factor from TCEQ Air Permit Technical Guidance for Flares and Vapor Oxidizers, high btu. SO2 emissions assume 100% conversion of H2S to SO2.

[d] There are no particulate matter emissions from vapor combustor, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.

Vapor Combustor - Routine						
GHG Emissions Calculations	**CO2**		**N2O**		**Methane**	
Emission Factor:	53.06	kg/MMBtu	0.0001	kg/MMBtu	0.001	kg/MMBtu
Calculated Emissions:	509.25	tpy	0.0010	tpy	1.77	tpy

GHG Emissions Factors from 40 CFR Part 98, Subpart C

*CO2 and methane emissions from waste stream added to emissions

Frontier Field Services, LLC. - Dagger Draw Gas Plant

Fugitive Emissions

Emission Unit: FUG
Source Description: Fugitives

Operating Hours:	8760 hours/year
Emission Factor Source	Standard EFs - EPA-453/R-95-017 Table 2-4
Control Efficiency Source:	None
Emission Buffer (%):	0

Service	Component Type	Count	Emission Factor (lb/hr-source)[a]		Control (%)[b]	Pollutant	Mass Fraction[c]	Uncontrolled Emissions	Uncontrolled Emissions	Controlled Emissions	Controlled Emissions
			Table 2-4	Table 2-8				(lb/hr)	(tpy)	(lb/hr)	(tpy)
Gas	Valves	**521**	9.92E-03	5.51E-05	0%	VOC	**0.221**	1.3799	6.0440	1.3799	6.0440
	Pump Seals	**0**	5.29E-03	7.72E-04	0%	H2S	**0.024**	0.1499	0.6566	0.1499	0.6566
	Connectors	**1010**	4.41E-04	2.20E-05	0%	Benzene	**0.003**	0.0178	0.0781	0.0178	0.0781
	Flanges	**0**	8.60E-04	1.26E-05	0%	Toluene	**0.002**	0.0139	0.0607	0.0139	0.0607
	Open-Ended Lines	**0**	4.41E-03	3.31E-05	0%	E-Benzene	**0.000**	0.0029	0.0126	0.0029	0.0126
	Other	**22**	1.94E-02	2.65E-04	0%	Xylenes	**0.001**	0.0047	0.0207	0.0047	0.0207
	Relief Valves	**10**	1.94E-02	2.65E-04	0%	n-Hexane	**0.004**	0.0275	0.1206	0.0275	0.1206
						Methane[c]	**0.599**	3.7353	16.3607	3.7353	16.3607
						2,2,4 Trimethylpentane	**0.000**	0.0000	0.0000	0.0000	0.0000
Heavy Oil	Valves	**0**	1.85E-05	1.85E-05	0%	VOC	**0.225**	0.0000	0.0000	0.0000	0.0000
	Pump Seals	**0**	0.00E+00	0.00E+00	0%	H2S	**1.18E-06**	0.0000	0.0000	0.0000	0.0000
	Connectors	**0**	1.65E-05	1.65E-05	0%	Benzene	**8.30E-02**	0.0000	0.0000	0.0000	0.0000
	Flanges	**0**	8.60E-06	8.60E-07	0%	Toluene	**6.87E-02**	0.0000	0.0000	0.0000	0.0000
	Open-Ended Lines	**0**	3.09E-04	1.59E-05	0%	E-Benzene	**8.48E-03**	0.0000	0.0000	0.0000	0.0000
	Other	**0**	3.09E-04	7.05E-05	0%	Xylenes	**1.13E-02**	0.0000	0.0000	0.0000	0.0000
	Relief Valves	0	3.09E-04	7.05E-05	0%	n-Hexane	**3.15E-03**	0.0000	0.0000	0.0000	0.0000
						Methane[c]	**6.57E-04**	0.0000	0.0000	0.0000	0.0000
						2,2,4 Trimethylpentane	**0**	0.0000	0.0000	0.0000	0.0000
Light Oil	Valves	**940**	5.51E-03	4.19E-05	0%	VOC	**0.225**	1.3811	6.0492	1.3811	6.0492
	Pump Seals	**0**	2.87E-02	1.12E-03	0%	H2S	**1.18E-06**	0.0000	0.0000	0.0000	0.0000
	Connectors	**1271**	4.63E-04	2.14E-05	0%	Benzene	**8.30E-02**	0.5091	2.2297	0.5091	2.2297
	Flanges	**0**	2.43E-04	5.29E-06	0%	Toluene	**6.87E-02**	0.4216	1.8465	0.4216	1.8465
	Open-Ended Lines	**0**	2.87E-03	3.09E-05	0%	E-Benzene	**8.48E-03**	0.0520	0.2279	0.0520	0.2279
	Other	**22**	1.65E-02	2.43E-04	0%	Xylenes	**1.13E-02**	0.0696	0.3047	0.0696	0.3047
	Relief Valves	**0**	1.65E-02	2.43E-04	0%	n-Hexane	**3.15E-03**	0.0193	0.0847	0.0193	0.0847
						Methane[c]	**6.57E-04**	0.0040	0.0177	0.0040	0.0177
						2,2,4 Trimethylpentane	**0**	0.0000	0.0000	0.0000	0.0000
Water/Oil	Valves	**0**	2.16E-04	2.14E-05	0%	VOC	**0.225**	0.0000	0.0000	0.0000	0.0000
	Pump Seals	**0**	5.29E-05	5.29E-05	0%	H2S	**1.18E-06**	0.0000	0.0000	0.0000	0.0000
	Connectors	**0**	2.43E-04	2.20E-05	0%	Benzene	**8.30E-02**	0.0000	0.0000	0.0000	0.0000
	Flanges	**0**	6.39E-06	6.39E-06	0%	Toluene	**6.87E-02**	0.0000	0.0000	0.0000	0.0000
	Open-Ended Lines	**0**	5.51E-04	7.72E-06	0%	E-Benzene	**8.48E-03**	0.0000	0.0000	0.0000	0.0000
	Other	**0**	3.09E-02	1.30E-04	0%	Xylenes	**1.13E-02**	0.0000	0.0000	0.0000	0.0000
	Relief Valves	**0**	3.09E-02	1.30E-04	0%	n-Hexane	**3.15E-03**	0.0000	0.0000	0.0000	0.0000
						Methane[c]	**6.57E-04**	0.0000	0.0000	0.0000	0.0000
						2,2,4 Trimethylpentane	**0**	0.0000	0.0000	0.0000	0.0000

Fugitive Emission Summary

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	2.76	12.09	2.76	12.09
HAPs	4.88	21.36	4.88	21.36
H2S	0.15	0.66	0.15	0.66
Benzene	0.53	2.31	0.53	2.31
Toluene	0.44	1.91	0.44	1.91
E-Benzene	0.05	0.24	0.05	0.24
Xylenes	0.07	0.33	0.07	0.33
n-Hexane	0.05	0.21	0.05	0.21
Methane	3.74	16.38	3.74	16.38
2,2,4 Trimethylpentane	0.00	0.00	0.00	0.00

Footnotes:

[a] Factors are taken from EPA Document EPA-453/R-095-017, November 1995, Table 2-4

[b] No control applied

[c] Gas/vapor based on historic inlet gas with update for increase in H2S content. Heavy Oil, Light Oil, and Water/Oil fugitives were based on current Promax estimate of slop from the dehydration system. For both, updating to current ProMax would decrease emissions, so Frontier Field Services has retained the more conservative basis.

[c] Methane emissions were not in the historic fugitive emissions calculation basis and have been added using current ProMax results.

Frontier Field Services, LLC. - Dagger Draw Gas Plant

SSM Blowdowns

Emission Unit: SSM
Source Description: Vented SSM for blowdowns

Blowdown Description	Blowdown Volume (ft^3)	MW from gas analysis (lb/lb-mol)	VOC Weight % from gas analysis calculation	Ideal Gas Law Conversion Factor (scf/lb-mol)	Number of Units	Number of Blowdowns per year (each)	VOC Emissions Per Blowdown (lbs)	VOC (lb/hr) 3 blowdowns in 1 hour	Annual VOC Emissions (lbs)	Annual VOC Emissions (TPY)
Compressor blowdowns	1365	18.7	0.0842	379.5	4	548	5.67	22.66	12,406.52	6.20

Composition Used for Blowdown Calculations						
Component	**MW (lb/lb-mole)**	**Residue Gas[1] Mole%**	**MW * wt vol %**	**Weight %**	**Lb/hr**	**TPY**
Water	18.02	0.00%	0.000	0.00%	0.000	0.000
Hydrogen Sulfide	34.08	0.0004%	0.000	0.00%	0.000	0.000
Carbon Dioxide	44.01	0.03%	0.011	0.06%	0.014	0.004
Nitrogen	28.01	7.40%	2.073	11.11%	2.519	0.689
Oxygen	32.00	0.000%	0.000	0.00%	0.000	0.000
Methane	16.04	86.025%	13.800	73.98%	16.763	4.589
Ethane	30.07	3.987%	1.199	6.43%	1.456	0.399
Propane	44.10	1.043%	0.460	2.47%	0.559	0.153
i-Butane	58.12	0.182%	0.106	0.57%	0.129	0.035
n-Butane	58.12	0.371%	0.216	1.16%	0.262	0.072
i-Pentane	72.15	0.143%	0.103	0.55%	0.126	0.034
Pentanes	72.15	0.160%	0.115	0.62%	0.140	0.038
Hexanes+	86.18	0.662%	0.570	3.06%	0.693	0.190
Total		**100.00%**	**18.65**	**100.00%**	**22.66**	**6.20**
NMNEHC (VOC)		**2.6%**	**1.57**	**8.42%**		

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.

TEG Dehydrator (Unit DEHY-1)

- BR&E ProMax Report
- Site specific inlet gas analysis

Amine Unit (Unit AU-1)

- BR&E ProMax Report
- Site specific inlet gas analysis

Compressor Engines (Units WAU-1, WAU-2, WAU-3, WAU-4, Ajax 1 and Ajax 2)

- Catalyst spec sheets, engine spec sheets
- AP-42 Chapter 3.2, Natural Gas-fired Reciprocating Engines, Table 3.2-3 for 4-stroke rich burn engines
- AP-42 Chapter 3.2, Natural Gas-fired Reciprocating Engines, Table 3.2-1 for 2-stroke lean burn engines
- 40 CFR 98 Subpart C Table C-1 and Table C-2

Fugitives (Unit FUG)

- Table 2-4 of the EPA Protocol for Equipment Leak Emission Estimates, November 1995
- BR&E ProMax Report

Hot oil heater (Unit H-1)

- Manufacturer spec sheet
- AP-42 Section 1.4 (July 1998) – Tables 1.4-1, 1.4-2, & 1.4-3
- 40 CFR 98 Subpart A Table A-1
- 40 CFR 98 Subpart C Table C-1 and Table C-2

Reboiler, Mol Sieve Regenerator, and Hot Oil heater (Units H-2, H-3, and H-6)

- AP-42 Section 1.4 (July 1998) – Tables 1.4-1, 1.4-2, & 1.4-3
- 40 CFR 98 Subpart A Table A-1
- 40 CFR 98 Subpart C Table C-1 and Table C-2

Flares and Vapor Combustor: Acid Gas Flare (Unit FL-1), Process Flare (Unit FL-2), and Vapor Combustor (Unit VCU-1)

- BR&E ProMax Report
- Site specific inlet gas analysis
- TCEQ – (APD-ID 6v1, Revised 03/21) NSR Emission Calculations
- 40 CFR 98 Subpart C Table C-1 and Table C-2
- Vapor Combustor specification sheet

Exempted Equipment:

- Methanol tank emissions - BR&E ProMax
- Representative Ethylene glycol MSDS
- Representative Lube Oil MSDS
- Representative MDEA MSDS

PANTECHS LABORATORIES

ANALYSIScertificate

OPERATOR	Kinetik	PRESS/TEMP	850 psig/91 F
LOCATION	Dagger Draw Plant	ATM TEMP	60 F
SITE	Train 3	DATE/TIME	04/16/2025 8:33 AM
SAMPLE POINT	Plant Inlet	COLLECTION BY	Cody Carson
METER ID	19G035409	SPOT/COMP	Spot
CONTAINER(S)	PLS020	BASE	14.650 psi/60 F

FRACTIONAL: GPA 2286-24

COMPOUND	FORMULA	MOL%	WT%	GPM
HELIUM	He	0.0463	0.0091	
OXYGEN+ARGON	O2+Ar	0.0684	0.1077	
NITROGEN	N2	1.9582	2.6983	
CARBON DIOXIDE	CO2	1.0336	2.2375	0.175
HYDROGEN SULFIDE	H2S	0.8736	1.4645	0.117
METHANE	C1	80.3822	63.4305	13.506
ETHANE	C2	9.3786	13.8716	2.486
PROPANE	C3	3.8214	8.2887	1.043
I-BUTANE	iC4	0.5025	1.4366	0.163
N-BUTANE	nC4	1.0519	3.0074	0.330
I-PENTANE	iC5	0.2686	0.9532	0.097
N-PENTANE	nC5	0.2413	0.8564	0.087
HEXANES PLUS	C6+	0.3734	1.6385	0.144
BENZENE		0.0347	0.1333	
N-HEXANE		0.0562	0.2382	
OTHER HEXANES		0.1063	0.4507	
2,2,4-TRIMETHYLPENTANE		0.0007	0.0034	
TOLUENE		0.0126	0.0571	
OTHER HEPTANES		0.1199	0.5306	
ETHYLBENZENE		0.0009	0.0047	
M+P XYLENE		0.0010	0.0052	
O XYLENE		0.0003	0.0016	
OTHER OCTANES		0.0375	0.1926	
NONANES		0.0027	0.0171	
DECANES+		0.0006	0.0040	
TOTALS:		**100.0000**	**100.0000**	**18.148**

Value of "0.0000" in fractional interpreted as below detectable limit.

LIQUID YIELD (GAL/MSCF)

ETHANE+	PROPANE+	BUTANES+	PENTANES+
4.350	1.864	0.821	0.328

CALCULATED PROPERTIES: GPA 2172/ASTM D3588

PROPERTY	MOL WT	SP GRAVITY	BTU/CF GR	BTU/CF NET	Z FACTOR	WOBBE INDX
DRY	20.330	0.7039	1168.565	1058.765	0.9968	1392.828
H2O SAT	19.975	0.6908	1149.342	1040.548	0.9965	1382.844
C6+ ONLY	89.182	3.0788	4782.585			



Bryan Research & Engineering, LLC

ProMax®

6.0

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Simulation Report

Project: DD Amine MDEA_Piperazine Max Design with Glycol v4 with lab sample.pmx

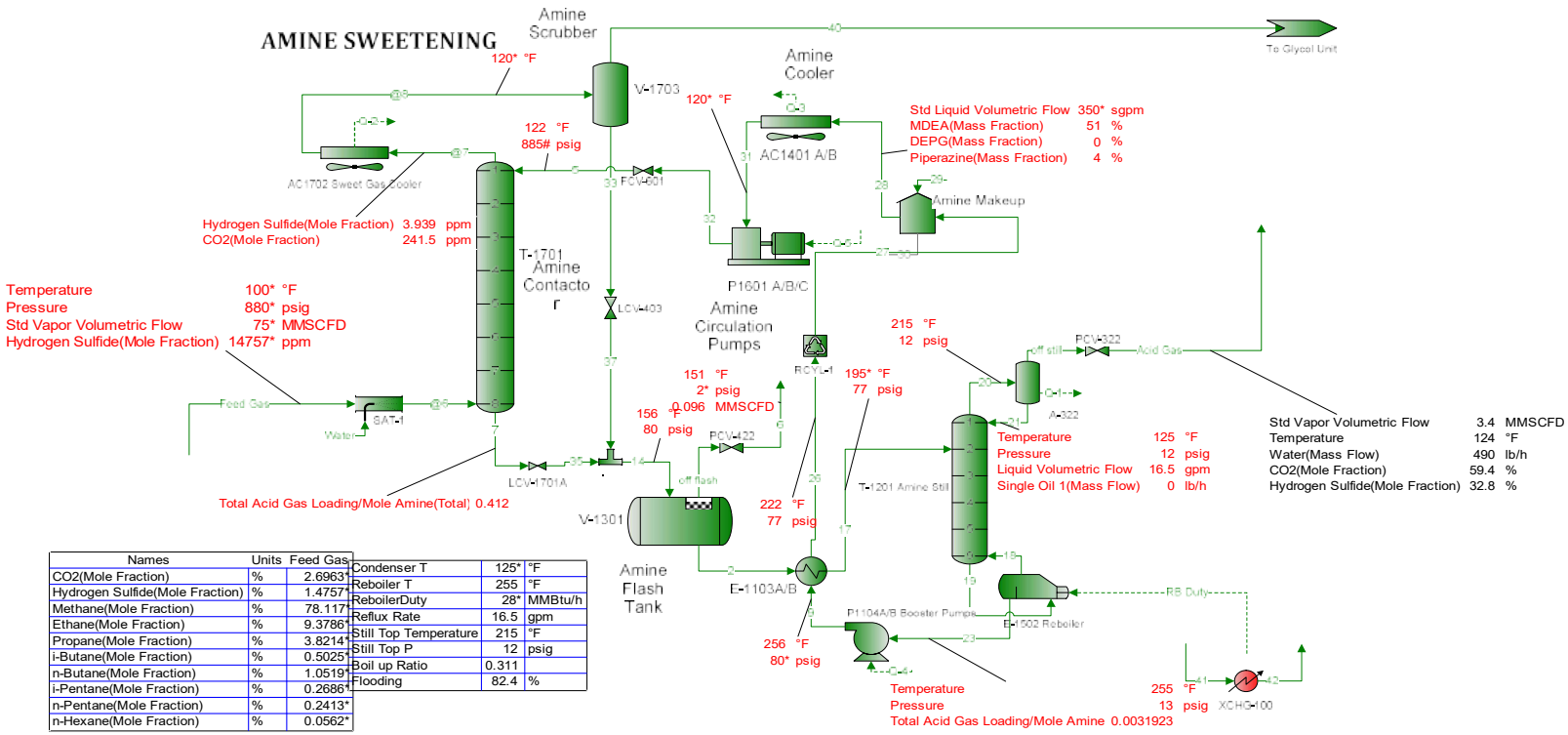
Licensed to Trinity Consultants, Inc. and Affiliates

Client Name: Kinetik
Location: Dagger Draw
Job: DD Amine and Dehy

ProMax Filename: C:\Users\JoshReddoch\Trinity Consultants, Inc\KINETIK - Documents\NM Permitting\Dagger Draw Gas Plant\254404.0535 Dagger Draw NSR Sig Rev\06 Working\DD Amine MDEA_Piperazine Max Design with Glycol v4 with lab sample.pmx
ProMax Version: 6.0.24120.0
Simulation Initiated: 11/18/2025 5:14:10 PM

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Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.



Names	Units	Feed Gas
CO2(Mole Fraction)	%	2.6963*
Hydrogen Sulfide(Mole Fraction)	%	1.4757*
Methane(Mole Fraction)	%	78.117*
Ethane(Mole Fraction)	%	9.3786*
Propane(Mole Fraction)	%	3.8214*
i-Butane(Mole Fraction)	%	0.5025*
n-Butane(Mole Fraction)	%	1.0519*
i-Pentane(Mole Fraction)	%	0.2686*
n-Pentane(Mole Fraction)	%	0.2413*
n-Hexane(Mole Fraction)	%	0.0562*

Condenser T	125*	°F
Reboiler T	255	°F
ReboilerDuty	28*	MMBtu/h
Reflux Rate	16.5	gpm
Still Top Temperature	215	°F
Still Top P	12	psig
Boil up Ratio	0.311	
Flooding	82.4	%

Process Streams		@6	@7	@8	Acid Gas	Feed Gas	off flash	off still	Water	2	5	6	7	9	14	17
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	SAT-1	T-1701	AC1702 Sweet Gas Cooler	PCV-322	--	V-1301	A-322	--	V-1301	FCV-601	PCV-422	T-1701	P1104A/B Booster Pumps	.	E-1103A/B
	To Block:	T-1701	AC1702 Sweet Gas Cooler	V-1703	--	SAT-1	PCV-422	PCV-322	SAT-1	E-1103A/B	T-1701	--	LCV-1701A	E-1103A/B	V-1301	T-1201 Amine Still
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Helium		0.0462384	0.0482244	0.0482244	1.06823E-07	0.0463*	0.00133889	1.06823E-07	0*	7.07323E-09	0	0.00133889	2.55306E-06	0	2.55222E-06	7.07323E-09
N2		1.95560	2.03899	2.03899	0.000391532	1.9582*	0.494560	0.000391532	0*	2.59251E-05	0	0.494560	0.000965884	0	0.000966008	2.59251E-05
CO2		2.69267	0.0241509	0.0241509	59.3999	2.69626*	12.5470	59.3999	0*	3.94150	0.00889823	12.5470	3.96072	0.00895835	3.95786	3.94150
O2		0.0683090	0.0711860	0.0711860	8.54956E-05	0.0684*	0.0415625	8.54956E-05	0*	5.66104E-06	0	0.0415625	8.46687E-05	0	8.46582E-05	5.66104E-06
Hydrogen Sulfide		1.47372	0.000393859	0.000393859	32.8474	1.47568*	4.64007	32.8474	0*	2.21453	0.0420812	4.64007	2.22087	0.0423619	2.21914	2.21453
Methane		78.0136	81.2725	81.2725	0.201989	78.1175*	63.7944	0.201989	0*	0.0133746	0	63.7944	0.134665	0	0.134619	0.0133746
Ethane		9.36613	9.75261	9.75261	0.0566977	9.3786*	10.0933	0.0566977	0*	0.00375421	0	10.0933	0.0229457	0	0.0229338	0.00375421
Propane		3.81632	3.97567	3.97567	0.0144768	3.8214*	3.00921	0.0144768	0*	0.000958573	0	3.00921	0.00668080	0	0.00667710	0.000958573
i-Butane		0.501832	0.522971	0.522971	0.00112572	0.5025*	0.284838	0.00112572	0*	7.45390E-05	0	0.284838	0.000616236	0	0.000615859	7.45390E-05
n-Butane		1.05050	1.09438	1.09438	0.00451631	1.0519*	0.798350	0.00451631	0*	0.000299045	0	0.798350	0.00181720	0	0.00181610	0.000299045
i-Pentane		0.268243	0.279642	0.279642	0.000249809	0.2686*	0.0902728	0.000249809	0*	1.65410E-05	0	0.0902728	0.000188228	0	0.000188113	1.65410E-05
n-Pentane		0.240979	0.251181	0.251181	0.000378588	0.2413*	0.104448	0.000378588	0*	2.50680E-05	0	0.104448	0.000223708	0	0.000223570	2.50680E-05
Neopentane		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
n-Hexane		0.0561253	0.0585099	0.0585099	6.20571E-05	0.0562*	0.0188282	6.20571E-05	0*	4.10908E-06	0	0.0188282	3.99198E-05	0	3.98926E-05	4.10908E-06
i-Hexane		0.0636952	0.0664002	0.0664002	7.35955E-05	0.06378*	0.0222313	7.35955E-05	0*	4.87309E-06	0	0.0222313	4.71565E-05	0	4.71243E-05	4.87309E-06
Benzene		0.0346539	0.0332765	0.0332765	0.0578654	0.0347*	0.127958	0.0578654	0*	0.00383153	0	0.127958	0.00406995	0	0.00406749	0.00383153
Cyclohexane		0.0424635	0.0441616	0.0441616	0.00109070	0.04252*	0.0571000	0.00109070	0*	7.22203E-05	0	0.0571000	0.000180744	0	0.000180627	7.22203E-05
i-Heptane		0.0598703	0.0624300	0.0624300	1.74104E-05	0.05995*	0.00989235	1.74104E-05	0*	1.15282E-06	0	0.00989235	1.99690E-05	0	1.99554E-05	1.15282E-06
n-Heptane		0.0598703	0.0624306	0.0624306	1.65956E-05	0.05995*	0.00947392	1.65956E-05	0*	1.09887E-06	0	0.00947392	1.91192E-05	0	1.91062E-05	1.09887E-06
Toluene		0.0125832	0.0121204	0.0121204	0.0203893	0.0126*	0.0402075	0.0203893	0*	0.00135006	0	0.0402075	0.00142488	0	0.00142393	0.00135006
Octane		0.0414448	0.0432168	0.0432168	1.45741E-05	0.0415*	0.00671449	1.45741E-05	0*	9.65014E-07	0	0.00671449	1.37368E-05	0	1.37271E-05	9.65014E-07
Ethylbenzene		0.000898803	0.000885346	0.000885346	0.00104869	0.0009*	0.00241785	0.00104869	0*	6.94385E-05	0	0.00241785	7.39525E-05	0	7.39027E-05	6.94385E-05
m-Xylene		0.00129827	0.00125826	0.00125826	0.00196041	0.0013*	0.00335293	0.00196041	0*	0.000129808	0	0.00335293	0.000136025	0	0.000135935	0.000129808
Water		0.132982	0.283056	0.283056	7.39024	0*	3.80187	7.39024	100*	78.8081	83.9794	3.80187	78.6497	83.8723	78.6655	78.8081
Triethylene Glycol		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
MDEA		0	0.000163229	0.000163229	1.80351E-13	0*	0.000603014	1.80351E-13	0*	13.5425	14.4064	0.000603014	13.5271	14.5028	13.5167	13.5425
Piperazine		0	0.000216195	0.000216195	4.78257E-14	0*	3.83400E-05	4.78257E-14	0*	1.46940	1.56316	3.83400E-05	1.46746	1.57360	1.46661	1.46940
UCARSOL™ AP-814		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
MEA		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
DEPG		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
Methyl Mercaptan		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
Methanol		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
Diethylamine		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
DEA		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
NMP		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
Single Oil 1		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0

Process Streams		@6	@7	@8	Acid Gas	Feed Gas	off flash	off still	Water	2	5	6	7	9	14	17
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	SAT-1	T-1701	AC1702 Sweet Gas Cooler	PCV-322	--	V-1301	A-322	--	V-1301	FCV-601	PCV-422	T-1701	P1104A/B Booster Pumps	.	E-1103A/B
	To Block:	T-1701	AC1702 Sweet Gas Cooler	V-1703	--	SAT-1	PCV-422	PCV-322	SAT-1	E-1103A/B	T-1701	--	LCV-1701A	E-1103A/B	V-1301	T-1201 Amine Still
Mass Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Helium		0.00884922	0.00962061	0.00962061	1.10211E-08	0.00885936*	0.000227458	1.10211E-08	0*	8.30280E-10	0	0.000227458	2.99757E-07	0	2.99764E-07	8.30280E-10
N2		2.61941	2.84691	2.84691	0.000282716	2.62242*	0.588030	0.000282716	0*	2.12986E-05	0	0.588030	0.000793701	0	0.000794083	2.12986E-05
CO2		5.66617	0.0529752	0.0529752	67.3829	5.67267*	23.4369	67.3829	0*	5.08712	0.0116339	23.4369	5.11312	0.0116762	5.11123	5.08712
O2		0.104513	0.113533	0.113533	7.05171E-05	0.104633*	0.0564481	7.05171E-05	0*	5.31244E-06	0	0.0564481	7.94735E-05	0	7.94918E-05	5.31244E-06
Hydrogen Sulfide		2.40151	0.000669028	0.000669028	28.8555	2.40426*	6.71196	28.8555	0*	2.21338	0.0426063	6.71196	2.22024	0.0427576	2.21929	2.21338
Methane		59.8412	64.9842	64.9842	0.0835247	59.9098*	43.4378	0.0835247	0*	0.00629238	0	43.4378	0.0633713	0	0.0633718	0.00629238
Ethane		13.4660	14.6162	14.6162	0.0439443	13.4815*	12.8815	0.0439443	0*	0.00331057	0	12.8815	0.0202389	0	0.0202355	0.00331057
Propane		8.04636	8.73775	8.73775	0.0164545	8.05559*	5.63200	0.0164545	0*	0.00123961	0	5.63200	0.00864151	0	0.00863977	0.00123961
i-Butane		1.39463	1.51500	1.51500	0.00168651	1.39623*	0.702675	0.00168651	0*	0.000127054	0	0.702675	0.00105064	0	0.00105037	0.000127054
n-Butane		2.91943	3.17033	3.17033	0.00676618	2.92278*	1.96947	0.00676618	0*	0.000509733	0	1.96947	0.00309820	0	0.00309742	0.000509733
i-Pentane		0.925372	1.00560	1.00560	0.000464574	0.926433*	0.276439	0.000464574	0*	3.49989E-05	0	0.276439	0.000398363	0	0.000398261	3.49989E-05
n-Pentane		0.831319	0.903253	0.903253	0.000704065	0.832272*	0.319847	0.000704065	0*	5.30411E-05	0	0.319847	0.000473453	0	0.000473327	5.30411E-05
Neopentane		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
n-Hexane		0.231260	0.251308	0.251308	0.000137845	0.231525*	0.0688661	0.000137845	0*	1.03846E-05	0	0.0688661	0.000100911	0	0.000100878	1.03846E-05
i-Hexane		0.262451	0.285198	0.285198	0.000163475	0.262752*	0.0813135	0.000163475	0*	1.23155E-05	0	0.0813135	0.000119204	0	0.000119165	1.23155E-05
Benzene		0.129428	0.129553	0.129553	0.116507	0.129576*	0.424229	0.116507	0*	0.00877714	0	0.424229	0.00932550	0	0.00932314	0.00877714
Cyclohexane		0.170875	0.185243	0.185243	0.00236607	0.171071*	0.203964	0.00236607	0*	0.000178249	0	0.203964	0.000446203	0	0.000446072	0.000178249
i-Heptane		0.286845	0.311790	0.311790	4.49679E-05	0.287174*	0.0420717	4.49679E-05	0*	3.38768E-06	0	0.0420717	5.86946E-05	0	5.86755E-05	3.38768E-06
n-Heptane		0.286845	0.311793	0.311793	4.28633E-05	0.287174*	0.0402921	4.28633E-05	0*	3.22913E-06	0	0.0402921	5.61967E-05	0	5.61784E-05	3.22913E-06
Toluene		0.0554361	0.0556611	0.0556611	0.0484239	0.0554997*	0.157240	0.0484239	0*	0.00364804	0	0.157240	0.00385111	0	0.00384989	0.00364804
Octane		0.226362	0.246049	0.246049	4.29114E-05	0.226622*	0.0325538	4.29114E-05	0*	3.23275E-06	0	0.0325538	4.60286E-05	0	4.60120E-05	3.23275E-06
Ethylbenzene		0.00456252	0.00468476	0.00468476	0.00286976	0.00456776*	0.0108949	0.00286976	0*	0.000216195	0	0.0108949	0.000230303	0	0.000230229	0.000216195
m-Xylene		0.00659031	0.00665801	0.00665801	0.00536471	0.00659787*	0.0151084	0.00536471	0*	0.000404153	0	0.0151084	0.000423611	0	0.000423478	0.000404153
Water		0.114550	0.254159	0.254159	3.43176	0*	2.90705	3.43176	100*	41.6367	44.9458	2.90705	41.5627	44.7494	41.5858	41.6367
Triethylene Glycol		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
MDEA		0	0.000969456	0.000969456	5.53954E-13	0*	0.00304986	5.53954E-13	0*	47.3261	51	0.00304986	47.2833	51.1820	47.2640	47.3261
Piperazine		0	0.000928156	0.000928156	1.06184E-13	0*	0.000140168	1.06184E-13	0*	3.71183	4	0.000140168	3.70778	4.01424	3.70695	3.71183
UCARSOL™ AP-814		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
MEA		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
DEPG		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
Methyl Mercaptan		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
Methanol		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
Diethylamine		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
DEA		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
NMP		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
Single Oil 1		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0

Process Streams		@6	@7	@8	Acid Gas	Feed Gas	off flash	off still	Water	2	5	6	7	9	14	17
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	SAT-1	T-1701	AC1702 Sweet Gas Cooler	PCV-322	--	V-1301	A-322	--	V-1301	FCV-601	PCV-422	T-1701	P1104A/B Booster Pumps	.	E-1103A/B
	To Block:	T-1701	AC1702 Sweet Gas Cooler	V-1703	--	SAT-1	PCV-422	PCV-322	SAT-1	E-1103A/B	T-1701	--	LCV-1701A	E-1103A/B	V-1301	T-1201 Amine Still
Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Helium		15.2609	15.2603	15.2603	1.57501E-06	15.2609*	0.000567815	1.57501E-06	0*	1.57501E-06	0	0.000567815	0.000569133	0	0.000569390	1.57501E-06
N2		4517.30	4515.80	4515.80	0.0404026	4517.30*	1.46793	0.0404026	0*	0.0404026	0	1.46793	1.50696	0	1.50833	0.0404026
CO2		9771.58	84.0299	84.0299	9629.60	9771.58*	58.5065	9629.60	0*	9650.08	20.4793	58.5065	9708.03	20.4807	9708.59	9650.08
O2		180.238	180.087	180.087	0.0100775	180.238*	0.140914	0.0100775	0*	0.0100775	0	0.140914	0.150892	0	0.150991	0.0100775
Hydrogen Sulfide		4141.52	1.06122	1.06122	4123.71	4141.52*	16.7554	4123.71	0*	4198.71	75.0005	16.7554	4215.46	74.9991	4215.46	4198.71
Methane		103199	103079	103079	11.9364	103199*	108.436	11.9364	0*	11.9364	0	108.436	120.320	0	120.372	11.9364
Ethane		23222.8	23184.3	23184.3	6.28002	23222.8*	32.1566	6.28002	0*	6.28002	0	32.1566	38.4265	0	38.4366	6.28002
Propane		13876.3	13859.9	13859.9	2.35149	13876.3*	14.0594	2.35149	0*	2.35149	0	14.0594	16.4072	0	16.4109	2.35149
i-Butane		2405.11	2403.11	2403.11	0.241017	2405.11*	1.75412	0.241017	0*	0.241017	0	1.75412	1.99480	0	1.99514	0.241017
n-Butane		5034.69	5028.81	5028.81	0.966946	5034.69*	4.91648	0.966946	0*	0.966946	0	4.91648	5.88240	0	5.88343	0.966946
i-Pentane		1595.85	1595.09	1595.09	0.0663916	1595.85*	0.690089	0.0663916	0*	0.0663916	0	0.690089	0.756353	0	0.756480	0.0663916
n-Pentane		1433.65	1432.75	1432.75	0.100617	1433.65*	0.798449	0.100617	0*	0.100617	0	0.798449	0.898921	0	0.899066	0.100617
Neopentane		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
n-Hexane		398.819	398.627	398.627	0.0196993	398.819*	0.171914	0.0196993	0*	0.0196993	0	0.171914	0.191594	0	0.191613	0.0196993
i-Hexane		452.610	452.384	452.384	0.0233620	452.610*	0.202987	0.0233620	0*	0.0233620	0	0.202987	0.226326	0	0.226349	0.0233620
Benzene		223.204	205.499	205.499	16.6499	223.204*	1.05902	16.6499	0*	16.6499	0	1.05902	17.7059	0	17.7089	16.6499
Cyclohexane		294.681	293.834	293.834	0.338132	294.681*	0.509164	0.338132	0*	0.338132	0	0.509164	0.847182	0	0.847296	0.338132
i-Heptane		494.677	494.566	494.566	0.00642630	494.677*	0.105025	0.00642630	0*	0.00642630	0	0.105025	0.111440	0	0.111452	0.00642630
n-Heptane		494.677	494.570	494.570	0.00612554	494.677*	0.100583	0.00612554	0*	0.00612554	0	0.100583	0.106698	0	0.106709	0.00612554
Toluene		95.6022	88.2903	88.2903	6.92019	95.6022*	0.392525	6.92019	0*	6.92019	0	0.392525	7.31190	0	7.31272	6.92019
Octane		390.372	390.285	390.285	0.00613242	390.372*	0.0812656	0.00613242	0*	0.00613242	0	0.0812656	0.0873922	0	0.0873980	0.00613242
Ethylbenzene		7.86829	7.43102	7.43102	0.410114	7.86829*	0.0271975	0.410114	0*	0.410114	0	0.0271975	0.437265	0	0.437312	0.410114
m-Xylene		11.3653	10.5610	10.5610	0.766664	11.3653*	0.0377159	0.766664	0*	0.766664	0	0.0377159	0.804289	0	0.804380	0.766664
Water		197.546	403.151	403.151	490.428	0*	7.25700	490.428	197.546*	78983.3	79118.6	7.25700	78913.0	78492.8	78990.5	78983.3
Triethylene Glycol		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
MDEA		0	1.53776	1.53776	7.91649E-11	0*	0.00761351	7.91649E-11	0*	89776.0	89776.0	0.00761351	89774.5	89776.0	89776.0	89776.0
Piperazine		0	1.47225	1.47225	1.51747E-11	0*	0.000349908	1.51747E-11	0*	7041.20	7041.26	0.000349908	7039.78	7041.20	7041.20	7041.20
UCARSOL™ AP-814		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
MEA		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
DEPG		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
Methyl Mercaptan		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
Methanol		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
Diethylamine		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
DEA		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
NMP		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0
Single Oil 1		0	0	0	0	0*	0	0	0*	0	0	0	0	0	0	0

Process Streams		@6	@7	@8	Acid Gas	Feed Gas	off flash	off still	Water	2	5	6	7	9	14	17
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	SAT-1	T-1701	AC1702 Sweet Gas Cooler	PCV-322	--	V-1301	A-322	--	V-1301	FCV-601	PCV-422	T-1701	P1104A/B Booster Pumps	.	E-1103A/B
	To Block:	T-1701	AC1702 Sweet Gas Cooler	V-1703	--	SAT-1	PCV-422	PCV-322	SAT-1	E-1103A/B	T-1701	--	LCV-1701A	E-1103A/B	V-1301	T-1201 Amine Still
Property	**Units**															
Temperature	°F	100	134.337	120*	124.342	100*	155.845	125.000	531.328	155.845	121.605	150.535	153.529	255.522	155.845	195*
Pressure	psia	894.696	889.696	884.696	21.6959	894.696*	94.6959	26.6959	894.696	94.6959	899.696*	16.6959*	894.696	94.6959*	94.6959	91.6959
Molecular Weight	lb/lbmol	20.9142	20.0635	20.0635	38.7956	20.9180	23.5606	38.7956	18.0153	34.0985	33.6609	23.5606	34.0905	33.7655	34.0785	34.0985
Mass Flow	lb/h	172455	158621	158621	14290.9	172257	249.635	14290.9	197.546	189696	176031	249.635	189865	175405	189946	189696
Std Vapor Volumetric Flow	MMSCFD	75.0999	72.0044	72.0044	3.35491	75*	0.0964992	3.35491	0.0998694	50.6673	47.6288	0.0964992	50.7242	47.3124	50.7638	50.6673
Std Liquid Volumetric Flow	sgpm	962.905	928.080	928.080	35.0431	962.510	1.19672	35.0431	0.394909	383.792	350	1.19672	384.825	348.749	384.989	383.792
Specific Gravity		0.722112	0.692741		1.33951	0.722245	0.813485	1.33951		1.10264	1.03147	0.813485	1.10300	0.968722		
API Gravity										-5.18065	3.29474		-5.14814	3.42620		
Net Ideal Gas Heating Value	Btu/ft^3	1041.04	1075.33	1075.33	199.180	1042.43	892.427	199.180	0	544.880	565.611	892.427	545.948	569.393	545.540	544.880
Gross Ideal Gas Heating Value	Btu/ft^3	1148.87	1186.95	1186.95	219.897	1150.33	986.140	219.897	50.3100	633.608	658.875	986.140	634.714	662.944	634.278	633.608

Process Streams		18	19	20	21	23	26	27	28	29	30	31	32	33	35
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	E-1502 Reboiler	T-1201 Amine Still	T-1201 Amine Still	A-322	E-1502 Reboiler	E-1103A/B	RCYL-1	Amine Makeup	--	Amine Makeup	AC1401 A/B	P1601 A/B/C	V-1703	LCV-1701A
	To Block:	T-1201 Amine Still	E-1502 Reboiler	A-322	T-1201 Amine Still	P1104A/B Booster Pumps	RCYL-1	Amine Makeup	AC1401 A/B	Amine Makeup	--	P1601 A/B/C	FCV-601	LCV-403	.
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%
Helium		0	0	4.79832E-08	9.25860E-14	0	0	0	0	0	0	0	0	1.47892E-06	2.55306E-06
N2		0	0	0.000175873	6.55651E-09	0	0	0	0	0	0	0	0	0.00112508	0.000965884
CO2		0.0873114	0.0275290	26.7016	0.0367132	0.00895835	0.00895835	0.00895773	0.00889823	0	0.00895773	0.00889823	0.00889823	0.292386	3.96072
O2		0	0	3.84046E-05	2.67178E-09	0	0	0	0	0	0	0	0	7.12545E-05	8.46687E-05
Hydrogen Sulfide		0.0806110	0.0514274	14.7898	0.0641747	0.0423619	0.0423619	0.0423626	0.0420812	0	0.0423626	0.0420812	0.0420812	0.00322797	2.22087
Methane		0	0	0.0907333	6.46626E-06	0	0	0	0	0	0	0	0	0.0752122	0.134665
Ethane		0	0	0.0254687	1.98880E-06	0	0	0	0	0	0	0	0	0.00770317	0.0229457
Propane		0	0	0.00650294	3.87000E-07	0	0	0	0	0	0	0	0	0.00193050	0.00668080
i-Butane		0	0	0.000505665	1.91779E-08	0	0	0	0	0	0	0	0	0.000132632	0.000616236
n-Butane		0	0	0.00202871	1.15810E-07	0	0	0	0	0	0	0	0	0.000406565	0.00181720
i-Pentane		0	0	0.000112212	3.16083E-09	0	0	0	0	0	0	0	0	4.07378E-05	0.000188228
n-Pentane		0	0	0.000170058	5.94895E-09	0	0	0	0	0	0	0	0	4.61328E-05	0.000223708
Neopentane		0	0	0	0	0	0	0	0	0	0	0	0	0	0
n-Hexane		0	0	2.78753E-05	5.38318E-10	0	0	0	0	0	0	0	0	4.97702E-06	3.99198E-05
i-Hexane		0	0	3.30582E-05	6.39508E-10	0	0	0	0	0	0	0	0	5.93261E-06	4.71565E-05
Benzene		0	0	0.0260660	0.000134096	0	0	0	0	0	0	0	0	0.000906520	0.00406995
Cyclohexane		0	0	0.000489967	7.64006E-08	0	0	0	0	0	0	0	0	3.10922E-05	0.000180744
i-Heptane		0	0	7.82050E-06	8.69436E-11	0	0	0	0	0	0	0	0	2.59823E-06	1.99690E-05
n-Heptane		0	0	7.45448E-06	8.27252E-11	0	0	0	0	0	0	0	0	2.46635E-06	1.91192E-05
Toluene		0	0	0.00917770	3.48522E-05	0	0	0	0	0	0	0	0	0.000204262	0.00142488
Octane		0	0	6.54646E-06	6.38859E-11	0	0	0	0	0	0	0	0	1.18238E-06	1.37368E-05
Ethylbenzene		0	0	0.000471858	1.45942E-06	0	0	0	0	0	0	0	0	1.00355E-05	7.39525E-05
m-Xylene		0	0	0.000882799	4.02243E-06	0	0	0	0	0	0	0	0	1.97642E-05	0.000136025
Water		99.6645	87.6153	58.3456	99.8989	83.8723	83.8723	83.8723	83.9794	99.9978	83.8723	83.9794	83.9794	98.9434	78.6497
Triethylene Glycol		0	0	0	0	0	0	0	0	0	0	0	0	0	0
MDEA		0.0892850	11.0866	1.88991E-05	3.43110E-05	14.5028	14.5028	14.5028	14.4064	0.000402306	14.5028	14.4064	14.4064	0.294030	13.5271
Piperazine		0.0782899	1.21919	1.53391E-05	2.78478E-05	1.57360	1.57360	1.57360	1.56316	0.00177792	1.57360	1.56316	1.56316	0.379048	1.46746
UCARSOL™ AP-814		0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEA		0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEPG		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Methyl Mercaptan		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Methanol		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diethylamine		0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEA		0	0	0	0	0	0	0	0	0	0	0	0	0	0
NMP		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single Oil 1		0	0	0	0	0	0	0	0	0	0	0	0	0	0

Process Streams		18	19	20	21	23	26	27	28	29	30	31	32	33	35
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	E-1502 Reboiler	T-1201 Amine Still	T-1201 Amine Still	A-322	E-1502 Reboiler	E-1103A/B	RCYL-1	Amine Makeup	--	Amine Makeup	AC1401 A/B	P1601 A/B/C	V-1703	LCV-1701A
	To Block:	T-1201 Amine Still	E-1502 Reboiler	A-322	T-1201 Amine Still	P1104A/B Booster Pumps	RCYL-1	Amine Makeup	AC1401 A/B	Amine Makeup	--	P1601 A/B/C	FCV-601	LCV-403	.
Mass Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%
Helium		0	0	7.01952E-09	2.05478E-14	0	0	0	0	0	0	0	0	3.17427E-07	2.99757E-07
N2		0	0	0.000180070	1.01839E-08	0	0	0	0	0	0	0	0	0.00169008	0.000793701
CO2		0.211191	0.0402839	42.9497	0.0895871	0.0116762	0.0116762	0.0116754	0.0116339	0	0.0116754	0.0116339	0.0116339	0.690016	5.11312
O2		0	0	4.49152E-05	4.74035E-09	0	0	0	0	0	0	0	0	0.000122265	7.94735E-05
Hydrogen Sulfide		0.150995	0.0582774	18.4226	0.121269	0.0427576	0.0427576	0.0427584	0.0426063	0	0.0427584	0.0426063	0.0426063	0.00589924	2.22024
Methane		0	0	0.0532003	5.75176E-06	0	0	0	0	0	0	0	0	0.0647016	0.0633713
Ethane		0	0	0.0279900	3.31579E-06	0	0	0	0	0	0	0	0	0.0124207	0.0202389
Propane		0	0	0.0104805	9.46201E-07	0	0	0	0	0	0	0	0	0.00456479	0.00864151
i-Butane		0	0	0.00107419	6.18045E-08	0	0	0	0	0	0	0	0	0.000413376	0.00105064
n-Butane		0	0	0.00430962	3.73219E-07	0	0	0	0	0	0	0	0	0.00126715	0.00309820
i-Pentane		0	0	0.000295899	1.26447E-08	0	0	0	0	0	0	0	0	0.000157610	0.000398363
n-Pentane		0	0	0.000448439	2.37983E-08	0	0	0	0	0	0	0	0	0.000178482	0.000473453
Neopentane		0	0	0	0	0	0	0	0	0	0	0	0	0	0
n-Hexane		0	0	8.77968E-05	2.57216E-09	0	0	0	0	0	0	0	0	2.29990E-05	0.000100911
i-Hexane		0	0	0.000104121	3.05566E-09	0	0	0	0	0	0	0	0	2.74148E-05	0.000119204
Benzene		0	0	0.0744162	0.000580777	0	0	0	0	0	0	0	0	0.00379708	0.00932550
Cyclohexane		0	0	0.00150712	3.56514E-07	0	0	0	0	0	0	0	0	0.000140317	0.000446203
i-Heptane		0	0	2.86409E-05	4.83048E-10	0	0	0	0	0	0	0	0	1.39608E-05	5.86946E-05
n-Heptane		0	0	2.73005E-05	4.59611E-10	0	0	0	0	0	0	0	0	1.32522E-05	5.61967E-05
Toluene		0	0	0.0309066	0.000178052	0	0	0	0	0	0	0	0	0.00100921	0.00385111
Octane		0	0	2.73311E-05	4.04628E-10	0	0	0	0	0	0	0	0	7.24248E-06	4.60286E-05
Ethylbenzene		0	0	0.00183092	8.59091E-06	0	0	0	0	0	0	0	0	5.71317E-05	0.000230303
m-Xylene		0	0	0.00342547	2.36781E-05	0	0	0	0	0	0	0	0	0.000112516	0.000423611
Water		98.6824	52.4826	38.4172	99.7880	44.7494	44.7494	44.7494	44.9458	99.9888	44.7494	44.9458	44.9458	95.5838	41.5627
Triethylene Glycol		0	0	0	0	0	0	0	0	0	0	0	0	0	0
MDEA		0.584757	43.9270	8.23105E-05	0.000226698	51.1820	51.1820	51.1820	51	0.00266081	51.1820	51	51	1.87883	47.2833
Piperazine		0.370635	3.49180	4.82901E-05	0.000133000	4.01424	4.01424	4.01424	4	0.00849990	4.01424	4	4	1.75079	3.70778
UCARSOL™ AP-814		0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEA		0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEPG		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Methyl Mercaptan		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Methanol		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diethylamine		0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEA		0	0	0	0	0	0	0	0	0	0	0	0	0	0
NMP		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single Oil 1		0	0	0	0	0	0	0	0	0	0	0	0	0	0

Process Streams		18	19	20	21	23	26	27	28	29	30	31	32	33	35
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	E-1502 Reboiler	T-1201 Amine Still	T-1201 Amine Still	A-322	E-1502 Reboiler	E-1103A/B	RCYL-1	Amine Makeup	--	Amine Makeup	AC1401 A/B	P1601 A/B/C	V-1703	LCV-1701A
	To Block:	T-1201 Amine Still	E-1502 Reboiler	A-322	T-1201 Amine Still	P1104A/B Booster Pumps	RCYL-1	Amine Makeup	AC1401 A/B	Amine Makeup	--	P1601 A/B/C	FCV-601	LCV-403	.
Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Helium		0	0	1.57501E-06	1.67397E-12	0	0	0	0	0	0	0	0	2.57270E-07	0.000569133
N2		0	0	0.0404035	8.29658E-07	0	0	0	0	0	0	0	0	0.00136978	1.50696
CO2		62.0072	82.4879	9636.90	7.29843	20.4807	20.4807	20.4793	20.4793	0	0	20.4793	20.4793	0.559249	9708.03
O2		0	0	0.0100779	3.86184E-07	0	0	0	0	0	0	0	0	9.90940E-05	0.150892
Hydrogen Sulfide		44.3333	119.332	4133.59	9.87951	74.9991	74.9991	75.0005	75.0005	0	0	75.0005	75.0005	0.00478125	4215.46
Methane		0	0	11.9369	0.000468581	0	0	0	0	0	0	0	0	0.0524397	120.320
Ethane		0	0	6.28029	0.000270128	0	0	0	0	0	0	0	0	0.0100668	38.4265
Propane		0	0	2.35157	7.70845E-05	0	0	0	0	0	0	0	0	0.00369970	16.4072
i-Butane		0	0	0.241023	5.03505E-06	0	0	0	0	0	0	0	0	0.000335036	1.99480
n-Butane		0	0	0.966976	3.04052E-05	0	0	0	0	0	0	0	0	0.00102701	5.88240
i-Pentane		0	0	0.0663927	1.03013E-06	0	0	0	0	0	0	0	0	0.000127740	0.756353
n-Pentane		0	0	0.100619	1.93879E-06	0	0	0	0	0	0	0	0	0.000144657	0.898921
Neopentane		0	0	0	0	0	0	0	0	0	0	0	0	0	0
n-Hexane		0	0	0.0196995	2.09547E-07	0	0	0	0	0	0	0	0	1.86403E-05	0.191594
i-Hexane		0	0	0.0233623	2.48937E-07	0	0	0	0	0	0	0	0	2.22193E-05	0.226326
Benzene		0	0	16.6972	0.0473144	0	0	0	0	0	0	0	0	0.00307748	17.7059
Cyclohexane		0	0	0.338161	2.90443E-05	0	0	0	0	0	0	0	0	0.000113725	0.847182
i-Heptane		0	0	0.00642634	3.93527E-08	0	0	0	0	0	0	0	0	1.13150E-05	0.111440
n-Heptane		0	0	0.00612557	3.74433E-08	0	0	0	0	0	0	0	0	1.07407E-05	0.106698
Toluene		0	0	6.93470	0.0145054	0	0	0	0	0	0	0	0	0.000817954	7.31190
Octane		0	0	0.00613245	3.29640E-08	0	0	0	0	0	0	0	0	5.86993E-06	0.0873922
Ethylbenzene		0	0	0.410814	0.000699879	0	0	0	0	0	0	0	0	4.63045E-05	0.437265
m-Xylene		0	0	0.768593	0.00192899	0	0	0	0	0	0	0	0	9.11929E-05	0.804289
Water		28973.9	107467	8619.90	8129.47	78492.8	78492.8	78492.9	79118.6	625.766	0	79118.6	79118.6	77.4693	78913.0
Triethylene Glycol		0	0	0	0	0	0	0	0	0	0	0	0	0	0
MDEA		171.689	89947.7	0.0184685	0.0184685	89776.0	89776.0	89776.0	89776.0	0.0166523	0	89776.0	89776.0	1.52276	89774.5
Piperazine		108.821	7150.02	0.0108351	0.0108351	7041.20	7041.20	7041.20	7041.26	0.0531954	0	7041.26	7041.26	1.41899	7039.78
UCARSOL™ AP-814		0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEA		0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEPG		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Methyl Mercaptan		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Methanol		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diethylamine		0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEA		0	0	0	0	0	0	0	0	0	0	0	0	0	0
NMP		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single Oil 1		0	0	0	0	0	0	0	0	0	0	0	0	0	0

Process Streams		18	19	20	21	23	26	27	28	29	30	31	32	33	35
Properties	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	E-1502 Reboiler	T-1201 Amine Still	T-1201 Amine Still	A-322	E-1502 Reboiler	E-1103A/B	RCYL-1	Amine Makeup	--	Amine Makeup	AC1401 A/B	P1601 A/B/C	V-1703	LCV-1701A
	To Block:	T-1201 Amine Still	E-1502 Reboiler	A-322	T-1201 Amine Still	P1104A/B Booster Pumps	RCYL-1	Amine Makeup	AC1401 A/B	Amine Makeup	--	P1601 A/B/C	FCV-601	LCV-403	.
Property	**Units**														
Temperature	°F	255.329	252.967	214.746	125.000	255.329	221.725	221.725	221.247	100*		120*	121.577	119.889	155.863
Pressure	psia	27.6959	27.6959	26.6959	26.6959	27.6959	91.6959	91.6959	91.6959	114.696*	91.6959	88.6959	909.696	882.696	94.6959*
Molecular Weight	lb/lbmol	18.1946	30.0750	27.3605	18.0353	33.7655	33.7655	33.7655	33.6609	18.0169	33.7655	33.6609	33.6609	18.6485	34.0905
Mass Flow	lb/h	29360.7	204766	22437.6	8146.74	175405	175405	175406	176031	625.836	0	176031	176031	81.0486	189865
Std Vapor Volumetric Flow	MMSCFD	14.6970	62.0094	7.46892	4.11401	47.3124	47.3124	47.3124	47.6288	0.316363	0	47.6288	47.6288	0.0395828	50.7242
Std Liquid Volumetric Flow	sgpm	58.8144	407.563	51.3373	16.2942	348.749	348.749	348.749	350*	1.25113	0	350	350	0.163541	384.825
Specific Gravity		0.628211	0.969202	0.944686	0.987736	0.968676	0.986860	0.986860	0.987072	0.993397		1.03072	1.03149	0.993806	
API Gravity			4.01153		9.97631	3.43840	3.42675	3.42675	3.44080	9.98485		3.44134	3.29295	9.26123	
Net Ideal Gas Heating Value	Btu/ft^3	6.15961	435.900	89.6804	0.385367	569.393	569.393	569.393	565.611	0.0709670	569.393	565.611	565.611	23.5206	545.948
Gross Ideal Gas Heating Value	Btu/ft^3	56.8298	519.287	126.688	50.6772	662.944	662.944	662.944	658.875	50.3856	662.944	658.875	658.875	75.3085	634.714

Process Streams		37	40	41	42
Composition	**Status:**	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	LCV-403	V-1703	--	XCHG-100
	To Block:	.	To Glycol Unit	XCHG-100	--
Mole Fraction		%	%	%	%
Helium		1.47892E-06	0.0482509	0*	0
N2		0.00112508	2.04011	0*	0
CO2		0.292386	0.0240033	0*	0
O2		7.12545E-05	0.0712251	0*	0
Hydrogen Sulfide		0.00322797	0.000392300	0*	0
Methane		0.0752122	81.3171	0*	0
Ethane		0.00770317	9.75797	0*	0
Propane		0.00193050	3.97786	0*	0
i-Butane		0.000132632	0.523259	0*	0
n-Butane		0.000406565	1.09498	0*	0
i-Pentane		4.07378E-05	0.279796	0*	0
n-Pentane		4.61328E-05	0.251319	0*	0
Neopentane		0	0	0*	0
n-Hexane		4.97702E-06	0.0585421	0*	0
i-Hexane		5.93261E-06	0.0664367	0*	0
Benzene		0.000906520	0.0332943	0*	0
Cyclohexane		3.10922E-05	0.0441859	0*	0
i-Heptane		2.59823E-06	0.0624643	0*	0
n-Heptane		2.46635E-06	0.0624649	0*	0
Toluene		0.000204262	0.0121270	0*	0
Octane		1.18238E-06	0.0432406	0*	0
Ethylbenzene		1.00355E-05	0.000885827	0*	0
m-Xylene		1.97642E-05	0.00125894	0*	0
Water		98.9434	0.228790	100*	100
Triethylene Glycol		0	0	0*	0
MDEA		0.294030	1.59290E-06	0*	0
Piperazine		0.379048	7.82605E-06	0*	0
UCARSOL™ AP-814		0	0	0*	0
MEA		0	0	0*	0
DEPG		0	0	0*	0
Methyl Mercaptan		0	0	0*	0
Methanol		0	0	0*	0
Diethylamine		0	0	0*	0
DEA		0	0	0*	0
NMP		0	0	0*	0
Single Oil 1		0	0	0*	0

Process Streams		37	40	41	42
Composition	**Status:**	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	LCV-403	V-1703	--	XCHG-100
	To Block:	.	To Glycol Unit	XCHG-100	--
Mass Fraction		%	%	%	%
Helium		3.17427E-07	0.00962553	0*	0
N2		0.00169008	2.84836	0*	0
CO2		0.690016	0.0526496	0*	0
O2		0.000122265	0.113591	0*	0
Hydrogen Sulfide		0.00589924	0.000666355	0*	0
Methane		0.0647016	65.0174	0*	0
Ethane		0.0124207	14.6236	0*	0
Propane		0.00456479	8.74221	0*	0
i-Butane		0.000413376	1.51578	0*	0
n-Butane		0.00126715	3.17195	0*	0
i-Pentane		0.000157610	1.00611	0*	0
n-Pentane		0.000178482	0.903714	0*	0
Neopentane		0	0	0*	0
n-Hexane		2.29990E-05	0.251436	0*	0
i-Hexane		2.74148E-05	0.285343	0*	0
Benzene		0.00379708	0.129617	0*	0
Cyclohexane		0.000140317	0.185337	0*	0
i-Heptane		1.39608E-05	0.311950	0*	0
n-Heptane		1.32522E-05	0.311953	0*	0
Toluene		0.00100921	0.0556890	0*	0
Octane		7.24248E-06	0.246174	0*	0
Ethylbenzene		5.71317E-05	0.00468713	0*	0
m-Xylene		0.000112516	0.00666136	0*	0
Water		95.5838	0.205425	100*	100
Triethylene Glycol		0	0	0*	0
MDEA		1.87883	9.46029E-06	0*	0
Piperazine		1.75079	3.35971E-05	0*	0
UCARSOL™ AP-814		0	0	0*	0
MEA		0	0	0*	0
DEPG		0	0	0*	0
Methyl Mercaptan		0	0	0*	0
Methanol		0	0	0*	0
Diethylamine		0	0	0*	0
DEA		0	0	0*	0
NMP		0	0	0*	0
Single Oil 1		0	0	0*	0

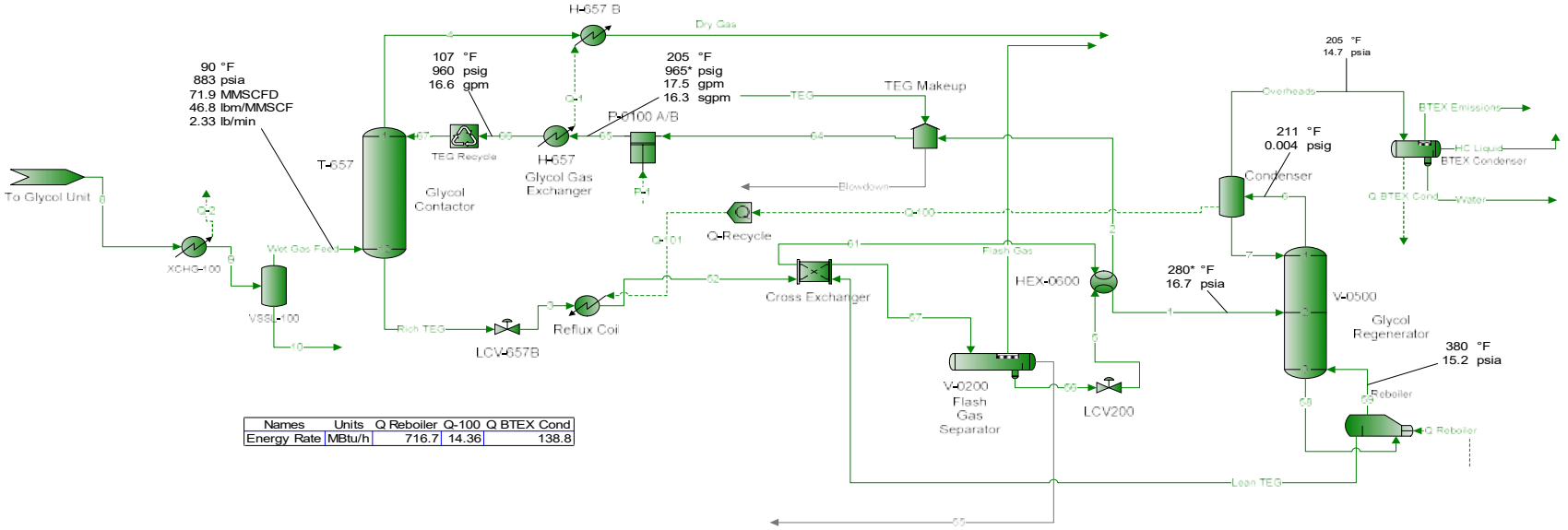
Process Streams		37	40	41	42
Composition	**Status:**	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	LCV-403	V-1703	--	XCHG-100
	To Block:	.	To Glycol Unit	XCHG-100	--
Mass Flow		lb/h	lb/h	lb/h	lb/h
Helium		2.57270E-07	15.2603	0*	0
N2		0.00136978	4515.80	0*	0
CO2		0.559249	83.4707	0*	0
O2		9.90940E-05	180.087	0*	0
Hydrogen Sulfide		0.00478125	1.05644	0*	0
Methane		0.0524397	103079	0*	0
Ethane		0.0100668	23184.3	0*	0
Propane		0.00369970	13859.9	0*	0
i-Butane		0.00335036	2403.11	0*	0
n-Butane		0.00102701	5028.81	0*	0
i-Pentane		0.000127740	1595.09	0*	0
n-Pentane		0.000144657	1432.75	0*	0
Neopentane		0	0	0*	0
n-Hexane		1.86403E-05	398.627	0*	0
i-Hexane		2.22193E-05	452.384	0*	0
Benzene		0.00307748	205.495	0*	0
Cyclohexane		0.000113725	293.834	0*	0
i-Heptane		1.13150E-05	494.566	0*	0
n-Heptane		1.07407E-05	494.570	0*	0
Toluene		0.000817954	88.2895	0*	0
Octane		5.86993E-06	390.285	0*	0
Ethylbenzene		4.63045E-05	7.43098	0*	0
m-Xylene		9.11929E-05	10.5609	0*	0
Water		77.4693	325.681	29880.6*	29880.6
Triethylene Glycol		0	0	0*	0
MDEA		1.52276	0.0149984	0*	0
Piperazine		1.41899	0.0532649	0*	0
UCARSOL™ AP-814		0	0	0*	0
MEA		0	0	0*	0
DEPG		0	0	0*	0
Methyl Mercaptan		0	0	0*	0
Methanol		0	0	0*	0
Diethylamine		0	0	0*	0
DEA		0	0	0*	0
NMP		0	0	0*	0
Single Oil 1		0	0	0*	0

Process Streams		37	40	41	42
Properties	**Status:**	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	LCV-403	V-1703	--	XCHG-100
	To Block:	.	To Glycol Unit	XCHG-100	--
Property	**Units**				
Temperature	°F	121.791	119.889	297.792	695.572
Pressure	psia	94.6959*	882.696	64.6959*	2992.75
Molecular Weight	lb/lbmol	18.6485	20.0643	18.0153	18.0153
Mass Flow	lb/h	81.0486	158540	29880.6*	29880.6
Std Vapor Volumetric Flow	MMSCFD	0.0395828	71.9649	15.1061	15.1061
Std Liquid Volumetric Flow	sgpm	0.163541	927.916	59.7334	59.7334
Specific Gravity			0.692767	0.622021	0.335425?
API Gravity					9.64124
Net Ideal Gas Heating Value	Btu/ft^3	23.5206	1075.91	0	0
Gross Ideal Gas Heating Value	Btu/ft^3	75.3085	1187.56	50.3100	50.3100

Dehydration Unit using Mass Transfer

Names	Units	Wet Gas Feed	Dry Gas
Water Content	lbm/MMSCF	46.8	3.23

Names	Units	Wet Gas Feed	Flash Gas	Overheads	BTEX Emissions
Mass Flow Sum	ton/yr	1365	38.02	214.3	33.44



Names	Units	Q Reboiler	Q-100	Q BTEX Cond
Energy Rate	MBtu/h	716.7	14.36	138.8

Process Streams		Blowdown	BTEX Emissions	Dry Gas	Flash Gas	HC Liquid	Lean TEG	Overheads	Rich TEG	TEG	Water	Wet Gas Feed	1	2
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	TEG Makeup	BTEX Condenser	H-657 B	V-0200	BTEX Condenser	Reboiler	Condenser	T-657	--	BTEX Condenser	VSSL-100	HEX-0600	HEX-0600
	To Block:	--	--	--	--	--	Cross Exchanger	BTEX Condenser	LCV-657B	TEG Makeup	--	T-657	V-0500	TEG Makeup
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%
Helium		5.89468E-13	0.00350675	0.0483782	0.0129977	6.31207E-07	5.89468E-13	0.000228750	0.000648085	0*	2.56481E-08	0.0483139	2.39536E-05	5.89468E-13
N2		1.66094E-12	0.0495398	2.04560	0.315370	3.83386E-05	1.66094E-12	0.00323401	0.0154940	0*	4.76623E-07	2.04277	0.000338651	1.66094E-12
CO2		6.04153E-09	0.212876	0.0241690	0.128532	0.00205802	6.04153E-09	0.0141057	0.00758936	0*	6.82852E-05	0.0242087	0.00147709	6.04153E-09
O2		5.53999E-14	0.00168723	0.0714170	0.0108202	3.09801E-06	5.53999E-14	0.000110301	0.000531527	0*	3.04107E-08	0.0713180	1.15502E-05	5.53999E-14
Hydrogen Sulfide		3.79806E-08	0.0309010	0.000329795	0.00524685	0.00105267	3.79806E-08	0.00212572	0.000464332	0*	3.03617E-05	0.000333906	0.000222630	3.79806E-08
Methane		8.65514E-09	18.3371	81.5191	46.2219	0.0542990	8.65514E-09	1.20045	2.34327	0*	0.000357228	81.4232	0.125705	8.65514E-09
Ethane		7.54252E-08	14.1892	9.77661	15.6175	0.229607	7.54252E-08	0.944058	0.845418	0*	0.000345291	9.77069	0.0988575	7.54252E-08
Propane		2.98515E-07	13.7325	3.98329	9.75146	0.649448	2.98515E-07	0.947966	0.563608	0*	0.000230993	3.98305	0.0992669	2.98515E-07
i-Butane		1.13925E-07	2.37493	0.523865	1.40624	0.250745	1.13925E-07	0.175068	0.0851010	0*	2.21858E-05	0.523942	0.0183324	1.13925E-07
n-Butane		8.65910E-07	8.46918	1.09539	4.14168	1.33459	8.65910E-07	0.659792	0.265013	0*	0.000132531	1.09641	0.0690912	8.65910E-07
i-Pentane		9.60348E-07	2.81101	0.279738	1.19287	1.05620	9.60348E-07	0.268326	0.0841328	0*	2.63800E-05	0.280161	0.0280987	9.60348E-07
n-Pentane		1.63329E-06	3.17903	0.251070	1.30174	1.51269	1.63329E-06	0.329052	0.0954240	0*	1.69511E-05	0.251647	0.0344583	1.63329E-06
Neopentane		0	0	0	0	0	0	0	0	0*	0	0	0	0
n-Hexane		8.64171E-06	1.00577	0.0583716	0.328518	1.40317	8.64171E-06	0.178508	0.0336047	0*	3.33651E-06	0.0586186	0.0187002	8.64171E-06
i-Hexane		4.92520E-06	1.01908	0.0663244	0.313635	1.02347	4.92520E-06	0.148818	0.0299263	0*	2.31414E-06	0.0665235	0.0155880	4.92520E-06
Ethylbenzene		0.00440071	0.113669	0.000612340	0.0579386	3.06271	0.00440071	0.253964	0.0318522	0*	9.95138E-05	0.000886938	0.0305338	0.00440071
Benzene		0.00981144	14.6799	0.0283018	1.86997	40.7112	0.00981144	4.25175	0.522126	0*	0.0214156	0.0333348	0.454008	0.00981144
Cyclohexane		0.000132090	2.54018	0.0433944	0.646276	5.56823	0.000132090	0.613839	0.0923893	0*	0.000114284	0.0442435	0.0643966	0.000132090
i-Heptane		7.32311E-06	0.765169	0.0621903	0.466533	2.21061	7.32311E-06	0.227793	0.0451558	0*	8.87509E-07	0.0625459	0.0238600	7.32311E-06
n-Heptane		1.71353E-05	0.832953	0.0620353	0.575359	3.46159	1.71353E-05	0.332885	0.0608748	0*	1.75315E-06	0.0625465	0.0348735	1.71353E-05
Toluene		0.0173264	3.55950	0.00930006	0.768728	28.5928	0.0173264	2.53651	0.304582	0*	0.00402389	0.0121419	0.281124	0.0173264
Octane		4.78720E-05	0.394800	0.0427611	0.473887	4.38159	4.78720E-05	0.378347	0.0605510	0*	4.13822E-07	0.0432971	0.0396616	4.78720E-05
m-Xylene		0.00613126	0.172039	0.000892430	0.0770906	4.09584	0.00613126	0.340924	0.0429163	0*	0.000116130	0.00126052	0.0411892	0.00613126
Water		9.00899	11.5255	0.00680697	14.1615	0.397386	9.00899	86.1916	16.9503	0.827516*	99.9724	0.0985472	17.0912	9.00899
Triethylene Glycol		90.9495	4.32591E-10	3.47229E-05	0.153867	1.24418E-06	90.9495	5.74887E-05	77.5159	99.1725*	6.71748E-05	0	81.4257	90.9495
MDEA		0.00220828	6.58930E-06	5.90702E-08	2.09558E-05	0.000671659	0.00220828	5.52179E-05	0.00188844	0*	8.63223E-07	1.59379E-06	0.00198282	0.00220828
Piperazine		0.00141302	2.33802E-07	8.84681E-07	0.000294044	1.48215E-07	0.00141302	0.000465791	0.00126477	0*	0.000545190	2.19179E-08	0.00131383	0.00141302
UCARSOL™ AP-814		0	0	0	0	0	0	0	0	0*	0	0	0	0
MEA		0	0	0	0	0	0	0	0	0*	0	0	0	0
DEPG		0	0	0	0	0	0	0	0	0*	0	0	0	0
Methyl Mercaptan		0	0	0	0	0	0	0	0	0*	0	0	0	0
Methanol		0	0	0	0	0	0	0	0	0*	0	0	0	0
Diethylamine		0	0	0	0	0	0	0	0	0*	0	0	0	0
DEA		0	0	0	0	0	0	0	0	0*	0	0	0	0
NMP		0	0	0	0	0	0	0	0	0*	0	0	0	0
Single Oil 1		0	0	0	0	0	0	0	0	0*	0	0	0	0

Mass Fraction	%	%	%	%	%	%	%	%	%	%	%	%	%
Helium	1.70670E-14	0.000298208	0.00965421	0.00177173	2.92335E-08	1.70670E-14	3.60056E-05	2.13043E-05	0*	5.69315E-09	0.00963679	7.58339E-07	1.70670E-14
N2	3.36569E-13	0.0294845	2.85701	0.300867	1.24271E-05	3.36569E-13	0.00356266	0.00356469	0*	7.40449E-07	2.85170	7.50357E-05	3.36569E-13
CO2	1.92331E-09	0.199042	0.0530310	0.192640	0.00104800	1.92331E-09	0.0244122	0.00274312	0*	0.000166658	0.0530929	0.000514165	1.92331E-09
O2	1.28232E-14	0.00114705	0.113936	0.0117912	1.14705E-06	1.28232E-14	0.000138796	0.000139686	0*	5.39652E-08	0.113724	2.92329E-06	1.28232E-14
Hydrogen Sulfide	9.36328E-09	0.0223747	0.000560377	0.00608973	0.000415118	9.36328E-09	0.00284894	0.000129967	0*	5.73842E-05	0.000567091	6.00128E-05	9.36328E-09
Methane	1.00439E-09	6.24991	65.2012	25.2527	0.0100793	1.00439E-09	0.757321	0.308736	0*	0.000317813	65.0934	0.0159505	1.00439E-09
Ethane	1.64056E-08	9.06464	14.6566	15.9927	0.0798860	1.64056E-08	1.11631	0.208778	0*	0.000575784	14.6407	0.0235114	1.64056E-08
Propane	9.52176E-08	12.8653	8.75715	14.6438	0.331365	9.52176E-08	1.64382	0.204111	0*	0.000564870	8.75244	0.0346218	9.52176E-08
i-Butane	4.78981E-08	2.93268	1.51805	2.78350	0.168632	4.78981E-08	0.400142	0.0406229	0*	7.15109E-05	1.51755	0.00842773	4.78981E-08
n-Butane	3.64058E-07	10.4582	3.17422	8.19800	0.897547	3.64058E-07	1.50805	0.126503	0*	0.000427184	3.17566	0.0317625	3.64058E-07
i-Pentane	5.01203E-07	4.30888	1.00625	2.93097	0.881740	5.01203E-07	0.761303	0.0498527	0*	0.000105550	1.00729	0.0160348	5.01203E-07
n-Pentane	8.52411E-07	4.87300	0.903129	3.19848	1.26283	8.52411E-07	0.933598	0.0565432	0*	6.78239E-05	0.904772	0.0196640	8.52411E-07
Neopentane	0	0	0	0	0	0	0	0	0*	0	0	0	0
n-Hexane	5.38689E-06	1.84143	0.250790	0.964120	1.39914	5.38689E-06	0.604932	0.0237836	0*	1.59452E-05	0.251731	0.0127462	5.38689E-06
i-Hexane	3.07017E-06	1.86579	0.284959	0.920444	1.02053	3.07017E-06	0.504320	0.0211802	0*	1.10593E-05	0.285677	0.0106249	3.07017E-06
Ethylbenzene	0.00337956	0.256388	0.00324115	0.209478	3.76230	0.00337956	1.06028	0.0277725	0*	0.000585894	0.00469237	0.0256397	0.00337956
Benzene	0.00554377	24.3619	0.110219	4.97439	36.7958	0.00554377	13.0602	0.334954	0*	0.0927688	0.129758	0.280498	0.00554377
Cyclohexane	8.04135E-05	4.54193	0.182080	1.85230	5.42234	8.04135E-05	2.03153	0.0638585	0*	0.000533389	0.185554	0.0428663	8.04135E-05
i-Heptane	5.30795E-06	1.62895	0.310687	1.59202	2.56303	5.30795E-06	0.897601	0.0371607	0*	4.93177E-06	0.312315	0.0189102	5.30795E-06
n-Heptane	1.24200E-05	1.77325	0.309913	1.96338	4.01346	1.24200E-05	1.31171	0.0500965	0*	9.74204E-06	0.312318	0.0276390	1.24200E-05
Toluene	0.0115480	6.96791	0.0427220	2.41214	30.4834	0.0115480	9.19062	0.230483	0*	0.0205609	0.0557499	0.204875	0.0115480
Octane	3.95559E-05	0.958130	0.243528	1.84348	5.79126	3.95559E-05	1.69954	0.0568054	0*	2.62146E-06	0.246463	0.0358340	3.95559E-05
m-Xylene	0.00470855	0.388045	0.00472368	0.278722	5.03142	0.00470855	1.42333	0.0374195	0*	0.000683725	0.00666880	0.0345871	0.00470855
Water	1.17401	4.41138	0.00611392	8.68839	0.0828363	1.17401	61.0622	2.50791	0.1*	99.8793	0.0884714	2.43536	1.17401
Triethylene Glycol	98.7979	1.38020E-09	0.000259975	0.786910	2.16193E-06	98.7979	0.000339501	95.6041	99.9*	0.000559439	0	96.7170	98.7979
MDEA	0.00190348	1.66821E-05	3.50940E-07	8.50415E-05	0.000926093	0.00190348	0.000258753	0.00184815	0*	5.70448E-06	9.46426E-06	0.00186884	0.00190348
Piperazine	0.000880414	4.27863E-07	3.79922E-06	0.000862549	1.47721E-07	0.000880414	0.00157776	0.000894724	0*	0.00260426	9.40804E-08	0.000895101	0.000880414
UCARSOL™ AP-814	0	0	0	0	0	0	0	0	0*	0	0	0	0
MEA	0	0	0	0	0	0	0	0	0*	0	0	0	0
DEPG	0	0	0	0	0	0	0	0	0*	0	0	0	0
Methyl Mercaptan	0	0	0	0	0	0	0	0	0*	0	0	0	0
Methanol	0	0	0	0	0	0	0	0	0*	0	0	0	0
Diethylamine	0	0	0	0	0	0	0	0	0*	0	0	0	0
DEA	0	0	0	0	0	0	0	0	0*	0	0	0	0
NMP	0	0	0	0	0	0	0	0	0*	0	0	0	0
Single Oil 1	0	0	0	0	0	0	0	0	0*	0	0	0	0
Mass Flow	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**
Helium	0	7.12015E-05	15.2583	0.00195319	1.58158E-08	1.56920E-12	7.12242E-05	0.00202442	0*	6.82246E-09	15.2603	7.12242E-05	1.56920E-12
N2	0	0.00703984	4515.45	0.331683	6.72323E-06	3.09452E-11	0.00704745	0.338730	0*	8.87327E-07	4515.79	0.00704745	3.09452E-11
CO2	0	0.0475242	83.8144	0.212371	0.000566986	1.76835E-07	0.0482909	0.260662	0*	0.000199717	84.0751	0.0482911	1.76835E-07
O2	0	0.000273874	180.073	0.0129989	6.20574E-07	1.17901E-12	0.000274559	0.0132735	0*	6.46699E-08	180.087	0.000274559	1.17901E-12
Hydrogen Sulfide	0	0.00534227	0.885665	0.00671345	0.000224585	8.60889E-07	0.00563562	0.0123499	0*	6.87670E-05	0.898015	0.00563648	8.60889E-07
Methane	0	1.49226	103049	27.8391	0.00545305	9.23463E-08	1.49809	29.3372	0*	0.000380855	103078	1.49809	9.23463E-08
Ethane	0	2.16431	23164.4	17.6306	0.0432196	1.50838E-06	2.20822	19.8389	0*	0.000689998	23184.3	2.20822	1.50838E-06
Propane	0	3.07176	13840.5	16.1437	0.179274	8.75460E-06	3.25171	19.3954	0*	0.000676920	13859.9	3.25172	8.75460E-06
i-Butane	0	0.700220	2399.25	3.06859	0.0912327	4.40390E-06	0.791538	3.86013	0*	8.56960E-05	2403.11	0.791543	4.40390E-06
n-Butane	0	2.49704	5016.78	9.03765	0.485587	3.34726E-05	2.98314	12.0208	0*	0.000511921	5028.80	2.98317	3.34726E-05
i-Pentane	0	1.02881	1590.35	3.23117	0.477035	4.60821E-05	1.50597	4.73718	0*	0.000126487	1595.09	1.50601	4.60821E-05
n-Pentane	0	1.16350	1427.38	3.52608	0.683212	7.83733E-05	1.84679	5.37295	0*	8.12776E-05	1432.75	1.84687	7.83733E-05
Neopentane	0	0	0	0	0	0	0	0	0*	0	0	0	0
n-Hexane	0	0.439667	396.368	1.06287	0.756956	0.000495288	1.19664	2.26000	0*	1.91081E-05	398.627	1.19714	0.000495288
i-Hexane	0	0.445484	450.371	1.01472	0.552120	0.000282281	0.997617	2.01262	0*	1.32530E-05	452.383	0.997900	0.000282281
Ethylbenzene	0	0.0612162	5.12257	0.230933	2.03547	0.310727	2.09738	2.63904	0*	0.000702114	7.43059	2.40811	0.310727
Benzene	0	5.81675	174.198	5.48387	19.9071	0.509712	25.8350	31.8286	0*	0.111171	205.477	26.3447	0.509712
Cyclohexane	0	1.08445	287.773	2.04201	2.93357	0.00739346	4.01866	6.06807	0*	0.000639193	293.833	4.02606	0.00739346
i-Heptane	0	0.388934	491.035	1.75507	1.38664	0.000488030	1.77558	3.53114	0*	5.91006E-06	494.566	1.77607	0.000488030
n-Heptane	0	0.423388	489.811	2.16447	2.17134	0.00114194	2.59474	4.76036	0*	1.16745E-05	494.570	2.59589	0.00114194
Toluene	0	1.66369	67.5212	2.65919	16.4920	1.06176	18.1804	21.9013	0*	0.0246394	88.2825	19.2421	1.06176
Octane	0	0.228767	384.891	2.03229	3.13316	0.00363689	3.36193	5.39786	0*	3.14145E-06	390.285	3.36557	0.00363689
m-Xylene	0	0.0926513	7.46568	0.307270	2.72208	0.432918	2.81555	3.55574	0*	0.000819350	10.5603	3.24847	0.432918
Water	0	1.05328	9.66293	9.57827	0.0448157	107.942	120.790	238.310	0.00142064*	119.692	140.099	228.732	107.942
Triethylene Glycol	0	3.29543E-10	0.410886	0.867506	1.16964E-06	9083.78	0.000671581	9084.65	1.41922*	0.000670411	0	9083.78	9083.78
MDEA	0	3.98309E-06	0.000554653	9.37516E-05	0.000501031	0.175012	0.000511850	0.175618	0*	6.83603E-06	0.0149871	0.175524	0.175012
Piperazine	0	1.02158E-07	0.00600459	0.000950892	7.99192E-08	0.0809480	0.00312103	0.0850199	0*	0.00312085	0.000148981	0.0840690	0.0809480
UCARSOL™ AP-814	0	0	0	0	0	0	0	0	0*	0	0	0	0
MEA	0	0	0	0	0	0	0	0	0*	0	0	0	0
DEPG	0	0	0	0	0	0	0	0	0*	0	0	0	0
Methyl Mercaptan	0	0	0	0	0	0	0	0	0*	0	0	0	0
Methanol	0	0	0	0	0	0	0	0	0*	0	0	0	0
Diethylamine	0	0	0	0	0	0	0	0	0*	0	0	0	0
DEA	0	0	0	0	0	0	0	0	0*	0	0	0	0
NMP	0	0	0	0	0	0	0	0	0*	0	0	0	0
Single Oil 1	0	0	0	0	0	0	0	0	0*	0	0	0	0

Process Streams		Blowdown	BTEX Emissions	Dry Gas	Flash Gas	HC Liquid	Lean TEG	Overheads	Rich TEG	TEG	Water	Wet Gas Feed	1	2
Properties	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	TEG Makeup	BTEX Condenser	H-657 B	V-0200	BTEX Condenser	Reboiler	Condenser	T-657	--	BTEX Condenser	VSSL-100	HEX-0600	HEX-0600
	To Block:	--	--	--	--	--	Cross Exchanger	BTEX Condenser	LCV-657B	TEG Makeup	--	T-657	V-0500	TEG Makeup
Property	**Units**													
Temperature	°F		120*	101.764	300	120	380.000	204.608	96.6973	100*	120	90*	280*	202.283
Pressure	psia	14.7	14.7	955	69.6959	14.7	15.2	14.7	970	25*	14.7	882.696	16.6959	14.7
Molecular Weight	lb/lbmol	138.243	47.0682	20.0574	29.3637	86.4238	138.243	25.4292	121.760	149.079	18.0321	20.0670	126.430	138.243
Mass Flow	lb/h	0	23.8764	158048	110.242	54.1016	9194.31	197.814	9502.37	1.42064	119.836	158355	9392.12	9194.31
Std Vapor Volumetric Flow	MMSCFD	0	0.00462005	71.7660	0.0341933	0.00570140	0.605731	0.0708482	0.710772	8.67903E-05	0.0605268	71.8710	0.676579	0.605731
Std Liquid Volumetric Flow	sgpm	0	0.0802373	926.614	0.481973	0.131163	16.2975	0.451008	17.2305	0.00251447	0.239608	927.545	16.7485	16.2975
Specific Gravity			1.62514	0.692530	1.01385	0.797165	0.943949	0.878006	1.08687	1.11372	0.988917	0.692861		1.05223
API Gravity						39.1872	-6.60527		-3.54454	-7.08515	9.98786			-6.60519
Net Ideal Gas Heating Value	Btu/ft^3	3436.92	2255.25	1077.76	1406.35	4080.62	3436.92	476.300	3044.12	3745.75	0.997341	1077.32	3126.89	3436.92
Gross Ideal Gas Heating Value	Btu/ft^3	3761.51	2426.90	1189.52	1540.41	4299.36	3761.51	548.103	3334.36	4095.08	51.3382	1189.05	3425.02	3761.51

3	4	5	6	7	8	9	10	52	55	56	57	58	59	61	64	65	66	67
Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
LCV-657B	T-657	LCV200	V-0500	Condenser	To Glycol Unit	XCHG-100	VSSL-100	Reflux Coil	V-0200	V-0200	Cross Exchanger	V-0500	Reboiler	Cross Exchanger	TEG Makeup	P-0100 A/B	H-657	TEG Recycle
Reflux Coil	H-657 B	HEX-0600	Condenser	V-0500	XCHG-100	VSSL-100	--	Cross Exchanger	--	LCV200	V-0200	Reboiler	V-0500	HEX-0600	P-0100 A/B	H-657	TEG Recycle	T-657
%	%	%	%	%	%	%	%	%		%	%	%	%	%	%	%	%	%
0.000648085	0.0483782	2.39536E-05	0.000207955	1.54720E-09	0.0482509	0.0482509	2.73106E-05	0.000648085		2.39536E-05	0.000648085	1.87400E-10	1.06945E-09	5.89468E-13	0	0	0	0
0.0154940	2.04560	0.000338651	0.00294001	2.83235E-08	2.04010	2.04010	0.00135588	0.0154940		0.000338651	0.0154940	9.35414E-10	5.34427E-09	1.66094E-12	0	0	0	0
0.00758936	0.0241690	0.00147709	0.0128236	2.76397E-06	0.0241777	0.0241777	0.000450190	0.00758936		0.00147709	0.00758936	4.80644E-07	2.72155E-06	6.04153E-09	0	0	0	0
0.000531527	0.0714170	1.15502E-05	0.000100273	1.57010E-09	0.0712250	0.0712250	8.81525E-05	0.000531527		1.15502E-05	0.000531527	3.16628E-11	1.80902E-10	5.53999E-14	0	0	0	0
0.000464332	0.000329795	0.000222630	0.00193260	1.38074E-06	0.000333492	0.000333492	1.67001E-05	0.000464332		0.000222630	0.000464332	9.92987E-07	5.50219E-06	3.79806E-08	0	0	0	0
2.34327	81.5191	0.125705	1.09132	1.99039E-05	81.3170	81.3170	0.0920486	2.34327		0.125705	2.34327	2.23063E-06	1.27220E-05	8.65514E-09	0	0	0	0
0.845418	9.77661	0.0988575	0.858236	1.56560E-05	9.75796	9.75796	0.0110471	0.845418		0.0988575	0.845418	9.50642E-06	5.40362E-05	7.54252E-08	7.54144E-08	7.54144E-08	7.54144E-08	8.24405E-08
0.563608	3.98329	0.0992669	0.861788	1.14497E-05	3.97785	3.97785	0.00239545	0.563608		0.0992669	0.563608	2.48755E-05	0.000140919	2.98515E-07	2.98472E-07	2.98472E-07	2.98472E-07	3.26324E-07
0.0851010	0.523865	0.0183324	0.159152	9.34409E-07	0.523258	0.523258	0.000159438	0.0851010		0.0183324	0.0851010	7.49737E-06	4.23594E-05	1.13925E-07	1.13909E-07	1.13909E-07	1.13909E-07	1.24678E-07
0.265013	1.09539	0.0690912	0.599812	7.77561E-06	1.09498	1.09498	0.000461951	0.265013		0.0690912	0.265013	4.71424E-05	0.000265644	8.65910E-07	8.65786E-07	8.65786E-07	8.65786E-07	9.45919E-07
0.0841328	0.279738	0.0280987	0.243933	1.60102E-06	0.279795	0.279795	5.74617E-05	0.0841328		0.0280987	0.0841328	3.81311E-05	0.000213638	9.60348E-07	9.60211E-07	9.60211E-07	9.60211E-07	1.04982E-06
0.0954240	0.251070	0.0344583	0.299138	1.81949E-06	0.251319	0.251319	2.37903E-05	0.0954240		0.0344583	0.0954240	5.93903E-05	0.000332098	1.63329E-06	1.63306E-06	1.63306E-06	1.63306E-06	1.78560E-06
0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
0.0336047	0.0583716	0.0187002	0.162280	5.77638E-07	0.0585421	0.0585421	2.78628E-06	0.0336047		0.0187002	0.0336047	0.000148121	0.000806692	8.64171E-06	8.64047E-06	8.64047E-06	8.64047E-06	9.45084E-06
0.0299263	0.0663244	0.0155880	0.135289	4.03698E-07	0.0664366	0.0664366	2.07233E-06	0.0299263		0.0155880	0.0299263	9.39436E-05	0.000514257	4.92520E-06	4.92450E-06	4.92450E-06	4.92450E-06	5.39058E-06
0.0318522	0.000612340	0.0305338	0.230884	8.05328E-05	0.000885797	0.000885797	1.28244E-05	0.0318522		0.0305338	0.0318522	0.0166279	0.0743606	0.00440071	0.00440008	0.00440008	0.00440008	0.00468776
0.522126	0.0283018	0.454008	3.86544	0.00239754	0.0332929	0.0332929	0.00125202	0.522126		0.454008	0.522126	0.0640751	0.320289	0.00981144	0.00981004	0.00981004	0.00981004	0.0105860
0.0923893	0.0433944	0.0643966	0.558037	1.46982E-05	0.0441858	0.0441858	3.87005E-05	0.0923893		0.0643966	0.0923893	0.00155270	0.00826030	0.000132090	0.000132071	0.000132071	0.000132071	0.000143860
0.0451558	0.0621903	0.0238600	0.207085	2.75787E-07	0.0624643	0.0624643	8.34671E-07	0.0451558		0.0238600	0.0451558	0.000152729	0.000839283	7.32311E-06	7.32206E-06	7.32206E-06	7.32206E-06	8.01305E-06
0.0608748	0.0620353	0.0348735	0.302623	5.83117E-07	0.0624649	0.0624649	1.58373E-06	0.0608748		0.0348735	0.0608748	0.000314978	0.00172129	1.71353E-05	1.71328E-05	1.71328E-05	1.71328E-05	1.87262E-05
0.304582	0.00930006	0.281124	2.30603	0.00120010	0.0121264	0.0121264	0.000266132	0.304582		0.281124	0.304582	0.0847750	0.403243	0.0173264	0.0173239	0.0173239	0.0173239	0.0186020
0.0605510	0.0427611	0.0396616	0.343952	4.29983E-07	0.0432406	0.0432406	3.69643E-07	0.0605510		0.0396616	0.0605510	0.000691491	0.00373044	4.78720E-05	4.78651E-05	4.78651E-05	4.78651E-05	5.22754E-05
0.0429163	0.000892430	0.0411892	0.309941	0.000105647	0.00125889	0.00125889	1.14423E-05	0.0429163		0.0411892	0.0429163	0.0231229	0.103351	0.00613126	0.00613038	0.00613038	0.00613038	0.00652933
16.9503	0.00680697	17.0912	87.4399	99.9230	0.228788	0.228788	99.8843	16.9503		17.0912	16.9503	23.8551	93.9534	9.00899	9.00782	9.00782	9.00782	9.00245
77.5159	3.47229E-05	81.4257	0.00505867	0.0550704	0	0	0	77.5159		81.4257	77.5159	75.9493	5.12391	90.9495	90.9507	90.9507	90.9507	90.9533
0.00188844	5.90702E-08	0.00198282	5.06981E-05	5.50026E-06	1.59452E-06	1.59452E-06	2.15241E-06	0.00188844		0.00198282	0.00188844	0.00191117	0.000508318	0.00220828	0.00220797	0.00220797	0.00220797	0.00203361
0.00126477	8.84681E-07	0.00131383	0.00206750	0.0180846	7.80446E-06	7.80446E-06	0.00596273	0.00126477		0.00131383	0.00126477	0.00186985	0.00402681	0.00141302	0.00141282	0.00141282	0.00141282	0.00158616
0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0

%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
2.13043E-05	0.00965421	7.58339E-07	3.36127E-05	3.42090E-10	0.00962550	0.00962550	6.06588E-06	2.13043E-05	7.58339E-07	2.13043E-05	6.32823E-12	1.68191E-10	1.70670E-14	0	0	0	0	0
0.00356469	2.85701	7.50357E-05	0.00332589	4.38292E-08	2.84835	2.84835	0.00210769	0.00356469	7.50357E-05	0.00356469	2.21076E-10	5.88239E-09	3.36569E-13	0	0	0	0	0
0.00274312	0.0530310	0.000514165	0.0227903	6.71941E-06	0.0530320	0.0530320	0.00109942	0.00274312	0.000514165	0.00274312	1.78460E-07	4.70611E-06	1.92331E-09	0	0	0	0	0
0.000139686	0.113936	2.92329E-06	0.000129572	2.77533E-09	0.113591	0.113591	0.000156527	0.000139686	2.92329E-06	0.000139686	8.54781E-12	2.27445E-10	1.28232E-14	0	0	0	0	0
0.000129967	0.000560377	6.00128E-05	0.00265978	2.59940E-06	0.000566463	0.000566463	3.15827E-05	0.000129967	6.00128E-05	0.000129967	2.85513E-07	7.36794E-06	9.36328E-09	0	0	0	0	0
0.308736	65.2012	0.0159505	0.706992	1.76385E-05	65.0172	65.0172	0.0819423	0.308736	0.0159505	0.308736	3.01905E-07	8.01912E-06	1.00439E-09	0	0	0	0	0
0.208778	14.6566	0.0235114	1.04212	2.60047E-05	14.6236	14.6236	0.0184327	0.208778	0.0235114	0.208778	2.41161E-06	6.38417E-05	1.64056E-08	1.64031E-08	1.64031E-08	1.64031E-08	1.79306E-08	
0.204111	8.75715	0.0346218	1.53458	2.78895E-05	8.74219	8.74219	0.00586141	0.204111	0.0346218	0.204111	9.25419E-06	0.000244155	9.52176E-08	9.52029E-08	9.52029E-08	9.52029E-08	1.04083E-07	
0.0406229	1.51805	0.00842773	0.373550	3.00007E-06	1.51577	1.51577	0.000514226	0.0406229	0.00842773	0.0406229	3.67640E-06	9.67367E-05	4.78981E-08	4.78907E-08	4.78907E-08	4.78907E-08	5.24163E-08	
0.126503	3.17422	0.0317625	1.40783	2.49648E-05	3.17194	3.17194	0.00148990	0.126503	0.0317625	0.126503	2.31167E-05	0.000606655	3.64058E-07	3.64002E-07	3.64002E-07	3.64002E-07	3.97676E-07	
0.0498527	1.00625	0.0160348	0.710709	6.38082E-06	1.00611	1.00611	0.000230053	0.0498527	0.0160348	0.0498527	2.32103E-05	0.000605631	5.01203E-07	5.01125E-07	5.01125E-07	5.01125E-07	5.47870E-07	
0.0565432	0.903129	0.0196640	0.871554	7.25155E-06	0.903712	0.903712	9.52463E-05	0.0565432	0.0196640	0.0565432	3.61506E-05	0.000941446	8.52411E-07	8.52279E-07	8.52279E-07	8.52279E-07	9.31854E-07	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.0237836	0.250790	0.0127462	0.564729	2.74973E-06	0.251436	0.251436	1.33238E-05	0.0237836	0.0127462	0.0237836	0.000107689	0.00273143	5.38689E-06	5.38606E-06	5.38606E-06	5.38606E-06	5.89098E-06	
0.0211802	0.284959	0.0106249	0.470804	1.92173E-06	0.285343	0.285343	9.90975E-06	0.0211802	0.0106249	0.0211802	6.83002E-05	0.00174126	3.07017E-06	3.06970E-06	3.06970E-06	3.06970E-06	3.36010E-06	
0.0277725	0.00324115	0.0256397	0.989846	0.000472287	0.00468696	0.00468696	7.55505E-05	0.0277725	0.0256397	0.0277725	0.0148933	0.310187	0.00337956	0.00337904	0.00337904	0.00337904	0.00359982	
0.334954	0.110219	0.280498	12.1930	0.0103451	0.129612	0.129612	0.00542684	0.334954	0.280498	0.334954	0.0422258	0.983011	0.00554377	0.00554292	0.00554292	0.00554292	0.00598113	
0.0638585	0.182080	0.0428663	1.89653	6.83312E-05	0.185337	0.185337	0.000180734	0.0638585	0.0428663	0.0638585	0.00110246	0.0273148	8.04135E-05	8.04010E-05	8.04010E-05	8.04010E-05	8.75741E-05	
0.0371607	0.310687	0.0189102	0.837948	1.52652E-06	0.311949	0.311949	4.64100E-06	0.0371607	0.0189102	0.0371607	0.000129113	0.00330434	5.30795E-06	5.30713E-06	5.30713E-06	5.30713E-06	5.80775E-06	
0.0500965	0.309913	0.0276390	1.22453	3.22763E-06	0.311952	0.311952	8.80595E-06	0.0500965	0.0276390	0.0500965	0.000266273	0.00677686	1.24200E-05	1.24181E-05	1.24181E-05	1.24181E-05	1.35725E-05	
0.230483	0.0427220	0.204875	8.58023	0.00610814	0.0556861	0.0556861	0.00136069	0.230483	0.204875	0.230483	0.0658992	1.45985	0.0115480	0.0115462	0.0115462	0.0115462	0.0123975	
0.0568054	0.243528	0.0358340	1.58659	2.71317E-06	0.246174	0.246174	2.34303E-06	0.0568054	0.0358340	0.0568054	0.000666397	0.0167430	3.95559E-05	3.95498E-05	3.95498E-05	3.95498E-05	4.31922E-05	
0.0374195	0.00472368	0.0345871	1.32878	0.000619570	0.00666106	0.00666106	6.74087E-05	0.0374195	0.0345871	0.0374195	0.0207107	0.431118	0.00470855	0.00470782	0.00470782	0.00470782	0.00501399	
2.50791	0.00611392	2.43536	63.6127	99.4393	0.205423	0.205423	99.8524	2.50791	2.43536	2.50791	3.62572	66.5048	1.17401	1.17385	1.17385	1.17385	1.17310	
95.6041	0.000259975	96.7170	0.0306776	0.456838	0	0	0	95.6041	96.7170	95.6041	96.2248	30.2338	98.7979	98.7980	98.7980	98.7980	98.7970	
0.00184815	3.50940E-07	0.00186884	0.000243963	3.62054E-05	9.46985E-06	9.46985E-06	1.42325E-05	0.00184815	0.00186884	0.00184815	0.00192136	0.00237998	0.00190348	0.00190319	0.00190319	0.00190319	0.00175283	
0.000894724	3.79922E-06	0.000895101	0.00719152	0.0860483	3.35043E-05	3.35043E-05	0.0285002	0.000894724	0.000895101	0.000894724	0.00135881	0.0136284	0.000880414	0.000880278	0.000880278	0.000880278	0.00098241	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	
0.00202442	15.2583	7.12242E-05	7.12242E-05	4.81740E-11	15.2603	15.2603	1.12737E-05	0.00202442	0	7.12242E-05	0.00202442	6.04524E-10	6.02955E-10	1.56920E-12	0	0	0	0
0.338730	4515.45	0.00704745	0.00704745	6.17215E-09	4515.80	4515.80	0.00391724	0.338730	0	0.00704745	0.338730	2.11189E-08	2.10880E-08	3.09452E-11	0	0	0	0
0.260662	83.8144	0.0482911	0.0482918	9.46245E-07	84.0772	84.0772	0.00204332	0.260662	0	0.0482911	0.260662	1.70479E-05	1.68711E-05	1.76835E-07	0	0	0	0
0.0132735	180.073	0.000274559	0.000274560	3.90829E-10	180.087	180.087	0.000290912	0.0132735	0	0.000274559	0.0132735	8.16555E-10	8.15376E-10	1.17901E-12	0	0	0	0
0.0123499	0.885665	0.00563648	0.00563599	3.66055E-07	0.898073	0.898073	5.86980E-05	0.0123499	0	0.00563648	0.0123499	2.72745E-05	2.64136E-05	8.60889E-07	0	0	0	0
29.3372	103049	1.49809	1.49809	2.48389E-06	103079	103079	0.152294	29.3372	0	1.49809	29.3372	2.88404E-05	2.87480E-05	9.23463E-08	0	0	0	0
19.8389	23164.4	2.20822	2.20822	3.66205E-06	23184.3	23184.3	0.0342580	19.8389	0	2.20822	19.8389	0.000230377	0.000228868	1.50838E-06	1.50838E-06	1.50838E-06	1.50838E-06	1.64884E-06
19.3954	13840.5	3.25172	3.25172	3.92747E-06	13859.9	13859.9	0.0108937	19.3954	0	3.25172	19.3954	0.000884035	0.000875280	8.75460E-06	8.75460E-06	8.75460E-06	8.75460E-06	9.57110E-06
3.86013	2399.25	0.791543	0.791539	4.22477E-07	2403.11	2403.11	0.000955713	3.86013	0	0.791543	3.86013	0.000351199	0.000346795	4.40390E-06	4.40390E-06	4.40390E-06	4.40390E-06	4.82004E-06
12.0208	5016.78	2.98317	2.98314	3.51561E-06	5028.81	5028.81	0.00276905	12.0208	0	2.98317	12.0208	0.00220829	0.00217482	3.34726E-05	3.34726E-05	3.34726E-05	3.34726E-05	3.65691E-05
4.73718	1590.35	1.50601	1.50597	8.98564E-07	1595.09	1595.09	0.000427564	4.73718	0	1.50601	4.73718	0.00221723	0.00217115	4.60821E-05	4.60821E-05	4.60821E-05	4.60821E-05	5.03804E-05
5.37295	1427.38	1.84687	1.84679	1.02118E-06	1432.75	1432.75	0.000177020	5.37295	0	1.84687	5.37295	0.00345340	0.00337502	7.83733E-05	7.83733E-05	7.83733E-05	7.83733E-05	8.56904E-05
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.26000	396.368	1.19714	1.19664	3.87224E-07	398.627	398.627	2.47629E-05	2.26000	0	1.19714	2.26000	0.0102873	0.00979202	0.000495288	0.000495288	0.000495288	0.000495288	0.000541716
2.01262	450.371	0.997900	0.997618	2.70623E-07	452.383	452.383	1.84177E-05	2.01262	0	0.997900	2.01262	0.00652458	0.00624230	0.000282281	0.000282281	0.000282281	0.000282281	0.000308984
2.63904	5.12257	2.40811	2.09745	6.65087E-05	7.43073	7.43073	0.000140414	2.63904	0	2.40811	2.63904	1.42273	1.11200	0.310727	0.310727	0.310727	0.310727	0.331028
31.8286	174.198	26.3447	25.8365	0.00145682	205.487	205.487	0.0100860	31.8286	0	26.3447	31.8286	4.03374	3.52403	0.509712	0.509712	0.509712	0.509712	0.550006
6.06807	287.773	4.02606	4.01867	9.62258E-06	293.834	293.834	0.000335902	6.06807	0	4.02606	6.06807	0.105315	0.0979220	0.00739346	0.00739346	0.00739346	0.00739346	0.00805304
3.53114	491.035	1.77607	1.77558	2.14968E-07	494.566	494.566	8.62552E-06	3.53114	0	1.77607	3.53114	0.0123339	0.0118458	0.000488030	0.000488030	0.000488030	0.000488030	0.000534062
4.76036	489.811	2.59589	2.59474	4.54523E-07	494.570	494.570	1.63663E-05	4.76036	0	2.59589	4.76036	0.0254366	0.0242946	0.00114194	0.00114194	0.00114194	0.00114194	0.00124808
21.9013	67.5212	19.2421	18.1812	0.000860164	88.2850	88.2850	0.00252890	21.9013	0	19.2421	21.9013	6.29522	5.23346	1.06176	1.06176	1.06176	1.06176	1.14004
5.39786	384.891	3.36557	3.36193	3.82076E-07	390.285	390.285	4.35463E-06	5.39786	0	3.36557	5.39786	0.0636596	0.0600227	0.00363689	0.00363689	0.00363689	0.00363689	0.00397182
3.55574	7.46568	3.24847	2.81564	8.72495E-05	10.5605	10.5605	0.000125282	3.55574	0	3.24847	3.55574	1.97845	1.54553	0.432918	0.432918	0.432918	0.432918	0.461071
238.310	9.66293	228.732	134.793	14.0033	325.679	325.679	185.580	238.310	0	228.732	238.310	346.358	238.416	107.942	107.944	107.944	107.944	107.875
9084.65	0.410886	9083.78	0.0650047	0.0643331	0	0	0	9084.65	0	9083.78	9084.65	9192.17	108.386	9083.78	9085.20	9085.20	9085.20	9085.06
0.175618	0.000554653	0.175524	0.000516948	5.09854E-06	0.0150135	0.0150135	2.64519E-05	0.175618	0	0.175524	0.175618	0.183544	0.00853208	0.175012	0.175012	0.175012	0.175012	0.161185
0.0850199	0.00600459	0.0840690	0.0152386	0.0121176	0.0531180	0.0531180	0.0529690	0.0850199	0	0.0840690	0.0850199	0.129805	0.0488568	0.0809480	0.0809480	0.0809480	0.0809480	0.0908755
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

3	4	5	6	7	8	9	10	52	55	56	57	58	59	61	64	65	66	67
Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
LCV-657B Reflux Coil	T-657 H-657 B	LCV200 HEX-0600	V-0500 Condenser	Condenser V-0500	To Glycol Unit XCHG-100	XCHG-100 VSSL-100	VSSL-100 --	Reflux Coil Cross Exchanger	V-0200 --	V-0200 LCV200	Cross Exchanger V-0200	V-0500 Reboiler	Reboiler V-0500	Cross Exchanger HEX-0600	TEG Makeup P-0100 A/B	P-0100 A/B H-657	H-657 TEG Recycle	TEG Recycle T-657
100.508	96.8797	298.232	211.273	204.608	119.889	90	90	103.196	300	300	300*	303.736	380.000	181.197	202.268	204.668	106.880	106.888
79.6959*	960	16.6959*	14.7	14.7	882.696	882.696	882.696	74.6959	69.6959	69.6959	69.6959	15.2	15.2	14.7	14.7	980*	975	975
121.760	20.0574	126.430	24.7632	18.1029	20.0643	20.0643	18.0210	121.760		126.430	121.760	118.530	25.4507	138.243	138.245	138.245	138.245	138.250
9502.37	158048	9392.12	211.897	14.0823	158540	158540	185.855	9502.37	0	9392.12	9502.37	9552.80	358.494	9194.31	9195.73	9195.73	9195.73	9195.69
0.710772	71.7660	0.676579	0.0779331	0.00708482	71.9649	71.9649	0.0939287	0.710772	0	0.676579	0.710772	0.734019	0.128288	0.605731	0.605817	0.605817	0.605817	0.605791
17.2305	926.614	16.7485	0.479155	0.0281468	927.917	927.917	0.372446	17.2305	0	16.7485	17.2305	16.9927	0.695252	16.2975	16.3*	16.3	16.3	16.3
	0.692530		0.855010	0.963172	0.692769		0.994703			0.989499		0.993335	0.878748	1.06452	1.05223	1.05234	1.10828	1.10826
				9.88683			10.0769			-5.61544		-5.96340		-6.60519	-6.60526	-6.74428	-6.74356	-6.74281
3044.12	1077.76	3126.89	433.255	2.80399	1075.91	1075.91	1.34249	3044.12		3126.89	3044.12	2876.77	231.958	3436.92	3436.96	3436.96	3436.96	3437.18
3334.36	1189.52	3425.02	503.123	53.3211	1187.56	1187.56	51.7278	3334.36		3425.02	3334.36	3156.37	299.068	3761.51	3761.56	3761.56	3761.56	3761.79

COOPER | MACHINERY SERVICES

Model	STD	LE
Fuel Gas System[1]		
Fuel pressure range	150 psi (10.3 bar)	150 psi (10.3 bar)
Exhaust System[2]		
Exhaust Temperature	465°F (241°C)	515°F (268°C)
Exhaust Flow	233 lb/min (106 kg/min)	239 lb/min (108 kg/min)
Cooling Water System		
Capacity	120 gal (454 l)	120 gal (454 l)
Lube Oil System[3]		
Capacity	95 gal (360 l)	95 gal (360 l)
Consumption	28.2 pints/day (13.3 l/day)	28.2 pints/day (13.3 l/day)
Crankcase Makeup	6.6 pints/day (3.1 l/day)	6 pints/day (2.8 l/day)
Brake Specific Fuel Consumption		
100% Load (LHV)	8,000 Btu/bhp-hr (11,319 kJ/kWh)	7,800 Btu/bhp-hr (11,036 kJ/kWh)
Engine Emissions[2]		
NOx	12 g/bhp-hr	2 g/bhp-hr
CO	1.2 g/bhp-hr	2.3 g/bhp-hr
NMHC	0.7 g/bhp-hr	0.8 g/bhp-hr
VOC	0.5 g/bhp-hr	0.75 g/bhp-hr
Formaldehyde	0.3 g/bhp-hr	0.3 g/bhp-hr
CO_2	469 g/bhp-hr	458 g/bhp-hr
Compressor Specifications		
No. of Throws	3	3
Stroke	11" (279 mm)	11" (279 mm)
Piston Speed	807 ft/min (4 m/s)	807 ft/min (4 m/s)
Rod Load	40,000 lb (178 kN)	40,000 lb (178 kN)
Rod Diameter	2.5" (64 mm)	2.5" (64 mm)
Crankshaft Centerline	20" (508 mm)	20" (508 mm)
Dry Weight		
Frame Weight	48,700 lb (22,090 kg)	48,700 lb (22,090 kg)
Dimensions		
Frame Length	171" (4,353 mm)	171" (4,353 mm)
Frame Width	157" (3,987 mm)	157" (3,987 mm)
Frame Height	74" (1,881 mm)	74" (1,881 mm)
Stack Diameter	17¼" (438 mm)	17¼" (438 mm)
Stack Height	241" (6,121 mm)	241" (6,121 mm)
Flywheel		
Outside Diameter	48" (1,219 mm)	48" (1,219 mm)
Weight	2,200 lb (998 kg)	2,200 lb (998 kg)

[1] Fuel gas system pressure noted is maximum pressure at customer connection
[2] Exhaust and emissions noted based on: PLQNG, 1500 FASL elevation, 65°F ambient temperature for STD and LE
[3] Lube oil system consumption rates based on full load and full speed operation. Values do not indicate break-in consumption rates.

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TABLE 3.2-1 UNCONTROLLED EMISSION FACTORS FOR 2-STROKE LEAN-BURN ENGINES [a]

(SCC 2-02-002-52)

Pollutant	Emission Factor (lb/MMBtu)b (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NOx [c] 90 - 105% Load	3.17 E+00	A
NOx [c] <90% Load	1.94 E+00	A
CO [c] 90 - 105% Load	3.86 E-01	A
CO [c] <90% Load	3.53 E-01	A
CO_2 [d]	1.10 E+02	A
SO_2 [e]	5.88 E-04	A
TOC[f]	1.64 E+00	A
Methane [g]	1.45 E+00	C
VOC[h]	1.20 E-01	C
PM10 (filterable)[i]	3.84 E-02	C
PM2.5 (filterable)[i]	3.84 E-02	C
PM Condensable[j]	9.91 E-03	E
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[k]	6.63 E-05	C
1,1,2-Trichloroethane[k]	5.27 E-05	C
1,1-Dichloroethane	3.91 E-05	C
1,2,3-Trimethylbenzene	3.54 E-05	D
1,2,4-Trimethylbenzene	1.11 E-04	C
1,2-Dichloroethane	4.22 E-05	D
1,2-Dichloropropane	4.46 E-05	C
1,3,5-Trimethylbenzene	1.80 E-05	D
1,3-Butadiene [k]	8.20 E-04	D
1,3-Dichloropropene [k]	4.38 E-05	C
2,2,4-Trimethylpentane [k]	8.46 E-04	B
2-Methylnaphthalene [k]	2.14 E-05	C
Acenaphthene [k]	1.33 E-06	C

Table 3.2-1. UNCONTROLLED EMISSION FACTORS FOR 2-STROKE LEAN-BURN ENGINES
(Continued)

Pollutant	Emission Factor (lb/MMBtu)b (fuel input)	Emission Factor Rating
Acenaphthylene[k]	3.17 E-06	C
Acetaldehydek,[l]	7.76 E-03	A
Acroleink,[l]	7.78 E-03	A
Anthracene[k]	7.18 E-07	C
Benz(a)anthracene[k]	3.36 E-07	C
Benzene[k]	1.94 E-03	A
Benzo(a)pyrene[k]	5.68 E-09	D
Benzo(b)fluoranthene[k]	8.51 E-09	D
Benzo(e)pyrene[k]	2.34 E-08	D
Benzo(g,h,i)perylene[k]	2.48 E-08	D
Benzo(k)fluoranthene[k]	4.26 E-09	D
Biphenyl[k]	3.95 E-06	C
Butane	4.75 E-03	C
Butyr/Isobutyraldehyde	4.37 E-04	C
Carbon Tetrachloride[k]	6.07 E-05	C
Chlorobenzene[k]	4.44 E-05	C
Chloroform[k]	4.71 E-05	C
Chrysene[k]	6.72 E-07	C
Cyclohexane	3.08 E-04	C
Cyclopentane	9.47 E-05	C
Ethane	7.09 E-02	A
Ethylbenzene[k]	1.08 E-04	B
Ethylene Dibromide[k]	7.34 E-05	C
Fluoranthene[k]	3.61 E-07	C
Fluorene[k]	1.69 E-06	C
Formaldehyde[k,l]	5.52 E-02	A

Table 3.2-1. UNCONTROLLED EMISSION FACTORS FOR 2-STROKE LEAN-BURN ENGINES
(Continued)

Pollutant	Emission Factor (lb/MMBtu)b (fuel input)	Emission Factor Rating
Indeno(1,2,3-c,d)pyrene[k]	9.93 E-09	D
Isobutane	3.75 E-03	C
Methanol[k]	2.48 E-03	A
Methylcyclohexane	3.38 E-04	C
Methylene Chloride[k]	1.47 E-04	C
n-Hexane[k]	4.45 E-04	C
n-Nonane	3.08 E-05	C
n-Octane	7.44 E-05	C
n-Pentane	1.53 E-03	C
Naphthalene[k]	9.63 E-05	C
PAH[k]	1.34 E-04	D
Perylene[k]	4.97 E-09	D
Phenanthrene[k]	3.53 E-06	C
Phenol[k]	4.21 E-05	C
Propane	2.87 E-02	C
Pyrene[k]	5.84 E-07	C
Styrene[k]	5.48 E-05	A
Toluene[k]	9.63 E-04	A
Vinyl Chloride[k]	2.47 E-05	C
Xylene[k]	2.68 E-04	A

[a] Reference 7. Factors represent uncontrolled levels. For NO_x, CO, and PM10, "uncontrolled" means no combustion or add-on controls; however, the factor may include turbocharged units. For all other pollutants, "uncontrolled" means no oxidation control; the data set may include units with control techniques used for NO_x control, such as PCC and SCR for lean burn engines, and PSC for rich burn engines. Factors are based on large population of engines. Factors are for engines at all loads, except as indicated. SCC = Source Classification Code. TOC = Total Organic Compounds. PM10 = Particulate Matter ≤10 microns (Fm) aerodynamic diameter. A "<" sign in front of a factor means that the corresponding emission factor is based on one-half of the method detection limit.

[b] Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA

Method 19. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by the heat content of the fuel. If the heat content is not available, use 1020 Btu/scf. To convert from (lb/MMBtu) to (lb/hp-hr) use the following equation:

lb/hp-hr = (lb/MMBtu) (heat input, MMBtu/hr) (1/operating HP, 1/hp)

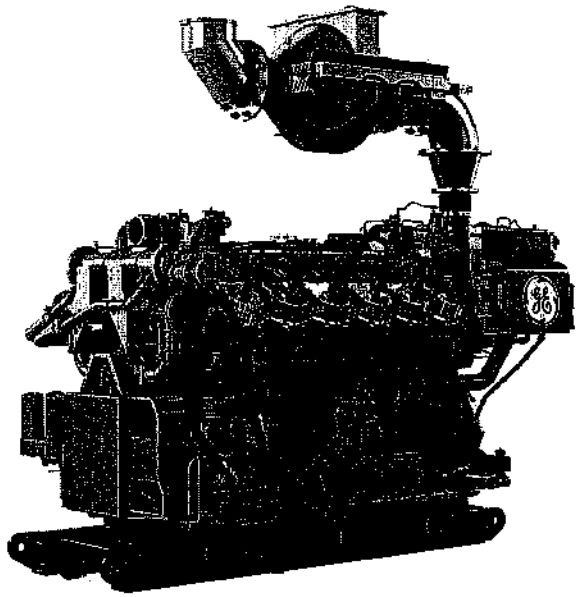
[c] Emission tests with unreported load conditions were not included in the data set.
[d] Based on 99.5% conversion of the fuel carbon to CO_2. CO_2 [lb/MMBtu] = (3.67)(%CON)(C)(D)(1/h), where %CON = percent conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.75), D = density of fuel, 4.1 E+04 lb/10^6 scf, and h = heating value of natural gas (assume 1020 Btu/scf at 60°F).
[e] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content in natural gas of 2,000 gr/10^6 scf.
[f] Emission factor for TOC is based on measured emission levels of 43 tests.
[g] Emission factor for methane is determined by subtracting the VOC and ethane emission factors from the TOC emission factor. Measured emission factor for methane compares well with the calculated emission factor, 1.48 lb/MMBtu vs. 1.45 lb/MMBtu, respectively.
[h] VOC emission factor is based on the sum of the emission factors for all speciated organic compounds less ethane and methane.
[i] Considered ≤ 1 μm in aerodynamic diameter. Therefore, for filterable PM emissions, PM10(filterable) = PM2.5(filterable).
[j] No data were available for condensable PM emissions. The presented emission factor reflects emissions from 4SLB engines.
[k] Hazardous Air Pollutant as defined by Section 112(b) of the Clean Air Act.
[l] For lean burn engines, aldehyde emissions quantification using CARB 430 may reflect interference with the sampling compounds due to the nitrogen concentration in the stack. The presented emission factor is based on FTIR measurements. Emissions data based on CARB 430 are available in the background report.

GE Power & Water

Waukesha* gas engines VHP* Series Four* L7044GSI

with **emPact Emission Control System**

1120 - 1680 BHP (835 - 1253 kWb)



Engine supplied with 3-way catalyst but without exhaust piping. Engine-out and catalyst-out exhaust piping shown for illustrative purposes only

GE's Waukesha Series Four rich-burn engines are the engines of choice for the harshest and most demanding gas compression, power generation and mechanical drive applications. The Series Four engines can reliably produce more power on hot field gases, at high altitudes, and in remote locations, all while delivering low emissions when paired with a 3-way catalyst (NSCR).

Waukesha's emPact Emission Control System combines an engine, catalyst, and air/fuel ratio control, factory-designed for optimal interaction and maximum performance. It consists of a GE-supplied catalyst, pre- and post-catalyst oxygen sensing, and differential temperature and pressure sensors. emPact's closed-loop control system measures the engine exhaust and automatically adjusts the air/fuel ratio to keep the catalyst operating at maximum efficiency, even as speed, load, fuel, and ambient conditions change.

The emPact display panel provides real-time engine operating parameters, including faults, alarms, and shutdowns. A logging function allows all data—including catalyst temperature and pressure differential—to be saved to a USB device to simplify emissions reporting.

Waukesha's emPact Emission Control System provides a one-stop shop for compliance and the simplest method of obtaining and meeting emission permits.

technical data

Cylinders	V12
Piston displacement	7040 cu. in. (115 L)
Compression ratio	8:1
Bore & stroke	9.375" x 8.5" (238 x 216)
Jacket water system capacity	100 gal. (379 L)
Lube oil capacity	190 gal. (719 L)
Starting system	125 - 150 psi air/gas 24V electric

Dimensions l x w x h inch (mm)
147 (3734) x 85 (2159) x 97.83 (2485)

Weights lb (kg)
21,000 (9,525)

imagination at work

*Trademark of General Electric Company

performance data

Intercooler Water Temperature 130°F (54°C)		1200 RPM	1000 RPM
	Power bhp (kWb)	1680 (1253)	1400 (1044)
	BSFC (LHV) Btu/bhp-hr (kJ/kWh)	7881 (11149)	7693 (10882)
	Fuel Consumption Btu/hr x 1000 (kW)	13240 (3881)	10781 (3156)
emPact Catalyst-Out Emissions	NOx g/bhp-hr (mg/Nm³ @ 5% O_2)	0.5 (185)	
	CO g/bhp-hr (mg/Nm³ @ 5% O_2)	1.0 (370)	
	NMHC g/bhp-hr (mg/Nm³ @ 5% O_2)	0.18 (67)	
	THC g/bhp-hr (mg/Nm³ @ 5% O_2)	1.68 (626)	
Engine-Out Emissions	NOx g/bhp-hr (mg/Nm³ @ 5% O_2)	13.30 (4922)	12.90 (4782)
	CO g/bhp-hr (mg/Nm³ @ 5% O_2)	11.20 (4140)	9.40 (3477)
	NMHC g/bhp-hr (mg/Nm³ @ 5% O_2)	0.35 (131)	0.34 (127)
	THC g/bhp-hr (mg/Nm³ @ 5% O_2)	2.40 (873)	2.30 (844)
Heat Balance	Heat to Jacket Water Btu/hr x 1000 (kW)	3849 (1128)	3227 (946)
	Heat to Lube Oil Btu/hr x 1000 (kW)	567 (166)	462 (135)
	Heat to Intercooler Btu/hr x 1000 (kW)	179 (53)	122 (36)
	Heat to Radiation Btu/hr x 1000 (kW)	724 (212)	642 (188)
	Total Exhaust Heat Btu/hr x 1000 (kW)	3900 (1143)	2962 (868)
Intake/ Exhaust System	Induction Air Flow scfm (Nm³/hr)	2424 (3651)	1972 (2970)
	Exhaust Flow lb/hr (kg/hr)	11273 (5113)	9171 (4160)
	Exhaust Temperature °F (°C)	1179 (637)	1112 (600)

All data according to full load and subject to technical development and modification.

emPact catalyst-out emissions valid from 100% - 75% load and 1200 rpm to 900 rpm and assume proper engine/catalyst maintenance and manual adjustment as necessary

Consult your local GE Power & Water's representative 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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0214 GEA-18926

AEG
2690 S COUNTY RD WEST
Odessa, TX 79766
Phone: 432 363-7889
Email: catalyst@alliedcomp.net

Emission Control Application Data Sheet

Customer:	**Eagle Claw**	Project:	**RC-1**	Date:	**6/5/2025**
Sales Person:	**R.Haley**	Site Elevation:	**500** ft	Contact:	**Joel**
Order/Quote #:					

Engine Data:

Engine Model:	**Waukesha 7044GSI**		Speed:	**1200**	RPM
Fuel & Operating Type:	**Natural Gas Rich Burn**		Engine Power:	**1680**	Hp
Exhaust Flow Rate:	**11273**	**acfm**	Exhaust Temperature:	**1179**	°F
	19153	**m^3/hr**		**637**	°C
	15841	**lbs/hr**			
GHSV:	**50653**	**hr^{-1}**			

Emission:

Min. Temp. at Core Face:	**800**	°F	**427**	°C
Max. Temp. at Core Face:	**1215**	°F	**657**	°C

Catalyst Type: **Three-Way Catalyst (NSCR)**
Catalyst Part # T2-2415RO353 (24L x 15W x 3.5D)

No. Elements	6
Blanks	0

	Pollutant					
	NOx	CO	NMHC/VOC	H2CO		
Engine Out / Pre Catalyst:	**13.3**	**11.2**	**0.35**	**0.05**	g/bhp-hr	
Post Catalyst:	0.33	0.39	0.01	0.01	g/bhp-hr	
	97.50%	96.50%	97.19%	90.00%		
	1.232	1.452	0.036	0.019	lb/hr	
	5.39	6.36	0.16	0.08	tons/year operation	**8760** hr/year
	47.34	91.67	1.46	1.09	ppmv	
	13.36	25.88	0.41	0.31	ppmvd @ 15% O2	

Warranty & Notes:

- **If Pre-Emission levels are not as noted above, contact AEG for a re-quote.**
- To achieve Post Emissions levels detailed above, exhaust temperature and Pre-Emission data must be as specified.
- Maximum allowable exhaust temperature at core face is 1250°F.
- If applicable, the engine will require an air/fuel ratio controller to meet above emission levels. For Rich Burn engines λ must be 0.96 - 0.99.
- Catalyst cleaning/regeneration required, if initial backpressure increases by 2" of WC.
- Engine operation to be stable and reproducible.
- Maximum lubrication oil consumption rate to be less than 0.0015 lb/bhp/hr.
- Lube oil sulfate ash contents should not exceed 0.5%.
- Phosphorus and/or Zinc should not exceed 5 ppmv in the exhaust stream.
- A high temperature alarm/shutdown to be maintained at downstream of catalyst at 1300°F.
- Fuel not to contain heavy or transition metals such as Pb, Ar, Zn, Cu, Sn, Fe, Ba, Ni, Cr etc.
- Chlorinated or Silicone containing compounds in the exhaust not to exceed 1 ppmv.
- Sulfur compounds in the exhaust gas stream not to exceed 25 ppmv.
- Performance guarantee is voided should the catalyst become masked or de-activated by any contaminant in the exhaust stream.
- Engine to be maintained and operated in accordance within manufacturer's recommended practice.
- Under no condition will AEG assume any contingent liabilities.
- Operating manual is available from a AEG sales representative.
- AEG's standard one year warranty applies to the housing.

ICE CATALYST SIZING PROGRAM

rev 2.1.3

Report Date: 8/1/2024

Customer	SEC Energy	Housing	
Sales Person	KW	Element	APX3-TW-SQ-1500-3600-350
Project	Waukesha P9394	Contact	Darryl Allen
Engine Name	Waukesha VHP - P9394GSI S5 2500 BHP 1200 RPM		

Engine Power	2390.0	BHP	ACFM	10701.0	CU. FT/MIN	Exhaust O2	0.2	%
Exhaust Mass Flow	15375.0	LBS/HR	ACFH	642060	CU. FT/HR	Exhaust CO2	9.9	%
Process Temperature	1106.0	F	SCFM	3558.8	CU. FT/MIN	Exhaust H2O	18.6	%
Exhaust Pressure	14.5	PSI	SCFH	213530	CU. FT/HR	Exhaust N2	71.4	%
Exhaust Density	0.0239	LBS/FT^3	Std Temp	68.0	F	Max Pressure Drop	27.0	in wc
Molecular Weight	27.75	AMU	Std Pressure	14.6959	PSI	Propane in Fuel	0.00	%

Type	Stoichiometric	Layers	1		
Geometry	Rectangular	Modules/Layer	4	Cell Count	300cpsi
X	14.875in	Guard Bed	No	Depth	3.500in
Y	35.875in				

Open Area	13.441	ft^2	Part Volume	0.980	ft^3	Part Weight	63	lbs
Linear Velocity	796	ft/min	Total Volume	3.920	ft^3	Total Weight	252	lbs
Pressure Drop	0.9	in wc	Space Velocity	54466	GHSV			

Inlet Emissions

	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2
NOx	12.24	64.49	282.67	2529.74	3106.39	885.40
CO	6.78	35.72	156.58	2301.55	2826.18	805.53
VOC	0.11	0.58	2.54	23.72	29.12	8.30
H2CO	0.05	0.26	1.15	15.83	19.44	5.54

Target Emissions

	min %DRE	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2
NOx	95.92	0.50	2.63	11.55	103.34	126.89	36.17
CO	92.63	0.50	2.63	11.55	169.73	208.42	59.40
VOC	0.00	0.40	2.11	9.24	86.24	105.90	30.18
H2CO	50.00	0.03	0.13	0.58	7.92	9.72	2.77

Emissions with Catalyst

	%DRE	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2
NOx	95.92	<0.50	<2.63	<11.55	<103.34	<126.89	<36.17
CO	92.63	<0.50	<2.63	<11.55	<169.73	<208.42	<59.40
VOC	0.00	<0.40	<2.11	<9.24	<86.24	<105.90	<30.18
H2CO	50.00	<0.03	<0.13	<0.58	<7.92	<9.72	<2.77

Safety Value: 2 VOC Molecular Weight: 44.1 O2 Reference Value: 15 Uptime (TPY): 100% (8760 hours)

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

Table 3.2-3. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE RICH-BURN ENGINES
(Concluded)

Pollutant	Emission Factor (lb/MMBtu)b (fuel input)	Emission Factor Rating
Chlorobenzene[l]	<1.29 E-05	E
Chloroform[l]	<1.37 E-05	E
Ethane[n]	7.04 E-02	C
Ethylbenzene[l]	<2.48 E-05	E
Ethylene Dibromide[l]	<2.13 E-05	E
Formaldehyde [l,m]	2.05 E-02	A
Methanol	3.06 E-03	D
Methylene Chloride[l]	4.12 E-05	C
Naphthalene[l]	<9.71 E-05	E
PAH[l]	1.41 E-04	D
Styrene[l]	<1.19 E-05	E
Toluene[l]	5.58 E-04	A
Vinyl Chloride[l]	<7.18 E-06	E
Xylene[l]	1.95 E-04	A

[a] Reference 7. Factors represent uncontrolled levels. For NO_x, CO, and PM-10, "uncontrolled" means no combustion or add-on controls; however, the factor may include turbocharged units. For all other pollutants, "uncontrolled" means no oxidation control; the data set may include units with control techniques used for NO_x control, such as PCC and SCR for lean burn engines, and PSC for rich burn engines. Factors are based on large population of engines. Factors are for engines at all loads, except as indicated. SCC = Source Classification Code. TOC = Total Organic Compounds. PM10 = Particulate Matter ≤ 10 microns (µm) aerodynamic diameter. A "<" sign in front of a factor means that the corresponding emission factor is based on one-half of the method detection limit.

[b] Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA Method 19. To convert from (lb/MMBtu) to (lb/106 scf), multiply by the heat content of the fuel. If the heat content is not available, use 1020 Btu/scf. To convert from (lb/MMBtu) to (lb/hp-hr) use the following equation:

lb/hp-hr = (lb/MMBtu) (heat input, MMBtu/hr) (1/operating HP, 1/hp)

[c] Emission tests with unreported load conditions were not included in the data set.

[d] Based on 99.5% conversion of the fuel carbon to CO_2. CO_2 [lb/MMBtu] = (3.67)(%CON)(C)(D)(1/h), where %CON = percent conversion of fuel carbon to CO_2,

C = carbon content of fuel by weight (0.75), D = density of fuel, 4.1 E+04 lb/10^6 scf, and h = heating value of natural gas (assume 1020 Btu/scf at 60°F).

[e] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content in natural gas of 2,000 gr/10^6scf.

[f] Emission factor for TOC is based on measured emission levels from 6 source tests.

[g] Emission factor for methane is determined by subtracting the VOC and ethane emission factors from the TOC emission factor.

[h] VOC emission factor is based on the sum of the emission factors for all speciated organic compounds. Methane and ethane emissions were not measured for this engine category.

[i] No data were available for uncontrolled engines. PM10 emissions are for engines equipped with a PCC.

[j] Considered # 1 Fm in aerodynamic diameter. Therefore, for filterable PM emissions, PM10 (filterable) = PM2.5 (filterable).

[k] No data were available for condensable emissions. The presented emission factor reflects emissions from 4SLB engines.

[l] Hazardous Air Pollutant as defined by Section 112(b) of the Clean Air Act.

[m] For rich-burn engines, no interference is suspected in quantifying aldehyde emissions. The presented emission factors are based on FTIR and CARB 430 emissions data measurements.

[n] Ethane emission factor is determined by subtracting the VOC emission factor from the NMHC emission factor.

This content is from the eCFR and is authoritative but unofficial.

Title 40 —Protection of Environment
Chapter I —Environmental Protection Agency
Subchapter C —Air Programs
Part 98 —Mandatory Greenhouse Gas Reporting
Subpart C —General Stationary Fuel Combustion Sources

Authority: 42 U.S.C. 7401-7671q.
Source: 74 FR 56374, Oct. 30, 2009, unless otherwise noted.

Editorial Note: At 90 FR 21227, May 19, 2025, as required by the Congressional Review Act and Public Law 119-2, the Environmental Protection Agency removed the amendments to §§ 98.3 and 98.4 made effective on Jan. 17, 2025, at 89 FR 91163, Nov. 18, 2024. As of May 19, 2025, §§ 98.3 and 98.4 reverted to the Jan. 16, 2025 version.

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

[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.

Fuel type	Default high heat value	Default CO_2 emission factor
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—liquid	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

[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.

Fuel type	Default high heat value	Default CO_2 emission factor
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
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
Petroleum products—solid	mmBtu/short ton	kg CO_2/mmBtu.
Petroleum Coke	30.00	102.41.
Petroleum products—gaseous	mmBtu/scf	kg CO_2/mmBtu.
Propane Gas	2.516×10^{-3}	61.46.
Other fuels—solid	mmBtu/short ton	kg CO_2/mmBtu
Municipal Solid Waste	9.95 [3]	90.7
Tires	28.00	85.97

[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.

Fuel type	Default high heat value	Default CO_2 emission factor
Plastics	38.00	75.00
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
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, as amended at 81 FR 89252, Dec. 9, 2016]

This content is from the eCFR and is authoritative but unofficial.

Title 40 —Protection of Environment
Chapter I —Environmental Protection Agency
Subchapter C —Air Programs
Part 98 —Mandatory Greenhouse Gas Reporting
Subpart C —General Stationary Fuel Combustion Sources

Authority: 42 U.S.C. 7401-7671q.
Source: 74 FR 56374, Oct. 30, 2009, unless otherwise noted.

Editorial Note: At 90 FR 21227, May 19, 2025, as required by the Congressional Review Act and Public Law 119-2, the Environmental Protection Agency removed the amendments to §§ 98.3 and 98.4 made effective on Jan. 17, 2025, at 89 FR 91163, Nov. 18, 2024. As of May 19, 2025, §§ 98.3 and 98.4 reverted to the Jan. 16, 2025 version.

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_2 O emission factor (kg N_2 O/mmBtu)
Coal and Coke (All fuel types in Table C-1)	1.1×10^{-02}	1.6×10^{-03}
Natural Gas[1]	1.0×10^{-03}	1.0×10^{-04}
Petroleum Products (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}
Other Fuels—Solid	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	3.2×10^{-03}	6.3×10^{-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.

[1] Reporters subject to subpart W of this part may only use the default CH_4 emission factor for natural gas-fired combustion units that are not reciprocating internal combustion engines or gas turbines. For natural gas-fired reciprocating internal combustion engines or gas turbines, at facilities subject to subpart W of this part, reporters must use a CH_4 emission factor determined in accordance with § 98.233(z)(4).

Fuel type	Default CH_4 emission factor (kg CH_4/mmBtu)	Default N_2O emission factor (kg N_2O/mmBtu)
Table C-1) 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.

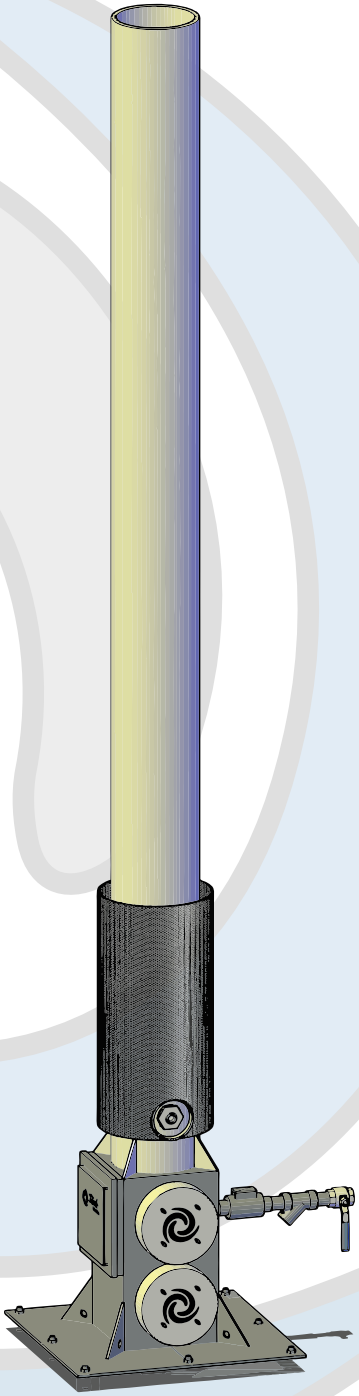
[1] Reporters subject to subpart W of this part may only use the default CH_4 emission factor for natural gas-fired combustion units that are not reciprocating internal combustion engines or gas turbines. For natural gas-fired reciprocating internal combustion engines or gas turbines, at facilities subject to subpart W of this part, reporters must use a CH_4 emission factor determined in accordance with § 98.233(z)(4).

[78 FR 71952, Nov. 29, 2013, as amended at 81 FR 89252, Dec. 9, 2016; 89 FR 42220, May 14, 2024]

Rush Industries
A Division of ClearRushCo.

BGR-LP Combustor

Model: BGR - 18LP



(See product specification sheet on reverse)

The BGR-18LP is a highly versatile, low cost vapour combustor designed to destruct volatile organic compounds (VOCs) produced from casing gas, oil storage tanks, pneumatics, instruments, or compressor vents. The combustor eliminates the need to install expensive vapour recovery units (VRU) or incinerators.

The design of the BGR LP Combustor allows for reduced spacing of 10m from existing process equipment.

The high efficiency burner inside the combustor chamber provides low pressure continuous burning capabilities, high combustion efficiency, low emissions, reduced odours, no visible flame, and increased flame stability with excellent turndown ratios for low pressure applications.

Approvals

EPA NSPS 40 CFR 60 Subpart 0000 and AER Directive 60 & Saskatchewan S 20

BMS Controller CSA approved for Class I Div 2 location

CSA B149.3-20

C22.2 No 199-M89

E60730-1-2013, ANSI Z21.20-2014

CAN/CSA C22.2 No. 60730-2-5-2014 Compliant, meets NFPA standards

www.clearrushco.com
1-877-638-5234 (403) 638-5234

Clear Rush Co.
Box 1898, 5406 Township Road 325B
Sundre, AB T0M 1X0
Canada

Rush Industries
A Division of ClearRushCo.

BGR-LP Combustor

Model: BGR - 18LP

Combustor Features

Destruction removal efficiency greater than 99.9% and meets the requirements of EPA NSPS 40 CFR 60 Subpart 0000 and AER Directive 60 & Saskatchewan S 20
18" x 20' high stainless steel fire tube
Unique design allows for reduced spacing of 10m
Main Low pressure burner volume up to 20,000 scf/d (566 m^3/d)
Operating pressures as low as 0.09 psi or 1.5 oz/in^2
Able to handle intermittent flows easily
No visible flame
Customized burner with manual shutoff valves for additional turndown
Heat shield for operator`s safety

Controller Features

CSA approved ACL3200 or CSC400 Ignition Control System (meets CSA B149.3-20)
Monitors and controls combustion
Remote Stop and Start
Auto re-light, continuous trial for ignition
Solar operated 12/24VDC (optional Rush Power available)
Thermocouple and thermowell for temperature sensing and monitoring (optional)
Data logging & acquisition capabilities to meet EPA requirements
Modbus communication capabilities built in

Burner Features

Full stainless steel burner
Extremely stable at wide range of flow rates, down to 1.5oz/in^2
No flame lift-off or impingement
Reduced emissions (low Nox, and low CO)

www.clearrushco.com
1-877-638-5234 (403) 638-5234

Clear Rush Co.
Box 1898, 5406 Township Road 325B
Sundre, AB T0M 1X0
Canada

Fugitives

United States Environmental Protection Agency
Office of Air Quality Planning and Standards Research Triangle Park NC 27711
EPA-453/R-95-017 November 1995

Air

EPA

Protocol for Equipment Leak Emission Estimates

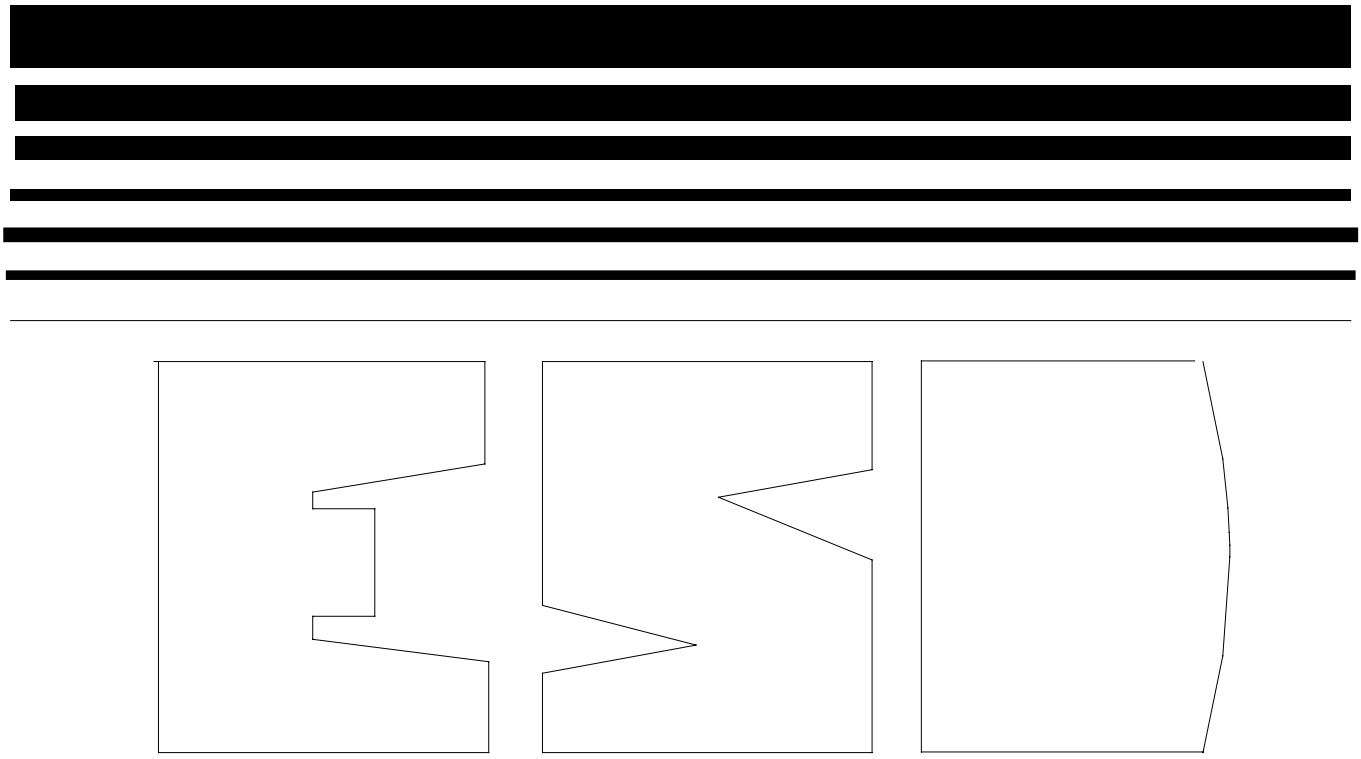


TABLE 2-4. OIL AND GAS PRODUCTION OPERATIONS AVERAGE EMISSION FACTORS (kg/hr/source)

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.

Owner:	Frontier Field Services		Owner Ref.:	H-102
Purchaser:	Kahuna		Purchaser Ref.:	240076
Manufacturer:	Tulsa Heaters Midstream, LLC		THM Ref.:	P24-0919
Service:	Heat Medium Heater		Project:	Dagger Draw Replacement
Quantity:	1		Location:	Pecos, TX
SHO Duty:	32.70	MMBTU/ hr	SHO Model:	SHO3000
BMS Release:	41.95	MMBTU/ hr	BMS Model:	BMS5500

Rev

PROCESS DESIGN CONDITIONS

		Radiant / Convection	Radiant / Convection	Radiant / Convection	Radiant / Convection
Heater Section	---				
Operating Case	---	Design			
Service	---	Heat Medium Hea			
Heat Absorption (R/C)	MMBTU/ hr	21.99 / 10.71			
Process Fluid	---	Chemtherm 550			
Process Mass Flow Rate, Total	Lb/ hr	455,000			
Process Bulk Velocity (calc. R/C)	ft/ s	9 / 9			
Process Mass Velocity (calc. R/C)	Lb/ s ft2	455 / 455			
Coking Allowance (dP calcs)	In				
Pressure Drop, Clean (allow. / calc.)	psi	27 / 27			
Pressure Drop, Fouled (allow. / calc.)	psi				
Average Heat Flux (allowable)	BTU/ hr ft2	13,000			
Average Heat Flux (calculated)	BTU/ hr ft2	11,930			
Maximum Heat Flux (allowable)	BTU/ hr ft2				
Maximum Heat Flux (calc. R/C)	BTU/ hr ft2	22,600 / 31,000			
Fouling Factor, Internal	hr ft2 °F/ BTU	0.002			
Corrosion or Erosion Characteristics	---				
Max. Film Temperature (allow. / calc.)	°F	635 / 520			
Inlet Conditions:					
Temperature	°F	300			
Pressure	psig	70			
Mass Flow Rate, Liquid	Lb/ hr	455,000			
Mass Flow Rate, Vapor	Lb/ hr	0			
Weight Percent, Liquid / Vapor	wt%	100% / 0%			
Density, Liquid / Vapor	Lb/ ft3	50.99 / 0.00			
Molecular Weight, Liquid / Vapor	Lb/ Lbmole	--- / 0.0			
Viscosity, Liquid / Vapor	cp	1.9668 / 0.000			
Specific Heat, Liquid / Vapor	BTU/ Lb °F	0.57 / 0.000			
Thermal Conductivity, Liq./Vap.	BTU/hr ft °F	0.0701 / 0.000			
Outlet Conditions:					
Temperature	°F	420			
Pressure	psig	43			
Mass Flow Rate, Liquid	Lb/ hr	455,000			
Mass Flow Rate, Vapor	Lb/ hr	0			
Weight Percent, Liquid / Vapor	wt%	100% / 0%			
Density, Liquid / Vapor	Lb/ ft3	48.39 / 0.00			
Molecular Weight, Liquid / Vapor	Lb/ Lbmole	--- / 0.0			
Viscosity, Liquid / Vapor	cp	0.893 / 0.000			
Specific Heat, Liquid / Vapor	BTU/ Lb °F	0.628 / 0.000			
Thermal Conductivity, Liq./Vap.	BTU/hr ft °F	0.067 / 0.000			

A	18-Sep-24	Issued with Proposal	dcb		
revision	date	description	by	chk'd	appv'd

THM TULSA HEATERS MIDSTREAM

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HEATER DATA SHEET
AMERICAN ENGINEERING SYSTEM of UNITS

P24-0919-HTRDS Pg 1 of 6

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COMBUSTION DESIGN CONDITIONS

Overall Performance:

Operating Case	---	Design
Service	---	Heat Medium Hea
Excess Air	mol%	15.0%
Calculated Heat Release (LHV)	MMBTU/ hr	38.13
Guaranteed Efficiency	HR%	83.8%
Calculated Efficiency	HR%	85.8%
Radiation Loss	HR%	2.00%
Flow Rate, Combustion Gen./ Imp.	Lb/ hr	37,118
Flue Gas Temp. Leaving (R/C)	°F	1,497 / 533
Flue Gas Mass Velocity	Lb/ sec ft2	0.448

Fuel(s) Data:		Gas 1 Mol.Wt.	Gas 2 Mol.Wt.	Gas 3 Mol.Wt.	Design Fuel Oil
LHV	BTU/ scf	958			---
LHV	BTU/ Lb	20,667			
P @ Burner	psig	270			
T @ Burner	°F	95			
MW	Lb/ Lbmole	17.60			---
Flow @ design	lb/hr	1,845			
Flow @ design	scfh	39,787			
Atomizing Media		---			
Atom. Media P & T		---			
Components:					
N	wt%	---			
S	wt%	---			
Ash	wt%	---			
Ni	ppm	---			
Va	ppm	---			
Na	ppm	---			
Fe	ppm	---			
H2	mol%	0.0%			---
O2	mol%	0.0%			---
N2 + Ar	mol%	1.9%			---
CO	mol%	0.0%			---
CO2	mol%	0.0%			---
CH4	mol%	89.1%			---
C2H6	mol%	8.5%			---
C2H4	mol%	0.0%			---
C3H8	mol%	0.5%			---
C3H6	mol%	0.0%			---
C4H10	mol%	0.0%			---
C4H8	mol%	0.0%			---
C5H12	mol%	0.0%			---
C5H10	mol%	0.0%			---
C6+	mol%	0.0%			---
H2S	ppmv	0.0%			---
SO2	mol%	0.0%			---
NH3	mol%	0.0%			---
H2O	mol%	0.0%			---
spare	mol%	0.0%			---

Blower/Fan Peformance:

Volumetric Flow	acfm	8,500
Rated Power	HP	20
Fan Speed	RPM	1,800
Sound Pressure	dBA	< 85
Area Classification	NEC	Unclassified

Burner Design:

OEM	---	Callidus Technologies, LLC	
Type	---	Enhanced IFGR	
Quantities	---	1	ULTRA Low NOx
Model No.	---	CUBL-10W-HC-HZ	Cylindrical
Windbox	---	yes ...	
Location	---	EndWall Center ...	Horizontally Fired

Pilot Design:

Type / Model		Self-Inspirating /	by O.E.M.
Ignition	---	Electric	requires elec.ign.system
Heat Release	--	> 350000 BTU/ hr on ...	Gas 1

Burner Performance:

Minimum Heat Release	MMBTU/ hr	8.39
Design Heat Release	MMBTU/ hr	38.13
Maximum Heat Release	MMBTU/ hr	41.95
Burner Turndown	Max:Min	5.00
Volumetric Ht. Release	BTU/ hr ft3	8,916
Pressure @ Arch	inH2O	0.80
Pressure @ Burner	inH2O	6.29
Combustion Air T @ Burner	°F	60
Flue Gas T @ Burner	°F	1,300

Guaranteed Emissions:

Basis of Guarantee	---	3.0% O2, dry (LHV)	
NOx Emissions	Lb/MMBTU	0.040	30 ppm
SOx Emissions	Lb/MMBTU	no quote	
CO Emissions	Lb/MMBTU	0.041	50 ppm
VOC Emissions	Lb/MMBTU	0.003	2 ppm
UHC Emissions	Lb/MMBTU	0.002	4 ppm
SPM10 Emissions	Lb/MMBTU	0.003	3 ppm
Noise Emissions	dBA @ 3ft	85	

Net Flame Clearances:

Est. Flame Size	approx. 24 ft L x 5 ft Diameter
Hor Clearance	3.13 ft NET Tube Clearance
Vert. Clearance	3.13 ft NET Tube Clearance
Axial Clearance	4.17 ft NET Refractory Clearance (to Target hot face)

Nominal Flame Clearances:

from burner CL ...		Vertical	Horizontal
to Tube CL, API	ft	17.98	11.99
to Tube CL, calc.	ft	5.63	5.63
to Refrac., calc.	ft	n / a	28.17

Owner:	Frontier Field Services		Owner Ref.:	H-102
Purchaser:	Kahuna		Purchaser Ref.:	240076
Manufacturer:	Tulsa Heaters Midstream		THM Ref.:	P24-0919
Service:	Heat Medium Heater		Project:	Dagger Draw Replacement
Number:	1		Location:	Pecos, TX
SHO Duty:	32.70	MMBTU/ hr	SHO Model:	SHO3000

Guarantees:

NOx	0.0401	Lb/MMBTU	30 ppm
SOx	no quote	Lb/MMBTU	- ppm
CO	0.0407	Lb/MMBTU	50 ppm
VOC	0.0026	Lb/MMBTU	2 ppm
UHC	0.0019	Lb/MMBTU	4 ppm
SPM	0.0027	Lb/MMBTU	3 ppm

		MW	Design Case				Maximum Case			
Heat Release	LHV Basis		38.13	MMBTU/hr			41.95	MMBTU/hr		
	HHV Basis		42.24	MMBTU/hr			46.47	MMBTU/hr		
Products of Combustion										
	O2	32.00	1,057	Lbm/ hr			1,163	Lbm/ hr		
	N2 + Ar	28.15	27,004	Lbm/ hr			29,704	Lbm/ hr		
	CO2	44.01	4,955	Lbm/ hr			5,450	Lbm/ hr		
	H2O	18.02	4,098	Lbm/ hr			4,508	Lbm/ hr		
	NOx	46.01	1.53	Lbm/ hr	/ 30	ppm	1.68	Lbm/ hr	/ 30	ppm
	SOx	64.06	0.00	Lbm/ hr	/ 0	ppm	0.00	Lbm/ hr	/ 0	ppm
	CO	28.01	1.55	Lbm/ hr	/ 50	ppm	1.71	Lbm/ hr	/ 50	ppm
	VOC	44.10	0.10	Lbm/ hr	/ 2	ppm	0.11	Lbm/ hr	/ 2	ppm
	UHC	16.04	0.07	Lbm/ hr	/ 4	ppm	0.08	Lbm/ hr	/ 4	ppm
	SPM		0.10	Lbm/ hr	/ 3	ppm	0.11	Lbm/ hr	/ 3	ppm
	Total		37,118	Lbm/ hr			40,829	Lbm/ hr		
Flue Gas Exit Temp.			533	°F						
Flue Gas Exit Velocity			42.7	Ft/sec			47.0	Ft/sec		
Stack Height			27.9	ft			27.9	ft		
Stack ID			36	in			36	in		

NOTES:

THM emissions guarantees applicable between 50-100% of Maximum Case combustion conditions w/ 15% excess air.

THM emissions guarantees applicable for firebox temperatures above 1100°F.

Emissions above are for Design and Max Case operation with air and fuel in ratio control. High turndown or start-up are not considered as guaranteed emissions cases.

The Maximum Case is the the specified heat release for the burner purchased. Extra duty is spec'd into the burner to ensure that the burner is never the limiting factor on duty.

revision	date	description	by	chk'd	appv'd
A	16-Sep-24	Issued with proposal	dcb		

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EMISSIONS PERMIT DATA SHEET

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P24-0919-EMISSIONSDS Pg 1 of 1

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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 $lb/10^6$ 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. $CO_2[lb/10^6 \text{ scf}] = (3.67)(CON)(C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, 4.2×10^4 $lb/10^6$ 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 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene[b, c]	2.4E-05	D
56-49-5	3-Methylcholanthrene[b, c]	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene[b,c]	<1.6E-05	E
83-32-9	Acenaphthene[b,c]	<1.8E-06	E
203-96-8	Acenaphthylene[b,c]	<1.8E-06	E
120-12-7	Anthracene[b,c]	<2.4E-06	E
56-55-3	Benz(a)anthracene[b,c]	<1.8E-06	E
71-43-2	Benzene[b]	2.1E-03	B
50-32-8	Benzo(a)pyrene[b,c]	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene[b,c]	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene[b,c]	<1.2E-06	E
207-08-9	Benzo(k)fluoranthene[b,c]	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene[b,c]	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene[b,c]	<1.2E-06	E
25321-22-6	Dichlorobenzene[b]	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene[b,c]	3.0E-06	E
86-73-7	Fluorene[b,c]	2.8E-06	E
50-00-0	Formaldehyde[b]	7.5E-02	B
110-54-3	Hexane[b]	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene[b,c]	<1.8E-06	E
91-20-3	Naphthalene[b]	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene[b,c]	1.7E-05	D
74-98-6	Propane	1.6E+00	E

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION (Continued)

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	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 $1b/10^6$ scf to lb/MMBtu, divide by 1,020. Emission Factors preceeded with a less-than symbol are based on method detection limits.

[b] Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act.

[c] HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.

[d] The sum of individual organic compounds may exceed the VOC and TOC emission factors due to differences in test methods and the availability of test data for each pollutant.

Table A-1 to Subpart A of Part 98—Global Warming Potentials, 100-Year Time Horizon

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Chemical-Specific GWPs			
Carbon dioxide	124-38-9	CO_2	1
Methane	74-82-8	CH_4	[a] [d] 28
Nitrous oxide	10024-97-2	N_2O	[a] [d] 265
Fully Fluorinated GHGs			
Sulfur hexafluoride	2551-62-4	SF_6	[a] [d] 23,500
Trifluoromethyl sulphur pentafluoride	373-80-8	SF_5CF_3	[d] 17,400
Nitrogen trifluoride	7783-54-2	NF_3	[d] 16,100
PFC-14 (Perfluoromethane)	75-73-0	CF_4	[a] [d] 6,630
PFC-116 (Perfluoroethane)	76-16-4	C_2F_6	[a] [d] 11,100
PFC-218 (Perfluoropropane)	76-19-7	C_3F_8	[a] [d] 8,900
Perfluorocyclopropane	931-91-9	c-C_3F_6	[d] 9,200
PFC-3-1-10 (Perfluorobutane)	355-25-9	C_4F_{10}	[a] [d] 9,200
PFC-318 (Perfluorocyclobutane)	115-25-3	c-C_4F_8	[a] [d] 9,540
Perfluorotetrahydrofuran	773-14-8	c-C_4F_8O	[e] 13,900
PFC-4-1-12 (Perfluoropentane)	678-26-2	C_5F_{12}	[a] [d] 8,550
PFC-5-1-14 (Perfluorohexane, FC-72)	355-42-0	C_6F_{14}	[a] [d] 7,910
PFC-6-1-12	335-57-9	C_7F_{16}; $CF_3(CF_2)_5CF_3$	[b] 7,820
PFC-7-1-18	307-34-6	C_8F_{18}; $CF_3(CF_2)_6CF_3$	[b] 7,620
PFC-9-1-18	306-94-5	$C_{10}F_{18}$	[d] 7,190
PFPMIE (HT-70)	NA	$CF_3OCF(CF_3)CF_2OCF_2OCF_3$	[d] 9,710

Texas Commission on Environmental Quality
Air Permits Division
New Source Review (NSR) Emission Calculations

This information is maintained by the Chemical NSR Section and is subject to change. Last update was made March 2021. These emission calculations represent current NSR guidelines and are provided for informational purposes only. The emission calculations are subject to change based on TCEQ case by case evaluation. Please contact the appropriate Chemical NSR Section management if there are questions related to the emission calculations.

Sample Calculations for Flares

The flare destruction efficiencies and emission factors are used in the sample calculations that follow. The TCEQ accepted destruction efficiencies and emission factors used in the sample calculations are included in Attachment A. Assuming an ideal gas mixture, use the ideal gas law to convert the volumetric flow rates from Attachment B (table template uses TCEQ NSR Table 8, Flare systems) and Table 1 into mass flow rates. The values are shown in Table 2.

$$m = \frac{60(MW)PV}{RT}$$

Where: m = mass flow rate in lb/hr,
MW = molecular weight in lb/lbmole,
P = standard pressure = 14.7 psia,
V = flow rate in scfm,
R = gas constant = $10.73 \frac{psia \cdot ft^3}{lbmol \cdot {}^oR}$
T = standard temperature = $528\ {}^oR$

Table 1. Waste Stream Constituents in Mole Percent

Constituent	Average Case		Maximum Case	
	scfm	Mole %	scfm	Mole %
Butane	10.16	5.08	12.70	5.08
Propylene	5.94	2.97	7.43	2.97
Propane	5.08	2.54	6.35	2.54
Ethylene	84.74	42.37	105.93	42.37
Ethane	37.28	18.64	46.60	18.64
Hydrogen	22.04	11.02	27.55	11.02
Ammonia	4.24	2.12	5.30	2.12
Inerts	30.50	15.26	38.15	15.26
Totals	200.00	100.00	250.00	100.00

Table 2. Estimation of Average Mass Flow Rate

Constituent	scfm	MW	lb/hr
Butane	10.16	58.12	91.93
Propylene	5.94	42.08	38.91
Propane	5.08	44.09	34.87
Ethylene	84.74	28.05	370.05
Ethane	37.28	30.07	174.52
Hydrogen	22.04	2.02	6.93
Ammonia	4.24	17.03	11.24

***Waste Stream DRE*.**
Applying 98 percent destruction efficiency for butane+ and hydrogen, and 99 percent destruction efficiency for propylene, propane, ethylene, and ammonia[1], the hourly maximum and annual emission rates may then be estimated (Table 3). The hourly emissions are calculated using the maximum case flow rate, which is 25 percent greater than the average case. Note that the ethane and hydrogen emission rates need not be shown on the NSR Table 1(a) submitted with the permit application, since these emissions are not regulated as pollutants.

Table 3. Emission Rates

Constituent	lb/hr	tpy
Butane	2.30	8.05
Propylene	0.49	1.70
Propane	0.44	1.53
Ethylene	4.63	16.21
Ethane	2.18	7.64
Hydrogen	0.17	0.61
Ammonia	0.14	0.49

***NO_x and CO Emissions*.**
The mole percent of each constituent in the waste stream may be calculated for both the average and maximum scenarios by dividing the individual flow rates by the total flow rates and multiplying by 100 percent (Table 1). In this case, the calculations are simplified since the average and maximum case waste streams have the same compositions. If they were of different composition, the heating value calculations would be required for both cases. Note that the maximum case shows the maximum vent stream to the flare under normal operating conditions for calculating emissions from the flare (upset and maintenance conditions are not considered). Emergency and maintenance emissions are not directed to the example flare.

Next, estimate the net, or lower, heating value of the waste stream by assuming a basis of 1 scf. Heats of combustion for most compounds may be found in any common engineering reference book. The net heat release will be used in determining which NO_x and CO factors to use as well as verifying that the flare will meet the minimum heating value requirements of 40 CFR § 60.18.

[1] The destruction efficiency of ammonia is subject to case-by-case review.

Based on the overall net heat release (see Table 4), it is now evident that the NO_x and CO factors for high-Btu[2], air-assisted flares should be used. Using these factors:

$$\left(\frac{0.138\ lb\ NO_x}{MMBtu}\right)\left(\frac{1228\ Btu}{scf}\right)\left(\frac{1\ MMBtu}{10^6\ Btu}\right)\left(\frac{250\ scf}{\min}\right)\left(\frac{60\ \min}{hr}\right) = 2.54\ lb\ NO_x/hr$$

$$\left(\frac{0.138\ lb\ NO_x}{MMBtu}\right)\left(\frac{1228\ Btu}{scf}\right)\left(\frac{1\ MMBtu}{10^6\ Btu}\right)\left(\frac{200\ scf}{\min}\right)\left(\frac{ton}{2000\ lb}\right)\left(\frac{60\ \min}{hr}\right)\left(\frac{8760\ hr}{yr}\right) = 8.91\ tons\ NO_x/yr$$

$$\left(\frac{0.2755\ lb\ CO}{MMBtu}\right)\left(\frac{1228\ Btu}{scf}\right)\left(\frac{1\ MMBtu}{10^6\ Btu}\right)\left(\frac{250\ scf}{\min}\right)\left(\frac{60\ \min}{hr}\right) = 5.07\ lb\ CO/hr$$

$$\left(\frac{0.2755\ lb\ CO}{MMBtu}\right)\left(\frac{1228\ Btu}{scf}\right)\left(\frac{1\ MMBtu}{10^6\ Btu}\right)\left(\frac{200\ scf}{\min}\right)\left(\frac{ton}{2000\ lb}\right)\left(\frac{60\ \min}{hr}\right)\left(\frac{8760\ hr}{yr}\right) = 17.78\ tons\ CO/yr$$

Table 4. Estimation of Net Heat Releases

Constituent	scf	Net Heating Value Btu/scf	Net Heat Release[3] Btu/scf
Butane	0.0508	2,956	150
Propylene	0.0297	2,142	64
Propane	0.0254	2,272	58
Ethylene	0.4237	1,471	623
Ethane	0.1864	1,587	296
Hydrogen	0.1102	269	30
Ammonia	0.0212	352	7
Inerts	0.1526	0	0
Totals	1.000		1,228

The NO_x emissions also need to be corrected for the fuel NO_x from ammonia. Fuel NO_x is assumed 0.5 wt percent of inlet NH_3[4].

[2] The high-Btu waste streams referred to streams have a heating value greater than 1,000 Btu/scf.
[3] Net heat release assumes a basis of 1 scf.
[4] NH_3 to fuel NO_x conversion is subject to case-by-case review.

In this case,

$$\left(11.24\,\frac{lb}{hr}\,ammonia\right)\left(\frac{0.5\,NO_x}{100\,ammonia}\right)\left(\frac{250\,scfm}{200\,scfm}\right)=0.07\,\frac{lb}{hr}\,NO_x$$

$$\left(11.24\,\frac{lb}{hr}\,ammonia\right)\left(\frac{0.5\,NO_x}{100\,ammnonia}\right)\left(\frac{24\,hr}{day}\right)\left(\frac{365\,day}{yr}\right)\left(\frac{1\,ton}{2000\,lb}\right)=0.25\,tpy\,NO_x$$

This results in total NO_x emissions of 2.61 lb/hr (=2.54 lb/hr +0.07 lb/hr) and 9.16 tpy (=8.91 tpy+0.25 tpy).

Particulate Emissions.
Particulate emissions should be negligible and should therefore not be estimated since smoking flares are excluded from permitting as defined in 30 TAC Section 111.111. There may be cases where there are noncombustible elements (such as metals) associated with the VOC being combusted. If this is the case, these emissions should be estimated based on sampling results from the waste stream. The AP-42 landfill flare particulate matter factor may be used if the flare controls landfill gas.

The following sample calculation demonstrates how to handle waste streams with hydrogen sulfide.

H_2S Emissions.
For instances where a waste stream to a flare contains H_2S, assume that 100 percent by weight of H_2S is converted to SO_2 (the H_2S allowable DRE is 98 percent but actual flare operation could combust almost 100 percent of the waste stream). Referring to Attachment C (table template uses TCEQ NSR Table 8, Flare systems), convert the design maximum H_2S volumetric waste flow rate into a molar flow rate using the ideal gas law:

$$\frac{(4.5\ ft^3/\min)(14.7\ psia)(60\ \min/hr)}{(10.73\ psia\cdot ft^3/lbmol\cdot{}^oR)(528\ {}^oR)}=0.701\,lbmol\ H_2S/hr$$

One mole of H_2S will form one mole of SO_2:

$$\frac{(0.701\,lbmol\ H_2S/hr)(1\,lbmol\ SO_2/lbmol\ H_2S)}{(1\,lbmol\ SO_2/64\,lb\ SO_2)}=44.9\,lb\ SO_2/hr$$

and as much as 2 percent of the H_2S will remain:

$$(0.02)\left(\frac{0.701\ lbmol\,H_2S}{hr}\right)\left(\frac{34\,lb\,H_2S}{lbmol\,H_2S}\right)=0.48\,lb\,H_2S/hr$$

Calculations for annual emissions should be performed in a similar manner using the average H_2S flow rate of 3.5 scfm, resulting in 0.55 lbmol H_2S/hr, and 34.9 lb SO_2/hr. The annual SO_2 emissions should then be estimated on a tons-per-year (tpy) basis:

$$\left(\frac{34.9\,lb}{hr}\right)\left(\frac{1\,ton}{2000\,lb}\right)\left(\frac{24\,hr}{day}\right)\left(\frac{365\,day}{yr}\right)=152.7\ TPY\ \ SO_2$$

and, likewise, 2 percent of the H_2S will remain:

$$\frac{(3.5\frac{ft^3}{min})(14.7\ psia)(\frac{60min}{hr})}{(10.73\ psia\cdot\frac{ft^3}{lbmol}\cdot o_R)(528o_R)}=0.545\ \frac{lbmol\ H_2S}{hr}$$

$$(0.02)\left(0.545\ \frac{lbmol\ H_2S}{hr}\right)\left(\frac{34\ lb\ H_2S}{lbmol\ H_2S}\right)=\frac{0.37lb\ H_2S}{hr}$$

$$\left(\frac{0.37lb\ H_2S}{hr}\right)\left(\frac{1\ ton}{2000\ lb}\right)\left(\frac{24\ hr}{day}\right)\left(\frac{365\ day}{yr}\right)=1.62\ ton\ SO_2/yr$$

40 CFR § 60.18 BACT Check

Calculations should also be performed to ensure the proposed flare meets BACT requirements of 40 CFR § 60.18. It was noted that H_T = 1,228 Btu/scf (Table 4) is greater than the minimum heating value of 300 Btu/scf required for air-assisted flares according to 40 CFR § 60.18(c)(3); therefore, this flare would be in compliance. In accordance with 60.18(5), air-assisted flares designed for and operated with an exit velocity less than the value V_{max} as calculated below, and less than 122 m/s (400 ft/s) are allowed. For this flare:

$V_{max} = 8.706 + 0.7084H_T = 8.706 + 0.7084(43.3) = 39.4$ m/s

The actual flare tip velocity may then be calculated for comparison using the design maximum flow rate and the flare tip area based on the flare tip diameter:

$V_{actual} = Q/A$

where Q = volumetric flow rate, ft^3/min, and
A = flare tip area, ft^2

$$V_{actual}=\left(\frac{250\,ft^3}{\min}\right)\left(\frac{4}{\pi\cdot(1\,ft)^2}\right)\left(\frac{1\,\min}{60\sec}\right)\left(\frac{0.3048m}{ft}\right)=1.62\,m/s$$

So, the sample flare meets the flare tip velocity restrictions of 40 CFR § 60.18.

40 CFR § 60.18 BACT Check for Hydrogen Flares

Similar to the previous example, calculations should also be performed to ensure a proposed hydrogen flare meets the BACT requirements of 40 CFR § 60.18. The heating value is calculated in the same manner as the above example. The flare diameter must be greater than 3 inches, the hydrogen content must be greater than 8.0 percent by volume and the exit velocity, Vmax, less than 37.2 m/s (122 ft/s) as calculated below. For example, a stream with an 11.0 percent hydrogen volume on a wet basis the maximum velocity would be:

$$V_{\max}=(X_{H_2}-K_1)\cdot K_2=(11.0-6.0)\cdot 3.9=19.5\,m/s\ (64.0\,ft/s)$$

So, the sample hydrogen flare would meet the flare tip velocity requirements of 40 CFR § 60.18.

Modeling Calculations

The net heating value of the waste gas stream to the flare and the flare height is sufficient information for the reviewing engineer to perform initial screen modeling using the EPA Screen 3 model with the built-in flare source algorithm; however, additional calculations must be provided to the reviewing engineer if refined modeling using the EPA ISC series of models and the point source algorithm is required. It should be noted that refined modeling is the applicant's responsibility and may be requested as determined to be appropriate by the reviewing engineer.

Flares are considered a special type of elevated source that may be modeled as a point source. In a flare, the velocity of the waste stream and the flare temperature are not used to determine the plume rise; rather, the TCEQ suggests use of the parameters and formula explained below to calculate the effective stack diameter based upon the net heat release and the average molecular weight of the compounds being burned.

If a flare is to be treated as a point source, accurate determination of all stack parameters is not possible. Since combustion occurs at or beyond the flare tip in the atmosphere, appropriate values for stack exit temperature and exit velocity cannot be accurately determined. The diameter of the pipe leading to the flare tip is not a factor in determining plume rise. The point source algorithm can be used with arbitrary values assigned

for stack exit velocity (20 m/s or 66 fps) and temperature (1,273K or 1,831F) to predict dispersion for flare type sources.

A stack height equal to the height of the flare tip is recommended for flares. The effective flare tip diameter is determined using the following equation:

$$D = \sqrt{(10^{-6})q(1 - 0.048\sqrt{(MW)})}$$

where D = effective flare tip diameter, meters,
q = net or lower heat release, cal/sec, and
MW = volume average molecular weight, g/g-mole.

First, estimate the net heat release based upon the overall net heating value from Table 4 and maximum waste gas stream flow rate from Table 1:

$$q = \left(\frac{1228\,Btu}{scf}\right)\left(\frac{250\,scf}{\min}\right)\left(\frac{1\min}{60\sec}\right)\left(\frac{252\,cal}{Btu}\right) = 1.289{,}400\,cal/\sec$$

Next, estimate the volume average molecular weight based upon the maximum volumetric flow rate (Table 1) and the molecular weights of the individual constituents (Table 5). Finally, estimate the effective flare tip diameter based on the net heat release and average molecular weight:

$$D = \sqrt{(10^{-6})\left(1{,}289{,}400\,\frac{cal}{\sec}\right)(1 - 0.048\sqrt{(27.61)})} = 3.22\ ft$$

Enclosed vapor combustion units should not be modeled with the above parameters, but instead with stack parameters that reflect the physical characteristics of the process unit.

Table 5. Estimation of Volume Average Molecular Weight

Constituent	scfm	Mole Fraction (MF)	Molecular Weight (MW)	MF x MW
Butane	10.16	0.060	58.12	3.49
Propylene	5.94	0.035	42.08	1.47
Propane	5.08	0.030	44.09	1.32
Ethylene	84.74	0.500	28.05	14.02
Ethane	37.28	0.220	30.07	6.62
Hydrogen	22.04	0.130	2.02	0.26
Ammonia	4.24	0.025	17.03	0.43
Totals		1.0000		27.61

Waste Stream[5]	Destruction/Removal Efficiency (DRE)
VOC	98 percent (generic)
	99 percent for compounds containing no more than 3 carbons that contain no elements other than carbon and hydrogen in addition to the following compounds: methanol, ethanol, propanol, ethylene oxide and propylene oxide.
H_2S	98 percent
NH_3	case-by-case
CO	case-by-case

Air Contaminants	Emission Factors	Btu	lb/MMBtu
Thermal NO_x	Steam-assist	High Btu	0.0485 lb/MMBtu
		Low Btu	0.068 lb/MMBtu
	Other	High Btu	0.138 lb/MMBtu
		Low Btu	0.0641 lb/MMBtu

Air Contaminants	Emission Factors
Fuel NO_x	NO_x is 0.5 wt percent of inlet NH_3 in the sample calculations. The actual conversion of ammonia and other fuels to Fuel NO_x are subject to case-by-case review.

Air Contaminants	Emission Factors	Btu	lb/MMBtu
CO	Steam-assist	High Btu	0.3503 lb/MMBtu
		Low Btu	0.3465 lb/MMBtu
	Other	High Btu	0.2755 lb/MMBtu
		Low Btu	0.5496 lb/MMBtu

Air Contaminants	Emission Factors
PM	None, required to be smokeless
SO_2	100 percent S in fuel to SO_2

[5]The only exception of this is if inorganics might be emitted from the flare. In the case of landfills, the AP-42 PM factor may be used. In other cases, the emissions should be based on the composition of the waste stream routed to the flare.

Texas Commission on Environmental Quality
Table 8
Flare Systems

Emission Point No. (EPN): Refinery Flare
Manufacturer: NA
Model No. (if available): NA

Type (elevated, ground level, pit)	Assisted (air, steam, non-assisted)	Operation (routine, MSS, emergency, dual)	Flare Height (ft.)	Flare tip inside diameter (ft.)
Elevated	Steam-assisted	Routine	60	1

Characteristics of Input

Waste Gas Stream Material (identify stream)	Minimum Value Expected (scfm [68°F, 14.7 psia])	Average Value Expected (scfm [68°F, 14.7 psia])	Design Maximum (scfm [68°F, 14.7 psia])	BTU/scf Rating
1. Butane	0	10.16	12.70	2956
2. Propylene	0	5.94	7.43	2142
3. Propane	0	5.08	6.35	2272
4. Ethylene	0	84.74	105.93	1471
5. Ethane	0	37.28	46.60	1587
6. H_2	0	22.04	27.55	269
7. NH_3	0	4.24	5.30	352
8. Inerts	0	30.50	38.15	0
Percent of time this condition occurs:	5	80	15	

Commercial products appearing in our Effects Screening Levels (ESLs) list, such as gasoline, may appear on this table as such or as individual constituents.

Attachment B — Example Refinery Flare Data

Number of Pilots	Type Fuel	Fuel Flow Rate (scfm [70°F and 14.7 psia]) per pilot	Total Heat Release Rate (Btu/hr)	Fuel Usage (scfm) Minimum	Fuel Usage (scfm) Maximum
1	Natural Gas	0.5			

Stream	Flow Rate (scfm [68°F, 14.7 psia]) Minimum Expected	Flow Rate (scfm [68°F, 14.7 psia]) Design Maximum	Total Heat Release Rate Average Btu/hr	Total Heat Release Rate Maximum Btu/hr	Btu/scf	Temp. °F	Pressure (psig)
Assist Gas		0.5				110	0
Waste Gas	200	250				130	0

For Steam Injection

Steam Pressure (psig) Minimum Expected	Steam Pressure (psig) Design Maximum	Total Steam Flow Rate (lb/hr)	Temp. °F	Velocity (ft/sec)	Number of Jet Streams	Diameter of Steam Jets (inches)	Design basis for steam injected (lb steam/lb hydrocarbon)

For Water Injection

Water Pressure (psig) Minimum Expected	Water Pressure (psig) Design Maximum	Total Water Flow Rate (gpm) Minimum Expected	Total Water Flow Rate (gpm) Design Maximum	Number of Water Jets	Diameter of Water Jets (inches)

Attachment B — Example Refinery Flare Data

Operating Schedule

Normal (hours/day)	Normal (days/week)	Normal (weeks/yr)	Maximum (hours/day)	Maximum (days/week)	Maximum (weeks/yr)
24	7				

Supply an assembly drawing, dimensioned and to scale, to clearly show the operation of the flare system. Show interior dimensions and features of the equipment necessary to calculate its performance. Also describe the type of ignition system and its method of operation. Provide an explanation of the control system for steam flow rate and other operating variables.

Texas Commission on Environmental Quality
Table 8
Flare Systems

Emission Point No. (EPN): Acid Gas Flare
Manufacturer: NA
Model No. (if available): NA

Type (elevated, ground level, pit)	Assisted (air, steam, non-assisted)	Operation (routine, MSS, emergency, dual)	Flare Height (ft.)	Flare Tip Inside Diameter (ft.)
Elevated	Non-assisted	Routine	60	0.20

Characteristics of Input

Waste Gas Stream Material (identify stream)	Minimum Value Expected (scfm [68°F, 14.7 psia])	Average Value Expected (scfm [68°F, 14.7 psia])	Design Maximum (scfm [68°F, 14.7 psia])	BTU/scf Rating
1. H_2S	0	3.5	4.5	
2.				
3.				
4.				
5.				
6.				
7.				
8.				
Percent of time this condition occurs:				

Commercial products appearing in our Effects Screening Levels (ESLs) list, such as gasoline, may appear on this table as such or as individual constituents.

Attachment C — Example Acid Gas Glare Data

Number of Pilots	Type Fuel	Fuel Flow Rate (scfm [70°F and 14.7 psia]) per pilot	Total Heat Release Rate (Btu/hr)	Fuel Usage (scfm) Minimum	Fuel Usage (scfm) Maximum
1	Natural Gas	0.6			

Stream	Flow Rate (scfm [68°F, 14.7 psia]) Minimum Expected	Flow Rate (scfm [68°F, 14.7 psia]) Design Maximum	Total Heat Release Rate Average Btu/hr	Total Heat Release Rate Maximum Btu/hr	Btu/scf	Temp. °F	Pressure (psig)
Assist Gas	0	7.5				90	10
Waste Gas	0	4.5				200	10

For Steam Injection

Steam Pressure (psig) Minimum Expected	Steam Pressure (psig) Design Maximum	Total Steam Flow Rate (lb/hr)	Temp. °F	Velocity (ft/sec)	Number of Jet Streams	Diameter of Steam Jets (inches)	Design Basis for Steam Injected (lb steam/lb hydrocarbon)

For Water Injection

Water Pressure (psig) Minimum Expected	Water Pressure (psig) Design Maximum	Total Water Flow Rate (gpm) Minimum Expected	Total Water Flow Rate (gpm) Design Maximum	Number of Water Jets	Diameter of Water Jets (inches)

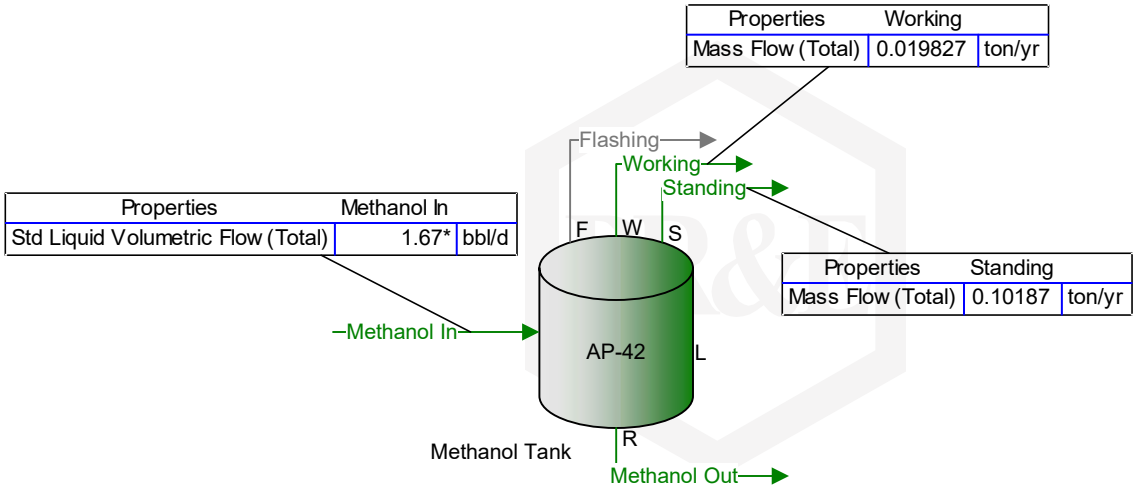
Attachment C — Example Acid Gas Glare Data

Operating Schedule

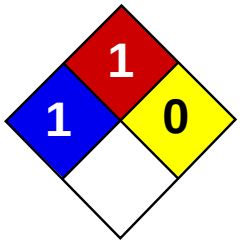
Normal (hours/day)	Normal (days/week)	Normal (weeks/yr)	Maximum (hours/day)	Maximum (days/week)	Maximum (weeks/yr)
			24	7	52

Supply an assembly drawing, dimensioned and to scale, to clearly show the operation of the flare system. Show interior dimensions and features of the equipment necessary to calculate its performance. Also describe the type of ignition system and its method of operation. Provide an explanation of the control system for steam flow rate and other operating variables.

Methanol Tank Calculations (EPN: TK-M)







Health	1
Fire	1
Reactivity	0
Personal Protection	C

Material Safety Data Sheet
Ethylene glycol MSDS

Section 1: Chemical Product and Company Identification

Product Name: Ethylene glycol

Catalog Codes: SLE1072

CAS#: 107-21-1

RTECS: KW2975000

TSCA: TSCA 8(b) inventory: Ethylene glycol

CI#: Not available.

Synonym: 1,2-Dihydroxyethane; 1,2-Ethanediol; 1,2-Ethandiol; Ethylene dihydrate; Glycol alcohol; Monoethylene glycol; Tescol

Chemical Name: Ethylene Glycol

Chemical Formula: HOCH2CH2OH

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Ethylene glycol	107-21-1	100

Toxicological Data on Ingredients: Ethylene glycol: ORAL (LD50): Acute: 4700 mg/kg [Rat]. 5500 mg/kg [Mouse]. 6610 mg/kg [Guinea pig]. VAPOR (LC50): Acute: >200 mg/m 4 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of inhalation. Severe over-exposure can result in death.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Non-mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention if irritation occurs.

Skin Contact:
Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion:
Medical Conditions Aggravated by Exposure: Persons with pre-existiing kidney, respiratory, eye, or neurological problems might be more sensitive to Ethylene Glycol. Notes to Physician: 1. Support vital functions, correct for dehydration and shock, and manage fluid balance. 2. The currently recommended medical management of Ethylene Glycol poisoning includes elimination of Ethylene Glycol and metabolites. Elimination of Ethylene Glycol may be achieved by the following methods: a. Emptying the stomach by gastric lavage. It is useful if initiated within < 1 of ingestion. b. Correct metabolic acidosis with intravenous administration of sodium bicarbonate, adjusting the administration rate accoridng to repeated and frequent measurement of acid/base status. c. Administer ethanol (orally or by IV (intravenously)) or fomepizole (4-methylpyrazole or Antizol)) therapy by IV as an antidote to inhibit the ormation of toxic metabolites. d. If patients are diagnosed and treated early in the course with the above methods, hemodialysis may be avoided if fomepizole or ethanol therapy is effective and has corrected the metabolic acidosis, and no renal failure is present. However, once severe acidosis and renal failure occured, however, hemodialysis is necessary. It is effective in removing Ethylene Glycol and toxic metabolites, and correcting metabolic acidosis.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 398°C (748.4°F)

Flash Points: CLOSED CUP: 111°C (231.8°F). (Tagliabue.)

Flammable Limits: LOWER: 3.2%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Slightly flammable to flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards:
Explosive decomposition may occur if combined with strong acids or strong bases and subjected to elevated temperatures.

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, alkalis.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Hygroscopic

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Safety glasses. Synthetic apron. Gloves (impervious). For most conditions, no respiratory protection should be needed. However, if material is heated or sprayed and if atmospheric levels exceed exposure guidelines, use an approved vapor (air purifying) respirator.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
STEL: 120 (mg/m3) [Australia] TWA: 100 (mg/m3) from ACGIH (TLV) [United States] CEIL: 125 (mg/m3) from OSHA (PEL) [United States] CEIL: 50 (ppm) from OSHA (PEL) [United States] TWA: 52 STEL: 104 (mg/m3) [United Kingdom (UK)] Inhalation TWA: 10 (mg/m3) [United Kingdom (UK)] SKIN3 Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (syrupy)

Odor: Odorless.

Taste: Mild sweet

Molecular Weight: 62.07 g/mole

Color: Clear Colorless.

pH (1% soln/water): Not available.

Boiling Point: 197.6°C (387.7°F)

Melting Point: -13°C (8.6°F)

Critical Temperature: Not available.

Specific Gravity: 1.1088 (Water = 1)

Vapor Pressure: .06 mmHg @ 20 C; .092 mmHg at 25 C

Vapor Density: 2.14 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: The product is more soluble in water; log(oil/water) = -1.4

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, acetone.

Solubility:
Soluble in cold water, hot water, acetone. Slightly soluble in diethyl ether. Miscible with lower aliphatic alcohols, glycerol, acetic acid, acetone and similar ketones, aldehydes, pyridine, similar coal tar bases. Practically insoluble in benzene and its homologs, chlorinated hydrocarbons, petroleum ether.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, incompatible materials.

Incompatibility with various substances: Reactive with oxidizing agents, acids, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Hygroscopic. Absorbs moisture from the air. Avoid contamination with materials with hydroxyl compounds. Also incompatible with aliphatic amines, isocyanates, chlorosulfonic acid, and oleum

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Ingestion.

Toxicity to Animals:
Acute oral toxicity (LD50): 4700 mg/kg [Rat]. Acute toxicity of the vapor (LC50): >200 mg/m3 4 hours [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Non-mutagenic for bacteria and/or yeast. May cause damage to the following organs: kidneys, liver, central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant, permeator), of inhalation.

Special Remarks on Toxicity to Animals:
Lowest Published Toxic Dose/Conc: TDL [Man] - Route: oral; Dose: 15gm/kg Lethal Dose/Conc 50% Kill LD50 [Rabbit] - Route: dermal; Dose: 9530 ul/kg

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects and birth defects (teratogenic) based on animal test data. No human data has been reported at this time. May affect genetic material (mutagenic)

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: May cause skin irritation. May cause more severe response if skin is abraded. A single prolonged exposure is not likely to result in material being absorbed through skin in harmful amounts. Massive contact with damaged skin may result in absorption of potentially harmful amounts Eyes: Vapors or mist may cause temporary eye irritation (mild temporary conjunctival inflammation) and lacrimation. Corneal injury is unlikely or insignificant.. Ingestion: It is rapidly absorbed from the gastrointestinal tract. Oral toxicity is expected to be moderate in humans due to Ethylene Glycol even though tests with animals show a lower degree of toxicity. Excessive exposure (swallowing large amounts) may cause gastrointestinal tract irritation with nausea, vomiting, abdominal discomfort, diarrhea. It can affect behavior/central nervous system within 0.5 to 12 hours after ingestion. A transient inebriation with excitement, stupor, headache, slurred speech, ataxia, somnolence, and euphoria, similar to ethanol intoxication, can occur within the first several hours. As sthe Ethylene Glycol is metabolized, metabolic acidosis and further central nervous system depression (convulsions, muscle weakness) develop. Serious intoxication may develop to coma associated with hypotonia, hyporeflexia, and less commonly seizures, and meningismus. 12 to 24 hours

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 41000 mg/l 96 hours [Fish (Trout)]. 46300 mg/l 48 hours [water flea]. 34250 mg/l 96 hours [Fish (bluegill fish)]. 34250 mg/l 72 hours [Fish (Goldfish)].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
Illinois toxic substances disclosure to employee act: Ethylene glycol Illinois chemical safety act: Ethylene glycol New York release reporting list: Ethylene glycol Rhode Island RTK hazardous substances: Ethylene glycol Pennsylvania RTK: Ethylene glycol Minnesota: Ethylene glycol Massachusetts RTK: Ethylene glycol Massachusetts spill list: Ethylene glycol New Jersey: Ethylene glycol Louisiana spill reporting: Ethylene glycol TSCA 8(b) inventory: Ethylene glycol TSCA 4(a) proposed test rules: Ethylene glycol SARA 313 toxic chemical notification and release reporting: Ethylene glycol CERCLA: Hazardous substances.: Ethylene glycol: 5000 lbs. (2268 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R22- Harmful if swallowed. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 1

Reactivity: 0

Personal Protection: C

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Not applicable. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:18 PM

Last Updated: 05/21/2013 12:00 PM

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SAFETY DATA SHEET
Lubricating Oil
According to Appendix D, OSHA Hazard Communication Standard 29 CFR §1910.1200

1. Identification

Product identifier

Product name Lubricating Oil

Chemical name Process Oil

Product number 1003, 1003B, 1003RB, 1003CN

Internal identification 1000-202

CAS number 64742-54-7

Recommended use of the chemical and restrictions on use

Application Firearm Lubrication

Uses advised against No specific uses advised against are identified.

Details of the supplier of the safety data sheet

Manufacturer Bushnell Holdings Inc
9200 Cody
Overland Park, KS 66214
1-800-423-3537
dangerous.goods@vistaoutdoor.com

Emergency telephone number

Emergency telephone Emergency Telephone Number (Hazardous Material/Dangerous Goods Transportation Emergency Only) 1-800-424-9300 (Inside US Only) +01-703-527-3887 (Outside US) - (CHEMTREC, Day and Night)

2. Hazard(s) identification

Classification of the substance or mixture

Physical hazards Not Classified

Health hazards Not Classified

Environmental hazards Not Classified

Label elements

Hazard statements NC Not Classified

Other hazards

This substance is not classified as PBT or vPvB according to current EU criteria.

3. Composition/information on ingredients

Substances

Product name Lubricating Oil

Chemical name Process Oil

CAS number 64742-54-7

4. First-aid measures

Description of first aid measures

Lubricating Oil

General information	If in doubt, get medical attention promptly. Show this Safety Data Sheet to the medical personnel.
Inhalation	No specific recommendations. If throat irritation or coughing persists, proceed as follows. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Loosen tight clothing such as collar, tie or belt. Get medical attention if any discomfort continues.
Ingestion	No specific recommendations. If throat irritation or coughing persists, proceed as follows. Rinse mouth. Get medical attention if any discomfort continues.
Skin Contact	No specific recommendations. Rinse with water. Get medical attention if any discomfort continues.
Eye contact	Remove any contact lenses and open eyelids wide apart. Rinse with water. Get medical attention if any discomfort continues.
Protection of first aiders	Use protective equipment appropriate for surrounding materials.

Most important symptoms and effects, both acute and delayed

General information	The severity of the symptoms described will vary dependent on the concentration and the length of exposure.
Inhalation	No specific symptoms known. Spray/mists may cause respiratory tract irritation.
Ingestion	No specific symptoms known. May cause discomfort if swallowed.
Skin contact	No specific symptoms known. May cause discomfort.
Eye contact	No specific symptoms known. May be slightly irritating to eyes.

Indication of immediate medical attention and special treatment needed

Notes for the doctor	Treat symptomatically.
Specific treatments	No special treatment required.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

Special hazards arising from the substance or mixture

Specific hazards	Containers can burst violently or explode when heated, due to excessive pressure build-up.
Hazardous combustion products	Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors.

Advice for firefighters

Protective actions during firefighting	Avoid breathing fire gases or vapors. Evacuate area. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. If a leak or spill has not ignited, use water spray to disperse vapors and protect men stopping the leak.
Special protective equipment for firefighters	Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Standard Firefighter's clothing including helmets, protective boots and gloves will provide a basic level of protection for chemical incidents.

Lubricating Oil

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions No specific recommendations. For personal protection, see Section 8.

Environmental precautions

Environmental precautions Avoid discharge into drains or watercourses or onto the ground.

Methods and material for containment and cleaning up

Methods for cleaning up Reuse or recycle products wherever possible. Absorb spillage to prevent material damage. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. Dispose of contents/container in accordance with national regulations.

Reference to other sections For personal protection, see Section 8. For waste disposal, see Section 13.

7. Handling and storage

Precautions for safe handling

Usage precautions Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Handle all packages and containers carefully to minimize spills. Keep container tightly sealed when not in use. Avoid the formation of mists.

Advice on general occupational hygiene Wash promptly if skin becomes contaminated. Take off contaminated clothing and wash before reuse. Wash contaminated clothing before reuse.

Conditions for safe storage, including any incompatibilities

Storage precautions Store away from incompatible materials (see Section 10). No specific recommendations.

Storage class Unspecified storage.

Specific end uses(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.

8. Exposure Controls/personal protection

Control parameters

Occupational exposure limits

Long-term exposure limit (8-hour TWA): OSHA 5 mg/m³
Long-term exposure limit (8-hour TWA): ACGIH 5 mg/m³
Short-term exposure limit (15-minute): ACGIH 10 mg/m³

OSHA = Occupational Safety and Health Administration.
ACGIH = American Conference of Governmental Industrial Hygienists.

Exposure controls

Protective equipment



Appropriate engineering controls No specific ventilation requirements.

Eye/face protection No specific eye protection required during normal use. Large Spillages: Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible.

Lubricating Oil

Hand protection	No specific hand protection recommended. Large Spillages: Wear protective gloves.
Other skin and body protection	Wear appropriate clothing to prevent repeated or prolonged skin contact.
Hygiene measures	Wash after use and before eating, smoking and using the toilet. Do not eat, drink or smoke when using this product.
Respiratory protection	No specific recommendations. Provide adequate ventilation. Large Spillages: If ventilation is inadequate, suitable respiratory protection must be worn.
Environmental exposure controls	Not regarded as dangerous for the environment.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Appearance	Clear liquid.
Color	Water-white.
Odor	Odorless.
pH	Not applicable.
Melting point	Not determined.
Initial boiling point and range	315°C/599°F
Flash point	192°C/378°F
Evaporation rate	No information available.
Flammability (solid, gas)	Class IIIB Liquid
Upper/lower flammability or explosive limits	Not available.
Vapor pressure	< 0.01 mm Hg @ 25°C
Vapor density	> 1.0 g/cc
Relative density	0.866
Bulk density	7.228 lb/gal
Solubility(ies)	Insoluble in water.
Partition coefficient	Not determined.
Auto-ignition temperature	210°C/410°F
Decomposition Temperature	Not determined.
Volatility	3% wt (Max)

10. Stability and reactivity

Reactivity	See the other subsections of this section for further details.
Stability	Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.
Possibility of hazardous reactions	No potentially hazardous reactions known.

Lubricating Oil

Conditions to avoid	There are no known conditions that are likely to result in a hazardous situation.
Materials to avoid	No specific material or group of materials is likely to react with the product to produce a hazardous situation.
Hazardous decomposition products	Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors.

11. Toxicological information

Information on toxicological effects

Toxicological effects	Not regarded as a health hazard under current legislation.

Acute toxicity - oral

Notes (oral LD_{50})	Based on available data the classification criteria are not met.

Acute toxicity - dermal

Notes (dermal LD_{50})	Based on available data the classification criteria are not met.

Acute toxicity - inhalation

Notes (inhalation LC_{50})	Based on available data the classification criteria are not met.

Skin corrosion/irritation

Animal data	Based on available data the classification criteria are not met.

Serious eye damage/irritation

Serious eye damage/irritation	Based on available data the classification criteria are not met.

Respiratory sensitization

Respiratory sensitization	Based on available data the classification criteria are not met.

Skin sensitization

Skin sensitization	Based on available data the classification criteria are not met.

Germ cell mutagenicity

Genotoxicity - in vitro	Based on available data the classification criteria are not met.

Carcinogenicity

Carcinogenicity	Based on available data the classification criteria are not met.
IARC carcinogenicity	None of the ingredients are listed or exempt.

Reproductive toxicity

Reproductive toxicity - fertility	Based on available data the classification criteria are not met.
Reproductive toxicity - development	Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure

STOT - single exposure	Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure	Not classified as a specific target organ toxicant after repeated exposure.

Aspiration hazard

Aspiration hazard	Based on available data the classification criteria are not met.

Lubricating Oil

General information	No specific health hazards known. The severity of the symptoms described will vary dependent on the concentration and the length of exposure.
Inhalation	No specific symptoms known. Spray/mists may cause respiratory tract irritation.
Ingestion	No specific symptoms known. May cause discomfort if swallowed.
Skin Contact	No specific symptoms known. May cause discomfort.
Eye contact	No specific symptoms known. May be slightly irritating to eyes.
Route of entry	Ingestion Inhalation Skin and/or eye contact
Target Organs	No specific target organs known.

12. Ecological Information

Ecotoxicity	Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment.
Toxicity	Based on available data the classification criteria are not met.

Persistence and degradability

Persistence and degradability	The degradability of the product is not known.

Bioaccumulative potential

Bio-Accumulative Potential	No data available on bioaccumulation.
Partition coefficient	Not determined.

Mobility in soil

Mobility	No data available.

Other adverse effects

Other adverse effects	None known.

13. Disposal considerations

Waste treatment methods

General information	The generation of waste should be minimized or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way.
Disposal methods	Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste packaging should be collected for reuse or recycling. Incineration or landfill should only be considered when recycling is not feasible. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of the local water authority.

14. Transport information

General	The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, DOT).

UN Number

Not applicable.

UN proper shipping name

Not applicable.

Lubricating Oil

Transport hazard class(es)

No transport warning sign required.

Packing group

Not applicable.

Environmental hazards

Environmentally Hazardous Substance
No.

Special precautions for user

Not applicable.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

US Federal Regulations

SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities
None of the ingredients are listed or exempt.

CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)
None of the ingredients are listed or exempt.

SARA Extremely Hazardous Substances EPCRA Reportable Quantities
None of the ingredients are listed or exempt.

SARA 313 Emission Reporting
None of the ingredients are listed or exempt.

CAA Accidental Release Prevention
None of the ingredients are listed or exempt.

FDA - Essential Chemical
None of the ingredients are listed or exempt.

FDA - Precursor Chemical
None of the ingredients are listed or exempt.

SARA (311/312) Hazard Categories
None of the ingredients are listed or exempt.

OSHA Highly Hazardous Chemicals
None of the ingredients are listed or exempt.

US State Regulations

California Proposition 65 Carcinogens and Reproductive Toxins
None of the ingredients are listed or exempt.

California Air Toxics "Hot Spots" (A-I)
None of the ingredients are listed or exempt.

California Air Toxics "Hot Spots" (A-II)
None of the ingredients are listed or exempt.

Lubricating Oil

California Directors List of Hazardous Substances
None of the ingredients are listed or exempt.

Massachusetts "Right To Know" List
None of the ingredients are listed or exempt.

Rhode Island "Right To Know" List
None of the ingredients are listed or exempt.

Minnesota "Right To Know" List
None of the ingredients are listed or exempt.

New Jersey "Right To Know" List
None of the ingredients are listed or exempt.

Pennsylvania "Right To Know" List
None of the ingredients are listed or exempt.

Inventories

US - TSCA
None of the ingredients are listed or exempt.

US - TSCA 12(b) Export Notification
None of the ingredients are listed or exempt.

16. Other information

Classification abbreviations and acronyms	Asp. Tox. = Aspiration hazard
Training advice	Only trained personnel should use this material.
Revision date	2/8/2019
Revision	7
Supersedes date	10/9/2017
SDS No.	4634

End of Safety Data Sheet

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

Safety Data Sheet
METHYLDIETHANOLAMINE

Version 1.4 Revision Date: 01/20/2025

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : METHYLDIETHANOLAMINE

Recommended use of the chemical and restrictions on use

Recommended use : Industrial chemical

Manufacturer or supplier's details

Company : Univar Solutions USA
Address 3075 Highland Pkwy Suite 200
Downers Grove, IL 60515
United States of America (USA)

Emergency telephone number:
Transport North America: CHEMTREC (1-800-424-9300)
CHEMTREC INTERNATIONAL Tel # 703-527-3887

Additional Information: : Responsible Party: Product Compliance Department
E-mail: SDSNA@univarsolutions.com
SDS Requests: 1-855-429-2661
Website: www.univarsolutions.com

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Eye irritation : Category 2A

GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : H319 Causes serious eye irritation.

Precautionary statements : **Prevention:**
P264 Wash skin thoroughly after handling.
P280 Wear eye protection/ face protection.
Response:
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/ attention.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Hazardous components

CAS-No.	Chemical name	Weight percent
105-59-9	2,2'-methyliminodiethanol	90 - 100
111-42-2	Diethanolamine	0.1 - 1

Actual concentration is withheld as a trade secret
Any Concentration shown as a range is due to batch variation.

Synonyms : N-METHYLDIETHANOLAMINE,

SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

If inhaled : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of skin contact : If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes.

In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear.
Do not induce vomiting without medical advice.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

Notes to physician : Treat symptomatically

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Water spray
Dry chemical
Carbon dioxide (CO2)
Alcohol-resistant foam

Unsuitable extinguishing media : High volume water jet

Specific hazards during fire-fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : No hazardous combustion products are known

Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Further information : Standard procedure for chemical fires.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment.
Environmental precautions	:	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
Advice on safe handling	:	Do not breathe vapours/dust. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations.
Conditions for safe storage	:	Keep container tightly closed in a dry and well-ventilated place. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

CAS-No.	Components	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
111-42-2	Diethanolamine	TWA (Inhalable fraction and vapor)	1 mg/m3	ACGIH
		TWA	3 ppm 15 mg/m3	NIOSH REL
		TWA	3 ppm 15 mg/m3	OSHA P0
		PEL	0.46 ppm 2 mg/m3	CAL PEL

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally re-

quired.
In the case of vapour formation use a respirator with an approved filter.

Hand protection

Remarks	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Eye protection	:	Eye wash bottle with pure water Tightly fitting safety goggles Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	:	Impervious clothing Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Colour	:	Clear, colorless, yellow
Odour	:	amine-like, ammoniacal
Odour Threshold	:	No data available
pH	:	10.4 - 11.5 @ 20 - 25 °C (68 - 77 °F)
Freezing Point (Melting point/freezing point)	:	-21 °C (-6 °F)
Boiling Point (Boiling point/boiling range)	:	240 - 255 °C (464 - 491 °F) (1013 hPa)
Flash point	:	116 °C (241 °F) Method: Pensky-Martens closed cup
Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available
Upper explosion limit	:	10 %(V)
Lower explosion limit	:	0.9 %(V)
Vapour pressure	:	< 0.01 mmHg @ 20 °C (68 °F)
Relative vapour density	:	4 @ 20 - 25 °C (68 - 77 °F) (Air = 1.0)
Relative density	:	1.041 @ 20 °C (68 °F) Reference substance: (water = 1)
Density	:	1.04 g/cm3 @ 20 °C (68 °F)
Solubility(ies)		
Water solubility	:	> 1,000 g/l completely miscible @ 20 °C (68 °F) , 1,013 hPa

Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	log Pow: -1.08 @ 25 °C (77 °F)
Auto-ignition temperature	:	265 - 280 °C
Thermal decomposition	:	No data available
Viscosity		
Viscosity, dynamic	:	34.78 mPa.s @ 40 °C (104 °F)
Viscosity, kinematic	:	99.05 mm2/s @ 20 °C (68 °F)

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Exothermic reaction with acids.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No hazards to be specially mentioned.
Conditions to avoid	:	Keep away from heat, flame, sparks and other ignition sources. Exposure to moisture
Incompatible materials	:	Strong acids Strong oxidizing agents nitrites Halogenated compounds
Hazardous decomposition products	:	Carbon dioxide (CO2), carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Components:

111-42-2:

Acute oral toxicity : LD50 (Rat, male and female): 1,600 mg/kg

Skin corrosion/irritation

Components:

111-42-2:

Species: Rabbit
Result: Irritating to skin.

Serious eye damage/eye irritation

Components:

105-59-9:

Species: Rabbit
Result: Irritating to eyes.

111-42-2:
Species: Rabbit
Result: Risk of serious damage to eyes.

Germ cell mutagenicity

Components:

111-42-2:

Germ cell mutagenicity - Assessment	:	Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Carcinogenicity

Components:

111-42-2:

Carcinogenicity - Assessment	:	Not classifiable as a human carcinogen.
IARC		Group 2B: Possibly carcinogenic to humans
		111-42-2 Diethanolamine
OSHA		No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP		No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Components:

111-42-2:

Effects on fertility	:	Remarks: In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. Repeated excessive exposures to high amounts may cause effects on testes and fertility in males.
Reproductive toxicity - Assessment		Fertility classification not possible from current data.
Teratogenicity - Assessment	:	Embryotoxicity classification not possible from current data.

STOT - repeated exposure

Components:

111-42-2:
Target Organs: Kidney, Blood, Liver
Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Further information

Product:

Remarks: No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

111-42-2:

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Ceriodaphnia dubia): 30.1 mg/l Exposure time: 48 h Test Type: static test
Toxicity to algae	:	EC50 (Pseudokirchneriella subcapitata (algae)): 86.96 mg/l End point: Growth rate Exposure time: 96 h Test Type: static test
Toxicity to fish (Chronic toxicity)	:	NOEC: Calculated > 1 mg/l
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 0.78 mg/l Exposure time: 21 d
Acute aquatic toxicity- Assessment	:	Harmful to aquatic life.
Chronic aquatic toxicity- Assessment	:	Harmful to aquatic life with long lasting effects.

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

Product:

Ozone-Depletion Potential	:	Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
Additional ecological information	:	No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of in accordance with all applicable local, state and federal regulations.
For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Univar Solutions ChemCare: 1-800-637-7922

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

DOT (Department of Transportation): Not regulated as a dangerous good

IATA (International Air Transport Association): Not regulated as a dangerous good

IMDG-Code: Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : D2B: Toxic Material Causing Other Toxic Effects

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Diethanolamine	111-42-2	100	100000

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Serious eye damage or eye irritation

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

Massachusetts Right To Know

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know

105-59-9	2,2'-methyliminodiethanol
111-42-2	Diethanolamine

California Prop 65

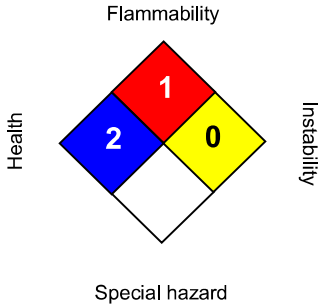
⚠ **WARNING**: This product can expose you to chemicals including Diethanolamine, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

The components of this product are reported in the following inventories:

TSCA	:	On TSCA Inventory
DSL	:	All components of this product are on the Canadian DSL
AICS	:	On the inventory, or in compliance with the inventory
NZIoC	:	On the inventory, or in compliance with the inventory
ENCS	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory
PHIL	:	On the inventory, or in compliance with the inventory

SECTION16. OTHER INFORMATION

NFPA:



HMIS III:

HEALTH	2
FLAMMABILITY	1
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 =Extreme, * = Chronic

The information accumulated is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made become available subsequently to the date hereof, we do not assume any responsibility for the results of its use. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Univar Solutions Product Compliance Department (1-855-429-2661) SDSNA@univarsolutions.com.

Revision Date : 01/20/2025

Legacy SDS: : R0017045

Material number:
16221993, 16204065, 16159430, 16182976, 16158004, 16158090, 16155000, 16116632, 16114651, 16015982, 573683, 573105, 105747, 104023, 71737, 55402, 165592, 503990

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chem-	PEL	Permissible Exposure Limit

	icals Association		
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

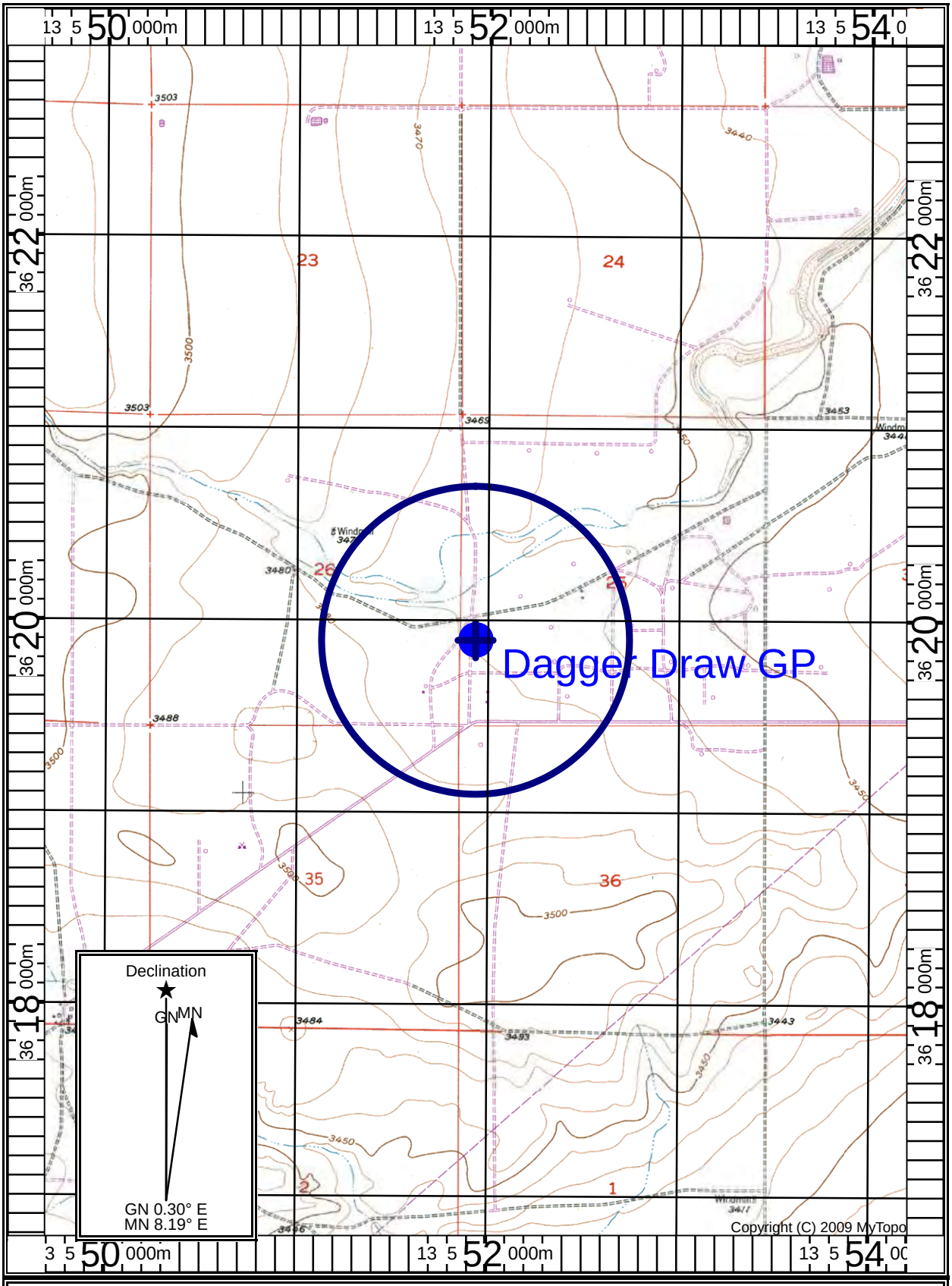
Section 8

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	

An area map is attached to this application.



Map Name: DAYTON (NM)
Print Date: 11/15/21
Scale: 1 inch = 2,500 ft.
Map Center: 13 0551933 E 3619895 N
Horizontal Datum: WGS84

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.

The public notice documentation is attached to this application.

9589 0710 5270 2053 6994 50

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

Houston, TX 77210

Certified Mail Fee $5.30
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $0.00

Postage $0.78

Total Postage and Fees $10.48

0128 50

Postmark Here
MAY 29 2026

05/29/2026

Sent To
EOG RESOURCES
Street and Apt. No.
PO BOX 4362
City, State, ZIP+4®
HOUSTON, TX 77210

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

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U.S. Postal Service™
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Dallas, TX 75201

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- Return Receipt (hardcopy) $0.00
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- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.78

Total $10.48

0128 50

Postmark Here
MAY 29 2026

05/29/2026

Sent To
AGAVE ENERGY COMPANY
Street and Apt. No.
3100 MCKINNON ST STE 800
City, State, ZIP+4®
DALLAS, TX 75201

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 3785 4764 63

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Rockwall, TX 75087

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- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.78

Total Postage and Fees $10.48

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AGAVE ENERGY COMPANY
Street and Apt. No.
2424 RIDGE RD
City, State, ZIP+4®
ROCKWALL TX 75087

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Artesia, NM 88211

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- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.78

Total $10.48

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MAY 29 2026

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Sent To
SHARBRO ENERGY
Street and Apt. No.
PO BOX 840
City, State, ZIP+4®
ARTESIA, NM 88211

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

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Addison, TX 75001

Certified Mail Fee $5.30
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.78

Total $10.48

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MAY 29 2026

05/29/2026

Sent To
REMUDA PROPERTIES
Street and Apt. No.
15851 DALLAS PKWY STE 600
City, State, ZIP+4®
ADDISON, TX 75001

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

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Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.78

Total $10.48

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Postmark Here
MAY 29 2026

05/29/2026

Sent To
WANDA FAYE WILSON ESTATE
Street and Apt. No.
361 KINCAID RANCH RD
City, State, ZIP+4®
ARTESIA, NM 88210

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

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El Paso, TX 79903

OFFICIAL USE

Certified Mail Fee	$5.30
Extra Services & Fees (check box, add fee as appropriate)	$4.40
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.78
Total	$10.48

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Postmark Here
MAY 29 2026

05/29/2026

HORNBAKER F D ESTATE
4101 PERSHING DR
EL PASO, TX 79903

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Carlsbad, NM 88220

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Certified Mail Fee	$5.30
Extra Services & Fees (check box, add fee as appropriate)	$4.40
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.78
Total	$10.48

0128 50

Postmark Here
MAY 29 2026

05/29/2026

BUREAU OF LAND MANAGEMENT
620 E. GREENE STREET
CARLSBAD, NM 88220

PS Form ... Instructions

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CERTIFIED MAIL® RECEIPT
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For delivery information, visit our website at www.usps.com®.

Santa Fe, NM 87504

OFFICIAL USE

Certified Mail Fee	$5.30
Extra Services & Fees (check box, add fee as appropriate)	$4.40
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.78
Total	$10.48

0128 50

Postmark Here
MAY 29 2026

05/29/2026

STATE OF NEW MEXICO
310 OLD SANTA FE TRAIL
SANTA FE, NM 87504

PS Form ... Instructions

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Carlsbad, NM 88220

OFFICIAL USE

Certified Mail Fee	$5.30
Extra Services & Fees (check box, add fee as appropriate)	$4.40
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.78
Total	$10.48

0128 50

Postmark Here
MAY 29 2026

05/29/2026

EDDY COUNTY MANAGER
101 W GREENE ST.
CARLSBAD, NM 88220

PS Form ... Instructions

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Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

Artesia, NM 88210

OFFICIAL USE

Certified Mail Fee	$5.30
Extra Services & Fees (check box, add fee as appropriate)	$4.40
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.78
Total	$10.48

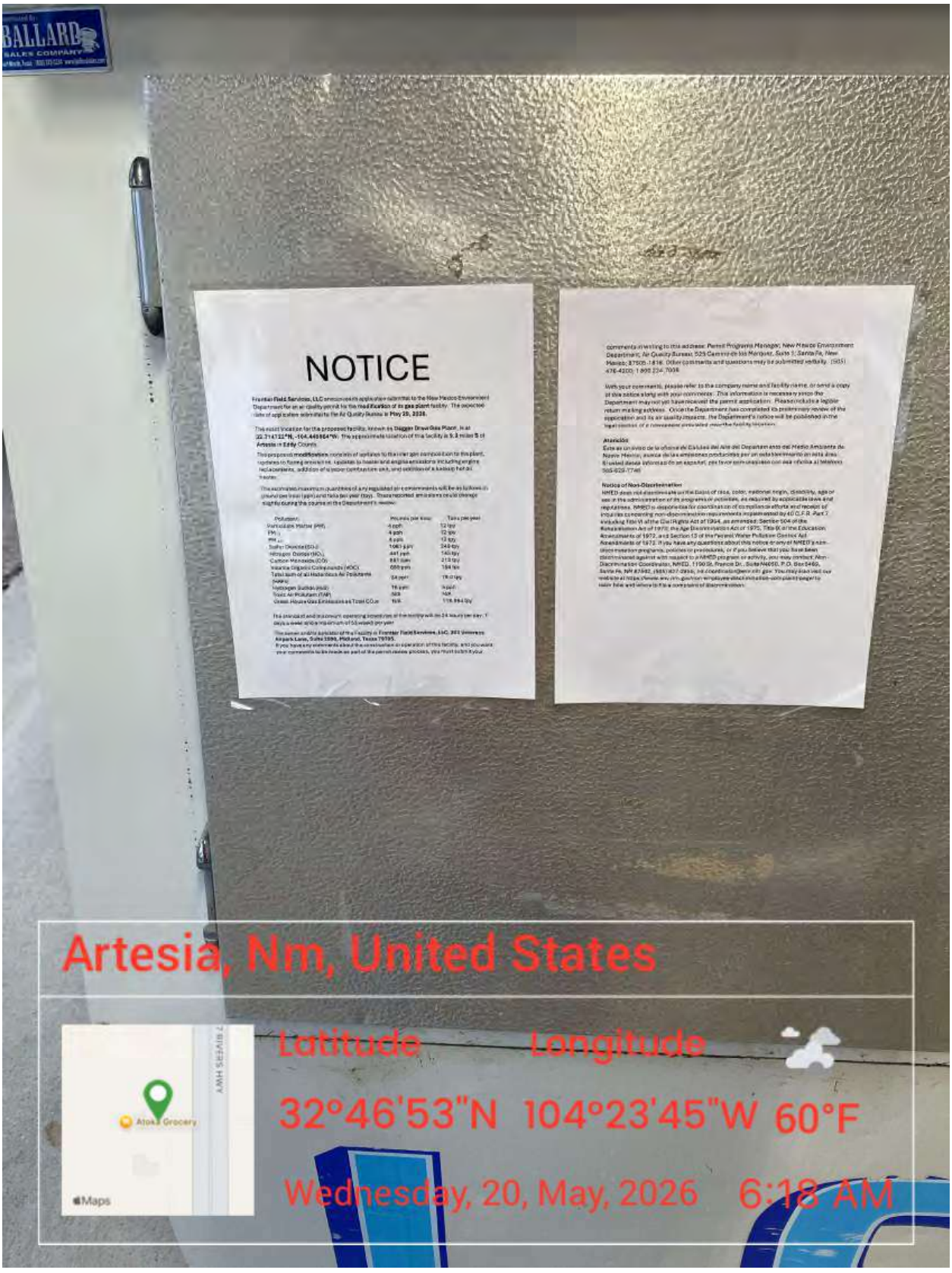
0128 50

Postmark Here
MAY 29 2026

05/29/2026

ARTESIA CITY MANAGER
511 WEST TEXAS AVE.
ARTESIA, NM 88210

PS Form ... Instructions


BALLARD
SALES COMPANY
NOTICE
Frontier Field Services, LLC announces its application to the New Mexico Environment Department for an air quality permit for the modification of its gas plant facility. The projected date of application submittal to the Air Quality Bureau is May 20, 2026.
The exact location for the proposed facility, known as Dagger Draw Gas Plant, is at 32.774722°N, -104.449864°W. The approximate location of this facility is 5.3 miles S of Artesia in Eddy County.
This proposed modification consists of updates to the nitrogen compression for this plant, updates to flaring emissions, updates to heater and engine emissions including engine replacements, addition of a vapor combustion unit, and addition of a backup heater.
The estimated maximum quantities of any regulated air contaminants will be as follows: (pounds per hour (pph) and tons per year (tpy). These reported emissions could change slightly during the course of the Department's review:
Pollutant | Pounds per hour | Tons per year
Particulate Matter (PM) | 4 pph | 12 tpy
PM10 | 4 pph | 12 tpy
PM2.5 | 4 pph | 12 tpy
Sulfur Dioxide (SO2) | 1061 pph | 349 tpy
Nitrogen Oxides (NOx) | 441 pph | 145 tpy
Carbon Monoxide (CO) | 881 pph | 213 tpy
Volatile Organic Compounds (VOC) | 689 pph | 184 tpy
Total sum of all Hazardous Air Pollutants (HAPs) | 54 pph | 18 tpy
Hydrogen Sulfide (H2S) | 16 pph | 4 tpy
Toxic Air Pollutant (TAP) | N/A | N/A
Green House Gas Emissions as Total CO2e | N/A | 119,994 tpy
The estimated and maximum operating schedule of the facility will be 24 hours per day, 7 days a week and a maximum of 52 week per year.
The owner and/or operator of the facility is Frontier Field Services, LLC, 301 Veterans Airpark Lane, Suite 3000, Midland, Texas 79705.
If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must both fi your
comments in writing to this address: Permit Programs Manager, New Mexico Environment Department, Air Quality Bureau, 525 Camino de los Marquez, Suite 1, Santa Fe, New Mexico, 87505-1816. Other comments and questions may be submitted verbally (505) 476-4300, 1 800 224 7008.
With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may not yet have received the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.
Atención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo Mexico, acerca de las emisiones productivas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-1746.
Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-coordinator/ to learn how and where to file a complaint of discrimination.
Artesia, Nm, United States
Latitude
Longitude
32°46'53"N 104°23'45"W 60°F
Wednesday, 20, May, 2026 6:18 AM
Atoka Grocery
Maps


NOTICE
Artesia, Nm, United States
Latitude
Longitude
32°46'53"N 104°23'45"W 60°F
Wednesday, 20, May, 2026 6:18 AM
Maps


NOTICE
Frontier Field Services, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the modification of its gas plant facility. The expected date of application submittal to the Air Quality Bureau is May 29, 2026.
The exact location for the proposed facility, known as Dagger Draw Gas Plant, is at 32.714722°N, -104.445864°W. The approximate location of this facility is 8.2 miles S of Artesia in Eddy County.
The proposed modification consists of updates to the inlet gas composition to the plant, updates to flaring emissions, updates to heater and engine emissions including engine replacements, addition of a vapor combustion unit, and addition of a backup hot oil heater.
The estimated maximum quantities of any regulated air contaminants will be as follows on pound per hour (pph) and tons per year (tpy). These reported emissions could change slightly during the course of the Department's review:
Pollutant: Pounds per hour: Tons per year:
Particulate Matter (PM) 4 pph 12 tpy
PM 10 4 pph 12 tpy
PM 2.5 4 pph 12 tpy
Sulfur Dioxide (SO2) 1061 pph 249 tpy
Nitrogen Oxides (NOx) 441 pph 145 tpy
Carbon Monoxide (CO) 881 pph 213 tpy
Volatile Organic Compounds (VOC) 699 pph 164 tpy
Total sum of all Hazardous Air Pollutants (HAPs) 24 pph 15.0 tpy
Hydrogen Sulfide (H2S) 16 pph 5 pph
Toxic Air Pollutants (TAP) N/A N/A
Green House Gas Emissions as Total CO2e N/A 118,984 tpy
The standard and maximum operating schedules of the facility will be 24 hours per day, 7 days a week and a maximum of 52 weeks per year.
The owner and/or operator of the Facility is Frontier Field Services, LLC, 385 Veterans Airpark Lane, Suite 2000, Midland, Texas 79705.
If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your
comments in writing to this address: Permit Programs Manager, New Mexico Environment Department, Air Quality Bureau, 525 Camino de los Marquez, Suite 1, Santa Fe, New Mexico, 87505-1816. Other comments and questions may be submitted verbally: (505) 476-4300; 1-800-224-7009.
With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may not yet have received the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.
Atencion
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo Mexico, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-7148.
Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination in Act of 1975; Title IX of the Education Amendments of 1972; and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you believe that you have been so discriminated against with respect to a NMED program or activity, you may contact the Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov, or visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.
Closed for
al
in observance.
Registration for the Summer Reading Program
COMING SOON
UNEARTH A STORY
Artesia, Nm, United States
Latitude
Longitude
32°50'27"N 104°23'57"W 78°F
Tuesday, 19, May, 2026 4:11 PM


NOTICE
Artesia, Nm, United States
Latitude
Longitude
32°50'36"N 104°24'4"W
78°F
Tuesday, 19, May, 2026
3:32 PM
Maps

General Posting of Notices – Certification

I, __Chad Frost_____, the undersigned, certify that on 5/19/26 & 5/20/26_____ posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in the city of **Artesia** of **Eddy** County, State of New Mexico on the following dates:

1. Dagger Draw Gas Plant 278 Pipeline Rd, Artesia, NM 88210 {DATE}
2. Artesia Post Office 201 N 4th Street, Artesia, NM 88210 {DATE}
3. Artesia Public Library 205 W Quay Ave, Artesia, NM 88210 {DATE}
4. Atoka Grocery Store 6475 7 Rivers Hwy, Artesia, NM 88210 {DATE}

Signed this __20___ day of ____May_____, _2026_____,

Chad Frost
Signature

5/20/26
Date

Chad Frost
Printed Name

___Environmental Tech _____
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

Dagger Draw Gas Plant - Public Notice

Table of Posted Notices

Location Name	Address	City	State	ZIP
Dagger Draw Gas Plant	278 Pipeline Road	Artesia	NM	88210
Artesia Post Office	201 N 4th Street	Artesia	NM	88210
Artesia Public Library	205 W Quay Avenue	Artesia	NM	88210
Atoka Grocery Store	6475 7 Rivers Highway	Artesia	NM	88210

- Account Search
- View Created Report(s)
- Help?
- Eddy County Website
- County Treasurer
- County Assessor
- County Clerk
- Logout Public

Account: R072813 *Mill Levy does not include Special District Rates such as Penasco, Carlsbad Soil & Water, Central Valley, Eagle Draw, PVC, Cottonwood, and Hackberry

Location

Account Number R072813

Situs Address 278 PIPELINE ROAD

Tax Area 16O_NR - ARTESIA-OUT (Nonresidential)

Parcel Number 4-150-107-132-396

Legal Summary Subd: AGAVE ENERGY CO LND DIV SW 25-18-25 Tract: B Quarter: SW S: 25 T: 18 R: 25

Map Number 104-AEC-B, CAB# 5-408-1

Parcel Size ODD SHAPE TRACT

Owner Information

Owner Name AGAVE ENERGY CO

In Care Of Name KE ANDREWS

Owner Address 2424 RIDGE RD ROCKWALL, TX 75087

Assessment History

Actual Value (2025)	$67,663
Primary Taxable	$22,554

Tax Area: 16O_NR **Mill Levy**: 18.289000

Type	Actual	Assessed	Acres
Non-Residential Land	$67,663	$22,554	112.700

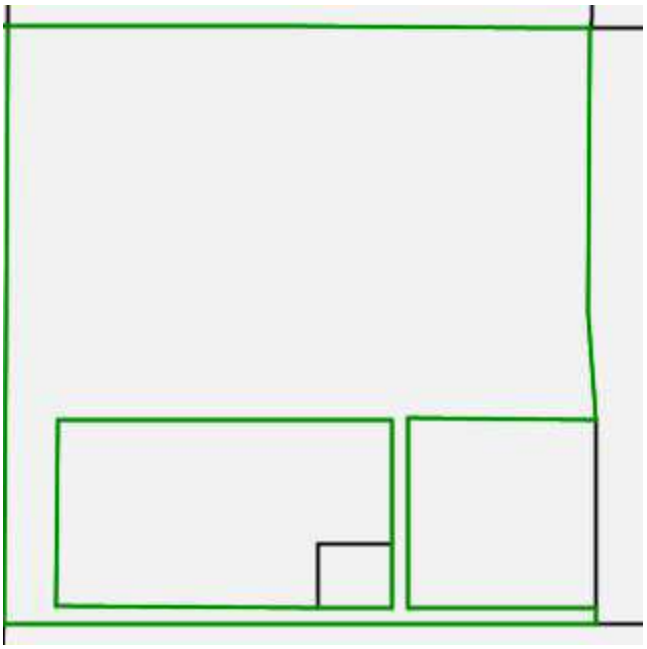
Tax History

Tax Year	Taxes
*2026	$491.42
2025	$491.42

* Estimated

Images

- GIS



Account: R073671 *Mill Levy does not include Special District Rates such as Penasco, Carlsbad Soil & Water, Central Valley, Eagle Draw, PVC, Cottonwood, and Hackberry

Location

Account Number R073671

Situs Address 288 W KINCAID RANCH ROAD

Tax Area 16O_NR - ARTESIA-OUT (Nonresidential)

Parcel Number 4-150-107-155-510

Legal Summary Quarter: SW S: 25 T: 18S R: 25E

Map Number 104-25.7

Parcel Size 2.16 ACRES

Owner Information

Owner Name AGAVE ENERGY CO

In Care Of Name KE ANDREWS

Owner Address 2424 RIDGE RD ROCKWALL, TX 75087

Assessment History

Actual Value (2025) $417,034

Primary Taxable $139,011

Tax Area: 16O_NR **Mill Levy**: 18.289000

Type	Actual	Assessed	Acres
Non-Residential Land	$15,120	$5,040	2.160
Non-Residential Improvement	$401,914	$133,971	

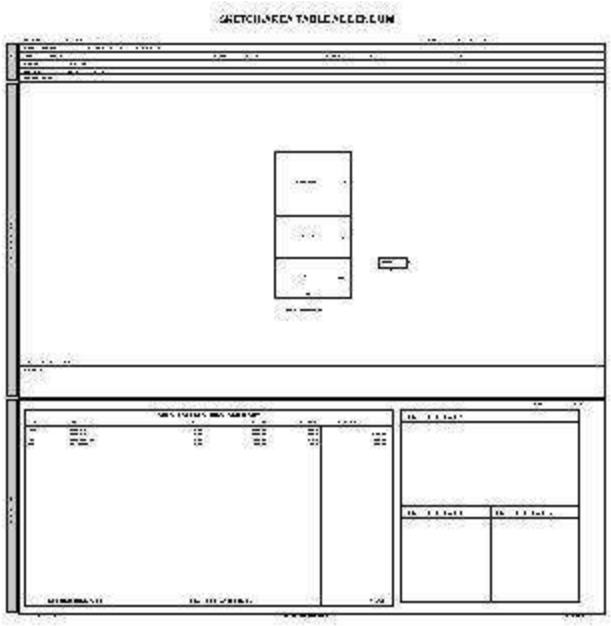
Tax History

Tax Year	Taxes
*2026	$2,959.40
2025	$2,959.40

* Estimated

Images

- Sketch
- GIS



May 27, 2026

CERTIFIED MAIL 9589 0710 5270 3785 4764 63
RETURN RECEIPT REQUESTED

Dear **Neighbor,**
Frontier Field Services, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the **modification** of its **gas plant** facility. The expected date of application submittal to the Air Quality Bureau is **May 29, 2026.**

The exact location of the proposed facility, known as **Dagger Draw Gas Plant**, is at **32.71422°N - 104.445864°W.** The approximate location of this facility is **9.2** miles **south** of **Artesia** in **Eddy** County.

The proposed **modification** consists of updates to the inlet gas composition to the plant, updates to flaring emissions, updates to heater and engine emissions, including engine replacements, addition of a vapor combustion unit, and addition of a backup hot oil heater.

The estimated maximum quantities of any regulated air contaminant will be as follows in pounds per hour (pph) and tons per year (tpy) and may change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	4 pph	12 tpy
PM_{10}	4 pph	12 tpy
$PM_{2.5}$	4 pph	12 tpy
Sulfur Dioxide (SO_2)	1061 pph	249 tpy
Nitrogen Oxides (NO_x)	441 pph	145 tpy
Carbon Monoxide (CO)	881 pph	213 tpy
Volatile Organic Compounds (VOC)	699 pph	154 tpy
Total sum of all Hazardous Air Pollutants (HAPs)	24 pph	19.0 tpy
Hydrogen Sulfide (H_2S)	16 pph	5 tpy
Toxic Air Pollutant (TAP)	N/A	N/A
Green House Gas Emissions as Total CO_2e	N/A	118,984 tpy

The standard and maximum operating schedules of the facility will be 24 hours per day, 7 days per week, and a maximum of 52 weeks per year.

Owners and operators of the facility include:
Attention: Molly Greer
Frontier Field Services, LLC
303 Veterans Airpark Lane, Suite 2000,
Midland, Texas, 79705

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

Please refer to the company name and facility name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the

application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

General information about air quality and the permitting process, and links to the regulations can be found at the Air Quality Bureau's website: www.env.nm.gov/air-quality/permitting-section-home-page/. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-7748.

Sincerely,
Frontier Field Services, LLC
303 Veterans Airpark Lane, Suite 2000,
Midland, Texas, 79705

Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

May 27, 2026

CERTIFIED MAIL 9589 0710 5270 3701 4331 43
RETURN RECEIPT REQUESTED

Dear **County,**
Frontier Field Services, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the **modification** of its **gas plant** facility. The expected date of application submittal to the Air Quality Bureau is **May 29, 2026.**

The exact location of the proposed facility, known as **Dagger Draw Gas Plant**, is at **32.71422°N - 104.445864°W.** The approximate location of this facility is **9.2** miles **south** of **Artesia** in **Eddy** County.

The proposed **modification** consists of updates to the inlet gas composition to the plant, updates to flaring emissions, updates to heater and engine emissions, including engine replacements, addition of a vapor combustion unit, and addition of a backup hot oil heater.

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Toxic Air Pollutant (TAP)	N/A	N/A
Green House Gas Emissions as Total CO_2e	N/A	118,984 tpy

The standard and maximum operating schedules of the facility will be 24 hours per day, 7 days per week, and a maximum of 52 weeks per year.

Owners and operators of the facility include:
Attention: Molly Greer
Frontier Field Services, LLC
303 Veterans Airpark Lane, Suite 2000,
Midland, Texas, 79705

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Sincerely,
Frontier Field Services, LLC
303 Veterans Airpark Lane, Suite 2000,
Midland, Texas, 79705

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Dagger Draw Gas Plant - Public Notice

Table of Noticed Neighbors (within 0.5 miles of facility)

Owner Name	Owner Address	City	State	ZIP
EOG Rsources Inc	PO Box 4362	Houston	TX	77210
Agave Energy Company	2424 Ridge Rd	Rockwall	TX	75087
Agave Energy Company	3100 McKinnon St Ste 800	Dallas	TX	75201
Sharbro Energy & Yates Industries	PO Box 840	Artesia	NM	88211
Remuda Properties	15851 Dallas Pkwy Ste 600	Addison	TX	75001-6030
Wanda Faye Wilson Estate	361 Kincaid Ranch Rd	Artesia	NM	88210
Hornbaker F D Estate	4101 Pershing Dr	El Paso	TX	79903
Bureau of Land Management	620 E Green St	Carlsbad	NM	88220
State of New Mexico	310 Old Santa Fe Trail	Santa Fe	NM	87501

Table of Noticed Municipalities (within 10 miles of facility)

Location	Owner Address	City	State	ZIP
Artesia City Manager	511 W Texas Ave	Artesia	NM	88210

Table of Noticed Counties (within 10 miles of facility)

Location	Owner Address	City	State	ZIP
Eddy County Manager	101 W Greene St	Carsbad	NM	88220

Table of Noticed Tribes (within 10 miles of facility)

Location	Owner Address	City	State	ZIP
N/A - No tribes within 10-mile radius.				

PUBLIC SERVICE ANNOUNCEMENT

Per New Mexico Administrative Code 20.2.72.203.D. NMAC and according to the Guidance for Public Notice for Air Quality Permit Applications – ***(5) Notifications: Submittal of Public Service Announcement (PSA)****: A public service announcement required for permits and significant permit revisions must be submitted to at least one radio or television station, which services the municipality, or county in which the facility is or will be located.* ***Therefore, based on the above, we respectfully ask that you air the information below as a Public Service Announcement.***

This is a public service announcement per the air permit requirements of New Mexico Administrative Code 20.2.72.203.D. Frontier Field Services, LLC, announces its application submittal to the New Mexico Environment Department for an air quality permit for the modification of its gas plant called the Dagger Draw Gas Plant.

Dagger Draw Gas Plant facility is located at **32.714722°N, -104.445864°W.** The approximate location of this facility is **9.2** miles **south** of **Artesia** in **Eddy** County.

The owner and/or operator of the Facility is: **Frontier Field Services, LLC, 303 Veterans Airpark Lane, Suite 2000, Midland, Texas, 79705.**

The locations where notices have been posted:

- Facility entrance, 278 Pipeline Rd, Artesia, NM 88210
- Artesia Post Office, 201 N 4th St, Artesia, NM 88210
- Artesia Public Library, 205 W Quay Ave, Artesia, NM 88210
- Atoka Grocery Store, 6475 7 Rivers Hwy, Artesia, NM 88210

If you have any comments about the construction or operation of this facility, you must submit your comments in writing to this address**: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally to (505) 476-4300 or 1-800 224-7009.**

Submittal of Public Service Announcement – Certification

I, Tina Purington, the undersigned, certify that on **February 11**, **2026** submitted a public service announcement to **KZOR 94.1** that serves the City\Town\Village of **Artesia**, **Eddy** County, New Mexico, in which the source is or is proposed to be located and that **KZOR 94.1 RESPONDED THAT IT WOULD AIR THE ANNOUNCEMENT.**

Signed this 11 day of February, 2026,

Tina Purington
Signature

2/11/2026
Date

Tina Purington
Printed Name

Associate Consultant
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

Affidavit of Publication

No. 106330

State of New Mexico

County of Eddy:

Adrian Hedden

being duly sworn, sayes that he is the **Publisher**

of the Artesia Daily Press, a weekly newspaper of General circulation, published in English at Artesia,

said county and state, and that the hereto attached

Legal Ad

was published in a regular and entire issue of the said Artesia Daily Press, a weekly newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/day on the same day as follows:

First Publication May 27, 2026

Second Publication

Third Publication

Fourth Publication

Fifth Publication

Sixth Publication

Seventh Publication

Eighth Publication

Subscribed ans sworn before me this

27th day of May 2026

LATISHA ROMINE
Notary Public, State of New Mexico
Commission No. 1076338
My Commission Expires
05-12-2027

Latisha Romine

Latisha Romine

Notary Public, Eddy County, New Mexico

Copy of Publication:

NOTICE OF AIR QUALITY PERMIT APPLICATION

Frontier Field Services, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the **modification** of its **gas plant** facility. The expected date of application submittal to the Air Quality Bureau is **May 29, 2026**.

The exact location for the proposed facility, known as **Dagger Draw Gas Plant**, is at **32.714722°N, -104.445864°W.** The approximate location of this facility is **9.2** miles **S** of **Artesia** in **Eddy** County.

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PM_{10}	4 pph	12 tpy
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Sulfur Dioxide (SO_2)	1061 pph	249 tpy
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Volatile Organic Compounds (VOC)	699 pph	154 tpy
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Hydrogen Sulfide (H2S)	16 pph	5 tpy
Toxic Air Pollutant (TAP)	N/A	N/A
Green House Gas Emissions as Total CO_2e	N/A	118,984 tpy

The standard and maximum operating schedules of the facility will be 24 hours per day, 7 days a week and a maximum of 52 weeks per year

The owner and/or operator of the Facility is: **Frontier Field Services, LLC, 303 Veterans Airpark Lane, Suite 2000, Midland, Texas, 79705**

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

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General information about air quality and the permitting process, and links to the regulations can be found at the

Seventh Publication

Eighth Publication

Subscribed ans sworn before me this

27th day of May 2026

LATISHA ROMINE
Notary Public, State of New Mexico
Commission No. 1076338
My Commission Expires
05-12-2027

Latisha Romine

Latisha Romine

Notary Public, Eddy County, New Mexico

facility will be 24 hours per day, 7 days a week and a maximum of 52 weeks per year.

The owner and/or operator of the Facility is: **Frontier Field Services, LLC, 303 Veterans Airpark Lane, Suite 2000, Midland, Texas, 79705**

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally, (505) 476-4300; 1 800 224-7009.

Please refer to the company name and site name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

General information about air quality and the permitting process, and links to the regulations can be found at the Air Quality Bureau's website: www.env.nm.gov/air-quality/permitting-section-home-page/. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC.

Atención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-7748.

Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.
106330-Published in Artesia Daily Press May 27, 2026.

Affidavit of Publication

No.

State of New Mexico

County of Eddy:

Adrian Hedden

being duly sworn, sayes that he is the **Publisher**

of the Artesia Daily Press, a weekly newspaper of General circulation, published in English at Artesia,

said county and state, and that the hereto attached

Diplay Ad

was published in a regular and entire issue of the said Artesia Daily Press, a weekly newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/day on the same day as follows:

First Publication	May 27, 2026
Second Publication	
Third Publication	
Fourth Publication	
Fifth Publication	
Sixth Publication	
Seventh Publication	
Eighth Publication	

Subscribed ans sworn before me this

27th day of May 2026

LATISHA ROMINE
Notary Public, State of New Mexico
Commission No. 1076338
My Commission Expires
05-12-2027

Latisha Romine

Latisha Romine

Notary Public, Eddy County, New Mexico

Copy of Publication:

NOTICE OF AIR QUALITY PERMIT APPLICATION

Frontier Field Services, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the **modification** of its **gas plant** facility. The expected date of application submittal to the Air Quality Bureau is **May 29, 2026.**

The exact location for the proposed facility, known as **Dagger Draw Gas Plant,** is at **32.714722°N, -104.445864°W.** The approximate location of this facility is **9.2** miles **S** of **Artesia** in **Eddy** County.

The proposed modification consists of updates to the inlet gas composition to the plant, updates to flaring emissions, updates to heater and engine emissions, including engine replacements, addition of a vapor combustion unit, and addition of a backup hot oil heater.
The estimated maximum quantities of any regulated air contaminant will be as follows in pounds per hour (pph) and tons per year (tpy) and could change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	4 pph	12 tpy
PM_{10}	4 pph	12 tpy
$PM_{2.5}$	4 pph	12 tpy
Sulfur Dioxide (SO_2)	1061 pph	249 tpy
Nitrogen Oxides (NO_x)	441 pph	145 tpy
Carbon Monoxide (CO)	881 pph	213 tpy
Volatile Organic Compounds (VOC)	699 pph	154 tpy
Total sum of all Hazardous Air Pollutants (HAPs)	24 pph	19.0 tpy
Hydrogen Sulfide (H2S)	16 pph	5 tpy
Toxic Air Pollutant (TAP)	N/A	N/A
Green House Gas Emissions as Total CO_2e	N/A	118,984 tpy

The standard and maximum operating schedules of the facility will be 24 hours per day, 7 days a week and a maximum of 52 weeks per year

The owner and/or operator of the Facility is: **Frontier Field Services, LLC, 303 Veterans Airpark Lane, Suite 2000, Midland, Texas, 79705**

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1-800-224-7009.

Please refer to the company name and site name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

General information about air quality and the permitting process, and links to the regulations can be found at the Air Quality Bureau's website: www.env.nm.gov/air-qual-

Subscribed ans sworn before me this

27th day of May 2026

LATISHA ROMINE
Notary Public, State of New Mexico
Commission No. 1076338
My Commission Expires
05-12-2027

Latisha Romine

Latisha Romine

Notary Public, Eddy County, New Mexico

Field Services, LLC, 303 Veterans Airpark Lane, Suite 2000, Midland, Texas, 79705

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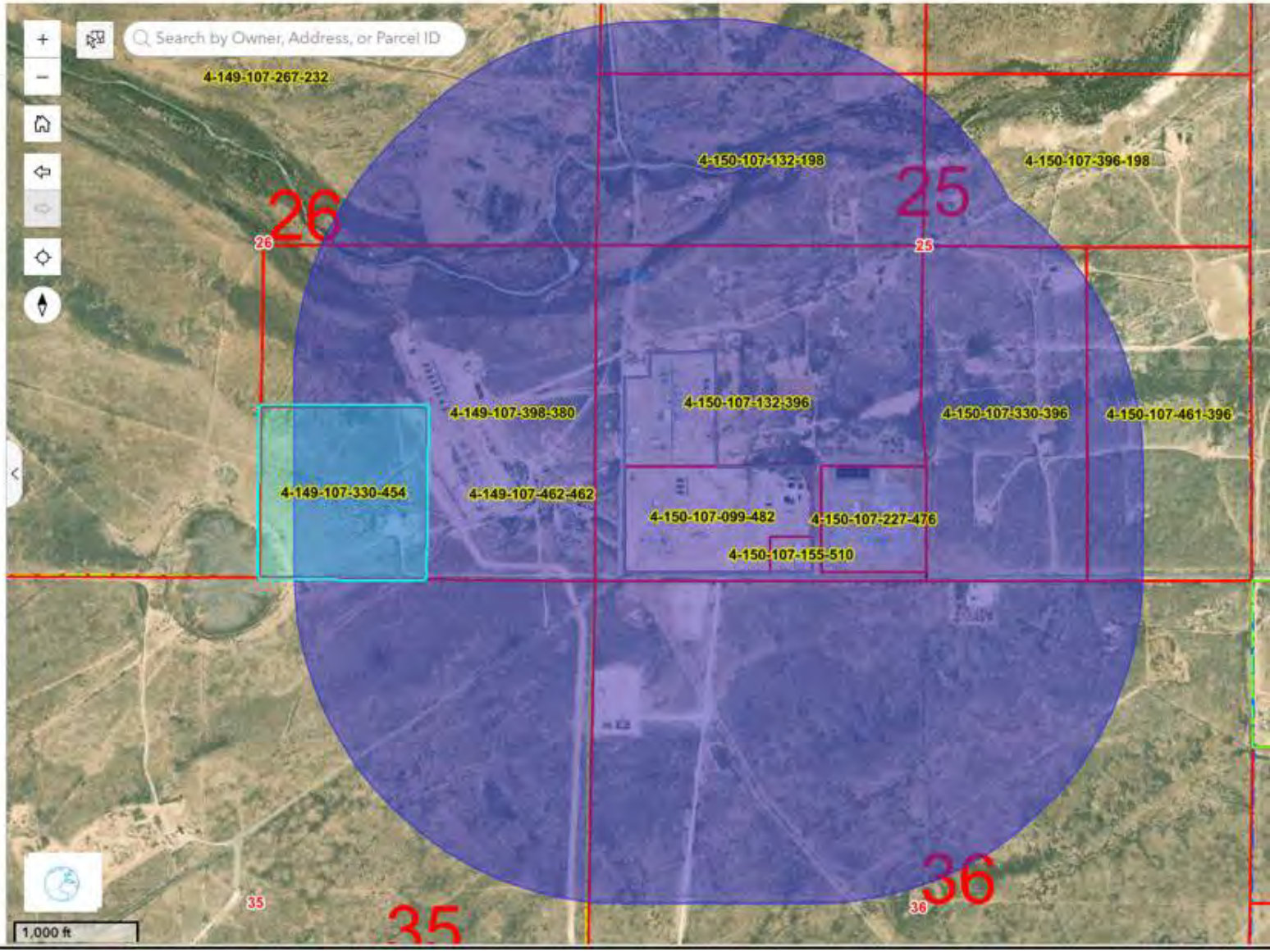
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Parcel Information

Assessor Property Information

UPC	4-149-107-330-454
Map Number	104-26.3, B/S 6-599-1
Owner Name	EOG RESOURCES INC
Owner Address	PO BOX 4362 HOUSTON, TX 77210-4362
Owner City	HOUSTON
Owner State	TX
Owner ZIP	772104362
Site Address	W OF 293 PIPELINE ROAD
Legal Summary	Quarter: SE S: 26 T: 18S R: 25E SWSE
Model Type	Land
Land Actual	90
Actual Area	40
Tax Area	16O_NR
Land Code	121_2_25
Book	
Page	



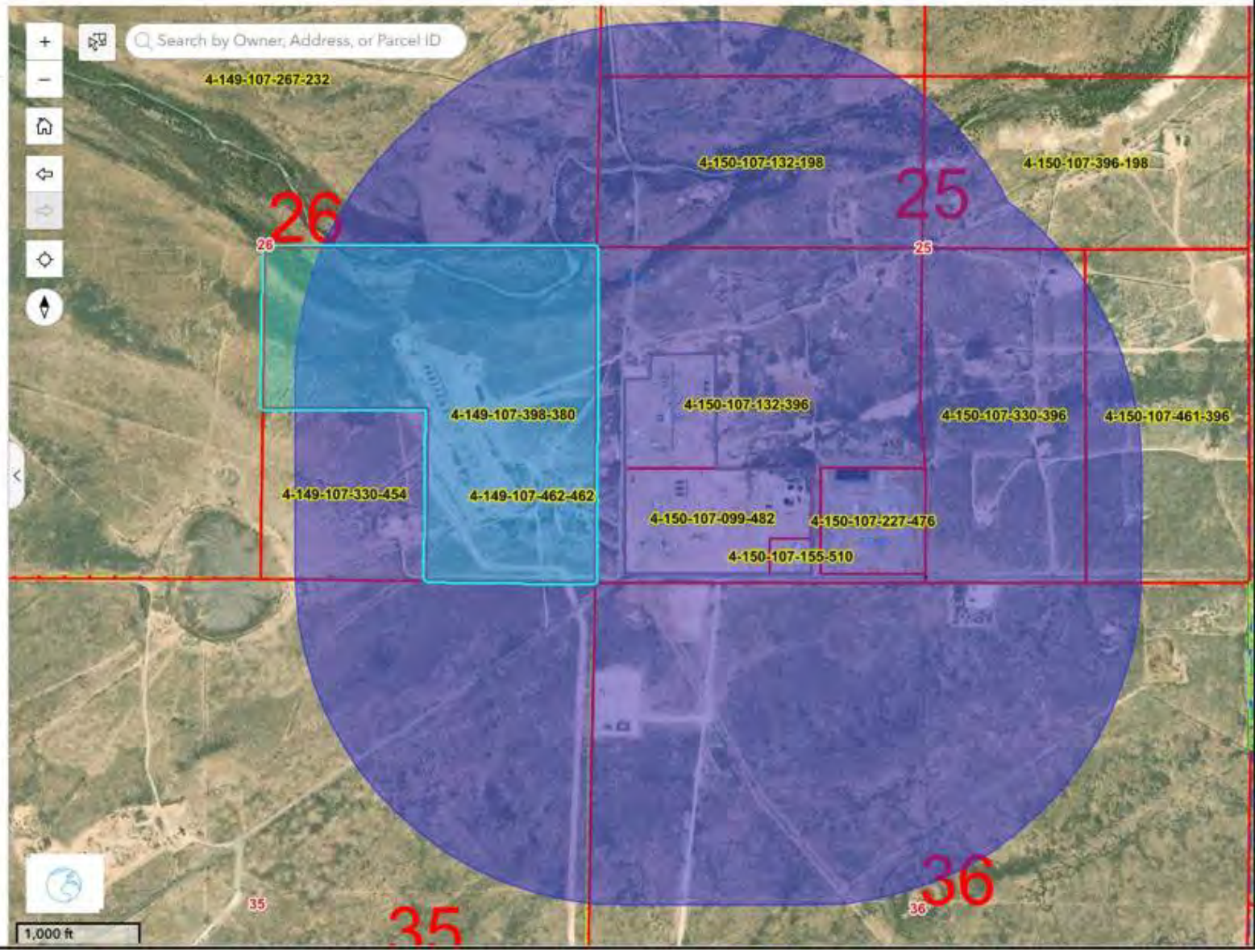
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Parcel Information

Assessor Property Information

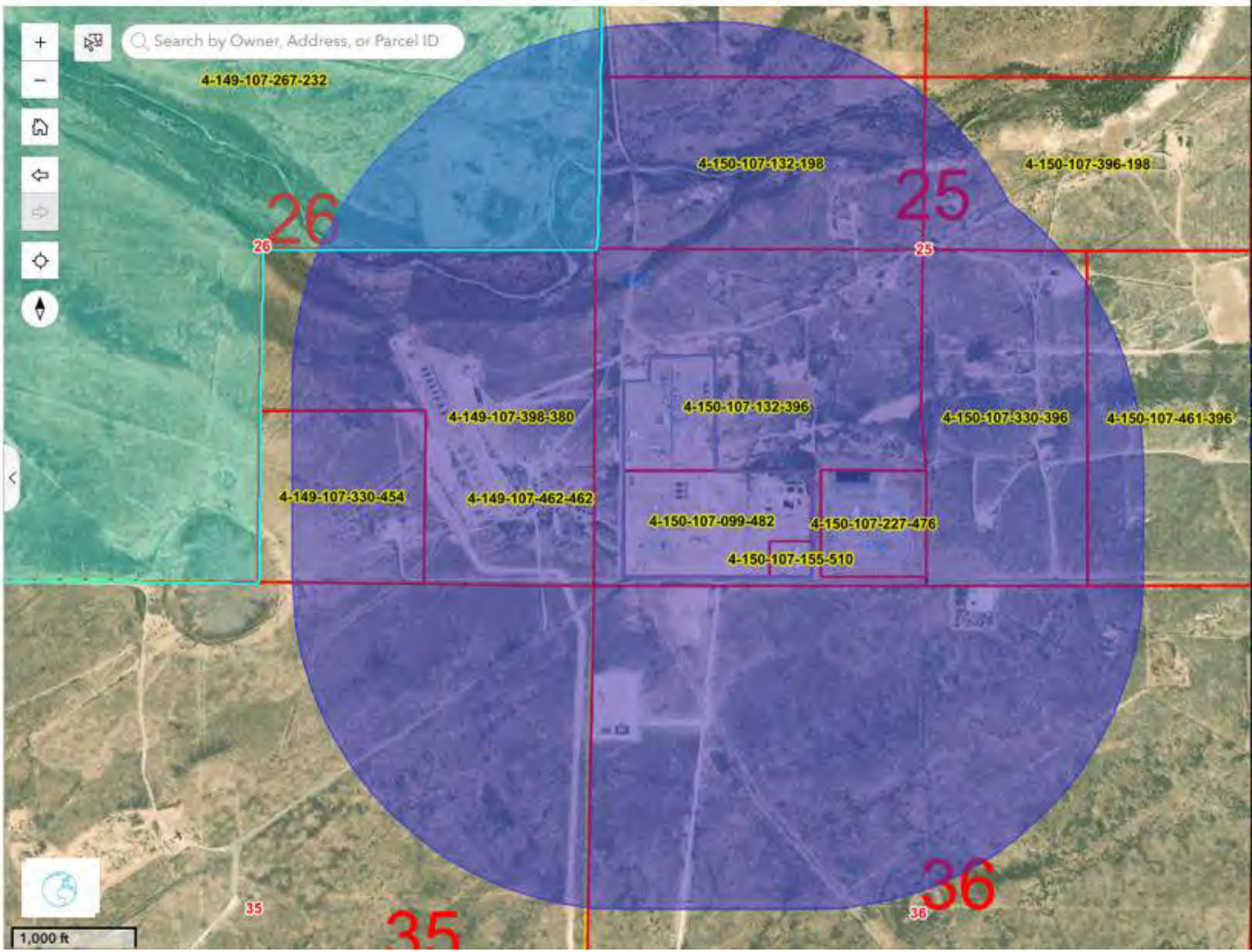
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Owner City	ROCKWALL
Owner State	TX
Owner ZIP	75087
Site Address	293 PIPELINE ROAD
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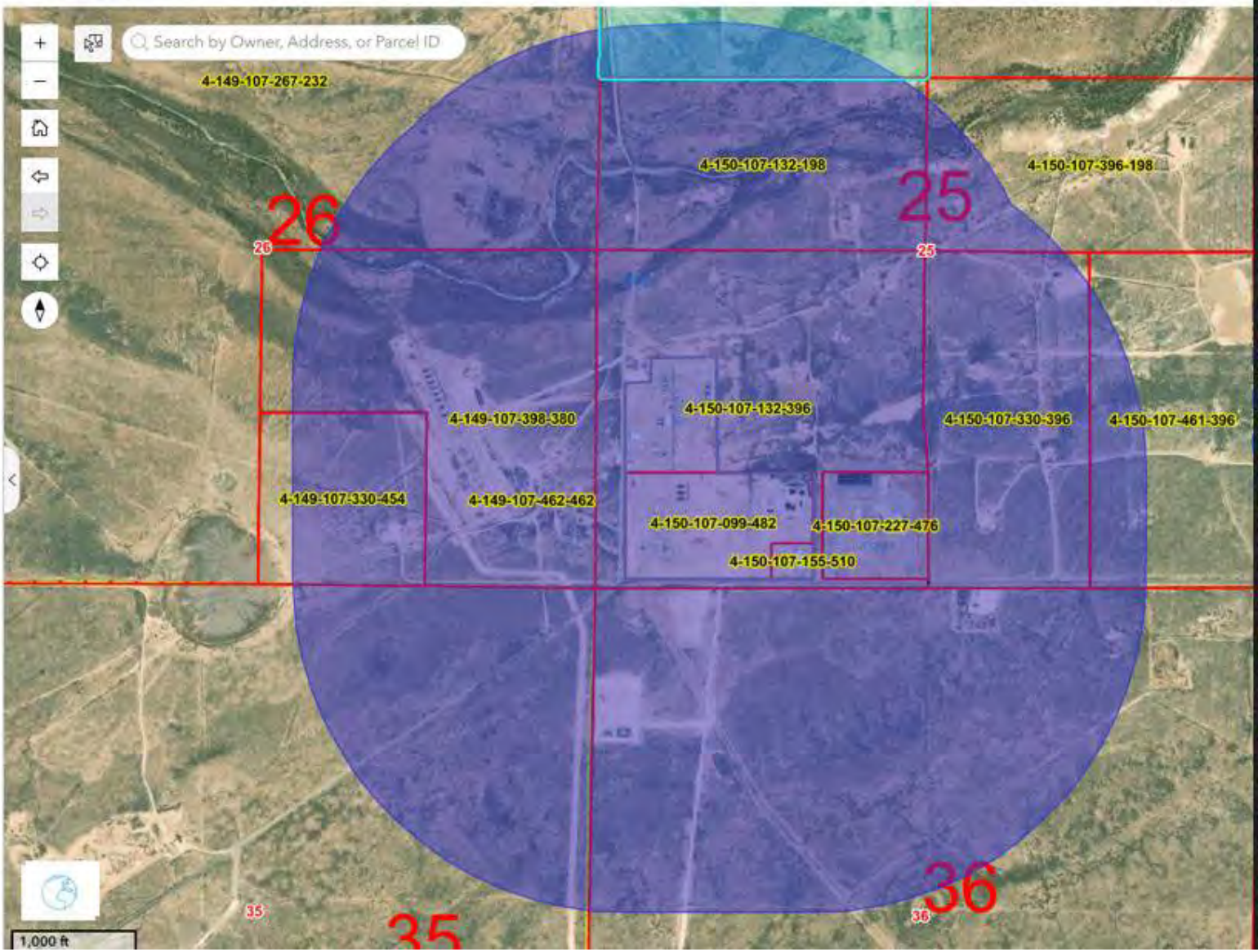
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Owner Address	361 W KINCAID RANCH ROAD ARTESIA, NM 88210
Owner City	ARTESIA
Owner State	NM
Owner ZIP	88210
Site Address	N OF 294 PIPELINE ROAD
Legal Summary	Quarter: NE S: 26 T: 18S R: 25E N2NE, S2NE,, Quarter: NW S: 26 T: 18S R: 25E ALL NW, Quarter: SW S: 26 T: 18S R: 25E S2SW, N2SW,,
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Land Code	121_2_25
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Parcel Information

Assessor Property Information

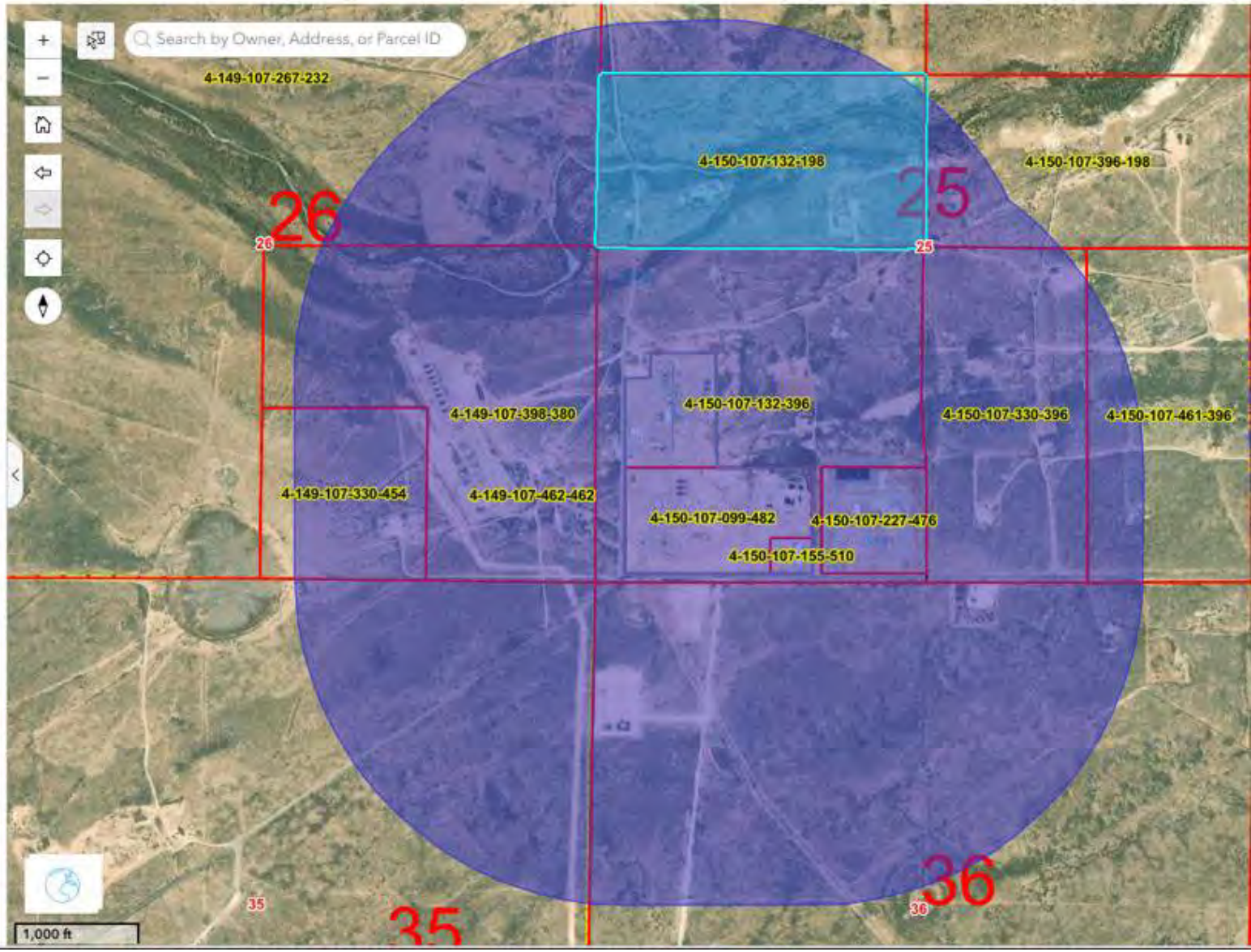
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Owner Address	361 W KINCAID RANCH ROAD ARTESIA, NM 88210
Owner City	ARTESIA
Owner State	NM
Owner ZIP	88210
Site Address	PIPELINE ROAD
Legal Summary	Quarter: NW S: 25 T: 18S R: 25E N2NW
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Book	358
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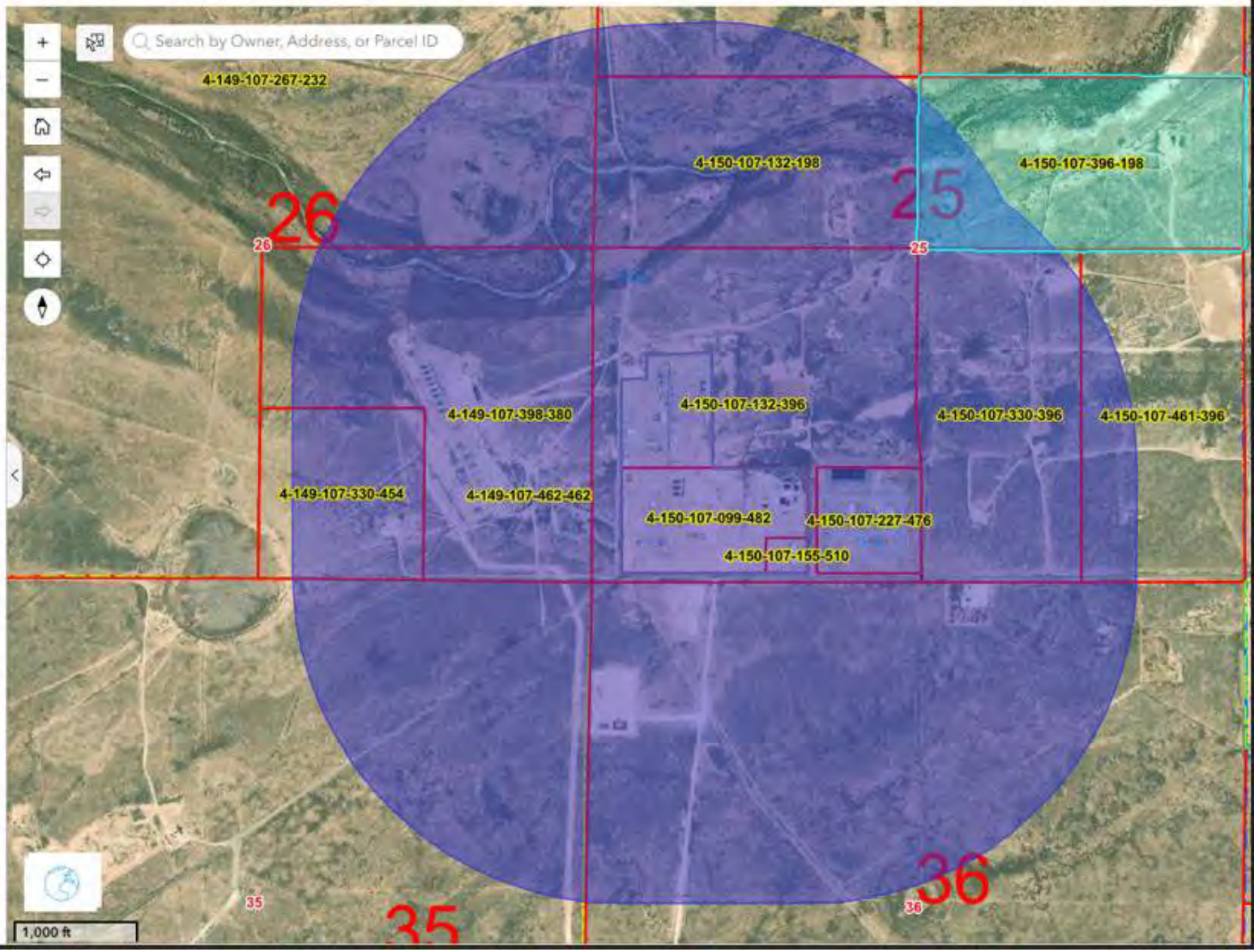
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Owner Address	361 W KINCAID RANCH ROAD ARTESIA, NM 88210
Owner City	ARTESIA
Owner State	NM
Owner ZIP	88210
Site Address	N OF 294 PIPELINE ROAD
Legal Summary	Quarter: NW S: 25 T: 18S R: 25E S2NW
Model Type	Land
Land Actual	180
Actual Area	80
Tax Area	16O_NR
Land Code	121_2_25
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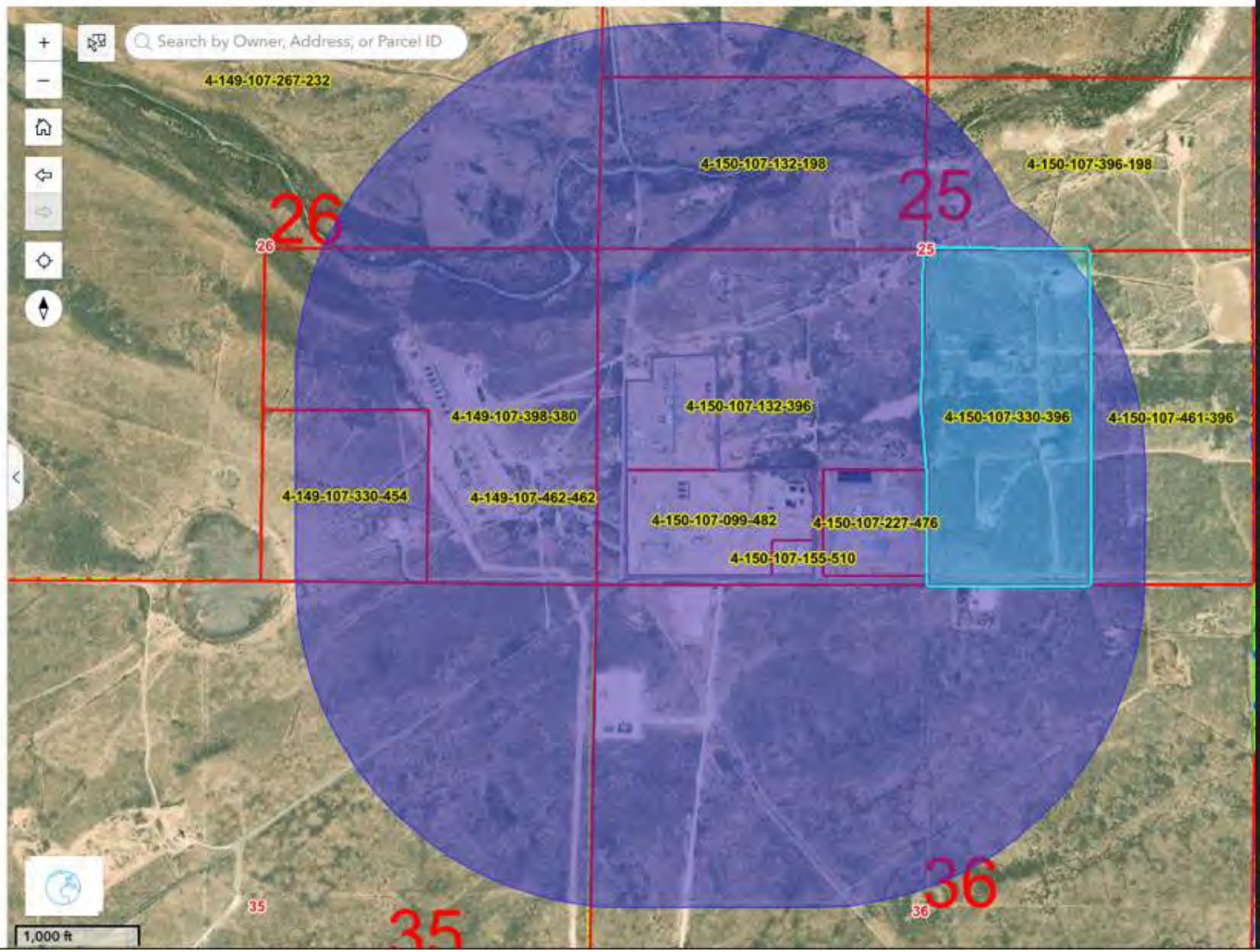
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Owner Name	HORNBAKER, F D ESTATE ET ALS
Owner Address	4101 PERSHING DRIVE EL PASO, TX 79903
Owner City	EL PASO
Owner State	TX
Owner ZIP	79903
Site Address	PIPELINE ROAD
Legal Summary	Quarter: NE S: 25 T: 18S R: 25E S2NE MI268/974 MAP# 104-25.1 LOC PIPELINE ROAD SEE FILE **** ***** ******* NOTE:REFER TO ATTORNEY OR ABST CO FOR OWNER INFORMATION
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Actual Area	80
Tax Area	16O_NR
Land Code	192_99_99
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Parcel Information

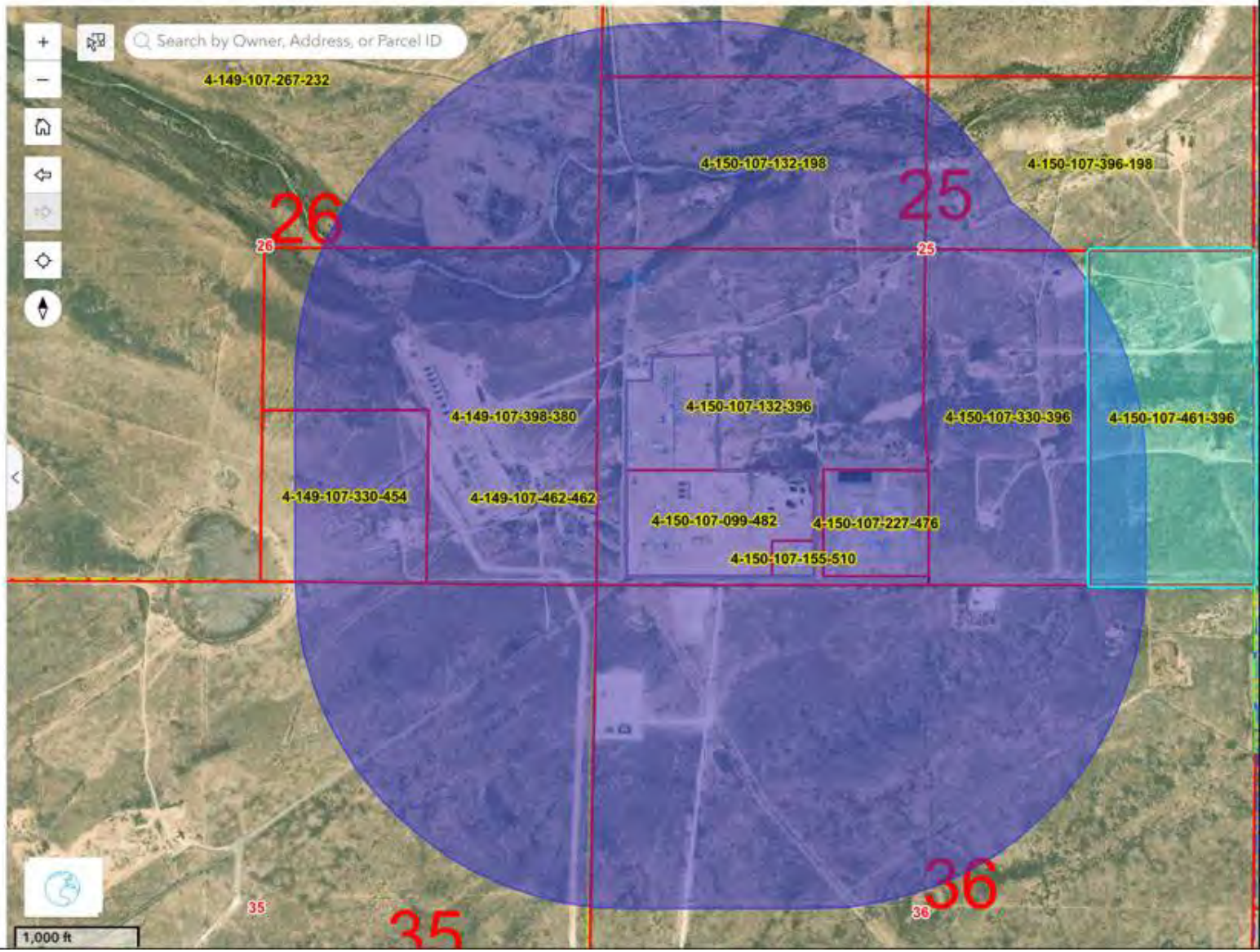
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Owner City	DALLAS
Owner State	TX
Owner ZIP	752017014
Site Address	PIPELINE ROAD
Legal Summary	Quarter: SE S: 25 T: 18S R: 25E W2SE
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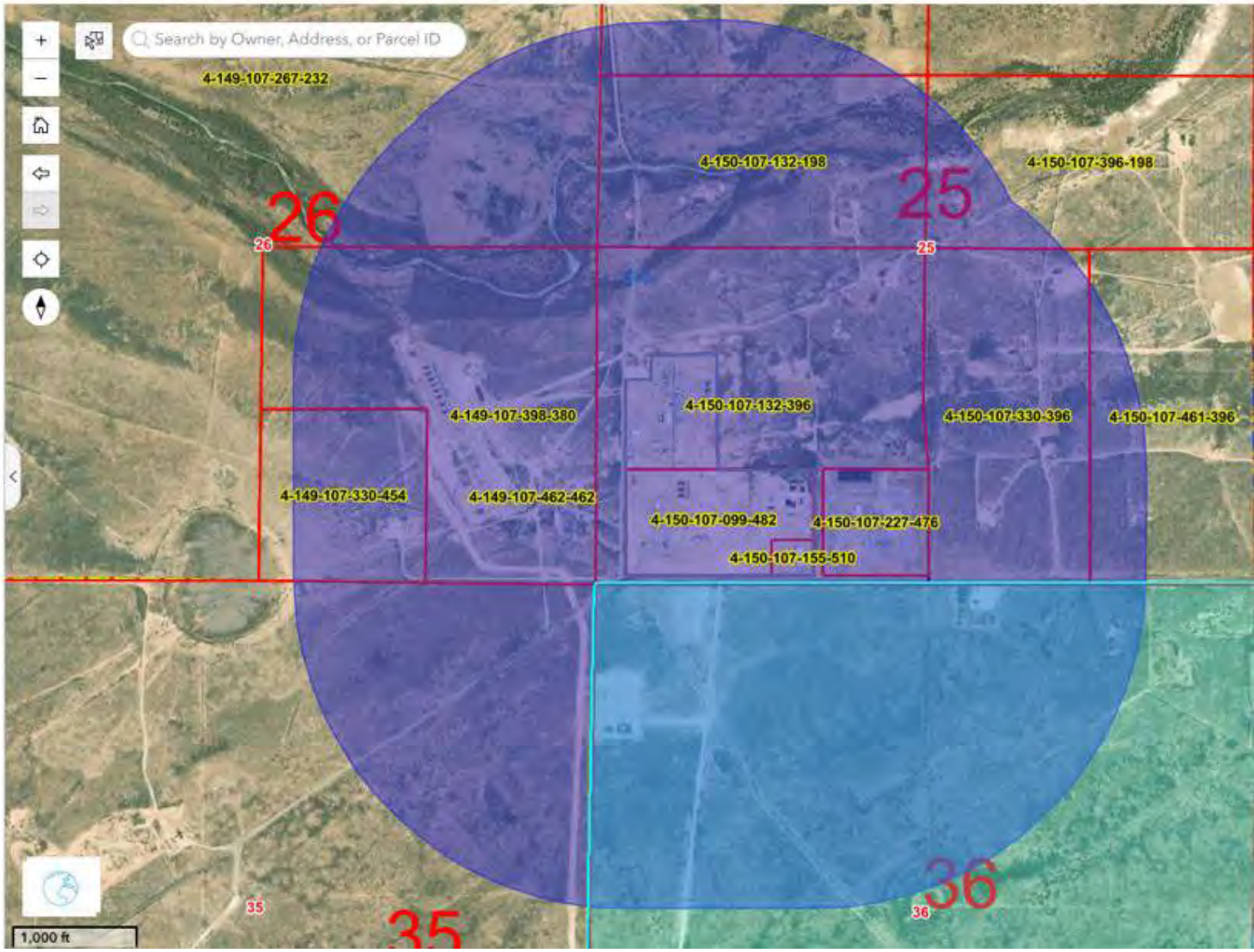
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Owner Name	SHARBRO ENERGY LLC & YATES INDUSTRIES LLC ETAL
Owner Address	PO BOX 840 ARTESIA, NM 88211-0840
Owner City	ARTESIA
Owner State	NM
Owner ZIP	882110840
Site Address	E OF 202 W KINCAID RANCH ROAD
Legal Summary	Quarter: SE S: 25 T: 18S R: 25E E2SE
Model Type	Land
Land Actual	7999
Actual Area	80
Tax Area	16O_NR
Land Code	112_99_99
Book	
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Parcel Information

Assessor Property Information

UPC	4-150-108-264-264
Map Number	
Owner Name	STATE OF NEW MEXICO
Owner Address	310 OLD SANTA FE TRAIL SANTA FE, NM 87504
Owner City	SANTA FE
Owner State	NM
Owner ZIP	87504
Site Address	
Legal Summary	Quarter: NE S: 36 T: 18S R: 25E Quarter: NW S: 36 T: 18S R: 25E Quarter: SW S: 36 T: 18S R: 25E Quarter: SE S: 36 T: 18S R: 25E ALL (PATENT# 1202927) MAP# 104-36 EXEMPT
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Land Code	150_2_25
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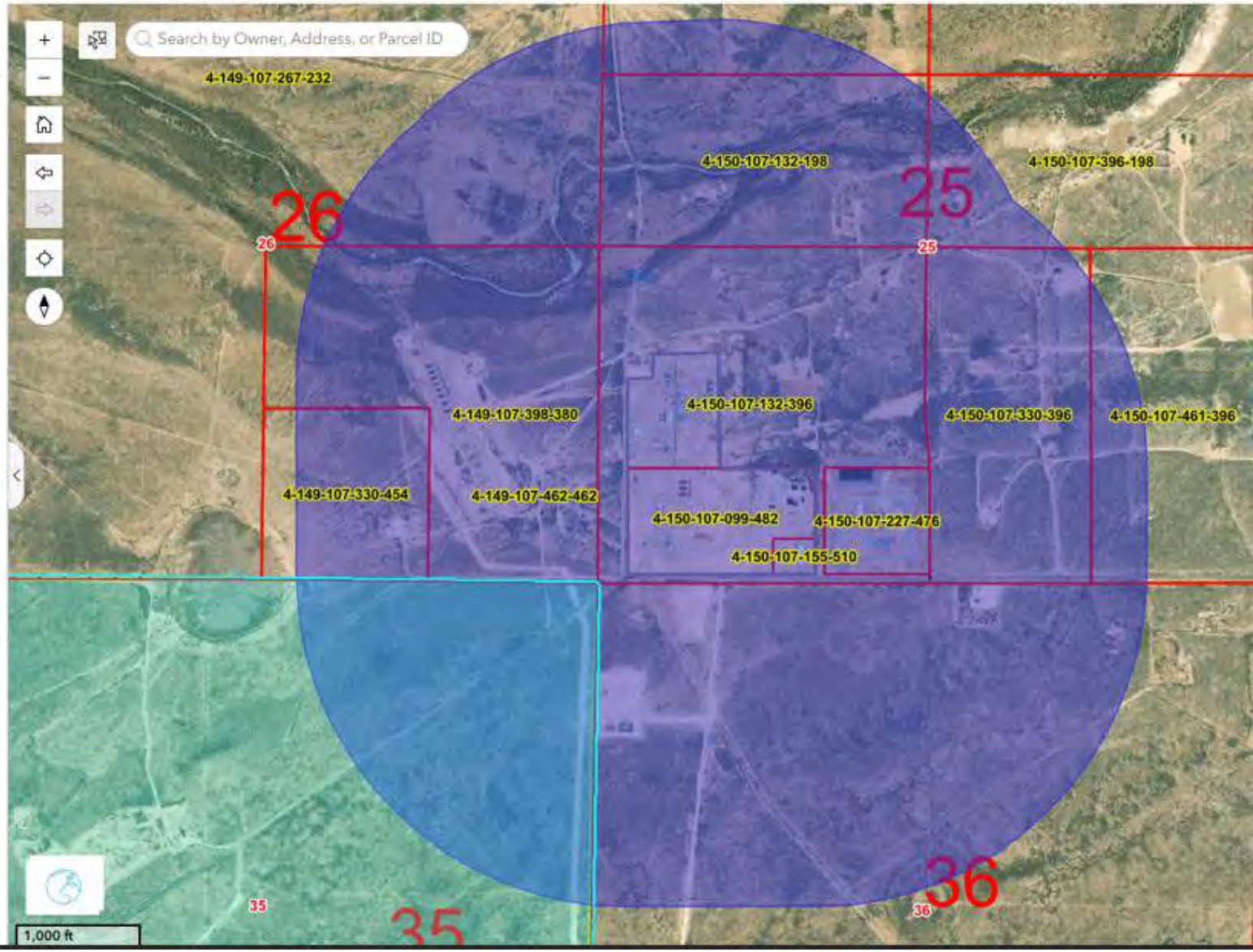


Results

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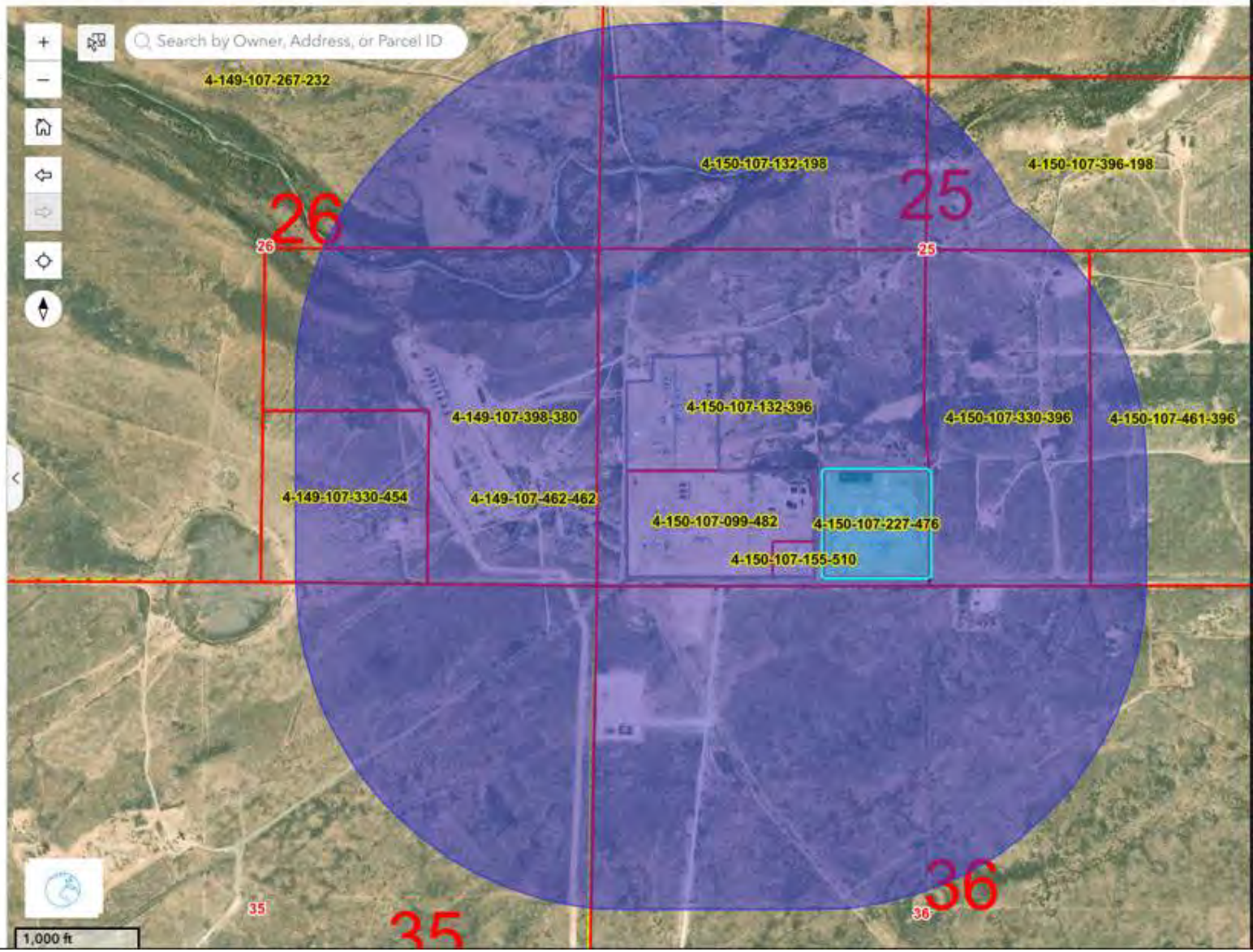
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Owner Name	WILSON, WANDA FAYE ESTATE & WILSON, DAVID D & DIANA L (N-JT)
Owner Address	361 W KINCAID RANCH ROAD ARTESIA, NM 88210
Owner City	ARTESIA
Owner State	NM
Owner ZIP	88210
Site Address	361 W KINCAID RANCH ROAD
Legal Summary	Quarter: NE S: 35 T: 18S R: 25E ALL NE ,, Quarter: NW S: 35 T: 18S R: 25E ALL NW , , Quarter: SW S: 35 T: 18S R: 25E ALL SW , , Quarter: SE S: 35 T: 18S R: 25E ALL SE , ,
Model Type	Land
Land Actual	1440
Actual Area	640
Tax Area	16O_NR
Land Code	121_2_25
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Parcel Information

Assessor Property Information

UPC	4-150-107-227-476
Map Number	104-AEC-A, CAB# 5-408-1
Owner Name	REMUDA PROPERTIES LLC
Owner Address	15851 DALLAS PKWY STE 600 ADDISON, TX 75001-6030
Owner City	ADDISON
Owner State	TX
Owner ZIP	750016030
Site Address	276 W KINCAID RANCH ROAD
Legal Summary	Subd: AGAVE ENERGY CO LND DIV SW 25-18-25 Tract: A
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Land Actual	122500
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Tax Area	16O_NR
Land Code	111_6999_99
Book	859
Page	189



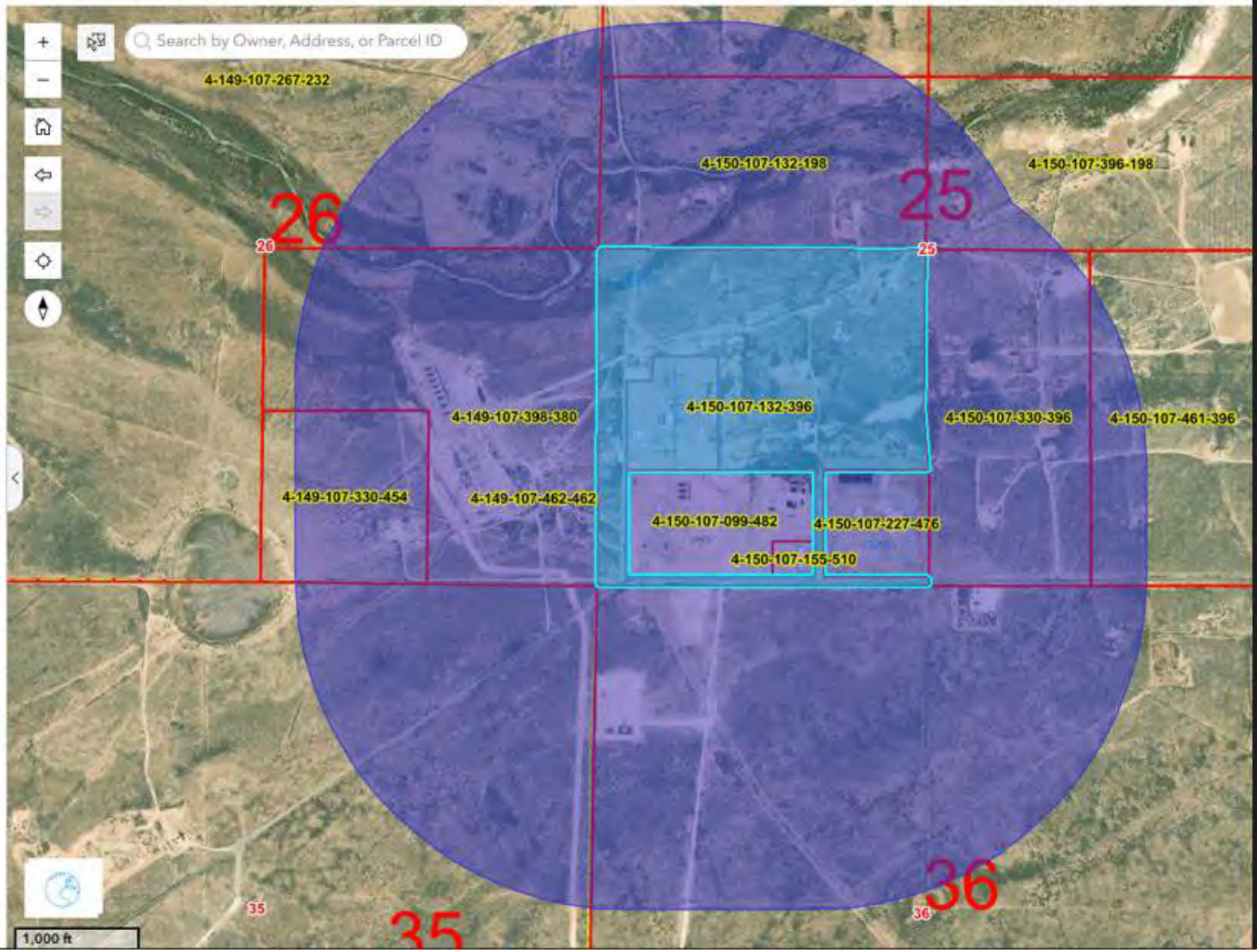
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Parcel Information

Assessor Property Information

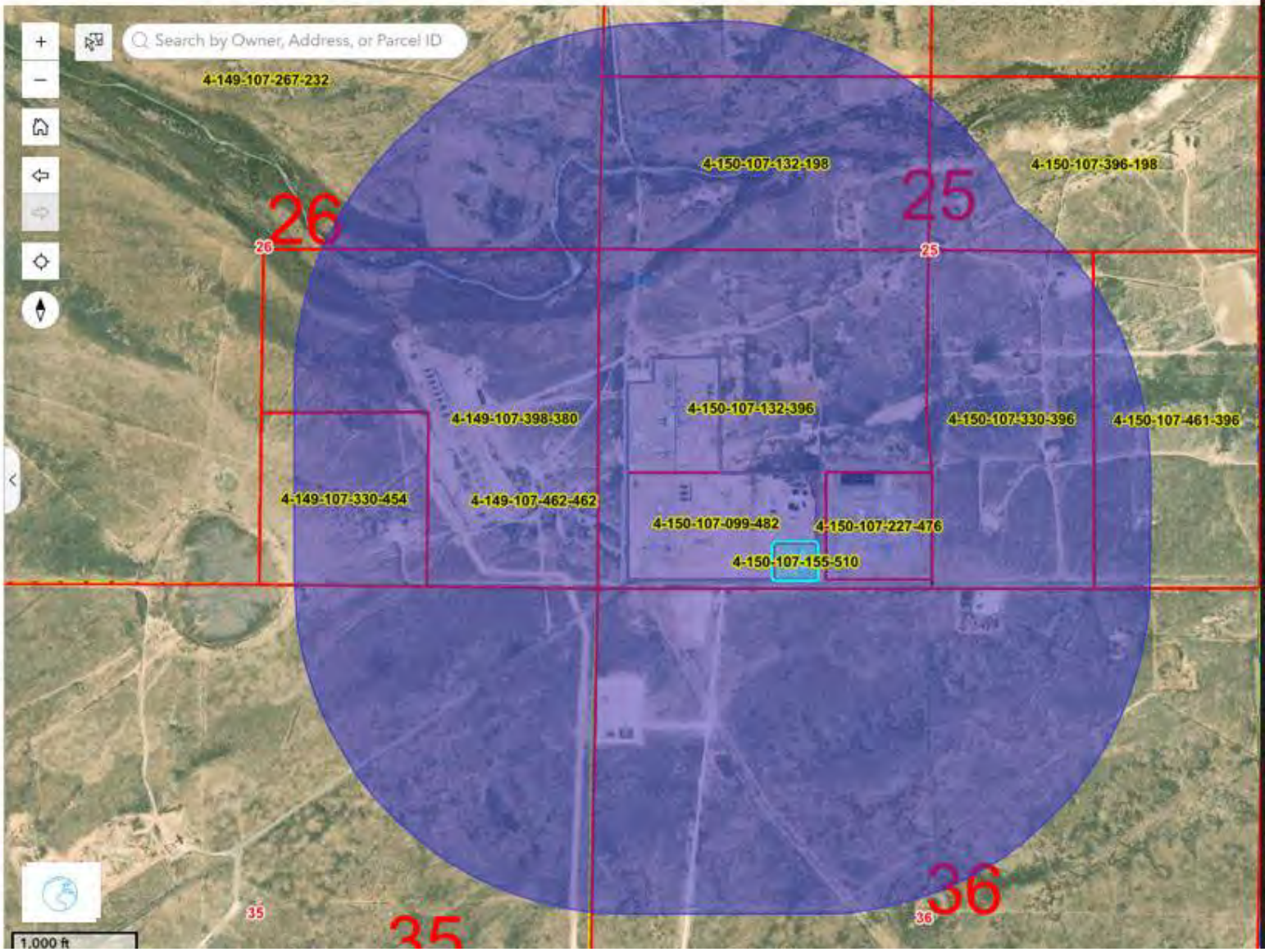
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Owner Address	2424 RIDGE RD ROCKWALL, TX 75087
Owner City	ROCKWALL
Owner State	TX
Owner ZIP	75087
Site Address	278 PIPELINE ROAD
Legal Summary	Subd: AGAVE ENERGY CO LND DIV SW 25-18-25 Tract: B
Model Type	Land
Land Actual	67663
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Tax Area	16O_NR
Land Code	111_3999_99
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Parcel Information

Assessor Property Information

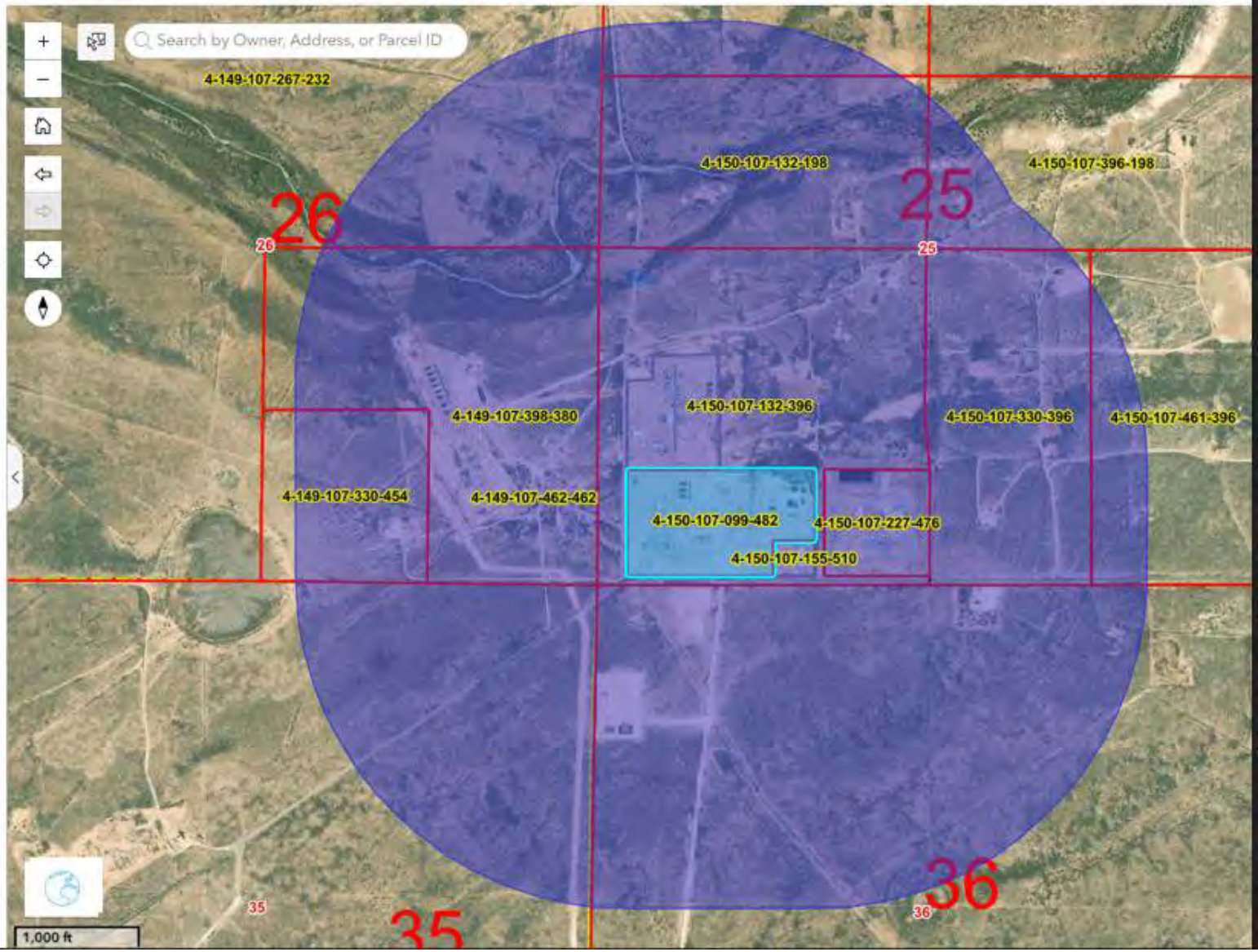
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Owner Address	2424 RIDGE RD ROCKWALL, TX 75087
Owner City	ROCKWALL
Owner State	TX
Owner ZIP	75087
Site Address	288 W KINCAID RANCH ROAD
Legal Summary	Quarter: SW S: 25 T: 18S R: 25E BEG E 1725' & N 40' FROM SW COR, N 280', W 335', S 280', E 335 TO POB
Model Type	Land
Land Actual	8640
Actual Area	2.16
Tax Area	16O_NR
Land Code	111_3999_99
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Parcel Information

Assessor Property Information

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Map Number	
Owner Name	
Owner Address	
Owner City	
Owner State	
Owner ZIP	
Site Address	
Legal Summary	
Model Type	
Land Actual	
Actual Area	
Tax Area	
Land Code	
Book	
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Section 10

Written Description of the Routine Operations of the Facility

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A written description of the routine operations of the facility. 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 Dagger Draw Gas Plant consists of four natural gas-fired residue compressor engines, an amine gas treatment system, two natural gas-fired acid gas compressor engines, an Acid Gas Injection Well that controls the acid gas stream from the amine unit, a process flare, an acid gas flare, a glycol dehydration system, and ancillary equipment. The primary function of the plant is to remove H2S and CO2 from sour field gas so that the gas can meet pipeline specifications. The plant has been designated a primary Standard Industrial Classification (SIC) Code of 1311. The operation of the Dagger Draw Gas Plant is intended to process 75 MMscfd of gas.

Amine Treating Unit (Unit AU-1)
The amine unit is designed to remove acid gas components (carbon dioxide, hydrogen sulfide and mercaptans) from the natural gas stream. These components are removed from the natural gas because they are corrosive, hazardous to health, and reduce the heating value of the natural gas stream. In addition, the carbon dioxide can freeze in the cryogenic unit forming dry ice and forcing the shut down of the facility. This is known as the gas sweetening process.

Amine treating is an exothermic chemical reaction process. The treating solution of amine is a mixture of RO water with amine. This aqueous mixture is regenerated and reused. Lean solution is pumped to the top of the contactor and allowed to flow downward. Sour gas is fed into the bottom of the contactor and flows upward. As the lean solution flows down through the contactor, it comes into contact with the sour gas. The H2S and CO2 react with the amine to form an amine sulfide complex and carbonate. The amine is now known as sour or rich amine and the remaining gas is sweet and continues to the dehydration system.

The rich amine solution is fed into a flash tank. This unit reduces the pressure on the rich amine and allows dissolved gases to vent off. The dissolved gases are usually hydrocarbons. This vented stream from the amine flash tank is returned to plant inlet. Due to weak chemical bonds between the sour gas and the amine solution, H2S and CO2 can be stripped from the amine by heating the amine at low pressures. Rich amine is fed into a stripper column known as a regenerator. Steam generated in the amine reboiler passes up through the amine still and removes the acid gases from the rich amine. Hot oil is used to supply heat to the regenerator reboiler. H2S and CO2 (acid gases) exit the top of the regenerator and are sent to the acid gas injection well (AGI). The amine solution is now regenerated and leaves the stripper column to be recirculated to the contactor.

Acid Gas Injection Well
The acid gas removed by the amine unit is disposed of by compressing and injecting the stream into a disposal well for a control of 100%. Acid gas is injected using two natural gas-fired compressors engines (Ajax-1, Ajax-2), or with a backup electrical unit (AGC-0). In the event the electrical unit is not functioning and both of the redundant AGI well compressor units go down, FL-1 will incinerate the acid gas stream from the amine unit (FL-1 SSM). The acid gas will be compressed in stages from a pressure of 5 PSIG to a final pressure of no more than 1250 PSIG. After compression, the gas must be cooled and any water that is condensed at the higher pressure will be separated. The water is collected and disposed of in a separate disposal well. Should the acid gas compressor shut down for any reason, valves will automatically isolate it. At this point, the acid gas will be diverted to FL-1 (FL-1 SSM). The acid gas will be enriched with sweet natural gas so that it will burn.

Glycol Dehydration Unit (Unit DEHY-1)
The glycol dehydration unit receives up to 75 MMscf/d of treated gas (sweet) from the amine unit and reduces the water content of the gas by circulating up to 17.5 gallons per minute of triethylene glycol (TEG). The gas passes into the lower section of the glycol contactor and the TEG enters the top of the contactor. The gas and liquid come into contact on trays

within the tower and the TEG absorbs the water. The dry gas exits the top of the contactor and moves on to the next processing phase, the molecular sieve dehydration.

The rich glycol is fed into a flash tank. This unit reduces the pressure on the solution and allows dissolved gases to vent off. The dissolved gases are usually hydrocarbons. This low-pressure stream from the dehy flash tank is returned to the inlet. The rich glycol is regenerated by passing through a series of heat exchangers to warm the glycol. It then enters the glycol reboiler (H-2) where it is heated to approximately 400°F to boil the absorbed water out of the solution. By-products that are also absorbed, such as benzene, toluene, ethylbenzene, and xylene (BTEX), are also boiled out of the solution. Since BTEX is considered a harmful component these vapors (including water) will be collected and condensed into a liquid using an air-cooled exchanger and a separator. These liquids are then disposed of in a disposal well. Any remaining non-condensable components in the vapors from the dehy regenerator vent are sent to the vapor combustor (VCU-1). The destruction efficiency of the VCU-1 is 98%. The glycol unit and the components of the glycol unit are similar to that of an amine unit.

Molecular Sieve Dehydration

Molecular sieve dehydration is used upstream of the cryogenic processes to achieve a -150°F dew point. The process uses two molecular sieve vessels with one vessel in service absorbing moisture from the gas stream and the other vessel in the regeneration mode. During the regeneration mode, hot, dry gas (regen gas) is passed up through the vessel to drive off the absorbed moisture from the molecular sieve. The gas comes from the discharge of the residue compressors, and it is passed through a heat exchanger (heated by hot oil) and a heater to achieve a temperature of approximately 500°F. After the gas passes through the bed it is cooled in an air cooled exchanger. The water in the gas condenses and is separated from the gas stream in a separator. The regen gas has four potential paths depending on the concentration of the sulfur products in the regen gas:

1. Blended with the sales gas at the sales point (outlet of the plant);
2. Routed to the front of the plant for reprocessing;
3. Sold to a third-party for processing; or
4. Treated on-site via AGI system.

There are no air emissions from the molecular sieve dehydration system, other than combustion emissions from the Mol Sieve Regen Heater (H-3).

Cryogenic Unit:

The cryogenic unit is designed to liquefy natural gas components from the sweet, dehydrated inlet gas by removing work (heat) from the gas by means of the turbo expander. The cryogenic unit recovers natural gas liquids (NGL) by cooling the gas stream to extremely cold temperatures (-150°F) and condensing components such as ethane, propane, butanes and heavier. The gas is cooled by a series of heat exchangers and by lowering the pressure of the gas from approximately 650 PSIG to approximately 180 PSIG. Once the gas has passed through the system of heat exchangers and expansion it is re-compressed using the energy obtained from expanding the gas. Further compression is usually required to enter the pipeline, so four residue compressors are located at the end of the process.

The gas flows through the following heat exchangers:

- Gas to Gas Exchanger – This unit exchanges heat from the warm inlet gas and the cold residue gas that has already been expanded. This cools the inlet gas.
- Product Heater – This unit will cool the inlet gas by exchanging heat with the cold liquid product that has been recovered.
- De-Methanizer Reboiler / Side-Reboiler – This unit draws liquid off of the de-methanizer and uses heat from the inlet gas to boil the methane out of the liquid. One stream comes off the side of the tower and one stream comes off of the bottom of the tower. This also cools the inlet gas. The gas is expanded and recompressed in the expander/compressor. At this point the gas temperature should be at its coldest. The de-methanizer is used to stabilize the liquid. By adding heat to the tower, the methane that has been absorbed in the liquid can be rejected with the residue gas.
- Natural Gas Liquids (NGLs) from the bottoms of the demethanizer are sent offsite via pipeline.

There are no air emissions associated with the cryogenic unit.

Residual Compression

Once the sweet, dry gas exits the cryogenic unit, it needs to be recompressed to approximately 800 to 1200 psi before the gas is sent to the main transportation pipeline. This is accomplished with two Waukesha L7044 units (WAU-1 and WAU-2), two Waukesha P9394GSI units (WAU-3, WAU-4), with one 2500 horsepower electric driven compressor (D-1) as backup/standby.

Hot Oil System

The hot oil system in the plant is used to provide heat to certain processes within the facility. It is a very basic system consisting of the following:

- Natural Gas Fired Heater (H-1) – This provides heat input into the system by burning natural gas and circulating the oil through the heater. The heater also has a convection section that assists in heating the regeneration gas for the molecular sieve. There is a backup natural gas fired heater (H-6) that can be used in the event the main heater is out of service for maintenance.
- Hot Oil Pumps – These pumps circulate the required amount of hot oil through the system.
- Hot Oil Surge Tank – This tank provides expansion volume for the system. As the system heats up the liquid will expand. This tank allows for the liquid to expand without spilling out of the system.
- Heat Exchangers – A series of exchangers, mainly the reboiler and regeneration gas heat exchanger that removes heat from the hot oil system and transfers it to the respective process.

Regen Gas Processing

During regeneration mode, hot gas is passed up through the vessel to drive the absorbed moisture off of the molecular sieve. The gas comes from the discharge of the residue compressors. The regen gas also drives off any residual sulfur compounds from the mole sieves. Due to the sulfur content of the regen gas, it does not generally meet pipeline specifications and must be treated. The sulfur compounds must be removed along with the water that was picked up from the mole sieve beds. The regen gas stream volume ranges from 1.5 MMscfd to 6.0 MMscfd depending on the volume of the mole sieve beds and the concentration of sulfur compounds in the inlet gas.

Sulfur Removal

AU-1 is an amine unit that is used to remove H2S and CO2. The concentrated waste acid gas is then sent to the AGI well. The selective amine is regenerated using the hot oil heater media. The regen gas waste stream is composed primarily of sulfur compounds. This stream would be mixed with the acid gas stream produced by the main process amine unit. The acid gas that is removed by the amine unit will normally be disposed of by acid gas injection into a disposal well or, under emergency situations, by incinerating in a flare (FL-1 SSM).

It is assumed that the main process stream removes 100% of all sulfur compounds for ease of measurement and calculations. In fact, the main amine unit removes 99.8% to 99.9% of H2S and leaves de minimis mercaptans in the gas stream. These additional sulfur compounds are removed by the mole sieves. This additional sulfur removal process will not generate any additional emissions as the emissions are already accounted for in the sulfur calculations of the main amine process unit.

The facility is authorized to operate continuously (8,760 hr/yr) at design maximum capacity processing rates. Frontier Field Services will minimize startup and shutdown activities at the facility in accordance with good operating principles and business objectives. This practice will serve to minimize total annual excess emissions from the facility due to startup, shutdown, and maintenance activities.

Facility wide fugitives also exist at the site as FUG.

SSM Description

Acid Gas Flare FL-1 SSM

- The acid gas that is removed by the amine unit will normally be disposed of by acid gas injection into a disposal well, but under SSM situations, the acid gas will be incinerated in the Acid Gas Flare. The acid gas will be enriched with sweet natural gas so that it will burn. FL-1 SSM only operates only in the event of an emergency and is less than 500 hr/year.

Process Flare FL-2 SSM

There are three vapor streams that could be routed to the Process Flare during periods of SSM and they could occur at the same time.

- The amine flash tank vapors normally are returned to the plant inlet. These vapors will be sent to FL-2 during time periods when the vapors cannot be returned to the inlet such as high pressure.
- The dehy flash tank vapors normally are returned to the plant inlet. These vapors will be sent to FL-2 during time periods when the vapors cannot be returned to the inlet such as high pressure.
- If there is an amine unit upset, the plant will derate and send to the Process Flare the gas that would normally be routed to the glycol dehydrator.

Compressor and equipment blowdowns to the atmosphere may occur during SSM events (SSM).

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)**:**
Dagger Draw Gas Plant. Please refer to Table 2-A.

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):

Section 12

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.**

This facility is not one of the listed 20.2.74.501 Table I – PSD Source Categories. Dagger Draw Gas Plant is currently and will remain a minor PSD source. The total emissions from the facility are less than PSD major source thresholds:

a. NOx: 120.03 TPY

b. CO: 176.63 TPY

c. VOC: 115.54 TPY

d. SOx: 242.45 TPY

e. PM: 8.46 TPY

f. PM10: 8.46 TPY

g. PM2.5: 8.46 TPY

h. Fluorides: 0 TPY

i. Lead: 0 TPY

j. Hydrogen Sulfide (H2S): 2.58 TPY

k. GHG: 99,004 TPY

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/

Applicable State Regulations:

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.1 NMAC	General Provisions	Yes	Facility	This facility is authorized under a construction permit. Therefore, this regulation applies.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	This facility is an emission source of nitrogen dioxide, carbon monoxide, and sulfur compounds. The facility meets the maximum allowable concentrations of sulfur compounds, carbon monoxide, and nitrogen dioxide. NMAAQS are shown to be met in the modeling in this application.
20.2.7 NMAC	Excess Emissions	Yes	Facility	This regulation establishes requirements for the facility if operations at the facility result in any excess emissions. The owner or operator will operate the source at the facility having an excess emission, to the extent practicable, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions. The facility will also notify the NMED of any excess emissions per 20.2.7.110 NMAC.
20.2.23 NMAC	Fugitive Dust Control	No	N/A	This regulation does not apply as the facility has no need to incorporate fugitive dust control measures as the facility does not generate enough emissions. As of January 2019, the only areas of the state subject to a mitigation plan per 40 CFR 51.930 are in Dona Ana and Luna Counties. As this site is located in Eddy County, a mitigation plan is not required.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	N/A	This regulation does not apply to internal combustion equipment such as engines. It only applies to external combustion equipment such as heaters or boilers. This facility does not have gas burning equipment (external combustion emission sources, such as gas fired boilers and heaters) having heat input greater than 1,000,000 million British Thermal Units per year per unit. The facility is not subject to this regulation and does not have emission sources that meet the applicability requirements under 20.2.33.108 NMAC.
20.2.34 NMAC	Oil Burning Equipment: NO_2	No	N/A	This regulation does not apply to internal combustion equipment such as engines. It only applies to external combustion equipment such as heaters or boilers. This facility does not have oil burning equipment (external combustion emission sources, such as oil-fired boilers and heaters) having a heat input of greater than 1,000,000 million British Thermal Units per year per unit. The facility is not subject to this regulation and does not have emission sources that meet the applicability requirements under 20.2.34.108 NMAC.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No	N/A	This regulation could apply to existing (prior to July 1, 1974) or new (on or after July 1, 1974) natural gas processing plants that use a Sulfur Recovery Unit to reduce sulfur emissions. No sulfur recovery units are used; therefore, this does not apply.
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	N/A	N/A	These regulations were repealed by the Environmental Improvement Board. If you had equipment subject to 20.2.37 NMAC before the repeal, your combustion emission sources are now subject to 20.2.61 NMAC.
20.2.38 NMAC	Hydrocarbon Storage Facility	No	N/A	This regulation could apply to storage tanks at petroleum production facilities, processing facilities, tanks batteries, or hydrocarbon storage facilities. This facility does not have a crude oil or condensate storage capacity greater than 65,000 gallons (1547.6 bbl) and is therefore not subject to this regulation.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	This regulation could apply to sulfur recovery plants that are not part of petroleum or natural gas processing facilities. This facility is not a sulfur recovery plant. Therefore, this regulation does not apply.
20.2.50 NMAC	Oil and Gas Sector – Ozone Precursor Pollutants	Yes	WAU-1, WAU-2, WAU-3, WAU-4	This regulation establishes emission standards for volatile organic compounds (VOC) and oxides of nitrogen (NOx) for oil and gas production, processing, compression, and transmission sources. 20.2.50 NMAC subparts below: Check the box for the subparts that are applicable. All sources are existing: ☒113 – Engines and Turbines. WAU-1, WAU-2, WAU-3, and WAU-4 are considered new natural gas-fired spark ignition engines and meet the emissions

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
			C-WAU1, C-WAU2, C-WAU3, C-WAU4, D-1 DEHY-1, VCU-1 FUG H-1	standards in 20.2.50.113.B.(2) Table 2. Ajax-1 and Ajax-2 are existing natural gas-fired spark ignition engines but are less than 1,000 bhp and not subject to this provision. ☒114 – Compressor Seals. This facility has reciprocating compressors (C-WAU1, C-WAU2, C-WAU3, C-WAU4, D-1). Thus, this facility is subject to this subpart. The facility will comply with this subpart as stated in 20.2.50.114.B(2) NMAC and 20.2.50.114.B(4) NMAC. ☐115 – Control Devices and Closed Vent Systems. No control devices are being used to comply with this regulation. ☒116 – Equipment Leaks and Fugitive Emissions. This facility has equipment leaks and fugitive (FUG) emissions. Thus, this facility will comply with this subpart as stated in 20.2.50.116.B NMAC. ☐ 117 – Natural Gas Well Liquid Unloading. There are no liquid unloading operations resulting in the venting of natural gas at natural gas wells at this facility; therefore, this subpart does not apply. ☐ 118 – Glycol Dehydrators. DEHY-1 has a PTE less than two tpy of VOC; therefore, this subpart does not apply. ☒ 119 – Heaters. H-1 is a natural gas-fired heater with a rated heat input ≥ 20 MMBtu/hr. H-1 does not exceed the emission standards stated in 20.2.50.119.B NMAC. Therefore, the facility will comply with the requirements of this subpart. H-6 is less than 20 MMBtu/hr and is not subject to this regulation. ☐ 120 – Hydrocarbon Liquid Transfers. There are no hydrocarbon liquid transfers at this facility that meet the thresholds; therefore, this provision does not apply. ☐121 – Pig Launching and Receiving. There are pig launchers and receivers at this facility. Records of pigging activities are kept that demonstrate the emissions are less than 1 ton/year VOC; therefore, these activities are not subject to this subpart (20.2.50.121.A NMAC). ☒122 – Pneumatic Controllers and Pumps. This facility is subject to the pneumatic controller and pump requirements of this rule and complies by not using any natural gas driven controllers or pumps. ☐ 123 – Storage Vessels. There are no storage vessels at this facility that emit > 2 tpy VOC emissions; therefore, this provision is not applicable. ☐124 – Well Workovers. There are no oil or natural gas wells at this facility; therefore, this subpart does not apply. ☐ 125 – Small Business Facilities. This facility does not qualify as a small business facility; therefore, this subpart does not apply ☐126 – Produced Water Management Unit. There are no produced water management units located at this facility; therefore, this subpart does not apply. ☐127 – Flowback Vessels and Preproduction Operations There are no wells at this facility; therefore, this subpart does not apply.
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	WAU-1, WAU-2, WAU-3, WAU-4, Ajax 1,	This regulation that limits opacity to 20% applies to Stationary Combustion Equipment, such as engines, boilers, heaters, and flares unless your equipment is subject to another state regulation that limits particulate matter such as 20.2.19

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
			Ajax 2, H-1, H-2, H-3, H-6, FL-1, FL-2, VCU-1	NMAC (see 20.2.61.109 NMAC). This regulation applies to the units listed and the facility will comply.
20.2.70 NMAC	Operating Permits	Yes	Facility	This regulation establishes requirements for obtaining an operating permit. A Title V application was submitted separately and is currently in process with the NMED as discussed in Section 3.
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	This regulation establishes a schedule of operating permit emission fees. The facility is subject to 20.2.70 NMAC and is therefore subject to requirements of this regulation.
20.2.72 NMAC	Construction Permits	Yes	Facility	This regulation establishes the requirements for obtaining a construction permit. This facility is a stationary source with a potential emission rate greater than 10 pounds per hour or 25 tons per year of any regulated air contaminant for which there is a National or New Mexico Air Quality Standard. This application is for a significant revision to the construction permit for this facility under 20.2.72 NMAC.
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	Emissions Inventory Reporting per 20.2.73.300 NMAC applies to the site. All facilities that are a Title V Major Source as defined under 20.2.70.7.R NMAC are subject to Emissions Inventory Reporting. The facility will meet all applicable reporting requirements under 20.2.73.300.B.4 NMAC.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	N/A	This regulation establishes requirements for obtaining a prevention of significant deterioration permit. This facility is not a major source with respect to PSD and is therefore not subject to 20.2.74 NMAC. Minor NSR site.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This regulation applies since this submittal is an application pursuant to 20.2.72 NMAC.
20.2.77 NMAC	New Source Performance	Yes	WAU-1, WAU-2, WAU-3, WAU-4, Facility (FUG), H-1, H-6	This is a stationary source which is subject to the requirements of 40 CFR Part 60: • For WAU-1, WAU-2, WAU-3, WAU-4 – NSPS JJJJ applies. • For Facility (FUG) – NSPS KKK applies • For the H-1, H-6 NSPS Dc applies.
20.2.78 NMAC	Emission Standards for HAPS	No	N/A	This facility does not include equipment subject to 40 CFR 61. Therefore, this regulation does not apply.
20.2.79 NMAC	Permits – Nonattainment Areas	No	N/A	This facility is not located in a non-attainment area. Therefore, this regulation does not apply.
20.2.80 NMAC	Stack Heights	No	N/A	This regulation establishes requirements for the evaluation of stack heights and other dispersion techniques. This regulation does not apply as all stacks at the facility follow good engineering practice.
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	WAU-1, WAU-2, WAU-3, WAU-4, Ajax 1,	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63. This facility operates units which are subject to 40 CFR 63. Therefore, this regulation applies. • WAU-1, WAU-2, WAU-3, WAU-4, Ajax 1, Ajax 2 – are subject to 63 Subpart ZZZZ • DEHY-1 – subject to 63 Subpart HH

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
			Ajax 2, DEHY-1	

Applicable Federal Regulations

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 50	NAAQS	Yes	Facility	This regulation defines National Ambient Air Quality Standards (NAAQS). The facility meets all applicable NAAQS for NOx, CO, SO2, H2S, PM10, and PM2.5 under this regulation.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	WAU-1, WAU-2, WAU-3, WAU-4, Facility (FUG), H-1, H-6	This is a stationary source which is subject to the requirements of 40 CFR Part 60: • For WAU-1, WAU-2, WAU-3, WAU-4 – NSPS JJJJ applies. • For Facility (FUG) – NSPS KKK applies • For the H-1, H-6 NSPS Dc applies.
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for **Electric Utility Steam Generating Units**	No	N/A	No units are subject to NSPS Subpart Da since there is no electric utility steam generating unit 250 MMBtu/hr.
NSPS 40 CFR60.40b Subpart Db	**Electric Utility Steam Generating Units**	No	N/A	No units are subject to NSPS Subpart Db since there is no industrial-commercial-institutional steam generating unit 100 MMBtu/hr.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	Yes	H-1, H-6	Applicability: the facility has one steam generating unit for which construction, modification or reconstruction is commenced after June 9, 1989, and that have a maximum design heat input capacity of 29 MW (100 MMBtu/hr) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr). Steam generating unit includes a device that combusts any fuel and produces steam or heats water or heats any heat transfer medium. The hot oil heaters H-1 and H-6 are subject to this regulation and will comply with the SO2 emission standards outlined in §60.42c(a) through (j) and the PM emissions standards outlined in §60.43c(a) through (e).

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
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 facility does not have any tanks with a volume of 420,000 gallons or larger. Therefore, this subpart does not apply. 40 CFR 60.110a(b).
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 facility does not have any storage vessels with a volume of 75 cubic meters. Therefore, this regulation does not apply. 40 CFR 60.110b(a).
NSPS 40 CFR 60, Subpart Kc	Standards of Performance for **Volatile Organic Liquid Storage Vessels** (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced **After** October 4, 2023	No	N/A	This facility does not have any storage vessels with a volume of 75 cubic meters. Therefore, this regulation does not apply. 40 CFR 60.110c(a).
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	No	N/A	This facility does not have any stationary turbines. Therefore, this regulation does not apply.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	Yes	Facility (FUG)	This facility is subject to this regulation as it operates a sweetening unit, dehydration unit, and compressors on site. The site was originally constructed in 2010 and relocated to New Mexico in 2021. The relocation in 2021 is not considered a modification per 40 CFR 60.14(e)(6); therefore, the facility remains subject to NSPS KKK in lieu of NSPS OOOO/OOOOa. The facility will comply with the standards (40 CFR 60.632), recordkeeping (40 CFR 60.635), and reporting (40 CFR 60.636) requirements of this rule.
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural Gas Processing**: SO_2 Emissions	No	N/A	The facility is not subject to this subpart as the acid gas is completely reinjected into the geologic formation.
NSPS 40 CFR Part	Standards of Performance for	No	N/A	This facility is a gas plant constructed before August 23, 2011 and has not been modified. Therefore, equipment leaks are not subject to this regulation. The

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
60 Subpart OOOO	Crude Oil and Natural Gas Production, Transmission, and Distribution for which construction, modification or reconstruction commenced after August 23, 2011 and before September 18, 2015			compressors at the facility were all manufactured before 2011. Therefore, no compressors are subject to this regulation. 40 CFR 60.5365.
NSPS 40 CFR Part 60 Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced **After** September 18, 2015	No	N/A	The compressors (Units C-WAU1, C-WAU2, C-WAU3, C-WAU4, C-Ajax1, C-Ajax2, AGC-0, D-1) were all constructed before 2011 and are not subject to this subpart. FUG is not subject to this subpart; it is subject to 40 CFR Part 60 Subpart KKK.
NSPS 40 CFR Part 60 Subpart OOOOb	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced **After** December 6, 2022	No	N/A	There are no facilities that were constructed, modified, or reconstructed after December 6, 2022 that are subject to the provisions of this rule.
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	No	N/A	There are no compression ignition engines installed at this facility. Therefore, this regulation does not apply.
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	Yes	WAU-1, WAU-2, WAU-3, WAU-4	The engines WAU-1, WAU-2, WAU-3, WAU-4 at this facility were manufactured after the NSPS JJJJ date of June 12, 2006. The units are therefore subject to this regulation and will comply with all applicable requirements in 40 CFR 60.4233(e). The Ajax-1 and Ajax-2 were manufactured in 1997 and are not subject to this regulation.
NSPS 40 CFR 60 Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units	No	N/A	There are no electric generating units at this facility. Therefore, this regulation does not apply.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No	N/A	There are no electric generating units at this facility. Therefore, this regulation does not apply.
NSPS 40 CFR 60, Subparts WWW, XXX, Cc, and Cf	Standards of performance for Municipal Solid Waste (MSW) Landfills	No	N/A	This facility is not a Municipal Solid Waste Landfill. Therefore, this regulation does not apply.
NESHAP 40 CFR 61 Subpart A	General Provisions	No	N/A	No units at this facility are subject to any of the subparts of 40 CFR 61.
NESHAP 40 CFR 61 Subpart E	National Emission Standards for **Mercury**	No	N/A	This facility does not process mercury. Therefore, this regulation does not apply.
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	No	N/A	This facility is not a major source of HAPs. Therefore, this regulation does not apply.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	WAU-1, WAU-2, WAU-3, WAU-4, Ajax 1, Ajax 2, DEHY-1	This facility is a stationary source with units that are subject to 40 CFR 63. Therefore, this regulation applies. • WAU-1, WAU-2, WAU-3, WAU-4, Ajax 1, Ajax 2 – are subject to 63 Subpart ZZZZ • DEHY-1 – subject to 63 Subpart HH
MACT 40 CFR 63.760 Subpart HH	**Oil and Natural Gas Production Facilities**	Yes	DEHY-1	This facility is subject to the requirements of 40 CFR 63 Subpart HH, which includes requirements applicable to area sources with TEG Dehydrators. The site is not a major source of HAPs, but an area source of HAPs and therefore is subject to this subpart. The dehydrator has the potential to emit less than 1 tpy (0.90 megagram per year) of benzene and is therefore exempt from the requirements of §63.764(d) pursuant to §63.764(e)(1)(ii). The unit will comply with the HH recordkeeping required for the exemption per §63.774(d).
MACT 40 CFR 63 Subpart HHH		No	N/A	This subpart applies to owners and operators of natural gas transmission and storage facilities that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user. This facility is not a natural gas transmission facility. Therefore, this regulation does not apply.
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 facility does not operate major industrial, commercial, and institutional boilers & process heaters, and the facility is not major for HAPs; therefore, this regulation does not apply.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
MACT 40 CFR 63 Subpart UUUUU	National Emission Standards for Hazardous Air Pollutants Coal & Oil Fire Electric Utility Steam Generating Unit	No	N/A	This regulation establishes national emission standards for hazardous air pollutants from coal and oil-fired electric utility steam generating units. This facility does contain an affected source under this regulation; therefore, this regulation does not apply.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	Yes	WAU-1, WAU-2, WAU-3, WAU-4, Ajax 1, Ajax 2	The compressor engines (WAU-1, WAU-2, WAU-3, WAU-4, Ajax 1, Ajax 2) at this facility are subject to MACT ZZZZ and will comply with this regulation by complying with the requirements of NSPS JJJJ, and/or maintenance practices as appropriate. 40 CFR 63.6590(c)(1).
40 CFR 64	**Compliance Assurance Monitoring**	No	N/A	This regulation establishes requirements for a Compliance Assurance Monitoring (CAM) plan for pollutant-specific emissions units at a major source required for part 70 or 71 permitting. CAM is not addressed in this part 72 application and it is addressed in the Title V permit.
40 CFR 68	**Chemical Accident Prevention**	Yes	Facility	The facility is an affected facility, as it will use flammable process chemicals such as propane at quantities greater than the thresholds. The facility has developed and maintains an RMP for these chemicals.
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No	N/A	This facility is not an acid rain source. This regulation does not apply.
Title IV – Acid Rain 40 CFR 73	**Sulfur Dioxide** Allowance Emissions	No	N/A	This regulation establishes sulfur dioxide allowance emissions for certain types of facilities. This facility is not an acid rain source. This regulation does not apply.
Title IV-Acid Rain 40 CFR 75	**Continuous Emissions Monitoring**	No	N/A	The facility is not an acid rain source and is therefore not subject to this regulation.
Title IV – Acid Rain 40 CFR 76	**Acid Rain** Nitrogen Oxides **Emission Reduction Program**	No	N/A	This regulation establishes an acid rain nitrogen oxide emission reduction program. This regulation applies to each coal-fired utility unit that is subject to an acid rain emissions limitation or reduction requirement for SO2. This part does not apply because the facility does not operate any coal-fired units and is not an acid rain source [40 CFR Part 76.1].
Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	No	N/A	This regulation establishes a regulation for the protection of the stratospheric ozone. The regulation is not applicable because the facility does not “service”, “maintain” or “repair” class I or class II appliances nor “dispose” of the appliances [40 CFR Part 82.1(a)].

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.

All required documentation is kept onsite and will be made available to the department upon request.

Startup and shutdown procedures are performed according to guidelines, which dictate proper procedural sequence to minimize emissions from the facility during such activities.

Equipment located at the plant is equipped with various safety devices that aid in preventing excess emissions to the atmosphere in the event of an operational emergency. In the event of a malfunction, startup, shutdown, or scheduled maintenance in which emission rates from the facility exceed permitted allowable emissions, Frontier Field Services will notify the AQB in accordance with 20.2.7 NMAC and the equipment responsible for the exceedance will be repaired as soon as possible.

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: www.env.nm.gov/air-quality/permitting-section-procedures-and-guidance/. 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.

There are no alternative operating scenarios.

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.	X
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.	
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.

Universal Application 4

Air Dispersion Modeling Report

Refer to and complete Section 16 of the Universal Application form (UA3) to assist your determination as to whether modeling is required. If, after filling out Section 16, you are still unsure if modeling is required, e-mail the completed Section 16 to the AQB Modeling Manager for assistance in making this determination. If modeling is required, a modeling protocol would be submitted and approved prior to an application submittal. The protocol should be emailed to the modeling manager. A protocol is recommended but optional for minor sources and is required for new PSD sources or PSD major modifications. Fill out and submit this portion of the Universal Application form (UA4), the "Air Dispersion Modeling Report", only if air dispersion modeling is required for this application submittal. This serves as your modeling report submittal and should contain all the information needed to describe the modeling. No other modeling report or modeling protocol should be submitted with this permit application.

16-A: Identification

1	Name of facility:	Dagger Draw Gas Plant
2	Name of company:	Frontier Field Services, LLC
3	Current Permit number:	NSR No. 0001-M13-R3
4	Name of applicant's modeler:	Dawna Allen
5	Phone number of modeler:	(512) 484-4478
6	E-mail of modeler:	Dawna.Allen@trinityconsultants.com

16-B: Brief

1	Was a modeling protocol submitted and approved?	Yes☒	No☐
2	Why is the modeling being done?	Other (describe below)	
3	Describe the permit changes relevant to the modeling.		
	(1) Update of multiple emission sources (dehy, amine unit streams) for a revised ProMax for the amine+dehy section of the station with optimized operations. (i) Max gas input to the station will be reduced to 75 MMSCFD from 90 MMSCFD. (ii) Increase in inlet gas composition for H2S and CO2 to reflect future inlet gas composition. Update of other component speciation in inlet gas consistent with recent inlet gas sample. (2) Update of emissions from flare FL-2. (i) The amine flash is now returned to inlet instead of flared at FL-2 during normal operations; the stream will now be flared 876 hours per year as FL-2 SSM. (ii) The dehy flash is returned to inlet instead of flared at FL-2 during normal operations; the stream will now be flared at 250 hours per year as FL-2 SSM		

	(iii) Increase of Dehy Inlet Flaring from 175 hours to 250 hours at FL-2 SSM; (iv) Update stream characteristics of these SSM streams to FL-2 per the updated ProMax. (v) Updated the NOx emission factor per TCEQ high/low Btu content to the higher NOx factor. (vi) Remove particulate matter emissions from this elevated flare, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines. (3) Update of emissions from flare FL-1. (i) FL-1 SSM updated acid gas composition consistent with updated ProMax. (ii) Updated the CO emission factor per TCEQ high/low Btu content to the higher CO factor. (iii) Increased annual number of hours of FL-1 SSM flaring from 425 hours up to 490 hours. (vi) Remove particulate matter emissions from this elevated flare, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines. (4) Update the heat duty of the hot oil heater (H-1) from 32.7 MMBtu/hr to 41.95 MMBtu/hr. Update emissions for H-1 based on installation of a low-emissions burner for compliance with 20.2.50 requirements. (5) Update the sulfur gas content of facility heaters (H-1, H-2, H-3) to a lower sulfur content, consistent with the AP-42 factor and the low sulfur fuel gas fired by these heaters. (6) Add a backup hot oil heater operating a maximum of 876 hours/year (H-6). Hot oil heater H-6 will not operate at the same time as hot oil heater H-1. H-6 was previously H-1 before it was replaced with a new low emissions hot oil heater earlier in 2025. (7) Engine Replacement. (i) Replacement of two engines (ENG-1 and ENG-3) with units (WAU-1 and WAU-2) with lower emission rates of NOx and CO than existing units. (ii) Replacement of two engines (ENG-2 and ENG-4) with units (WAU-3 and WAU-4) with higher exhaust temperature and velocity than existing units. (8) Update the routing of the dehy still vent to a new BTEX combustor (VCU-1) instead of the existing flare (FL-2). (9) Update of stack locations to reflect the actual stack locations at the site. The latest modeling protocol and modeling waivers approved by Sahil Kassanjee on June 12, 2026 are attached to the end of this document.

4	What geodetic datum was used in the modeling?	WGS84	
5	How long will the facility be at this location?	Longer than 1 year.	
6	Is the facility a major source with respect to Prevention of Significant Deterioration (PSD)?	Yes☐	No☒
7	Identify the Air Quality Control Region (AQCR) in which the facility is located	155	
8	List the PSD baseline dates for this region (minor or major, as appropriate).		
	NO2	3/16/1988	
	SO2	7/28/1978	
	PM10	2/20/1979	
	PM2.5	11/13/2013	
9	Provide the name and distance to Class I areas within 50 km of the facility (300 km for PSD permits).		
	N/A- Carlsbad Caverns National Park (57.05 km)		
10	Is the facility located in a non-attainment area? If so describe below	Yes☐	No☒
	N/A		

11	Describe any special modeling requirements, such as streamline permit requirements.
	N/A

16-C: Modeling History of Facility

Describe the modeling history of the facility, including the air permit numbers, the pollutants modeled, the National Ambient Air Quality Standards (NAAQS), New Mexico AAQS (NMAAQS), and PSD increments modeled. (Do not include modeling waivers).

	Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
1	CO	0001-M12	7/18/2024	
	NO_2	0001-M12	7/18/2024	
	SO_2	0001-M12	7/18/2024	
	H_2S	0001-M12	7/18/2024	
	PM2.5	0001-M12	7/18/2024	
	PM10	0001-M12	7/18/2024	
	Lead	N/A	N/A	This pollutant is not emitted at this facility.
	Ozone (PSD only)	N/A	N/A	This facility is not PSD.
	NM Toxic Air Pollutants (20.2.72.402 NMAC)	N/A	N/A	No TAPS are emitted at this facility.

16-D: Modeling performed for this application

For each pollutant, indicate the modeling performed and submitted with this application.
Choose the most complicated modeling applicable for that pollutant, i.e., culpability analysis assumes ROI and cumulative analysis were also performed.

	Pollutant	ROI	Cumulative analysis	Culpability analysis	Waiver approved	Pollutant not emitted or not changed.
1	CO	☒	☐	☐	☒	☐
	NO_2	☐	☒	☐	☐	☐
	SO_2	☒	☐	☐	☒	☐
	H_2S	☐	☐	☐	☒	☐
	PM2.5	☐	☐	☐	☒	☐
	PM10	☐	☐	☐	☒	☐
	Lead	☐	☐	☐	☐	☒
	Ozone	☐	☐	☐	☐	☒
	State air toxic(s) (20.2.72.402 NMAC)	☐	☐	☐	☐	☒

16-E: New Mexico toxic air pollutants modeling

1	List any New Mexico toxic air pollutants (NMTAPs) from Tables A and B in 20.2.72.502 NMAC that are modeled for this application.

	N/A

List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required.

Pollutant	Pollutant	Pollutant	Pollutant	Pollutant	Pollutant
N/A	N/A	N/A	N/A	N/A	N/A

16-F: Modeling options

1	Was the latest version of AERMOD used with regulatory default options? If not explain below.	Yes☒	No☐
	N/A		

16-G: Surrounding source modeling

1	Date of surrounding source retrieval	N/A – no surrounding sources were used in modeling.

If the surrounding source inventory provided by the Air Quality Bureau was believed to be inaccurate, describe how the sources modeled differ from the inventory provided. If changes to the surrounding source inventory were made, use the table below to describe them. Add rows as needed.

AQB Source ID	Description of Corrections

16-H: Building and structure downwash

1	How many buildings are present at the facility?	26 buildings are modeled at this facility.	
2	How many above ground storage tanks are present at the facility?	11 above ground storage tanks.	
3	Was building downwash modeled for all buildings and tanks? If not explain why below.	Yes☒	No☐
	N/A		
4	Building comments	N/A	

16-I: Receptors and modeled property boundary

1 “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 a 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. A Restricted Area is required in order to exclude receptors from the facility property. If the facility does not have a Restricted Area, then receptors shall be placed within the property boundaries of the facility.

Describe the fence or other physical barrier at the facility that defines the restricted area.

	A secure chain link fence surrounds the facility, there are three points to enter the facility, but these entry points are locked.						
2	Receptors must be placed along publicly accessible roads in the restricted area. Are there public roads passing through the restricted area?					Yes☐	No☒
3	Are restricted area boundary coordinates included in the modeling files?					Yes☐	No☒
4	Describe the receptor grids and their spacing. The table below may be used, adding rows as needed.						
	Grid Type	Shape	Spacing	Start distance from restricted area or center of facility	End distance from restricted area or center of facility	Comments	
	Variable Density	Square	50 m	0 m	800 m		
	Variable Density	Square	100 m	800 m	3,000 m		
	Variable Density	Square	250 m	3,000 m	6,000 m		
	Variable Density	Square	500 m	6,000 m	10,000 m		
	Variable Density	Square	1,000 m	10,000 m	50,000 m		
5	Describe receptor spacing along the fence line.						
	50 m grid spacing.						
6	Describe the PSD Class I area receptors.						
	N/A- There are no Class I areas within 50 km of this facility.						

16-J: Sensitive areas

1	Are there schools or hospitals or other sensitive areas near the facility? If so describe below. This information is optional (and purposely undefined) but may help determine issues related to public notice.	Yes☐	No☒
	N/A		
3	The modeling review process may need to be accelerated if there is a public hearing. Are there likely to be public comments opposing the permit application?	Yes☐	No☒

16-K: Modeling Scenarios

1	Identify, define, and describe all modeling scenarios. Examples of modeling scenarios include using different production rates, times of day, times of year, simultaneous or alternate operation of old and new equipment during transition periods, etc. Alternative operating scenarios should correspond to all parts of the Universal Application and should be fully described in Section 15 of the Universal Application (UA3).
	CASE #1: FL-1 pilot, FL-2 SSM, and normal operations of all other sources. **CASE #2**: FL-1 SSM and normal operation of all other sources, including normal operation of FL-2.

	VCU SIL: A modeling waiver was not requested for the new BTEX Combustor (VCU-1). A SIL model was conducted for VCU-1 for CO, NO_2 Annual, and SO_2. VCU-1 was also included in the NO_2 1hr and 24hr SIL models described for Case #1 and Case #2 above.											
2	Which scenario produces the highest concentrations? Why?											
	NO_2: Case #1 produced the highest concentration as it had the highest emission rate of NO_2 between the two scenarios.											
3	Were emission factor sets used to limit emission rates or hours of operation? (This question pertains to the "SEASON", "MONTH", "HROFDY" and related factor sets, not to the factors used for calculating the maximum emission rate.)								Yes☐		No☒	
4	If so, describe factors for each group of sources. List the sources in each group before the factor table for that group. (Modify or duplicate table as necessary. It's ok to put the table below section 16-K if it makes formatting easier.) Sources: N/A											
5	Hour of Day	Factor	Hour of Day	Factor								
	1		13									
	2		14									
	3		15									
	4		16									
	5		17									
	6		18									
	7		19									
	8		20									
	9		21									
	10		22									
	11		23									
	12		24									
	If hourly, variable emission rates were used that were not described above, describe them below.											
	N/A											
6	Were different emission rates used for short-term and annual modeling? If so describe below.								Yes☐		No☒	
	N/A											

16-L: NO_2 Modeling

1	Which types of NO_2 modeling were used? Check all that apply.	
	☒	ARM2
	☐	100% NO_X to NO_2 conversion
	☐	PVMRM
	☐	OLM
	☐	Other:
2	Describe the NO_2 modeling.	
	The ARM2 Methodology was used with the default maximum and minimum ambient ratios.	

3	Were default NO_2/NO_X ratios (0.5 minimum, 0.9 maximum or equilibrium) used? If not describe and justify the ratios used below.	Yes☒	No☐
	N/A		
4	Describe the design value used for each averaging period modeled.		
	1-hour: High eighth high 5-year annual model was used (2020-2024). Annual: Other (Describe):		

16-M: Particulate Matter Modeling – N/A

1	Select the pollutants for which plume depletion modeling was used.	
	☐	PM2.5
	☐	PM10
	☐	None
2	Describe the particle size distributions used. Include the source of information.	
	N/A	
3	Does the facility emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2? Sources that emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2 are considered to emit significant amounts of precursors and must account for secondary formation of PM2.5.	Yes☐ No☐
4	Was secondary PM modeled for PM2.5?	Yes☐ No☐

5	If MERPs were used to account for secondary PM2.5 fill out the information below. If another method was used describe below.			
	NO_X (ton/yr)	SO_2 (ton/yr)	$[PM2.5]_{annual}$	$[PM2.5]_{24\text{-}hour}$
	N/A	N/A	N/A	N/A
	A waiver was granted for $PM_{2.5}$ and PM_{10}; therefore, particulate matter was not modeled.			

16-N: Setback Distances

1	Portable sources or sources that need flexibility in their site configuration requires that setback distances be determined between the emission sources and the restricted area boundary (e.g. fence line) for both the initial location and future locations. Describe the setback distances for the initial location.
	N/A
2	Describe the requested, modeled, setback distances for future locations, if this permit is for a portable stationary source. Include a haul road in the relocation modeling.
	N/A

16-O: PSD Increment and Source IDs

1	The unit numbers in the Tables 2-A, 2-B, 2-C, 2-E, 2-F, and 2-I should match the ones in the modeling files. Do these match? If not, provide a cross-reference table between unit numbers if they do not match below.	Yes☒	No☐

Unit Number in UA-2	Unit Number in Modeling Files
N/A	N/A

2	The emission rates in the Tables 2-E and 2-F should match the ones in the modeling files. Do these match? If not, explain why below.	Yes☒	No☐
	N/A		
3	Have the minor NSR exempt sources or Title V Insignificant Activities" (Table 2-B) sources been modeled?	Yes☐	No☒

4 Which units consume increment for which pollutants?

Unit ID	NO_2	SO_2	PM10	PM2.5
WAU-1	Yes	Yes	Yes	Yes
WAU-1	Yes	Yes	Yes	Yes
WAU-1	Yes	Yes	Yes	Yes
WAU-1	Yes	Yes	Yes	Yes
Ajax-1	Yes	Yes	Yes	Yes
Ajax-2	Yes	Yes	Yes	Yes
H-1	Yes	Yes	Yes	Yes
H-2	Yes	Yes	Yes	Yes
H-3	Yes	Yes	Yes	Yes
H-4	Yes	Yes	Yes	Yes
H-5	Yes	Yes	Yes	Yes
H-6	Yes	Yes	Yes	Yes
FL-1	Yes	Yes	No	No
FL-2	Yes	Yes	No	No
FUG	No	No	No	No
VCU-1	Yes	Yes	No	No

5	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date).	N/A

6	Are all the actual installation dates included in Table 2A of the application form, as required? This is necessary to verify the accuracy of PSD increment modeling. If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☒	No☐
	N/A		

16-P: Flare Modeling

1 For each flare or flaring scenario, complete the following

	Flare ID (and scenario)	Average Molecular Weight	Gross Heat Release (cal/s)	Effective Flare Diameter (m)
	FL-1 (Case #1)	18.70	14,417.20	0.254*
	FL-1 (Case #2)	24.62	3,156,279.54	1.551

	FL-1 (Case #1)	24.62	3,156,279.54	0.254*
	FL-2 (Case #1)	20.08	174,958,186.62	11.719
	FL-2 (Case #2)	22.84	481,641.14	0.609
	*The actual flare diameter is larger than the effective flare diameter. Actual flare diameter was used in modeling.			

16-Q: Volume and Related Sources – N/A

1	Were the dimensions of volume sources different from standard dimensions in the Air Quality Bureau (AQB) Modeling Guidelines? If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☐	No☒
	N/A		
2	Describe the determination of sigma-Y and sigma-Z for fugitive sources.		
	N/A		
3	Describe how the volume sources are related to unit numbers. Or say they are the same.		
	N/A		
4	Describe any open pits.		
	N/A		
5	Describe emission units included in each open pit.		
	N/A		

16-R: Background Concentrations

1	Were NMED provided background concentrations used? Identify the background station used below. If non-NMED provided background concentrations were used describe the data that was used.	Yes☒	No☐
	CO: N/A		
	NO_2: Outside Carlsbad (350151005)		
	PM2.5: N/A		
	PM10: N/A		
	SO_2: N/A		
	Other:		
	Comments: N/A		
2	Were background concentrations refined to monthly or hourly values? If so describe below.	Yes☐	No☒
	N/A		

16-S: Meteorological Data

1	Was NMED provided meteorological data used? If so select the station used. Carlsbad	Yes☒	No☐
2	If NMED provided meteorological data was not used describe the data set(s) used below. Discuss how missing data were handled, how stability class was determined, and how the data were processed.		
	N/A		

16-T: Terrain

1	Was complex terrain used in the modeling? If not, describe why below.	Yes☒	No☐
	N/A		
2	What was the source of the terrain data?		
	Terrain was incorporated into the modeling analysis through the use of AERMAP with the most recent 1/3 degree NED data currently available from https://apps.nationalmap.gov/downloader/#/		

16-U: Modeling Files

Describe the modeling files:
The file name format of the modeling files are as follows:

"DDGP_PollAvgSt_#_20-24" where

- "Poll" stands for pollutant where N = NO_2, S = SO_2, C = CO
- "Avg" stands for averaging period (1hr, 3hr, 8hr, 24hr, Annual)
- "St" stands for standard where S= Significance, N=NAAQS, NM= NMAAQS
- "#" stands for model type where c1= case #1 model, c2= case #2 model, VCU = VCU model; and
- "20-24" are the years of meteorological data used in the models.

1

File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
DDGP_N1hrS_c1_20-24	NO_2	ROI/SIA
DDGP_N24hrS_c1_20-24	NO_2	ROI/SIA
DDGP_N1hrN_c1_20-24	NO_2	cumulative
DDGP_N1hrS_c2_20-24	NO_2	ROI/SIA
DDGP_N24hrS_c2_20-24	NO_2	ROI/SIA
DDGP_N1hrN_c2_20-24	NO_2	cumulative
DDGP_NAnnS_VCU_20-24	NO_2	ROI/SIA
DDGP_S1hrS_VCU_20-24	SO_2	ROI/SIA
DDGP_S3-24hrS_VCU_20-24	SO_2	ROI/SIA
DDGP_SAnnS_VCU_20-24	SO_2	ROI/SIA
DDGP_C1-8hrS_VCU_20-24	CO	ROI/SIA

16-V: PSD New or Major Modification Applications

1	A new PSD major source or a major modification to an existing PSD major source requires additional analysis. Was preconstruction monitoring done (see 20.2.74.306 NMAC and PSD Preapplication Guidance on the AQB website)?	Yes☐	No☒
2	If not, did AQB approve an exemption from preconstruction monitoring?	Yes☐	No☒
3	Describe how preconstruction monitoring has been addressed or attach the approved preconstruction monitoring or monitoring exemption.		
	N/A		
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC.		
	N/A		
5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed? If so describe below.	Yes☐	No☒
	N/A		

16-W: Modeling Results

1	If ambient standards are exceeded because of surrounding sources, a culpability analysis is required for the source to show that the contribution from this source is less than the significance levels for the specific pollutant. Was culpability analysis performed? If so describe below.	Yes☐	No☒
	N/A		
2	Identify the maximum concentrations from the modeling analysis. Rows may be modified, added and removed from the table below as necessary.		

Pollutant, Time Period and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary PM (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (ft)
Case #1: NO2 24-hr SIL	28.083	-	-	-	28.08	5	Significant	552196	3619726	1056.37
Case #1: NO2 1-hr SIL	58.682	-	-	-	58.68	7.52	Significant	552138	3619727	1056.60
Case #2: NO2 24-hr SIL	28.081	-	-	-	28.08	5	Significant	552196	3619726	1056.37
Case #2: NO2 1-hr SIL	58.682	-	-	-	58.68	7.52	Significant	552138	3619727	1056.60
VCU: NO2 Annual SIL	0.323	-	-	-	0.32	1	32.3%	552138	3619968	1056.40
VCU: CO 1-hr SIL	10.646	-	-	-	10.65	2000	0.5%	552070	3620000	1056.50
VCU: CO 8-hr SIL	7.923	-	-	-	7.92	500	1.6%	552138	3619968	1056.40
VCU: SO2 Annual SIL	0.027	-	-	-	0.03	1	2.7%	552138	3619968	1056.40

Pollutant, Time Period and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary PM (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (ft)
VCU: SO2 24-hr SIL	0.206	-	-	-	0.21	5	4.1%	552138	3619968	1056.40
VCU: SO2 3-hr SIL	0.352	-	-	-	0.35	25	1.4%	552020	3620000	1056.75
VCU: SO2 1-hr SIL	0.387	-	-	-	0.39	7.8	5.0%	552070	3620000	1056.50
Case #1: NO2 1-hr NAAQS	124.55	-	-	58.6	183.15	188.03	97.4%	552173	3619929	1056.10
Case #2: NO2 1-hr NAAQS	124.55	-	-	58.6	183.15	188.03	97.4%	552173	3619929	1056.10

16-X: Summary/conclusions

1	A statement that modeling requirements have been satisfied and that the permit can be issued.
	Frontier Field Services, LLC has demonstrated that the proposed changes to NSR Permit 0001-M13-R3 would neither cause nor contribute to an exceedance of the standards for NO_2, CO, or SO_2.

Approved Modeling Waiver and Protocol

New Mexico Environment Department
Air Quality Bureau
Modeling Section
525 Camino de Los Marquez - Suite 1
Santa Fe, NM 87505

Phone:(505) 476-4300
Fax: (505) 476-4375
www.env.nm.gov/air-quality/

For Department use only:

Approved by:

Date:

Sahil Kassanjee

Digitally signed by Sahil Kassanjee
Date: 2026.06.11 22:11:50 -06'00'

Air Dispersion Modeling Waiver Request Form

This form must be completed and submitted with all air dispersion modeling waiver requests.

If an air permit application requires air dispersion modeling, in some cases the demonstration that ambient air quality standards and Prevention of Significant Deterioration (PSD) increments will not be violated can be satisfied with a discussion of previous modeling. The purpose of this form is to document and streamline requests to certify that previous modeling satisfies all or some of the current modeling requirements. The criteria for requesting and approving modeling waivers are found in the Air Quality Bureau Modeling Guidelines. Typically, only construction permit applications submitted per 20.2.72, 20.2.74, or 20.2.79 NMAC require air dispersion modeling. However, modeling is sometimes also required for a Title V permit application.

A waiver may be requested by e-mailing this completed form in **MS Word** format to the modeling manager, sufi.mustafa@env.nm.gov.

This modeling waiver is not valid if the emission rates in the application are higher than those listed in the approved waiver request.

Section 1 and Table 1: Contact and facility information:

Contact name	Dawna Allen
E-mail Address:	Dawna.Allen@trinityconsultants.com
Phone	(512) 484-4478
Facility Name	Dagger Draw Gas Plant
Air Quality Permit Number(s)	NSR Permit No. 0001-M13-R3
Agency Interest Number (if known)	211
Latitude and longitude of facility (decimal degrees)	32.714817°, -104.445846°

General Comments: (Add introductory remarks or comments here, including the purpose of and type of permit application.)

Frontier Field Services, LLC owns and operates the Dagger Draw Gas Plant, located approximately 9.2 miles southwest of Artesia, New Mexico in Eddy County. Dagger Draw Gas Plant is currently permitted under NSR permit No. 0001-M13-R3. No Title V permit is currently in effect for this facility.

Note: This modeling waiver was submitted and approved by NMED on 1/15/2026. Since then, it has been identified there are a few more changes required. The new information versus the previous approved modeling waiver is identified as a separated section below.

This modeling waiver is being submitted for a NSR significant revision application to NSR permit 0001-M13-R3 pursuant to 20.2.72.219.D(1)(a) NMAC for the existing Dagger Draw Gas Plant facility. The modifications to Dagger Draw Gas Plant are as follows:

(1) Update of multiple emission sources (dehy, amine unit streams) for a revised ProMax for the amine+dehy section of the station with optimized operations.

(i) Max gas input to the station will be reduced to 75 MMSCFD from 90 MMSCFD.

(ii) Increase in inlet gas composition for H_2S and CO_2 to reflect future inlet gas composition. Update of other component speciation in inlet gas consistent with recent inlet gas sample.

(2) Update of emissions from flare FL-2.

(i) The amine flash is now returned to inlet instead of flared at FL-2 during normal operations; the stream will now be flared 876 hours per year as FL-2 SSM.

(ii) Increase of Dehy Inlet Flaring from 175 hours to 250 hours at FL-2 SSM; updated stream characteristics per updated ProMax

(iii) Updated the characteristics per the updated ProMax for the dehy flash and still column streams which are normally routed to FL-2.

(iv) Updated the NOx emission factor per TCEQ high/low Btu content to the higher NOx factor.

(v) Remove particulate matter emissions from this elevated flare, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.

(3) Update of emissions from flare FL-1.

(i) FL-1 SSM updated acid gas composition consistent with updated ProMax.

(ii) Updated the CO emission factor per TCEQ high/low Btu content to the higher CO factor.

(iii) Increased annual number of hours of FL-1 SSM flaring from 425 hours up to 490 hours.

(vi) Remove particulate matter emissions from this elevated flare, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.

(4) Update the heat duty of the hot oil heater (H-1) from 32.7 MMBtu/hr to 41.95 MMBtu/hr. Update emissions for H-1 based on installation of a low-emissions burner for compliance with 20.2.50 requirements.

(5) Update the sulfur gas content of facility heaters (H-1, H-2, H-3) to a lower sulfur content, consistent with the AP-42 factor and the low sulfur fuel gas fired by these heaters.

(6) Add a backup hot oil heater operating a maximum of 876 hours/year (H-6). Hot oil heater H-6 will not operate at the same time as hot oil heater H-1. H-6 was previously H-1 before it was replaced with a new low emissions hot oil heater earlier in 2025.

(7) Update compressor engine emissions (ENG-1 to ENG-4) for fuel consumption and the lower manufacturer specifications for VOCs.

New information since the January modeling waiver was approved:

A modeling waiver was previously submitted to NMED on 1/12/2026 and approved by NMED on 1/15/2026. Since that approval, it has been identified that the locations for several stacks need to be updated to reflect accurate locations, and two engines need to be replaced. Other than that, emission rates do not change with these updates versus the original modeling waiver request, and most of these location changes are moving stacks further from the fenceline, which should result in even lower contributions from these stacks to the facility modeled impact. As follows is a discussion of each change:

Engine changes.

(1) Replacement of two engines (ENG-1 and ENG-3) with units with lower emission rates of NOx and CO than existing units. ENG-1 and ENG-3 will be renamed WAU-1 and WAU-2. An NMED Engine Replacement Verification file has been completed for the engine replacements.

Stack location updates to reflect actual stack locations at the site. A map showing the movement of the stacks is shown in Appendix 8.

(1) FL-2 has been moved 69 feet west, further away from the eastern boundary of the facility and 12 feet closer to the northern boundary. FL-2 does not have PM_{10} or $PM_{2.5}$. While FL-2 is a main contributor of CO emissions, overall CO emissions are still decreasing for Case #1 and the previous modeled concentration for Case #2 is still well below the SIL; SO_2 emissions are still decreasing for both Case #1 and Case #2. The updating of this stack would not be expected to impact the modeled concentrations in a significant manner.

(2) Ajax 1 has been moved 36 feet north, 17 feet further away from the eastern boundary of the facility. For CO and SO_2, Ajax 1 is a relatively small source of emissions, relative to other sources and emissions are still decreasing.

For PM_{10} and $PM_{2.5}$, total facility emissions are decreasing and the minor stack location change is not expected to impact modeled concentrations in a significant manner.

(3) Ajax 2 has been moved 91 feet north, 34 feet further away from the eastern boundary of the facility. For CO and SO_2, Ajax 1 is a relatively small source of emissions, relative to other sources and emissions are still decreasing. For PM_{10} and $PM_{2.5}$, total facility emissions are decreasing and the minor stack location change is not expected to impact modeled concentrations in a significant manner.

(4) H-1 has been moved 188 feet southeast: 100 feet further east from the western boundary of the facility and 153 feet further south from the northern boundary. As the stack is moving more interior to the plant, this change is not expected to impact modeled concentrations, as emissions for H-1 are low relative to other units at the facility.

(5) H-2 has been moved 119 feet further east from the western boundary of the facility and 13 feet further south from the northern boundary. As the stack is moving more interior to the plant, this change is not expected to impact modeled concentrations, as emissions for H-2 are low relative to other units at the facility.

(6) H-3 has been moved 505 feet north and 67 feet east from the previous location. For PM_{10} and $PM_{2.5}$, total facility emissions are decreasing and moving the stack is not expected to impact modeled concentrations in a significant manner, as emissions for H-3 are very low, relative to the other sources at the site.

(7) ENG-1 through ENG-4 have been moved slightly and approximately 150 feet south (ENG-1 (now called WAU-1), ENG-2, ENG-3 (now called WAU-2), and ENG-4) well within the interior of the plant. No change is expected due to the minor shift of these stacks. In addition, the replacement of ENG-1 and ENG-3 is reducing emissions of NOx and CO.

(8) No change to the location of FL-1.

All Sections below have been updated to incorporate the entire project as detailed above, including the changes since the modeling waiver was initially approved in 1/15/2026.

Section 2 – List All Regulated Pollutants from the Entire Facility - Required

In Table 2, below, list all regulated air pollutants emitted from your facility, except for New Mexico Toxic Air Pollutants, which are listed in Table 6 of this form. All pollutants emitted from the facility must be listed whether or not a modeling waiver is requested for that pollutant or if the pollutant emission rate is subject to the proposed permit changes.

Table 2: Air Pollutant summary table (Check all that apply. Include all pollutants emitted by the facility):

Pollutant	Pollutant is not emitted at the facility and modeling or waiver are not required.	Pollutant does not increase in emission rate at any emission unit (based on levels currently in the permit) and stack parameters are unchanged. Modeling or waiver are not required.	Stack parameters or stack location has changed.	Pollutant is new to the permit, but already emitted at the facility.	Pollutant is increased at any emission unit (based on levels currently in the permit).	A modeling waiver is being requested for this pollutant.	Modeling for this pollutant will be included in the permit application.
CO					X	X	
NO_2					X	X - Annual	X – 1hour
SO_2					X	X	
PM10					X	X	
PM2.5					X	X	
H_2S					X	X	
Reduced S	X						
O_3 (PSD only)	X						
Pb	X						

Section 3: Pollutants, other than NMTAPs, with very small emission rates

The Air Quality Bureau has performed generic modeling to demonstrate that small sources, as listed in Appendix 2 of this form, do not need computer modeling. This modeling compared emissions from a project (the increase in emissions from the previous permit or total facility emissions for a new facility) with significance levels. After comparing the project's emission rates for various pollutants to Appendix 2, list in Table 3 the pollutants that do not need to be modeled because of very small emission rates.

The facility must be at least 2 km from the nearest Class I area to qualify for a waiver due to very small emission rates. List the nearest Class I area and the distance from the facility in Section 3 comments.

Section 3 Comments. (If you are not requesting a waiver for any pollutants based on their low emission rate, then note that here. You do not need to complete the rest of Section 3 or Table 3.)
A waiver is not being requested for any pollutants based on their low emission rate.

Table 3: List of Pollutants with very small emission rates from the project

Pollutant	Requested Allowable Emission Rate for Project (pounds/hour)	Release Type (select "all from stacks >20 m" or "other")	Waiver Threshold (from appendix 2) (lb/hr)
N/A	N/A	N/A	N/A

Section 4: Pollutants that have previously been modeled at equal or higher emission rates
List the pollutants and averaging periods in Table 4 for which you are requesting a modeling waiver based on previous modeling for this facility. The previous modeling reports that apply to the pollutant must be submitted with the modeling waiver request. Request previous modeling reports from the Modeling Section of the Air Quality Bureau if you do not have them and believe they exist in the AQB modeling file archive.

Section 4 Comments. (If you are not asking for a waiver based on previously modeled pollutants, note that here. You do not need to complete the rest of section 4 or table 4.)
Two scenarios were previously modeled for this facility: Case #1 and Case #2.

The modeling report for Case #1, modeled and submitted to the agency 6/2023, is attached to the end of this waiver in Appendix 3. In Case #1, modeled emissions are a result of FL-2 SSM and normal operations of all other sources including normal operations of FL-1 (pilot only).

The air dispersion modeling summary by NMED/AQB for Case #2, dated 06/28/2024, is attached to the end of this waiver in Appendix 4. In Case #2, modeled emissions are a result of FL-1 SSM and normal operation of all other sources, including normal operation of FL-2. FL-1 SSM is considered to be emergency operation occurring less than 500 hours per year and therefore does not need to demonstrate compliance with PSD increment.

Table 4: List of previously modeled pollutants (facility-wide emission rates)

Pollutant	Averaging period	Proposed emission rate (pounds/hour)	Previously modeled emission rate (pounds/hour)	Proposed minus modeled emissions (lb/hr)	Modeled percent of standard or increment	Year modeled
Case #1: FL-2 SSM and normal operations of all other sources (No FL-1 SSM, pilot only)						
CO	8-hr NMAAQS	708.50	1067.29	-358.80	1.30%	2023
CO	1-hr NMAAQS	708.50	1067.29	-358.80	1.40%	2023
NO_2	Annual NMAAQS	362.76	276.10	86.66	17.00%	2023
NO_2	Annual PSD Class II Increment	362.76	276.10	86.66	64.10%	2023
NO_2*	1-hr NAAQS	362.76	276.10	86.66	99.10%	2023

PM_{10}	Annual PSD Class II Increment	Type here 1.68	24.84	-23.17	4.30%	2023
PM_{10}	24-hr NAAQS	1.68	24.84	-23.17	28.50%	2023
PM_{10}	24-hr PSD Class II Increment	1.68	24.84	-23.17	20.40%	2023
$PM_{2.5}$	Annual NAAQS	1.68	24.61	-22.93	66.90%	2023
$PM_{2.5}$	Annual PSD Class II Increment	1.68	24.61	-22.93	17.90%	2023
$PM_{2.5}$	24-hr NAAQS	1.68	24.61	-22.93	58.40%	2023
$PM_{2.5}$	24-hr PSD Class II Increment	1.68	24.61	-22.93	48.10%	2023
H_2S	1-hr NMAAQS	0.51	0.31	0.20	58.40%	2023
SO_2	1-hr NAAQS	33.57	62.38	-28.81	33.00%	2023
SO_2	Annual NMAAQS	33.57	62.38	-28.81	2.30%	2023
SO_2	3-hr PSD Class II Increment	33.57	62.38	-28.81	0.70%	2023
SO_2	24-hr PSD Class II Increment	33.57	62.38	-28.81	1.70%	2023
SO_2	Annual PSD Class II Increment	33.57	62.38	-28.81	5.90%	2023
Case #2: FL-1 SSM and normal operations of all other sources (No FL-2 SSM, routine FL-2 emissions only)						
CO	8-hr SIL	45.50	33.4	12.10	29.26%	2024
CO	1-hr SIL	45.50	33.4	12.10	9.88%	2024
NO_2*	1-hr NAAQS	21.14	21.106	0.03	74.10%	2024
$PM_{2.5}$	Annual NAAQS	1.68	1.732	-0.05	23.90%	2024
$PM_{2.5}$	24-hr NAAQS	1.68	1.732	-0.05	10.20%	2024
H_2S	1-hr NMAAQS	10.06	10.24	-0.18	48.82%	2024
SO_2	1-hr NAAQS	931.05	942.39	-11.34	98.50%	2024

*A waiver is not being requested for NO_2 1-hour NAAQS. This pollutant and standard is included in the table for reference only.

Section 4, Table 5: Questions about previous modeling:

Question	Yes	No
Was AERMOD used to model the facility?	X	
Did previous modeling predict concentrations less than 95% of each air quality standard and PSD increment?		Case #1: NO_2 1hr NAAQs (99.1%) Case #: SO_2 1hr NAAQs (98.5%)
Were all averaging periods modeled that apply to the pollutants listed above?	X	
Were all applicable startup/shutdown/maintenance scenarios modeled?	X	
Did modeling include all sources within 1000 meters of the facility fence line that now exist?		Eddy County CNG Station
Did modeling include background concentrations at least as high as current background concentrations?	X	
If a source is changing or being replaced, is the following equation true for all pollutants for which the waiver is requested? (Attach calculations if applicable.) EXISTING SOURCE REPLACMENT SOURCE $\frac{[(g) \times (h1)] + [(v1)^2/2] + [(c) \times (T1)]}{q1} <= \frac{[(g) \times (h2)] + [(v2)^2/2] + [(c) \times (T2)]}{q2}$ Where g = gravitational constant = 32.2 ft/sec^2 h1 = existing stack height, feet v1 = exhaust velocity, existing source, feet per second		Calculations are attached.

c = specific heat of exhaust, 0.28 BTU/lb-degree F T1 = absolute temperature of exhaust, existing source = degree F + 460 q1 = emission rate, existing source, lbs/hour h2 = replacement stack height, feet v2 = exhaust velocity, replacement source, feet per second T2 = absolute temperature of exhaust, replacement source = degree F + 460 q2 = emission rate, replacement source, lbs/hour		

If you checked "no" for any of the questions, provide an explanation for why you think the previous modeling may still be used to demonstrate compliance with current ambient air quality standards.

Case #1 NO_2 1hr NAAQS:
A waiver is not requested for NO_2 1-hr NAAQS.

Case #2 SO_2 1hr NAAQS:
The facility was previously modeled at 98.5% of the NAAQS in 2024 using modeled facility impacts and surrounding sources. With this application, Case #2 facility emissions for SO_2 decreased by 11.36 lb/hr. Using the scaled facility and neighbor impacts as described in Section 5 of this waiver, the scaled standard for this facility would be 97.34% of the NAAQS resulting in an approximate decrease of 1.16% from the previous application.

Eddy County CNG Station:
Eddy County CNG station is located approximately 1 km east-northeast of Dagger Draw Gas Plant. This facility operates under NOI #10632 and was constructed 07/24/2025. The facility consists of two compressor engines, haul road emissions, and two generator engines. Facility emissions are as follows:
SO_2: 0.0046 lb/hr
PM_{10}: 1.76 lb/hr
$PM_{2.5}$: 0.37 lb/hr
H_2S: 0 lb/hr

<u>CO, NO_2, SO_2, and H_2S</u>
Previous modeling for Dagger Draw Gas Plant did not use background concentrations instead of surrounding sources for CO 1hr and 8hr NMAAQS modeling and NO_2 1hr NAAQS and annual NMAAQS modeling. There are no H_2S emissions from Eddy County CNG Station. Additionally, SO_2 emissions for Eddy County CNG Station fall under the "very small emission rate" threshold of 0.023 lb/hr presented in the Appendix 2.

<u>PM_{10}</u>
Previous Modeling for Dagger Draw Gas Plant was below the Significance Level 24-hr (Case #1 and Case #2) and annual (Case #1) for PM_{10}. With this application, facility emissions for PM_{10} have decreased by 22.93 lb/hr (Case #1) and 0.059 lb/hr (Case #2). Additionally, the scaled standards for this facility as described in Section 5 of this waiver are below 30% of the air quality standard and as such, the addition of Eddy County CNG Station as a surrounding source would not have a significant impact on facility modeling.

For additional reference, the below total facility rate for Case #2 that was used to model the Significance Level of PM_{10} 24 hr: 1.732 lb/hr
The current facility rate excludes acid gas compressor engines Ajax 1 and 2 as their emissions did not change: .1.07 lb/hr.

The primary drivers of reduction of PM_{10} emissions are the flares. FL-1 and FL-2 are truly elevated flares and should be smokeless. Per Chapter of AP-42, Table 13.5-1.a, the concentration of soot in nonsmoking flares is 0 μg/L and therefore FL-1 and FL-2 would not have PM_{10} emissions. Similarly, per TCEQ Air Permit Technical

Type text here

Guidance for Flares and Vapor Oxidizers, particulate emissions should be negligible and should therefore not be estimated since smoking flares are excluded from permitting as defined in [TCEQ rules].

$PM_{2.5}$

Finally, for $PM_{2.5}$, in previous modeling both Case #1 and Case #2 were significant for annual and 24-hour averaging periods. The cumulative scaled impacts of the two scenarios were examined and compared to the percentages of the $PM_{2.5}$ annual and 24-hour air quality standards to determine if the addition of Eddy County CNG Station as a surrounding source would not have a significant impact on facility modeling.

	Previously Modeled Results		Scaled Results	
$PM_{2.5}$ Air Quality Standard	**Case 1**	**Case 2**	**Case 1**	**Case 2**
24-hr NAAQS	66.90%	10.20%	48.29%	57.51%
24-hr PSD Class II Increment	17.90%	N/A	3.53%	N/A
Annual NAAQS	58.40%	23.90%	79.60%	89.26%
Annual PSD Class II Increment	48.10%	N/A	1.25%	N/A

For Case #1, facility emissions for $PM_{2.5}$ are reduced by 22.93 lb/hr with this application. For Case #2, facility emissions for $PM_{2.5}$ are reduced by 0.059 lb/hr. The cumulative scaled impact for $PM_{2.5}$ 24-hr NAAQs is less than 60% of the air quality standard for both scenarios. The cumulative scaled impact for annual and 24-hr Class II increment was less than 50% of the air quality standard for both scenarios. The cumulative scaled impact for annual NAAQS is less than 90% of the air quality standard for both scenarios. Previous modeling compared $PM_{2.5}$ annual NAAQs to the previous standard of 12 $\mu g/m^3$. The table below compares the results of the previous $PM_{2.5}$ annual model to the current air quality standard:

Air Quality Standards

Previous $PM_{2.5}$ Annual NAAQS	**Current $PM_{2.5}$ Annual NAAQS**	**Model Facility + Neighbor Impacts**	**Background Concentration**	**Secondary formation of $PM_{2.5}$**	**Cumulative Impact**	**% of Current/ $PM_{2.5}$ Standard**
12	9	0.926	7.1	0.0024	8.0284	89%

The primary drivers of reduction of $PM_{2.5}$ emissions are the flares. FL-1 and FL-2 are truly elevated flares and should be smokeless. Per Chapter of AP-42, Table 13.5-1.a, the concentration of soot in nonsmoking flares is 0 µg/L and therefore FL-1 and FL-2 would not have $PM_{2.5}$ emissions. Similarly, per TCEQ Air Permit Technical Guidance for Flares and Vapor Oxidizers, particulate emissions should be negligible and should therefore not be estimated since smoking flares are excluded from permitting as defined in [TCEQ rules].

It is unlikely the addition of Eddy County CNG Station as a surrounding source would have a significant impact on facility modeling.

Changing sources:

With this permit application, FL-2 has revised process streams routed to it. The change in steams for FL-2 consists of a removal of the amine flash during normal operations (previously this stream was permitted to be routed to FL-2 for 8,760 hrs/yr), revise to have the amine flash occur for only 876 hours as an SSM scenario. Also, there are revised dehy stream characteristics due to updated inlet and ProMax analysis and for 250 hours per year instead of 175 hours per year.

FL-1 does not have additional process streams however the stream characteristics have changed due to the updated ProMax model used to calculate emissions

The change in process and stream composition has therefore modified and reduced the effective diameters of each flare.

FL-1 Effective Diameter:
Previous: 5.168 ft
Current: 5.088 ft (SSM)
0.83 ft (pilot only)

FL-2 Effective Diameter:
Previous: 2.0 ft
Current: 1.84 ft (normal operations)
38.44 ft (normal operations and SSM)

While emissions increase for CO at FL-1/FL-1 SSM, when previously modeled, the facility was below the Significance Level (29.26% for 8-hour and 9.88% for 1-hr). FL-2/FL-2 SSM has an increase in NO_2 emissions; however, a waiver is not requested for the 1-hour standard for FL-2. The increase in NO_2 emissions is a result of FL-2 SSM which is an intermittent source and will not influence annual averaging periods. The effective diameter of FL-2 during Case #1 is actually larger than previously modeled. Emissions increased for H_2S at FL-2 SSM by 0.25 lb/hr, when previously modeled, the facility was below the 1-hour NMAAQS (58.40%). Both FL-1 and FL-2 have a slight reduction in their effective diameters this reduction should not influence the annual or short-term averaging periods.

Hot oil heater H-6:
Heater H-6 is a "new" hot oil heater that operates as a backup unit to hot oil heater H-1 a maximum of 10% of the year (876 hours). Prior to this permit application, H-6 was originally Hot Oil Heater H-1. This unit was replaced with an NSR Equipment Substitution Form submitted on 11/06/2024 and approved on 01/21/2025. The Substitution Form and approval is attached for reference in Appendix 7. H-6 was previously modeled during the application for NSR-0001-M13. The location, hourly emission rate, and stack parameters of H-6 have not changed since it was previously modeled (modeled in 2023 and 2024 for NSR-0001-M13 application; this unit was previously known as H-1), other than reducing SO_2 due to the fuel sulfur update described above, and should therefore not have an impact on short-term averaging periods. As this source is intermittent, it should not influence annual averaging periods.

Compressor Engines WAU-1 and WAU-2 (ENG-1 and ENG-3):
WAU-1 and WAU-2 are replacement engines for the existing Caterpillar G3606 LE engines (ENG-1 and ENG-3). NMED's Engine Replacement Verification file was completed and the replacement Waukesha L7044 engines qualify as replacement engines. This document has been included in Appendix 9.

Section 5: Modeling waiver using scaled emission rates and scaled concentrations
At times it may be possible to scale the results of modeling one pollutant and apply that to another pollutant. Increases in emissions of one pollutant might also demonstrate compliance by applying a scaling factor to the modeling results. If the analysis for the waiver gets too complicated, then it becomes a modeling review rather than a modeling waiver, and applicable modeling fees will be charged for the modeling. Plume depletion, ozone chemical reaction modeling, post-processing, and unequal pollutant ratios from different sources are likely to invalidate scaling.

If you are not scaling previous results, note that here. You do not need to complete the rest of section 5. Scaling analyses are not intended to be used for previously modeled pollutants with decreasing emissions, which is already addressed in section 4.

To demonstrate compliance with standards for a pollutant describe scenarios below that you wish the modeling section to consider for scaling results.

A table demonstrating the scaled emission rates and scaled concentrations is attached to this waiver in Appendix 6. Previously modeled Emission Rates, Facility Impacts, And Facility & Neighbor Impacts were referenced from Case #1 and #2 reports found in Appendices 3 and 4.

Scaled Facility Impacts were determined by the following equation:
[Previously Modeled Facility Impacts] / [Previously Modeled Emission Rate] * [Current Emission Rates]

Scaled Facility & Neighbor Impacts were determined by the following equation:
[Previously Modeled Facility & Neighbor Impacts] / [Previously Modeled Emission Rate] * [Current Emission Rates]

Current background concentrations, which are the same used for previous modeling, and Secondary Formation of $PM_{2.5}$ were added to the Scaled Facility Impacts and Scaled Facility & Neighbor Impacts results where applicable to determine the Cumulative Scaled Impact of each pollutant and averaging period.

Secondary formation of $PM_{2.5}$ was calculated using current project emissions and are presented below:

Case #1

Pollutant	NOx	SO_2		$[PM_{2.5}]_{24\text{-hour}}$
$MERP_{annual}$	26780	14978		0.027
$MERP_{24\text{-hour}}$	7331	1981		$[PM_{2.5}]_{annual}$
Emission rate (ton/yr)	114.50	14.39		0.0010

Case #2

Pollutant	NOx	SO_2		$[PM_{2.5}]_{24\text{-hour}}$
$MERP_{annual}$	26780	14978		0.150
$MERP_{24\text{-hour}}$	7331	1981		$[PM_{2.5}]_{annual}$
Emission rate (ton/yr)	72.02	228.43		0.0036

Section 6: New Mexico Toxic air pollutants – 20.2.72.400 NMAC

Modeling must be provided for any New Mexico Toxic Air Pollutant (NMTAP) with a facility-wide controlled emission rate in excess of the pound per hour emission levels specified in Tables A and B at **20.2.72.502 NMAC** - Toxic Air Pollutants and Emissions. An applicant may use a stack height correction factor based on the release height of the stack for the purpose of determining whether modeling is required. See Table C - Stack Height Correction Factor at 20.2.72.502 NMAC. Divide the emission rate for each release point of a NMTAP by the correction factor for that release height and add the total values together to determine the total adjusted pound per hour emission rate for that NMTAP. If the total adjusted pound per hour emission rate is lower than the emission rate screening level found in Tables A and B, then modeling is not required.

In Table 6, below, list the total facility-wide emission rates for each New Mexico Toxic Air Pollutant emitted by the facility. The table is pre-populated with common examples. Extra rows may be added for NMTAPS not listed or for NMTAPS emitted from multiple stack heights. NMTAPS not emitted at the facility may be deleted, left blank, or noted as 0 emission rate. Toxics previously modeled may be addressed in Section 5 of this waiver form. For convenience, we have listed the stack height correction factors in Appendix 1 of this form.

Section 6 Comments. (If you are not requesting a waiver for any NMTAPs then note that here. You do not need to complete the rest of section 6 or Table 6.)
N/A- There are no NMTAPs at this facility.

Table 6: New Mexico Toxic Air Pollutants emitted at the facility

If requesting a waiver for any NMTAP, all NMTAPs from this facility must be listed in Table 3 regardless of if a modeling waiver is requested for that pollutant or if the pollutant emission rate is subject to the proposed permit changes.

Pollutant	Requested Allowable Emission Rate (pounds/hour)	Release Height (Meters)	Correction Factor	Allowable Emission Rate Divided by Correction Factor	Emission Rate Screening Level (pounds/hour)
Ammonia					1.20
Asphalt (petroleum) fumes					0.333
Carbon black					0.233
Chromium metal					0.0333
Glutaraldehyde					0.0467
Nickel Metal					0.0667
Wood dust (certain hard woods as beech & oak)					0.0667
Wood dust (soft wood)					0.333
(add additional toxics if they are present)					

Section 7: Approval or Disapproval of Modeling Waiver

The AQB air dispersion modeler should list each pollutant for which the modeling waiver is approved, the reasons why, and any other relevant information. If not approved, this area may be used to document that decision.

The modeling waiver request for the Dagger Draw Gas Plant is approved based on a review of the submitted documentation and supporting analyses. The applicant has demonstrated that the proposed modifications are largely operational refinements, including updated process modeling (ProMax), revised emission factors, and equipment updates, many of which result in reduced emissions or no meaningful increase in overall facility impacts. Notably, reductions in maximum throughput and removal or reduction of particulate emissions from flares support a net decrease in several key pollutant emissions.

The applicant has appropriately relied on previously approved modeling (Case #1 and Case #2), which evaluated worst-case operating scenarios and demonstrated compliance with applicable NAAQS and PSD increments. Where emission increases or operational changes occur, the applicant has provided scaling analyses and supporting justification showing that impacts remain comparable to or lower than previously modeled conditions. Additionally, equipment replacements and stack relocations either reduce emissions or move sources further from the facility boundary, which is expected to maintain or reduce ambient impacts.

Based on the information provided, the previous modeling remains representative of current and proposed operations, and the changes do not warrant additional refined dispersion modeling. Therefore, the waiver request is consistent with 20.2.72.219.D(1)(a) NMAC and applicable Air Quality Bureau modeling guidance, and approval of the modeling waiver is justified.

The new June 2026 modeling waiver addresses the changes that occurred after the prior approved waiver, including the replacement of ENG-2 and ENG-4 with WAU-3 and WAU-4, routing the dehy still vent to the new BTEX combustor VCU-1 instead of FL-2, and confirming that VCU-1 is not being waived. Therefore, this new waiver appears to be the appropriate waiver submittal, but approval should still be conditioned on the final modeling report including VCU-1 and NO_2 1-hour modeling, and on acceptance of the Case #2 SO_2 and $PM_{2.5}$ scaling demonstrations.

Appendix 1: Stack Height Release Correction Factor (adapted from 20.2.72.502 NMAC)

Release Height in Meters	Correction Factor
0 to 9.9	1
10 to 19.9	5
20 to 29.9	19
30 to 39.9	41
40 to 49.9	71
50 to 59.9	108
60 to 69.9	152
70 to 79.9	202
80 to 89.9	255
90 to 99.9	317
100 to 109.9	378
110 to 119.9	451
120 to 129.9	533
130 to 139.9	617
140 to 149.9	690
150 to 159.9	781
160 to 169.9	837
170 to 179.9	902
180 to 189.9	1002
190 to 199.9	1066
200 or greater	1161

Appendix 2. Very small emission rate modeling waiver requirements (updated 3/4/2024 to correct feet to meters)
Modeling is waived if emissions of a pollutant for the project are below the amount:

Pollutant	If all emissions come from stacks 20 meters or greater in height and there are no horizontal stacks or raincaps (lb/hr)	If not all emissions come from stacks 20 meters or greater in height, or there are horizontal stacks, raincaps, volume, or area sources (lb/hr)
CO	16.037	2.580
H_2S (Pecos-Permian Basin)	0.114	0.015
H_2S (Not in Pecos-Permian Basin)	0.022	0.003
Lead	0.005	0.001
NO_2	0.189	0.024
PM2.5 – Point Sources	0.056	0.009
PM2.5 – Volume Sources		0.003
PM10 – Point Sources	0.255	0.039
PM10 – Volume Sources		0.015
SO_2	0.179	0.023
Reduced sulfur (Pecos-Permian Basin)	0.033	No waiver
Reduced sulfur (Not in Pecos-Permian Basin)	No waiver	No waiver

Appendix 3. Case #1 Model Report

Appendix 5. Additional Calculations for Section 4, Table 5

Appendix 6. Scaled Emission Rates and Scaled Concentrations.

Appendix 7. H-1 and H-6 Replacement Reference Documents.

Appendix 8. Map of True-up of Emissions Stack Locations

Appendix 9. Engine Replacement Verification

Dawna Allen

From: Kassanjee, Sahil, ENV <sahil.kassanjee@env.nm.gov>
Sent: Friday, June 12, 2026 8:00 AM
To: Dawna Allen
Cc: Molly Greer; Beth Morley; John Ke; Mustafa, Sufi A., ENV
Subject: Re: [EXTERNAL] RE: Dagger Draw Modeling Protocol and Waiver - Update
Attachments: Dagger Draw_Modeling Waiver June update.pdf

Dawna and Beth,

The updated waiver is acceptable as submitted. My comment was added below previous comments and I signed this copy. The modeling protocol is also acceptable and modeling may proceed.

Please let me know if you have any questions.

Sahil Kassanjee
Senior Environmental Scientist
NMED – AQB – Air Modeling

From: Dawna Allen <Dawna.Allen@trinityconsultants.com>
Sent: Thursday, June 11, 2026 2:46 PM
To: Kassanjee, Sahil, ENV <sahil.kassanjee@env.nm.gov>
Cc: Molly Greer <mgreer@kinetik.com>; Beth Morley <Beth.Morley@trinityconsultants.com>; John Ke <JKe@trinityconsultants.com>; Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Subject: Re: [EXTERNAL] RE: Dagger Draw Modeling Protocol and Waiver - Update

Thank you. I look forward to hearing back!

Dawna Allen

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From: Kassanjee, Sahil, ENV <sahil.kassanjee@env.nm.gov>
Sent: Thursday, 11 June 2026 08:54:38
To: Dawna Allen <Dawna.Allen@trinityconsultants.com>
Cc: Molly Greer <mgreer@kinetik.com>; Beth Morley <Beth.Morley@trinityconsultants.com>; John Ke <JKe@trinityconsultants.com>; Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Subject: Re: [EXTERNAL] RE: Dagger Draw Modeling Protocol and Waiver - Update

Dawna,

I apologize for the delay. I have been out of town for training. I will review this ASAP and should have a response later today or tomorrow morning at the latest.

Thank you,
Sahil Kassanjee
Senior Environmental Scientist
NMED – AQB – Air Modeling

From: Dawna Allen <Dawna.Allen@trinityconsultants.com>
Sent: Wednesday, June 10, 2026 1:37 PM
To: Kassanjee, Sahil, ENV <sahil.kassanjee@env.nm.gov>
Cc: Molly Greer <mgreer@kinetik.com>; Beth Morley <Beth.Morley@trinityconsultants.com>; John Ke <JKe@trinityconsultants.com>; Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Subject: FW: [EXTERNAL] RE: Dagger Draw Modeling Protocol and Waiver - Update

Dear Sahil,

I am just checking in on if you have been able to review our updated modeling waiver and protocol - see below from Beth and attached. Please let us know if you have any questions or want to discuss anything. The client is hoping to proceed soon with this application.

Thank you very much for your time!

Sincerely,

Dawna Allen

Managing Consultant

M 512.484.4478

Email: dawna.allen@trinityconsultants.com

9737 Great Hills Trl #340, Austin, TX 78759

Trinity Consultants

From: Beth Morley <Beth.Morley@trinityconsultants.com>
Sent: Thursday, June 4, 2026 1:37 PM
To: Kassanjee, Sahil, ENV <sahil.kassanjee@env.nm.gov>
Cc: Dawna Allen <Dawna.Allen@trinityconsultants.com>; mgreer@kinetik.com; Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Subject: RE: [EXTERNAL] RE: Dagger Draw Modeling Protocol and Waiver - Update

Good afternoon, Sahil,

Thank you for your previous waiver approval on March 18.

There are a few more changes to the previously approved modeling waiver that have been identified. We have attached an updated modeling waiver with changes detailed in a separate paragraph in the discussion section along with an updated modeling protocol.

The emission changes for certain pollutants are due to additional engine swaps as discussed within, for which an NMED engine replacement verification form has been completed and attached to the waiver. Additionally, emissions from the dehy still vent will go to a new BTEX combustor instead of the existing flare. A modeling waiver is not being requested for the new combustor unit and the modeling protocol has been updated and submitted alongside the waiver.

Let us know if the modeling waiver is still acceptable and if the updated modeling protocol is approved.

Regards,

Beth Morley
Consultant

P 505.266.6611
Email: Beth.Morley@Trinityconsultants.com
9400 Holly Avenue NE, Building 3, Suite B, Albuquerque, NM 87122

Type texthere

Trinity Consultants

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From: Kassanjee, Sahil, ENV <sahil.kassanjee@env.nm.gov>
Sent: Wednesday, March 18, 2026 10:49 AM
To: Dawna Allen <Dawna.Allen@trinityconsultants.com>
Cc: Beth Morley <Beth.Morley@trinityconsultants.com>; Molly Greer <mgreer@kinetik.com>; Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Subject: RE: [EXTERNAL] RE: Dagger Draw Modeling Protocol and Waiver - Update

I apologize again. This is the updated document, both signed and with comments.

Sahil

From: Dawna Allen <Dawna.Allen@trinityconsultants.com>
Sent: Tuesday, March 17, 2026 10:27 AM
To: Kassanjee, Sahil, ENV <sahil.kassanjee@env.nm.gov>
Cc: Beth Morley <Beth.Morley@trinityconsultants.com>; Molly Greer <mgreer@kinetik.com>; Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Subject: Re: [EXTERNAL] RE: Dagger Draw Modeling Protocol and Waiver - Update

Thank you so much, Sahil!

Would you be able to add your comments to Section 7 for approval, or is your email sufficient documentation for us to submit?

Thank you,

Dawna Allen

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From: Kassanjee, Sahil, ENV <sahil.kassanjee@env.nm.gov>
Sent: Tuesday, March 17, 2026 8:43 AM

To: Dawna Allen <Dawna.Allen@trinityconsultants.com>
Cc: Beth Morley <Beth.Morley@trinityconsultants.com>; Molly Greer <mgreer@kinetik.com>; Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Subject: RE: [EXTERNAL] RE: Dagger Draw Modeling Protocol and Waiver - Update

Dawna,

Attached is the approved waiver request. Please let me know if you have any questions.

Sahil Kassanjee

Senior Environmental Scientist

NMED – AQB – Air Modeling

From: Dawna Allen <Dawna.Allen@trinityconsultants.com>
Sent: Friday, March 13, 2026 11:43 AM
To: Kassanjee, Sahil, ENV <sahil.kassanjee@env.nm.gov>
Cc: Beth Morley <Beth.Morley@trinityconsultants.com>; Molly Greer <mgreer@kinetik.com>; Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Subject: [EXTERNAL] RE: Dagger Draw Modeling Protocol and Waiver - Update

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello Sahil,

I had sent to you the below message with attachments a couple of weeks ago. I also left you a voicemail to see if you have any questions, and I can discuss any of these items with you.

Let me know if you have been able to review and/or if we need to discuss.

Thank you very much for your time,

Dawna Allen

Managing Consultant

M 512.484.4478

Email: dawna.allen@trinityconsultants.com

9737 Great Hills Trl #340, Austin, TX 78759

Trinity Consultants

From: Dawna Allen
Sent: Monday, February 23, 2026 9:25 AM
To: 'Kassanjee, Sahil, ENV' <sahil.kassanjee@env.nm.gov>
Cc: Beth Morley <Beth.Morley@trinityconsultants.com>; Molly Greer <mgreer@kinetik.com>; Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Subject: RE: Dagger Draw Modeling Protocol and Waiver - Update

Sahil,

Thank you very much for your previous waiver approval on Jan 15th.

There are a few changes to the previously approved modeling waiver that have been identified. We have attached an updated modeling waiver, and the changes are detailed in a separate paragraph in the discussion section. In order to show clearly what the slight changes are versus the approved modeling waiver on January 15, 2026, I have also attached a track changes version, so you can see the either no change or slight change portions.

The emissions changes for certain pollutants are solely due to the two engine switches as discussed within, for which an NMED Engine Replacement Verification form is attached. Emissions that were decreasing before are still all decreasing. A true-up of some stack locations to more interior to the plant to reflect accurate locations should result in even lower contributions from the stacks versus previous facility modeled results.

Please review and let us know if the modeling waiver is still acceptable.

Thank you,

Dawna Allen

Managing Consultant

M 512.484.4478

Email: dawna.allen@trinityconsultants.com

9737 Great Hills Trl #340, Austin, TX 78759

Trinity Consultants

From: Kassanjee, Sahil, ENV <sahil.kassanjee@env.nm.gov>
Sent: Thursday, January 15, 2026 11:48 AM
To: Dawna Allen <dawna.allen@trinityconsultants.com>
Subject: Dagger Draw Modeling Protocol and Waiver

Dawna,

I reviewed the modeling protocol and waiver that was submitted a few days ago for Dagger Draw.

The modeling protocol is accepted as submitted, and you may begin modeling.

Additionally, the waiver is also accepted as submitted. Please find my comments in the attached signed document.

Please let me know if you have any questions.

Regards,

Sahil Kassanjee

Senior Environmental Scientist

NMED – AQB – Air Modeling

Type text here

New Mexico Environment Department
Air Quality Bureau
Modeling Section
525 Camino de Los Marquez - Suite 1
Santa Fe, NM 87505

Phone: (505) 476-4300
Fax: (505) 476-4375
www.env.nm.gov/air-quality/

For Department use only:

Approved by:

Date:

Air Dispersion Modeling Waiver Request Form

This form must be completed and submitted with all air dispersion modeling waiver requests.

If an air permit application requires air dispersion modeling, in some cases the demonstration that ambient air quality standards and Prevention of Significant Deterioration (PSD) increments will not be violated can be satisfied with a discussion of previous modeling. The purpose of this form is to document and streamline requests to certify that previous modeling satisfies all or some of the current modeling requirements. The criteria for requesting and approving modeling waivers are found in the Air Quality Bureau Modeling Guidelines. Typically, only construction permit applications submitted per 20.2.72, 20.2.74, or 20.2.79 NMAC require air dispersion modeling. However, modeling is sometimes also required for a Title V permit application.

A waiver may be requested by e-mailing this completed form in **MS Word** format to the modeling manager, sufi.mustafa@env.nm.gov.

This modeling waiver is not valid if the emission rates in the application are higher than those listed in the approved waiver request.

Section 1 and Table 1: Contact and facility information:

Contact name	Dawna Allen
E-mail Address:	Dawna.Allen@trinityconsultants.com
Phone	(512) 484-4478
Facility Name	Dagger Draw Gas Plant
Air Quality Permit Number(s)	NSR Permit No. 0001-M13-R3
Agency Interest Number (if known)	211
Latitude and longitude of facility (decimal degrees)	32.714817°, -104.445846°

General Comments: (Add introductory remarks or comments here, including the purpose of and type of permit application.)

Frontier Field Services, LLC owns and operates the Dagger Draw Gas Plant, located approximately 9.2 miles southwest of Artesia, New Mexico in Eddy County. Dagger Draw Gas Plant is currently permitted under NSR permit No. 0001-M13-R3. No Title V permit is currently in effect for this facility.

Note: This modeling waiver was originally submitted and approved by NMED on 1/15/2026. An updated modeling waiver was submitted and approved by NMED on 3/17/2026. Since then, additional changes have been identified. The new information versus the previous approved modeling waivers are identified as separated sections below.

Modeling Waiver approved by NMED on 1/15/2026:

This modeling waiver is being submitted for a NSR significant revision application to NSR permit 0001-M13-R3 pursuant to 20.2.72.219.D(1)(a) NMAC for the existing Dagger Draw Gas Plant facility. The modifications to Dagger Draw Gas Plant are as follows:

(1) Update of multiple emission sources (dehy, amine unit streams) for a revised ProMax for the amine+dehy section of the station with optimized operations.
- (i) Max gas input to the station will be reduced to 75 MMSCFD from 90 MMSCFD.
- (ii) Increase in inlet gas composition for H_2S and CO_2 to reflect future inlet gas composition. Update of other component speciation in inlet gas consistent with recent inlet gas sample.

(2) Update of emissions from flare FL-2.
- (i) The amine flash is now returned to inlet instead of flared at FL-2 during normal operations; the stream will now be flared 876 hours per year as FL-2 SSM.
- (ii) Increase of Dehy Inlet Flaring from 175 hours to 250 hours at FL-2 SSM; updated stream characteristics per updated ProMax
- (iii) Updated the characteristics per the updated ProMax for the dehy flash and still column streams which are normally routed to FL-2.
- (iv) Updated the NOx emission factor per TCEQ high/low Btu content to the higher NOx factor.
- (v) Remove particulate matter emissions from this elevated flare, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.

(3) Update of emissions from flare FL-1.
- (i) FL-1 SSM updated acid gas composition consistent with updated ProMax.
- (ii) Updated the CO emission factor per TCEQ high/low Btu content to the higher CO factor.
- (iii) Increased annual number of hours of FL-1 SSM flaring from 425 hours up to 490 hours.
- (vi) Remove particulate matter emissions from this elevated flare, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.

(4) Update the heat duty of the hot oil heater (H-1) from 32.7 MMBtu/hr to 41.95 MMBtu/hr. Update emissions for H-1 based on installation of a low-emissions burner for compliance with 20.2.50 requirements.

(5) Update the sulfur gas content of facility heaters (H-1, H-2, H-3) to a lower sulfur content, consistent with the AP-42 factor and the low sulfur fuel gas fired by these heaters.

(6) Add a backup hot oil heater operating a maximum of 876 hours/year (H-6). Hot oil heater H-6 will not operate at the same time as hot oil heater H-1. H-6 was previously H-1 before it was replaced with a new low emissions hot oil heater earlier in 2025.

(7) Update compressor engine emissions (ENG-1 to ENG-4) for fuel consumption and the lower manufacturer specifications for VOCs.

A modeling waiver was previously submitted to NMED on 1/12/2026 and approved by NMED on 1/15/2026. Since that approval, it has been identified that the locations for several stacks need to be updated to reflect accurate locations, and two engines need to be replaced. Other than that, emission rates do not change with these updates versus the original modeling waiver request, and most of these location changes are moving stacks further from the fenceline, which should result in even lower contributions from these stacks to the facility modeled impact. As follows is a discussion of each change:

Engine changes.

(1) Replacement of two engines (ENG-1 and ENG-3) with units with lower emission rates of NOx and CO than existing units. ENG-1 and ENG-3 will be renamed WAU-1 and WAU-2. An NMED Engine Replacement Verification file has been completed for the engine replacements.

Stack location updates to reflect actual stack locations at the site. A map showing the movement of the stacks is shown in Appendix 8.

(1) FL-2 has been moved 69 feet west, further away from the eastern boundary of the facility and 12 feet closer to the northern boundary. FL-2 does not have PM_{10} or $PM_{2.5}$. While FL-2 is a main contributor of CO emissions,

overall CO emissions are still decreasing for Case #1 and the previous modeled concentration for Case #2 is still well below the SIL; SO_2 emissions are still decreasing for both Case #1 and Case #2. The updating of this stack would not be expected to impact the modeled concentrations in a significant manner.

(2) Ajax 1 has been moved 36 feet north, 17 feet further away from the eastern boundary of the facility. For CO and SO_2, Ajax 1 is a relatively small source of emissions, relative to other sources and emissions are still decreasing. For PM_{10} and $PM_{2.5}$, total facility emissions are decreasing and the minor stack location change is not expected to impact modeled concentrations in a significant manner.

(3) Ajax 2 has been moved 91 feet north, 34 feet further away from the eastern boundary of the facility. For CO and SO_2, Ajax 1 is a relatively small source of emissions, relative to other sources and emissions are still decreasing. For PM_{10} and $PM_{2.5}$, total facility emissions are decreasing and the minor stack location change is not expected to impact modeled concentrations in a significant manner.

(4) H-1 has been moved 188 feet southeast: 100 feet further east from the western boundary of the facility and 153 feet further south from the northern boundary. As the stack is moving more interior to the plant, this change is not expected to impact modeled concentrations, as emissions for H-1 are low relative to other units at the facility.

(5) H-2 has been moved 119 feet further east from the western boundary of the facility and 13 feet further south from the northern boundary. As the stack is moving more interior to the plant, this change is not expected to impact modeled concentrations, as emissions for H-2 are low relative to other units at the facility.

(6) H-3 has been moved 505 feet north and 67 feet east from the previous location. For PM_{10} and $PM_{2.5}$, total facility emissions are decreasing and moving the stack is not expected to impact modeled concentrations in a significant manner, as emissions for H-3 are very low, relative to the other sources at the site.

(7) ENG-1 through ENG-4 have been moved slightly and approximately 150 feet south (ENG-1 (now called WAU-1), ENG-2, ENG-3 (now called WAU-2), and ENG-4) well within the interior of the plant. No change is expected due to the minor shift of these stacks. In addition, the replacement of ENG-1 and ENG-3 is reducing emissions of NOx and CO.

(8) No change to the location of FL-1.

New information since the February/March modeling waiver was approved:

A revision to the original modeling waiver was previously submitted to NMED on 2/23/2026 and approved by NMED on 3/17/2026.

All Sections below have been updated to incorporate the entire project as detailed above, including the changes since the modeling waiver was initially approved 1/15/2026 and 3/17/2026. Since that approval, it has been identified that the two additional existing engines need to be replaced and emissions from the dehy still vent will go to a new BTEX combustor instead of the flare FL-2. There are no emission rate changes expected with the additional revisions. As follows is a discussion of each change:

Engine modifications:

(1) Replacement of two engines (ENG-2 and ENG-4) with units with higher exhaust temperature and velocity than existing units. ENG-2 and ENG-4 will be renamed WAU-3 and WAU-4. An NMED Engine Replacement Verification file has been completed for the engine replacements and is included as part of this updated submittal.

Dehydrator modifications:

(1) Emissions from the dehy still vent will go to a new BTEX combustor (VCU-1) instead of the existing flare (FL-2). Emissions from FL-2 will decrease with this update.

(2) VCU-1 is a new unit. A modeling waiver is not being requested for this unit. An updated modeling protocol will be submitted alongside this waiver.

Section 2 – List All Regulated Pollutants from the Entire Facility - Required

In Table 2, below, list all regulated air pollutants emitted from your facility, except for New Mexico Toxic Air Pollutants, which are listed in Table 6 of this form. All pollutants emitted from the facility must be listed whether or not a modeling waiver is requested for that pollutant or if the pollutant emission rate is subject to the proposed permit changes.

Table 2: Air Pollutant summary table (Check all that apply. Include all pollutants emitted by the facility):

Pollutant	Pollutant is not emitted at the facility and modeling or waiver are not required.	Pollutant does not increase in emission rate at any emission unit (based on levels currently in the permit) and stack parameters are unchanged. Modeling or waiver are not required.	Stack parameters or stack location has changed.	Pollutant is new to the permit, but already emitted at the facility.	Pollutant is increased at any emission unit (based on levels currently in the permit).	A modeling waiver is being requested for this pollutant.	Modeling for this pollutant will be included in the permit application.
CO					X	X	
NO_2					X	X - Annual	X – 1hour
SO_2					X	X	
PM10					X	X	
PM2.5					X	X	
H_2S					X	X	
Reduced S	X						
O_3 (PSD only)	X						
Pb	X						

Section 3: Pollutants, other than NMTAPs, with very small emission rates

The Air Quality Bureau has performed generic modeling to demonstrate that small sources, as listed in Appendix 2 of this form, do not need computer modeling. This modeling compared emissions from a project (the increase in emissions from the previous permit or total facility emissions for a new facility) with significance levels. After comparing the project's emission rates for various pollutants to Appendix 2, list in Table 3 the pollutants that do not need to be modeled because of very small emission rates.

The facility must be at least 2 km from the nearest Class I area to qualify for a waiver due to very small emission rates. List the nearest Class I area and the distance from the facility in Section 3 comments.

Section 3 Comments. (If you are not requesting a waiver for any pollutants based on their low emission rate, then note that here. You do not need to complete the rest of Section 3 or Table 3.)
A waiver is not being requested for any pollutants based on their low emission rate.

Table 3: List of Pollutants with very small emission rates from the project

Pollutant	Requested Allowable Emission Rate for Project (pounds/hour)	Release Type (select "all from stacks >20 m" or "other")	Waiver Threshold (from appendix 2) (lb/hr)
N/A	N/A	N/A	N/A

Section 4: Pollutants that have previously been modeled at equal or higher emission rates
List the pollutants and averaging periods in Table 4 for which you are requesting a modeling waiver based on previous modeling for this facility. The previous modeling reports that apply to the pollutant must be submitted with the modeling waiver request. Request previous modeling reports from the Modeling Section of the Air Quality Bureau if you do not have them and believe they exist in the AQB modeling file archive.

Section 4 Comments. (If you are not asking for a waiver based on previously modeled pollutants, note that here. You do not need to complete the rest of section 4 or table 4.)
Two scenarios were previously modeled for this facility: Case #1 and Case #2.

The modeling report for Case #1, modeled and submitted to the agency 6/2023, is attached to the end of this waiver in Appendix 3. In Case #1, modeled emissions are a result of FL-2 SSM and normal operations of all other sources including normal operations of FL-1 (pilot only).

The air dispersion modeling summary by NMED/AQB for Case #2, dated 06/28/2024, is attached to the end of this waiver in Appendix 4. In Case #2, modeled emissions are a result of FL-1 SSM and normal operation of all other sources, including normal operation of FL-2. FL-1 SSM is considered to be emergency operation occurring less than 500 hours per year and therefore does not need to demonstrate compliance with PSD increment.

Table 4: List of previously modeled pollutants (facility-wide emission rates)

Pollutant	Averaging period	Proposed emission rate (pounds/hour)	Previously modeled emission rate (pounds/hour)	Proposed minus modeled emissions (lb/hr)	Modeled percent of standard or increment	Year modeled
Case #1: FL-2 SSM and normal operations of all other sources (No FL-1 SSM, pilot only)						
CO	8-hr NMAAQS	709.40	1067.29	-357.89	1.30%	2023
CO	1-hr NMAAQS	709.40	1067.29	-357.89	1.40%	2023
NO_2	Annual NMAAQS	364.17	276.10	88.07	17.00%	2023
NO_2	Annual PSD Class II Increment	364.17	276.10	88.07	64.10%	2023
NO_2*	1-hr NAAQS	364.17	276.10	88.07	99.10%	2023
PM_{10}	Annual PSD Class II Increment	2.08	24.84	-22.76	4.30%	2023
PM_{10}	24-hr NAAQS	2.08	24.84	-22.76	28.50%	2023
PM_{10}	24-hr PSD Class II Increment	2.08	24.84	-22.76	20.40%	2023
$PM_{2.5}$	Annual NAAQS	2.08	24.61	-22.53	66.90%	2023
$PM_{2.5}$	Annual PSD Class II Increment	2.08	24.61	-22.53	17.90%	2023
$PM_{2.5}$	24-hr NAAQS	2.08	24.61	-22.53	58.40%	2023
$PM_{2.5}$	24-hr PSD Class II Increment	2.08	24.61	-22.53	48.10%	2023
H_2S	1-hr NMAAQS	0.50	0.31	0.20	58.40%	2023
SO_2	1-hr NAAQS	33.29	62.38	-29.09	33.00%	2023
SO_2	Annual NMAAQS	33.29	62.38	-29.09	2.30%	2023
SO_2	3-hr PSD Class II Increment	33.29	62.38	-29.09	0.70%	2023
SO_2	24-hr PSD Class II Increment	33.29	62.38	-29.09	1.70%	2023
SO_2	Annual PSD Class II Increment	33.29	62.38	-29.09	5.90%	2023
Case #2: FL-1 SSM and normal operations of all other sources (No FL-2 SSM, routine FL-2 emissions only)						
CO	8-hr SIL	45.80	33.4	12.40	29.26%	2024
CO	1-hr SIL	45.80	33.4	12.40	9.88%	2024
NO_2*	1-hr NAAQS	22.25	21.106	1.14	74.10%	2024
$PM_{2.5}$	Annual NAAQS	2.08	1.732	0.35	23.90%	2024
$PM_{2.5}$	24-hr NAAQS	2.08	1.732	0.35	10.20%	2024

Pollutant	Averaging period	Proposed emission rate (pounds/hour)	Previously modeled emission rate (pounds/hour)	Proposed minus modeled emissions (lb/hr)	Modeled percent of standard or increment	Year modeled
H_2S	1-hr NMAAQS	10.06	10.24	-0.18	48.82%	2024
SO_2	1-hr NAAQS	931.05	942.39	-11.34	98.50%	2024

*A waiver is not being requested for NO_2 1-hour NAAQS. This pollutant and standard is included in the table for reference only.

Section 4, Table 5: Questions about previous modeling:

Question	Yes	No
Was AERMOD used to model the facility?	X	
Did previous modeling predict concentrations less than 95% of each air quality standard and PSD increment?		Case #1: NO_2 1hr NAAQs (99.1%) Case #2: SO_2 1hr NAAQs (98.5%)
Were all averaging periods modeled that apply to the pollutants listed above?	X	
Were all applicable startup/shutdown/maintenance scenarios modeled?	X	
Did modeling include all sources within 1000 meters of the facility fence line that now exist?		Eddy County CNG Station
Did modeling include background concentrations at least as high as current background concentrations?	X	
If a source is changing or being replaced, is the following equation true for all pollutants for which the waiver is requested? (Attach calculations if applicable.) $\frac{[(g) \times (h1)] + [(v1)^2/2] + [(c) \times (T1)]}{q1} <= \frac{[(g) \times (h2)] + [(v2)^2/2] + [(c) \times (T2)]}{q2}$ Where g = gravitational constant = 32.2 ft/sec^2 h1 = existing stack height, feet v1 = exhaust velocity, existing source, feet per second c = specific heat of exhaust, 0.28 BTU/lb-degree F T1 = absolute temperature of exhaust, existing source = degree F + 460 q1 = emission rate, existing source, lbs/hour h2 = replacement stack height, feet v2 = exhaust velocity, replacement source, feet per second T2 = absolute temperature of exhaust, replacement source = degree F + 460 q2 = emission rate, replacement source, lbs/hour		Calculations are attached.

If you checked "no" for any of the questions, provide an explanation for why you think the previous modeling may still be used to demonstrate compliance with current ambient air quality standards.

Case #1 NO_2 1hr NAAQS:
A waiver is not requested for NO_2 1-hr NAAQS.

Case #2 SO_2 1hr NAAQS:
The facility was previously modeled at 98.5% of the NAAQS in 2024 using modeled facility impacts and surrounding sources. With this application, Case #2 facility emissions for SO_2 decreased by 11.36 lb/hr. Using the scaled facility and neighbor impacts as described in Section 5 of this waiver, the scaled standard for this facility would be 97.34% of the NAAQS resulting in an approximate decrease of 1.16% from the previous application.

Eddy County CNG Station:

Eddy County CNG station is located approximately 1 km east-northeast of Dagger Draw Gas Plant. This facility operates under NOI #10632 and was constructed 07/24/2025. The facility consists of two compressor engines, haul road emissions, and two generator engines. Facility emissions are as follows:
SO_2: 0.0046 lb/hr
PM_{10}: 1.76 lb/hr
$PM_{2.5}$: 0.37 lb/hr
H_2S: 0 lb/hr

CO, NO_2, SO_2, and H_2S

Previous modeling for Dagger Draw Gas Plant did not use background concentrations instead of surrounding sources for CO 1hr and 8hr NMAAQS modeling and NO_2 1hr NAAQS and annual NMAAQS modeling. There are no H_2S emissions from Eddy County CNG Station. Additionally, SO_2 emissions for Eddy County CNG Station fall under the "very small emission rate" threshold of 0.023 lb/hr presented in the Appendix 2.

PM_{10}

Previous Modeling for Dagger Draw Gas Plant was below the Significance Level 24-hr (Case #1 and Case #2) and annual (Case #1) for PM_{10}. With this application, facility emissions for PM_{10} have decreased by 22.93 lb/hr (Case #1) and 0.059 lb/hr (Case #2). Additionally, the scaled standards for this facility as described in Section 5 of this waiver are below 30% of the air quality standard and as such, the addition of Eddy County CNG Station as a surrounding source would not have a significant impact on facility modeling.

For additional reference, the below total facility rate for Case #2 that was used to model the Significance Level of PM_{10} 24 hr: 1.732 lb/hr
The current facility rate excludes acid gas compressor engines Ajax 1 and 2 as their emissions did not change: .1.07 lb/hr.

The primary drivers of reduction of PM_{10} emissions are the flares. FL-1 and FL-2 are truly elevated flares and should be smokeless. Per Chapter of AP-42, Table 13.5-1.a, the concentration of soot in nonsmoking flares is 0 g/L and t ere ore L-1 and FL-2 would not have PM_{10} emissions. Similarly, per TCEQ Air Permit Technical Guidance for Flares and Vapor Oxidizers, particulate emissions should be negligible and should therefore not be estimated since smoking flares are excluded from permitting as defined in [TCEQ rules].

$PM_{2.5}$

Finally, for $PM_{2.5}$, in previous modeling both Case #1 and Case #2 were significant for annual and 24-hour averaging periods. The cumulative scaled impacts of the two scenarios were examined and compared to the percentages of the $PM_{2.5}$ annual and 24-hour air quality standards to determine if the addition of Eddy County CNG Station as a surrounding source would not have a significant impact on facility modeling.

	Previously Modeled Results		Scaled Results	
$PM_{2.5}$ Air Quality Standard	**Case 1**	**Case 2**	**Case 1**	**Case 2**
24-hr NAAQS	66.90%	10.20%	48.54%	59.91%
24-hr PSD Class II Increment	17.90%	N/A	4.29%	N/A
Annual NAAQS	58.40%	23.90%	79.77%	91.76%
Annual PSD Class II Increment	48.10%	N/A	1.54%	N/A

For Case #1, facility emissions for $PM_{2.5}$ are reduced by 22.93 lb/hr with this application. For Case #2, facility emissions for $PM_{2.5}$ are reduced by 0.059 lb/hr. The cumulative scaled impact for $PM_{2.5}$ 24-hr NAAQs is less

than 60% of the air quality standard for both scenarios. The cumulative scaled impact for annual and 24-hr Class II increment was less than 50% of the air quality standard for both scenarios. The cumulative scaled impact for annual NAAQS is less than 90% of the air quality standard for both scenarios. Previous modeling compared $PM_{2.5}$ annual NAAQs to the previous standard of 12 g/m^3. The table below compares the results of the previous $PM_{2.5}$ annual model to the current air quality standard:

Air Quality Standards

Previous $PM_{2.5}$ Annual NAAQS	Current $PM_{2.5}$ Annual NAAQS	Model Facility + Neighbor Impacts	Background Concentration	Secondary formation of $PM_{2.5}$	Cumulative Impact	% of Current/ $PM_{2.5}$ Standard
12	9	0.926	7.1	0.0024	8.0284	89%

The primary drivers of reduction of $PM_{2.5}$ emissions are the flares. FL-1 and FL-2 are truly elevated flares and should be smokeless. Per Chapter of AP-42, Table 13.5-1.a, the concentration of soot in nonsmoking flares is 0 g/L and t ere ore L-1 and FL-2 would not have $PM_{2.5}$ emissions. Similarly, per TCEQ Air Permit Technical Guidance for Flares and Vapor Oxidizers, particulate emissions should be negligible and should therefore not be estimated since smoking flares are excluded from permitting as defined in [TCEQ rules].

It is unlikely the addition of Eddy County CNG Station as a surrounding source would have a significant impact on facility modeling.

Changing sources:
With this permit application, FL-2 has revised process streams routed to it. The change in steams for FL-2 consists of a removal of the amine flash during normal operations (previously this stream was permitted to be routed to FL-2 for 8,760 hrs/yr), revise to have the amine flash occur for only 876 hours as an SSM scenario. Also, there are revised dehy stream characteristics due to updated inlet and ProMax analysis and for 250 hours per year instead of 175 hours per year. Finally, the dehy still vent stream is no longer controlled by FL-2.
FL-1 does not have additional process streams however the stream characteristics have changed due to the updated ProMax model used to calculate emissions

The change in process and stream composition has therefore modified and reduced the effective diameters of each flare.

<u>FL-1 Effective Diameter:</u>
Previous: 5.168 ft
Current: 5.088 ft (SSM)
0.83 ft (pilot only)

<u>FL-2 Effective Diameter:</u>
Previous: 2.0 ft
Current: 2.0 ft (normal operations)
38.45 ft (normal operations and SSM)

While emissions increase for CO at FL-1/FL-1 SSM, when previously modeled, the facility was below the Significance Level (29.26% for 8-hour and 9.88% for 1-hr). FL-2/FL-2 SSM has an increase in NO_2 emissions; however, a waiver is not requested for the 1-hour standard for FL-2. The increase in NO_2 emissions is a result of FL-2 SSM which is an intermittent source and will not influence annual averaging periods. The effective diameter of FL-2 during Case #1 is actually larger than previously modeled. Emissions increased for H_2S at FL-2 SSM by 0.25 lb/hr, when previously modeled, the facility was below the 1-hour NMAAQS (58.40%). FL-1 has a slight reduction in its effective diameter and this reduction should not influence the annual or short-term averaging periods.

Hot oil heater H-6:
Heater H-6 is a "new" hot oil heater that operates as a backup unit to hot oil heater H-1 a maximum of 10% of the year (876 hours). Prior to this permit application, H-6 was originally Hot Oil Heater H-1. This unit was replaced with an NSR Equipment Substitution Form submitted on 11/06/2024 and approved on 01/21/2025. The Substitution Form and approval is attached for reference in Appendix 7. H-6 was previously modeled during the application for NSR-0001-M13. The location, hourly emission rate, and stack parameters of H-6 have not changed since it was previously modeled (modeled in 2023 and 2024 for NSR-0001-M13 application; this unit was previously known as H-1), other than reducing SO_2 due to the fuel sulfur update described above, and should therefore not have an impact on short-term averaging periods. As this source is intermittent, it should not influence annual averaging periods.

Compressor Engines ENG-1 and ENG-3:
WAU-1 and WAU-2 are replacement engines for the existing Caterpillar G3606 LE engines (ENG-1 and ENG-3). NMED's Engine Replacement Verification file was completed and the replacement Waukesha L7044 engines qualify as replacement engines. This document has been included in Appendix 9.

Compressor Engines ENG-2 and ENG-4:
WAU-3 and WAU-4 are replacement engines for the existing Caterpillar G3606 LE engines (ENG-2 and ENG-4). NMED's Engine Replacement Verification file was completed and the replacement Waukesha P9394 engines qualify as replacement engines. This document has been included in Appendix 9.

Section 5: Modeling waiver using scaled emission rates and scaled concentrations
At times it may be possible to scale the results of modeling one pollutant and apply that to another pollutant. Increases in emissions of one pollutant might also demonstrate compliance by applying a scaling factor to the modeling results. If the analysis for the waiver gets too complicated, then it becomes a modeling review rather than a modeling waiver, and applicable modeling fees will be charged for the modeling. Plume depletion, ozone chemical reaction modeling, post-processing, and unequal pollutant ratios from different sources are likely to invalidate scaling.

If you are not scaling previous results, note that here. You do not need to complete the rest of section 5. Scaling analyses are not intended to be used for previously modeled pollutants with decreasing emissions, which is already addressed in section 4.

To demonstrate compliance with standards for a pollutant describe scenarios below that you wish the modeling section to consider for scaling results.

A table demonstrating the scaled emission rates and scaled concentrations is attached to this waiver in Appendix 6. Previously modeled Emission Rates, Facility Impacts, And Facility & Neighbor Impacts were referenced from Case #1 and #2 reports found in Appendices 3 and 4.

Scaled Facility Impacts were determined by the following equation:
[Previously Modeled Facility Impacts] / [Previously Modeled Emission Rate] * [Current Emission Rates]

Scaled Facility & Neighbor Impacts were determined by the following equation:
[Previously Modeled Facility & Neighbor Impacts] / [Previously Modeled Emission Rate] * [Current Emission Rates]

Current background concentrations, which are the same used for previous modeling, and Secondary Formation of $PM_{2.5}$ were added to the Scaled Facility Impacts and Scaled Facility & Neighbor Impacts results where applicable to determine the Cumulative Scaled Impact of each pollutant and averaging period.

Secondary formation of $PM_{2.5}$ was calculated using current project emissions and are presented below:

Case #1

Pollutant	NOx	SO_2		$[PM_{2.5}]_{24\text{-hour}}$
$MERP_{annual}$	26780	14978		0.027
$MERP_{24\text{-hour}}$	7331	1981		$[PM_{2.5}]_{annual}$
Emission rate (ton/yr)	114.50	14.39		0.0010

Case #2

Pollutant	NOx	SO_2		$[PM_{2.5}]_{24\text{-hour}}$
$MERP_{annual}$	26780	14978		0.150
$MERP_{24\text{-hour}}$	7331	1981		$[PM_{2.5}]_{annual}$
Emission rate (ton/yr)	72.02	228.43		0.0036

Section 6: New Mexico Toxic air pollutants – 20.2.72.400 NMAC

Modeling must be provided for any New Mexico Toxic Air Pollutant (NMTAP) with a facility-wide controlled emission rate in excess of the pound per hour emission levels specified in Tables A and B at **20.2.72.502 NMAC** - Toxic Air Pollutants and Emissions. An applicant may use a stack height correction factor based on the release height of the stack for the purpose of determining whether modeling is required. See Table C - Stack Height Correction Factor at 20.2.72.502 NMAC. Divide the emission rate for each release point of a NMTAP by the correction factor for that release height and add the total values together to determine the total adjusted pound per hour emission rate for that NMTAP. If the total adjusted pound per hour emission rate is lower than the emission rate screening level found in Tables A and B, then modeling is not required.

In Table 6, below, list the total facility-wide emission rates for each New Mexico Toxic Air Pollutant emitted by the facility. The table is pre-populated with common examples. Extra rows may be added for NMTAPS not listed or for NMTAPS emitted from multiple stack heights. NMTAPS not emitted at the facility may be deleted, left blank, or noted as 0 emission rate. Toxics previously modeled may be addressed in Section 5 of this waiver form. For convenience, we have listed the stack height correction factors in Appendix 1 of this form.

Section 6 Comments. (If you are not requesting a waiver for any NMTAPs then note that here. You do not need to complete the rest of section 6 or Table 6.)
N/A- There are no NMTAPs at this facility.

Table 6: New Mexico Toxic Air Pollutants emitted at the facility

If requesting a waiver for any NMTAP, all NMTAPs from this facility must be listed in Table 3 regardless of if a modeling waiver is requested for that pollutant or if the pollutant emission rate is subject to the proposed permit changes.

Pollutant	Requested Allowable Emission Rate (pounds/hour)	Release Height (Meters)	Correction Factor	Allowable Emission Rate Divided by Correction Factor	Emission Rate Screening Level (pounds/hour)
Ammonia					1.20
Asphalt (petroleum) fumes					0.333
Carbon black					0.233
Chromium metal					0.0333
Glutaraldehyde					0.0467
Nickel Metal					0.0667
Wood dust (certain hard woods as beech & oak)					0.0667
Wood dust (soft wood)					0.333

(add additional toxics if they are present)					

Section 7: Approval or Disapproval of Modeling Waiver

The AQB air dispersion modeler should list each pollutant for which the modeling waiver is approved, the reasons why, and any other relevant information. If not approved, this area may be used to document that decision.

<Add comments here>

Appendix 1: Stack Height Release Correction Factor (adapted from 20.2.72.502 NMAC)

Release Height in Meters	Correction Factor
0 to 9.9	1
10 to 19.9	5
20 to 29.9	19
30 to 39.9	41
40 to 49.9	71
50 to 59.9	108
60 to 69.9	152
70 to 79.9	202
80 to 89.9	255
90 to 99.9	317
100 to 109.9	378
110 to 119.9	451
120 to 129.9	533
130 to 139.9	617
140 to 149.9	690
150 to 159.9	781
160 to 169.9	837
170 to 179.9	902
180 to 189.9	1002
190 to 199.9	1066
200 or greater	1161

Appendix 2. Very small emission rate modeling waiver requirements (updated 3/4/2024 to correct feet to meters)
Modeling is waived if emissions of a pollutant for the project are below the amount:

Pollutant	If all emissions come from stacks 20 meters or greater in height and there are no horizontal stacks or raincaps (lb/hr)	If not all emissions come from stacks 20 meters or greater in height, or there are horizontal stacks, raincaps, volume, or area sources (lb/hr)
CO	16.037	2.580
H_2S (Pecos-Permian Basin)	0.114	0.015
H_2S (Not in Pecos-Permian Basin)	0.022	0.003
Lead	0.005	0.001
NO_2	0.189	0.024
PM2.5 – Point Sources	0.056	0.009
PM2.5 – Volume Sources		0.003
PM10 – Point Sources	0.255	0.039
PM10 – Volume Sources		0.015
SO_2	0.179	0.023
Reduced sulfur (Pecos-Permian Basin)	0.033	No waiver
Reduced sulfur (Not in Pecos-Permian Basin)	No waiver	No waiver

Universal Application 4

Air Dispersion Modeling Report

Refer to and complete Section 16 of the Universal Application form (UA3) to assist your determination as to whether modeling is required. If, after filling out Section 16, you are still unsure if modeling is required, e-mail the completed Section 16 to the AQB Modeling Manager for assistance in making this determination. If modeling is required, a modeling protocol would be submitted and approved prior to an application submittal. The protocol should be emailed to the modeling manager. A protocol is recommended but optional for minor sources and is required for new PSD sources or PSD major modifications. Fill out and submit this portion of the Universal Application form (UA4), the "Air Dispersion Modeling Report", only if air dispersion modeling is required for this application submittal. This serves as your modeling report submittal and should contain all the information needed to describe the modeling. No other modeling report or modeling protocol should be submitted with this permit application.

16-A: Identification

1	Name of facility:	Dagger Draw Gas Plant
2	Name of company:	Frontier Field Services, LLC
3	Current Permit number:	NSR-0001-M11
4	Name of applicant's modeler:	Kimberly Krause
5	Phone number of modeler:	512-773-1973
6	E-mail of modeler:	kimberly@brightskyenv.com

16-B: Brief

1	Was a modeling protocol submitted and approved?	Yes☒	No☐
2	Why is the modeling being done?	Other (describe below)	
3	Describe the permit changes relevant to the modeling.		
	1. Removal of H-4 and H-5 heaters from the permit. This equipment was never installed. 2. Adjustments to emissions factors used for ENG-1 through ENG-6. 3. Addition of amine flash tank and SSM emissions at the Process Flare, FL-2. 4. Updated gas sample composition updated for various sources. 5. Updated stack parameters for ENG-1, ENG-2, and ENG-3. 6. Addition of SSM emissions at the Acid Gas Flare, FL-1.		
4	What geodetic datum was used in the modeling?	NAD83	

5	How long will the facility be at this location?	Permanent	
6	Is the facility a major source with respect to Prevention of Significant Deterioration (PSD)?	Yes☐	No☒
7	Identify the Air Quality Control Region (AQCR) in which the facility is located	155	
8	List the PSD baseline dates for this region (minor or major, as appropriate).		
	NO2	Minor Source Baseline Date - 3/16/1988	
	SO2	Minor Source Baseline Date - 7/28/1978	
	PM10	Minor Source Baseline Date - 2/20/1979	
	PM2.5	Minor Source Baseline Date - 1/13/2013	
9	Provide the name and distance to Class I areas within 50 km of the facility (300 km for PSD permits).		
	Carlsbad Caverns National Park		
10	Is the facility located in a non-attainment area? If so describe below	Yes☐	No☒
	N/A		
11	Describe any special modeling requirements, such as streamline permit requirements.		
	N/A		

16-C: Modeling History of Facility

1. Describe the modeling history of the facility, including the air permit numbers, the pollutants modeled, the National Ambient Air Quality Standards (NAAQS), New Mexico AAQS (NMAAQS), and PSD increments modeled. (Do not include modeling waivers).

Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
CO	0001-M11	4/26/2022	
NO_2	0001-M11	4/26/2022	
SO_2	0001-M11	4/26/2022	
H_2S	0001-M11	4/26/2022	
PM2.5	0001-M11	4/26/2022	
PM10	0001-M11	4/26/2022	
Lead	N/A	N/A	
Ozone (PSD only)	N/A	N/A	
NM Toxic Air Pollutants (20.2.72.402 NMAC)	N/A	N/A	

16-D: Modeling performed for this application

1. For each pollutant, indicate the modeling performed and submitted with this application.
Choose the most complicated modeling applicable for that pollutant, i.e., culpability analysis assumes ROI and cumulative analysis were also performed.

	Pollutant	ROI	Cumulative analysis	Culpability analysis	Waiver approved	Pollutant not emitted or not changed.
	CO	☒	☐	☐	☐	☐
	NO_2	☐	☒	☐	☐	☐
	SO_2	☒	☒	☐	☐	☐
	H_2S	☒	☒	☐	☐	☐
	PM2.5	☐	☒	☐	☐	☐
	PM10	☒	☐	☐	☐	☐
	Lead	☐	☐	☐	☐	☒
	Ozone	☐	☐	☐	☐	☒
	State air toxic(s) (20.2.72.402 NMAC)	☐	☐	☐	☐	☒

16-E: New Mexico toxic air pollutants modeling

1 List any New Mexico toxic air pollutants (NMTAPs) from Tables A and B in 20.2.72.502 NMAC that are modeled for this application.

2 List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required.

Pollutant	Emission Rate (pounds/hour)	Emission Rate Screening Level (pounds/hour)	Stack Height (meters)	Correction Factor	Emission Rate/ Correction Factor

N/A – No TAPs were modeled for this facility.

16-F: Modeling options

1	Was the latest version of AERMOD used with regulatory default options? If not explain below.	Yes☒	No☐

16-G: Surrounding source modeling

1	Date of surrounding source retrieval	5/22/2023

2 If the surrounding source inventory provided by the Air Quality Bureau was believed to be inaccurate, describe how the sources modeled differ from the inventory provided. If changes to the surrounding source inventory were made, use the table below to describe them. Add rows as needed.

AQB Source ID	Description of Corrections
211E6	Removed-Site owned by Dagger Draw. Known Source has been removed.
211E25	Removed-Source is project source - double counted
211E29	Removed-Source is project source - double counted
211E46	Removed-Source is project source - double counted
211E47	Removed-Source is project source - double counted
211E51	Removed-Source is project source - double counted
211E52	Removed-Source is project source - double counted
211E53	Removed-Source is project source - double counted
211E50	Removed-Source is project source - double counted
211E48	Removed-Source is project source - double counted
211R10	Removed-Source is project source - double counted
39270X	Added-Site owned by Frontier Field Services. Known Source not in inventory. Modeled with parameters from July permit modification.
39270C1	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with stack height from July permit modification, flare Source parameters for exit temperature and velocity, and effective diameter from previous inventory data.
39270E2	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E8	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E12	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E13	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E19	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E20	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E21	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E22	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E23	Removed-Site owned by Frontier Field Services. Known Source has been removed.
3927EX	Added-Site owned by Frontier Field Services. Known Source not previously included inventory. Modeled using volume Source parameters.
198E233	Removed - Emissions Cap not to be modeled with facility SSM
198E236	Revised emission rates - Values pulled from permit
198E232	Removed - Emissions Cap not to be modeled with facility SSM
35645E6	Removed - Emergency Flare not to be modeled with facility SSM
39387E1	Removed - Temporary Flare not to be modeled with facility SSM
35643E6	Removed - Emergency Flare not to be modeled with facility SSM
26207E4	Revised - 100F not appropriate for heater, used temp from same size heater at other facility

198E55	Revised model using flare parameters - offsite inventory did not use flare parameters
26205E4	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26205E5	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26498E5	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26498E6	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26498E7	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26509E4	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26509E5	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26206E5	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26206E6	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
29146E2	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
29146E8	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
29146E9	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
28959E3	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
28959E4	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
26301E3	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
26500E5	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
26500E6	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
198R154	Removed - SSM Emissions not to be modeled with facility SSM
26510E4	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
26510E5	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
199R2	Removed - SSM Emissions not to be modeled with facility SSM
199R3	Removed - Total Malfunction not to be modeled with facility SSM

16-H: Building and structure downwash

1	How many buildings are present at the facility?	26 buildings are modeled at this facility		
2	How many above ground storage tanks are present at the facility?	11 above ground storage tanks were modeled.		
3	Was building downwash modeled for all buildings and tanks? If not explain why below.		Yes☒	No☐
4	Building comments	N/A		

16-I: Receptors and modeled property boundary

1	"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 a 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. A Restricted Area is required in order to exclude receptors from the facility property. If the facility does not have a Restricted Area, then receptors shall be placed within the property boundaries of the facility. Describe the fence or other physical barrier at the facility that defines the restricted area.						
	A secure chain link fence surrounds the facility, there are three points to enter the facility, but these entry points are locked.						
2	Receptors must be placed along publicly accessible roads in the restricted area. Are there public roads passing through the restricted area?					Yes☐	No☒
3	Are restricted area boundary coordinates included in the modeling files?					Yes☐	No☒
4	Describe the receptor grids and their spacing. The table below may be used, adding rows as needed.						
	Grid Type	Shape	Spacing	Start distance from restricted area or center of facility	End distance from restricted area or center of facility	Comments	
	Variable density	Circular	50 m	From restricted facility	800 m from restricted facility		
	Variable density	Circular	100 m	800 m from restricted facility	3,000 m from restricted facility		
	Variable density	Circular	250 m	3,000 m from restricted facility	6,000 m from restricted facility		
	Variable density	Circular	500 m	6,00 m from restricted facility	10,000 m from restricted facility		
	Variable density	Circular	500 m	10,00 m from restricted facility	50,000 m from restricted facility		
5	Describe receptor spacing along the fence line.						
	Along the facility fence line a 25 m spaced boundary receptor grid was applied.						

6	Describe the PSD Class I area receptors. N/A

16-J: Modeling Scenarios

1	Identify, define, and describe all modeling scenarios. Examples of modeling scenarios include using different production rates, times of day, times of year, simultaneous or alternate operation of old and new equipment during transition periods, etc. Alternative operating scenarios should correspond to all parts of the Universal Application and should be fully described in Section 15 of the Universal Application (UA3). Original form UA4 submitted 6/2023 represents modeling for all sitewide changes including the SSM emissions from FL-2. Original approved modeling represents CASE #1 in which FL-2 SSM is occurring and normal operation of all other sources including normal operation of FL-1. This submittal of the modeling represents CASE #2 in which FL-1 SSM is occurring and normal operation of all other sources, including normal operation of FL-2. FL-1 SSM and FL-2 SSM will not occur simultaneously. For CASE #2, the FL-1 SSM is considered to be an emergency operation which occurs less than 500 hours per year; therefore, no increment modeling is being resubmitted as part of this update. The following modeling runs were submitted in 6/2023 (and approved) and are not affected as part of CASE #2: • NO2 CLASS II PSD INCREMENT • PM10 24-hour CLASS II PSD INCREMENT • PM2.5 24-hour CLASS II PSD INCREMENT • PM2.5 annual CLASS II PSD INCREMENT • NO2 annual SIL
2	Which scenario produces the highest concentrations? Why? CASE #2 (FL-1 SSM occurring with FL-2 normal) produces the highest concentration of hourly CO, SO2, and NO2 due to the concentration of H2S in the flared stream and flared volumetric flow rate.
3	Were emission factor sets used to limit emission rates or hours of operation? (This question pertains to the "SEASON", "MONTH", "HROFDY" and related factor sets, not to the factors used for calculating the maximum emission rate.) — Yes☐ — No☒
4	If so, describe factors for each group of sources. List the sources in each group before the factor table for that group. (Modify or duplicate table as necessary. It's ok to put the table below section 16-K if it makes formatting easier.) Sources:

5

Hour of Day	Factor	Hour of Day	Factor								
1		13									
2		14									
3		15									
4		16									
5		17									
6		18									
7		19									
8		20									
9		21									
10		22									
11		23									

	12		24									
	If hourly, variable emission rates were used that were not described above, describe them below.											
6	Were different emission rates used for short-term and annual modeling? If so describe below.									Yes☐		No☒

16-K: NO_2 Modeling

1	Which types of NO_2 modeling were used? Check all that apply.	
	☒	ARM2
	☐	100% NO_X to NO_2 conversion
	☐	PVMRM
	☐	OLM
	☐	Other:
2	Describe the NO_2 modeling.	
	The ARM2 Methodology was used with the default maximum and minimum ambient ratios.	
3	Were default NO_2/NO_X ratios (0.5 minimum, 0.9 maximum or equilibrium) used? If not describe and justify the ratios used below.	Yes☒ / No☐
4	Describe the design value used for each averaging period modeled.	
	1-hour: High eighth high Annual Highest Annual Average of Three Years:	

16-L: Ozone Analysis

1	NMED has performed a generic analysis that demonstrates sources that are minor with respect to PSD do not cause or contribute to any violations of ozone NAAQS. The analysis follows. The basis of the ozone SIL is documented in *Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program*, EPA, April 17, 2018 and associated documents. NMED accepts this SIL basis and incorporates it into this permit record by reference. Complete documentation of the ozone concentration analysis using MERPS is included in the New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines.
2	The MERP values presented in Table 10 and Table 11 of the NM AQB Modeling Guidelines that produce the highest concentrations indicate that facilities emitting no more than 250 tons/year of NO_X and no more than 250 tons/year of VOCs will cause less formation of O_3 than the O_3 significance level. $$[O_3]_{8-hour} = \left(\frac{250 \frac{ton}{yr}}{340_{MERP_{NOX}}} + \frac{250 \frac{ton}{yr}}{4679_{MERP_{VOC}}} \right) \times 1.96\ \mu g/m^3$$ =1.546 µg/m^3, which is below the significance level of 1.96 µg/m^3.

	Sources that produce ozone concentrations below the ozone SIL do not cause or contribute to air contaminant levels exceeding the ozone NAAQS.		
3	Does the facility emit at least 250 tons per year of NO_X or at least 250 tons per year of VOCs? Sources that emit at least 250 tons per year of NO_X or at least 250 tons per year of VOCs are covered by the analysis above and require an individual analysis.	Yes☐	No☒

5	For new PSD Major Sources or PSD major modifications, if MERPs were used to account for ozone fill out the information below. If another method was used describe below.				
	NO_X (ton/yr)	$MERP_{NOX}$	VOCs (ton/yr)	$MERP_{VOC}$	$[O_3]_{8\text{-hour}}$

16-M: Particulate Matter Modeling

1	Select the pollutants for which plume depletion modeling was used.	
	☐	PM2.5
	☐	PM10
	☒	None
2	Describe the particle size distributions used. Include the source of information.	
	N/A. Size distributions were not implemented in this modeling.	

3	Does the facility emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2? Sources that emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2 are considered to emit significant amounts of precursors and must account for secondary formation of PM2.5.	Yes☒	No☐
4	Was secondary PM modeled for PM2.5?	Yes☒	No☐

5	If MERPs were used to account for secondary PM2.5 fill out the information below. If another method was used describe below.				
	Pollutant	NO_X	SO_2		$[PM2.5]_{24\text{-hour}}$
	$MERP_{annual}$	N/A	N/A		0.318
	$MERP_{24\text{-hour}}$	7,331.35	990.67		$[PM2.5]_{annual}$
	Emission rate (ton/yr)	102.32	249.05		N/A

16-N: Setback Distances

1	Portable sources or sources that need flexibility in their site configuration requires that setback distances be determined between the emission sources and the restricted area boundary (e.g. fence line) for both the initial location and future locations. Describe the setback distances for the initial location.
	N/A

2	Describe the requested, modeled, setback distances for future locations, if this permit is for a portable stationary source. Include a haul road in the relocation modeling.
	N/A

16-O: PSD Increment and Source IDs

1	The unit numbers in the Tables 2-A, 2-B, 2-C, 2-E, 2-F, and 2-I should match the ones in the modeling files. Do these match? If not, provide a cross-reference table between unit numbers if they do not match below.	Yes☒	No☐

Unit Number in UA-2	Unit Number in Modeling Files

2	The emission rates in the Tables 2-E and 2-F should match the ones in the modeling files. Do these match? If not, explain why below.	Yes☒	No☐
3	Have the minor NSR exempt sources or Title V Insignificant Activities" (Table 2-B) sources been modeled?	Yes☒	No☐

4 Which units consume increment for which pollutants?

Unit ID	NO_2	SO_2	PM10	PM2.5
ENG-1	Yes	Yes	Yes	Yes
ENG-2	Yes	Yes	Yes	Yes
ENG-3	Yes	Yes	Yes	Yes
ENG-4	Yes	Yes	Yes	Yes
ENG-5	Yes	Yes	Yes	Yes
ENG-6	Yes	Yes	Yes	Yes
H-1	Yes	Yes	Yes	Yes
H-2	Yes	Yes	Yes	Yes
H-3	Yes	Yes	Yes	Yes
FL-1	Yes	Yes	Yes	Yes
FL-2	Yes	Yes	Yes	Yes

5	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date).	N/A

6	Are all the actual installation dates included in Table 2A of the application form, as required? This is necessary to verify the accuracy of PSD increment modeling. If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☒	No☐

16-P: Flare Modeling

1 For each flare or flaring scenario, complete the following

	Flare ID (and scenario)	Average Molecular Weight	Gross Heat Release (cal/s)	Effective Flare Diameter (m)
	FL-1 (Normal + SSM)	20.35	3,167,183.53	1.58
	FL-2 (Normal)	24.06	507,936.52	0.62

16-Q: Volume and Related Sources

1	Were the dimensions of volume sources different from standard dimensions in the Air Quality Bureau (AQB) Modeling Guidelines? If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☐	No☒
2	Describe the determination of sigma-Y and sigma-Z for fugitive sources.		
	The pipe rack height of height of 10 feet from the ground and length of the AGI well inlet area of 88 ft was used as the dimensions of sigma-Y and sigma-Z values for the fugitive source.		
3	Describe how the volume sources are related to unit numbers. Or say they are the same.		
	They are the same.		
4	Describe any open pits.		
	N/A		
5	Describe emission units included in each open pit.		
	N/A		

16-R: Background Concentrations

1	Were NMED provided background concentrations used? Identify the background station used below. If non-NMED provided background concentrations were used describe the data that was used.	Yes☒	No☐
	CO: N/A		
	NO_2: Hobbs-Jefferson (350250008)		
	PM2.5: Hobbs-Jefferson (350450019)		
	PM10: Hobbs-Jefferson (350250008)		
	SO_2: Amarillo (483751025)		
	Other:		
	Comments:		
2	Were background concentrations refined to monthly or hourly values? If so describe below.	Yes☒	No☐

16-S: Meteorological Data

1	Was NMED provided meteorological data used? If so select the station used. Choose an item.	Yes☒	No☐
2	If NMED provided meteorological data was not used describe the data set(s) used below. Discuss how missing data were handled, how stability class was determined, and how the data were processed.		

	N/A

16-T: Terrain

1	Was complex terrain used in the modeling? If not, describe why below.	Yes☒	No☐
2	What was the source of the terrain data?		
	National Elevation Dataset (NED) files were obtained from the following USGS website: https://apps.nationalmap.gov/downloader/#/		

16-U: Modeling Files

Describe the modeling files:

	File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
1	Dagger Draw SIL_20XX_CO_1	CO	SIL
	H2S_NMAAQS_20XX_H2S_1	H2S	CIA - NMAAQS
	PM10_24H_NAAQSINC_2017-2021_PM10_1	PM10	CIA - NAAQS
	Dagger Draw SIL_20XX_PM10_A	PM10	SIL
	Dagger Draw SIL_20XX_PM25_1	PM25	SIL
	Dagger Draw SIL_2017-2021_NO2_1	NO2	SIL
	Dagger Draw SIL_20XX_SO2_1	SO2	SIL
	Dagger Draw CIA SO2_1H_2017-2021_SO2_1	SO2	CIA - NAAQS
	Dagger Draw CIA_NO2_1H_2017-2021_NO2_1	NO2	CIA - NAAQS
	Dagger Draw CIA_ PM25_24H_2017-2021_PM2.5_1	PM2.5	CIA - NAAQS
	Dagger Draw SO2_1H NAAQS - Culpability_2017-2021_SO2_1	SO2	Culpability Analysis

16-V: PSD New or Major Modification Applications

1	A new PSD major source or a major modification to an existing PSD major source requires additional analysis. Was preconstruction monitoring done (see 20.2.74.306 NMAC and PSD Preapplication Guidance on the AQB website)?	Yes☐	No☒
2	If not, did AQB approve an exemption from preconstruction monitoring?	Yes☐	No☒
3	Describe how preconstruction monitoring has been addressed or attach the approved preconstruction monitoring or monitoring exemption.		
	N/A		
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC.		
	N/A		

5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed? If so describe below.	Yes☐	No☒

16-W: Modeling Results

1	If ambient standards are exceeded because of surrounding sources, a culpability analysis is required for the source to show that the contribution from this source is less than the significance levels for the specific pollutant. Was culpability analysis performed? If so describe below.	Yes☒	No☐
	Culpability analysis conducted for 1-hour SO2.		
2	Identify the maximum concentrations from the modeling analysis. Rows may be modified, added and removed from the table below as necessary. For CASE #2: The GLCmax for SO_2 1-hour from all sources is 204.13 µg/m^3. The maximum contribution from the facility sources alone is 184.09 µg/m^3 at any receptor. There is one receptor with an exceedance over the SO_2 1- hour NAAQS. The maximally affected receptor with UTM coordinates 563,608 m E, 3,625,665 m N has a maximum concentration of 204.25 µg/m^3 from all modeled sources. The exceedance at this receptor is attributed to a single offsite source with a concentration above the NAAQS all on its own. NMED Source ID 26207E4 contributes 202.88 ug/m3 while the facility sources alone contribute 18.06 µg/m^3 to the concentration at this receptor. No other offsite source contributes an exceedance above the NAAQS to this receptor. Frontier Field Services proposes that this receptor and associated exceedance be removed from the analysis.		

Modeling Results – Case #2

Pollutant, Time Period, and Standard	Modeled Facility Concentration (µg/m^3)	Modeled Concentration with Surrounding Sources (µg/m^3)	Secondary PM (µg/m^3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (m)
CO (1-HR) Significance	198.36				198.36	2,000.00	9.92%	552,137	3,619,980	1,062
CO (8-HR) Significance	149.70				149.70	500.00	29.94%	552,208	3,619,915	1,061
SO_2 (1-HR) NAAQS	184.09	204.25		N/A	204.13	196.40	103.94%	563,608	3,625,665	1,006
NO_2 (1-HR) NAAQS	116.87			54.50	54.50	188.03	28.98%	552,208	3,619,915	1,061
PM_{10} (24-HR) NAAQS		5.59		37.30	42.89	150.00	28.59%	552,208	3,619,915	1,061
$PM_{2.5}$ (24-HR) NAAQS		4.46	0.3092	16.50	21.27	35.00	60.78%	552,158	3,619,915	1,061
H_2S (1/2 HR) NMAAQS		68.00			68.00	139.30	48.82%	551,978	3,619,940	1,062

Modeling Results – Case #1

Pollutant, Time Period, and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary Formation (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	UTM East (m)	UTM North (m)	Elevation (ft)
CO (1-HR) NMAAQS	191.812	191.812			191.812	14997.5	1.3	552,158.0	3,619,865.0	3469
CO (8-HR) NMAAQS	143.662	143.662			143.662	9960.1	1.4	552,208.0	3,619,915.0	3468
H_2S (1/2 HR) NMAAQS	80.324	81.304			81.304	139.3	58.4	552,137.0	3,619,880.0	3469
NO_2 (1-HR) NAAQS	120.545	120.545		65.800	186.345	188.03	99.1	552,158.0	3,619,965.0	3468
NO_2 (ANN) NMAAQS	6.715	6.715		9.300	16.015	94.02	17.0	552,079.0	3,619,997.0	3468
NO_2 (ANN) PSD Class II		6.715		9.300	16.015	25	64.1	552,079.0	3,619,997.0	3468
PM_{10} (24-HR) NAAQS	8.258	5.439		37.300	42.739	150	28.5	552,208.0	3,619,915.0	3468
PM_{10} (24-HR) PSD Class II		6.133			6.133	30	20.4	552,208.0	3,619,915.0	3468

PM_{10} (ANN) PSD Class II	0.580	0.730			0.730	17	4.3	552,208.0	3,619,915.0	3468
$PM_{2.5}$ (24-HR) NAAQS	5.457	3.848	0.0872	16.500	20.435	35	58.4	552,208.0	3,619,915.0	3468
$PM_{2.5}$ (ANN) NAAQS	0.603	0.926	0.0024	7.100	8.028	12	66.9	552,079.0	3,619,997.0	3468
$PM_{2.5}$ (24-HR) PSD Class II		4.239	0.0872		4.326	9	48.1	552,208.0	3,619,915.0	3468
$PM_{2.5}$ (ANN) PSD Class II		0.715	0.0024		0.718	4	17.9	552,054.0	3,619,997.0	3468
SO_2 (1-HR) NAAQS	3.250	64.781			64.781	196.4	33.0	552,137.0	3,619,830.0	3470
SO_2 (ANN) NMAAQS		1.202			1.202	52.4	2.3	552,137.0	3,619,830.0	3470
SO_2 (3-HR) PSD Class II	3.613	3.613			3.613	512	0.7	551,975.0	3,619,466.0	3476
SO_2 (ANN) PSD Class II	0.141	1.180			1.180	20	5.9	552,137.0	3,619,830.0	3470
SO_2 (24-HR) PSD Class II	1.575	1.575			1.575	91	1.7	551,975.0	3,619,466.0	3476

16-X: Summary/conclusions

	A statement that modeling requirements have been satisfied and that the permit can be issued.
1	Frontier Field Services has demonstrated that the proposed changes to NSR Permit 0001-M11 would neither cause nor contribute to an exceedance of the standards for SO_2, CO, H_2S, NO_2, $PM_{2.5}$, and PM_{10}.

Air Dispersion Modeling Summary for Permit No. 0001

Report Date: 6/28/2024
NMED/AQB Modeler: Sahil Kassanjee

Facility Identification:
Project: Dagger Draw Gas Plant Company: Frontier Field Services, LLC
Permit number: 0001 TEMPO ID: 211

Location Information:
The facility is located 5.3 miles southwest of Atoka, in Eddy County. The facility is located 9.2 miles south of Artesia.
UTM Coordinates: 551,933 m East, 3,619,808 m North, zone 13, Datum: NAD83
Elevation = 3465 feet
Air Quality Control Region (AQCR): 155
Airshed: Pr

Project Description:
Brief: Frontier Field Services, LLC has applied to the New Mexico Air Quality Bureau for a New Source Review air quality permit for the construction of the Dagger Draw Gas Plant facility (the facility). The facility is a gas plant.

The Dagger Draw Gas Plant is currently permitted under Synthetic Minor > 80, permit NSR-0001-M11, authorized 4/26/2022. Frontier Field Services, LLC seeks a Significant Permit Revision per 20.2.72.219.D NMAC.

The facility's total capacity is 90 MMSCFD of natural gas, which is treated to remove H2S and CO2. The gas plant is located approximately 9.2 miles southwest of Artesia in Eddy County, New Mexico. This permit modification includes the following proposed changes:

1. Removal of H-4 and H-5 heaters from the permit. This equipment was never installed.
2. Adjustments to emissions factors used for ENG-1 through ENG-6 and renamed ENG-5 to Ajax 1,ENG-6 to Ajax 2.
3. Addition of amine flash tank and SSM emissions at the Process Flare, FL-2.
4. Updated gas sample composition updated for various sources.

5. Updated as-built counts of fugitive components used for fugitive emissions calculations.
6. Addition of SSM emissions at the Acid Gas Flare, FL-1.
There are no proposed changes made to the following equipment:
• Dehydrators DEHY-1 and DEHY-2
• Amine treating units AU-1, AU-2, and AU-3
This proposed revision does not increase the facility's total capacity and causes no auxiliary emissions increases.

The facility is not a new major stationary source under the new source review requirements of the FCAA, Part C (PSD). The facility is located in Eddy County, New Mexico, an area that is classified as attainment or unclassified with the National Ambient Air Quality Standards (NAAQS) for all pollutants. Oil and gas production operations are not a listed source category under 40 CFR §52.21(b)(1); therefore, the facility would be considered a major source if criteria pollutant emissions are greater than or equal to the major source threshold of 250 tpy for each pollutant. The maximum annual emission rates for each criteria pollutant are less than 250 tpy. Therefore, the facility will remain a minor source as defined in the rules, and PSD review is not triggered.

Title V permitting requirements are triggered since the Title V major source thresholds are exceeded (100 tpy for each criteria pollutant, 25 tpy for total HAPs, 10 tpy for any single HAP). The site will be Title V major for NOx, CO, SO2 and VOC.

The following types of emission sources are included in the project: Heaters, Engines, Fugitives, and Normal + SSM flares. The emission units used in the modeling are described in the tables below.

For this permit, modeling was required for the following pollutants: Carbon Monoxide (CO), Hydrogen sulfide (H_2S), Nitrogen Dioxide (NO_2), Particulate Matter 10 micrometers or less in aerodynamic diameter (PM10), Particulate Matter (2.5 microns or less) (PM2.5), and Sulfur Dioxide (SO_2).

Table 1: Table of Total Facility Emissions

NO_2 Rate (lbs/hr)	CO Rate (lbs/hr)	SO_2 Rate (lbs/hr)	H_2S Rate (lbs/hr)	PM10 Rate (lbs/hr)	PM2.5 Rate (lbs/hr)
21.106	33.400	942.391	10.236	1.732	1.732

Table 2: Table of Point Sources

Stack Number	Description	Stack Height (ft)	Diameter (ft)	Velocity (ft/s)	Temperature (°F)	NO_2 Rate (lbs/hr)	CO Rate (lbs/hr)	SO_2 Rate (lbs/hr)	H_2S Rate (lbs/hr)	PM10 Rate (lbs/hr)	PM2.5 Rate (lbs/hr)
FL_1	Normal + SSM	200.0	5.2	65.6	1,832	3.077	11.667	931.770	10.116	0.410	0.410
ENG_1	Engine 1	30.0	1.7	91.4	867	1.957	2.348	0.007	0	0.117	0.117
ENG_2	Engine 2	30.0	1.7	91.4	867	1.957	2.348	0.007	0	0.117	0.117
ENG_3	Engine 3	30.0	1.7	91.4	867	1.957	2.348	0.007	0	0.117	0.117
ENG_4	Engine 4	30.0	1.7	91.4	867	1.957	2.348	0.007	0	0.117	0.117
ENG_5	Engine 5	20.1	1.4	64.9	515	3.527	4.056	0.004	0	0.303	0.303
ENG_6	Engine 6	20.1	1.4	64.9	515	3.527	4.056	0.004	0	0.303	0.303
H_1	Heater 1	17.0	2.7	41.4	600	2.196	1.845	0.132	0	0.167	0.167
H_2	Heater 2	14.0	1.5	7.9	600	0.147	0.123	0.009	0	0.011	0.011
H_3	Heater 3	25.0	1.5	16.8	600	0.312	0.262	0.019	0	0.024	0.024
FL_2	Normal	100.0	2.0	65.6	1,832	0.493	1.999	10.427	0	0.043	0.043

Table 3: Table of Volume Sources

Source ID	Description	Release Height (ft)	Horizontal Dimension (ft)	Vertical Dimension (ft)	H_2S Rate (lbs/hr)
FUG	Fugitives	5.0	20.5	4.7	0.120

Modeling Assumptions:
This facility is authorized for continuous operation, 8760 hours a year.

Permit Conditions:
Operating hours: The facility shall have maximum operating hours from 24 hours a day and 8,760 hours a year

Conclusion:
This modeling analysis demonstrates that operation of the facility described in this report neither causes nor contributes to any exceedances of applicable air quality standards. The standards relevant at this facility are NAAQS for CO, NO_2, PM10, PM2.5, and SO_2; NMAAQS for CO, H_2S, NO_2, and SO_2, and Class II PSD increments for NO_2, PM10, PM2.5, and SO_2.

Action: The permit can be issued based on this modeling analysis.

Modeling report submitted by Bright Sky ENV (dated 3/1/2024)
The air quality analysis demonstrates compliance with applicable regulatory requirements.

Model(s) Used: AERMOD version 21112 was used to run the modeling analysis.

Note: Complete modeling input and output files can be made available and are located in the Modeling Archives in the folder, "0001_Frontier Field Services, LLC Dagger Draw Gas Plant".

Description of model input files: NMED's AERMOD ready meteorological data was used for this analysis. This data is available on AQB's website. GeoTiff terrain data was obtained through the USGS.

Modeling Parameters:
The AERMOD regulatory default parameters were included in assumptions made by the model.

Building downwash produced by buildings at the facility was considered. The following buildings were included in the modeling.

Table 4: Table of Buildings

Building Name	Height (m)	Diagonal Length (m)
DDBLDG1	4.6	12.4
DDBLDG2	3.1	4.4
DDBLDG3	3.4	4.7
DDBLDG4	4.4	8.4
DDBLDG5	6.4	17.9
DDBLDG6	11.6	28.4
DDBLDG7	2.6	11.6
DDBLDG8	2.6	11.6
DDBLDG9	3.1	11.7
DDBTANK	5.2	19.7
DDTK1	4.4	1.5
DDTK2	6.9	1.8
DDTK3	3.7	1.5
DDTK4	3.7	1.2
DDTK5	2.7	1.5
DDTK6	4.3	1.5
ZQE66002	4.7	15.9
ZQE66009	2.8	4.3
ZQE6600C	4.9	1.2
ZQE6600D	4.9	1.2
ZQE6600E	4.9	1.5
ZQE6600K	2.8	6.3
ZQE6600N	3.5	8.7
ZQE6600O	3.5	5.9
ZQE6600P	4.5	1.2
ZQE6600Q	4.5	1.2

Complex Terrain Data:
Elevations of receptors, facility sources, and surrounding sources were obtained from USGS GeoTIFF files using AERMAP.
Both simple and complex types of terrain were used to model the facility.

Receptor Grid: The following grids were used to determine the maximum concentration for each pollutant.

Table 5: Table of Receptors

Grid Type	Description	Shape	Spacing	Radius or Length
Cartesian	Rough	Square	1000 meters	10 kilometers
Cartesian	Intermediate	Square	500 meters	10 kilometers
Cartesian	Intermediate	Square	250 meters	4 kilometers
Cartesian	Fine	Square	100 meters	2 kilometers
Cartesian	Very fine	Square	50 meters	1 kilometers
Fence line	Very fine	Fence line	50 meters	Fence line

Receptors outside of the radii of impact were discarded for the surrounding source runs. Receptors that demonstrated compliance were then discarded, and further detailed analysis was performed on the remaining receptors.

Meteorological Data: AERMOD – Carlsbad.

Adjacent Sources:
The Division 's Modeling Guidance was used to select 444 sources within 50 km of the facility. Additionally, the sources in table 6 were corrected for the reasons listed.

Table 6 Modifications to surrounding Sources

AQB Source ID	Description of Corrections
211E6	Removed-Site owned by Dagger Draw. Known Source has been removed.
211E25	Removed-Source is project source - double counted
211E29	Removed-Source is project source - double counted
211E46	Removed-Source is project source - double counted

211E47	Removed-Source is project source - double counted
211E51	Removed-Source is project source - double counted
211E52	Removed-Source is project source - double counted
211E53	Removed-Source is project source - double counted
211E50	Removed-Source is project source - double counted
211E48	Removed-Source is project source - double counted
211R10	Removed-Source is project source - double counted
39270X	Added-Site owned by Frontier Field Services. Known Source not in inventory. Modeled with parameters from July permit modification.
39270C1	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with stack height from July permit modification, flare Source parameters for exit temperature and velocity, and effective diameter from previous inventory data.
39270E2	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E8	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E12	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E13	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E19	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E20	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E21	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E22	Revised-Site owned by Frontier Field Services. Known Source incorrect in inventory. Modeled with parameters from July permit modification.
39270E23	Removed-Site owned by Frontier Field Services. Known Source has been removed.
3927EX	Added-Site owned by Frontier Field Services. Known Source not previously included inventory. Modeled using volume Source parameters.
198E233	Removed - Emissions Cap not to be modeled with facility SSM
198E236	Revised emission rates - Values pulled from permit
198E232	Removed - Emissions Cap not to be modeled with facility SSM
35645E6	Removed - Emergency Flare not to be modeled with facility SSM
39387E1	Removed - Temporary Flare not to be modeled with facility SSM
35643E6	Removed - Emergency Flare not to be modeled with facility SSM
26207E4	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
198E55	Revised model using flare parameters - offsite inventory did not use flare parameters
26205E4	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26205E5	Revised - 100F not appropriate for heater, used temp from same size heater at other facility

26498E5	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26498E6	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26498E7	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26509E4	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26509E5	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26206E5	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
26206E6	Revised - 100F not appropriate for heater, used temp from same size heater at other facility
29146E2	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
29146E8	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
29146E9	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
28959E3	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
28959E4	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
26301E3	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
26500E5	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
26500E6	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
198R154	Removed - SSM Emissions not to be modeled with facility SSM
26510E4	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
26510E5	Revised - Modeled as point source - inventory listed as volume source - not appropriate for heater treater
199R2	Removed - SSM Emissions not to be modeled with facility SSM
199R3	Removed - Total Malfunction not to be modeled with facility SSM

The facility is 0.5 km from North Pen Compressor Station. The facility is 4.1 km from Portable Crusher No2 GCP2-5037. The facility is 15.0 km from HF Sinclair Navajo Refining LLC (Artesia). The facility is 22.5 km from Artesia Gas Plant. The facility is

30.4 km from Indian Basin Gas Plant.

Modeling Procedures: Modeling was first conducted for project sources only. If project sources were above the SIL, a full facility model was conducted. PSD Class II increment was not modeled (See PSD Increment Information).

PSD Increment Information: Original form UA4 submitted 6/2023 represents modeling for all sitewide changes including the SSM emissions from FL-2. Original approved modeling represents CASE #1 in which FL-2 SSM is occurring and normal operation of all other sources including normal operation of FL-1. This submittal of the modeling represents CASE #2 in which FL-1 SSM is occurring and normal operation of all other sources, including normal operation of FL-2. FL-1 SSM and FL-2 SSM will not occur simultaneously.

For CASE #2, the FL-1 SSM is considered to be an emergency operation which occurs less than 500 hours per year; therefore, no increment modeling is being resubmitted as part of this update. The following modeling runs were submitted in 6/2023 (and approved) and are not affected as part of CASE #2:

- NO2 CLASS II PSD INCREMENT
- PM10 24-hour CLASS II PSD INCREMENT
- PM2.5 24-hour CLASS II PSD INCREMENT
- PM2.5 annual CLASS II PSD INCREMENT
- NO2 annual SIL

The facility is a minor source (for PSD purposes) located in AQCR 155. The minor source baseline dates here are 3/16/1988 for NO_2, 7/28/1978 for SO_2, 2/20/1979 for PM10, and 11/13/2013 for PM2.5.
The facility is 57.6 km from the Class I area Carlsbad Caverns National Park. Class I area impacts are negligible for minor sources over 50 km from a Class I area. Modeling is not required.

Results Discussion:

CO Analysis:

The 1-hour CO concentration was below the significance level. No cumulative analysis is required.

The 8-hour CO concentration was below the significance level. No cumulative analysis is required.

H_2S Analysis:

The facility is in the Pecos-Permian Basin AQCR. Facilities within 5-miles of the corporate limits of municipalities within AQCR 155 have a different NMAAQS. The maximum total 1/2-hour (AQCR 155) H_2S concentration was 68.003 µg/m^3, which occurred 139 m north-northeast from the center of the facility. This was 48.8% of the NMAAQS.

NO_2 Analysis:

ARM2 was used with default options (0.5 minimum ratio, 0.9 maximum ratio) to determine the conversion of NO_X to NO_2.

Compliance with 1-hour NO_2 NAAQS automatically demonstrates compliance with air quality standards of other periods. The maximum total 1-hour NO_2 concentration was 139.379 µg/m^3, which occurred 282 m east-northeast from the center of the facility. This was 74.1% of the NAAQS. A background concentration of 38.700 µg/m^3 was added from the monitor 5ZR, at 2811 Holland Street, Carlsbad, NM.

PM10 Analysis:

The 24-hour PM10 concentration was below the significance level. No cumulative analysis is required.

PM2.5 Analysis:

The maximum total 24-hour PM2.5 concentration was 3.585 µg/m^3, which occurred 347 m east-northeast from the center of the facility. This was 10.2% of the NAAQS.

The maximum total annual PM2.5 concentration was 0.957 µg/m^3, which occurred 235 m northeast from the center of the facility. This was 8.0% of the NAAQS.

SO_2 Analysis:
Compliance with 1-hour SO_2 NAAQS automatically demonstrates compliance with air quality standards of other periods. The maximum total 1-hour SO_2 concentration was 193.498 µg/m^3, which occurred 13563 m east-northeast from the center of the facility. This was 98.5% of the NAAQS.

Table 7: Table of Ambient Impact from Emissions

Pollutant	Period	Modeled Facility Concentration ($\mu g/m^3$)	Modeled Concentration with Surrounding Sources ($\mu g/m^3$)	Secondary Formation ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Cumulative Concentration ($\mu g/m^3$)	Standard	Value of Standard ($\mu g/m^3$)	Percent of Standard	UTM East (m)	UTM North (m)	Elevation (ft)
CO	1-hour	197.52				197.52	SIL	2000	9.88	552131.0	3619990.0	3466
CO	8-hour	146.30				146.30	SIL	500	29.26	552200.0	3619900.0	3464
H_2S	1/2-hour (AQCR 155)		68.00			68.00	NMAAQS	139.3	48.8	551,978.0	3,619,940.0	3484
NO_2	1-hour		100.68		38.700	139.38	NAAQS	188.03	74.1	552,200.0	3,619,900.0	3464
PM2.5	24-hour		3.59			3.59	NAAQS	35	10.2	552,250.0	3,619,950.0	3464
PM2.5	annual		0.96			0.96	NAAQS	4	23.9	552,082.0	3,619,990.0	3466
SO_2	1-hour		193.5			193.5	NAAQS	196.4	98.5	564,000.0	3,626,000.0	3409

Appendix 5. Additional Calculations for Section 4, Table 5

FL-1

g=	32.2	ft/sec^2	gravitational constant
h1=	200	feet	existing stack height
v1=	65.617	ft/s	existing velocity
c=	0.28	Btu/lb-degree F	Specific heat of exhayst
T1=	2292	K	absolute temperature of exhaust, existing source = degree F + 460
q1=	3.077	lb/hr	NOx
q1=	11.667	lb/hr	CO
q1=	931.77	lb/hr	SO2
q1=	0.41	lb/hr	PM10
q1=	0.41	lb/hr	PM2.5
q1=	10.116	lb/hr	H2S
h2=	200	ft	replacement stack height, feet
v2=	65.617	ft/s	exhaust velocity, replacement source
T2=	2292	K	absolute temperature of exhaust, replacement source = degree F + 460
q2=	2.903452303	lb/hr	NOx
q2=	24.894499	lb/hr	CO
q2=	930.959682	lb/hr	SO2
q2=	0	lb/hr	PM10
q2=	0	lb/hr	PM2.5
q2=	9.90550489	lb/hr	H2S

emission rate, existing source, lbs/hr

emission rate, replacment source

	Existing Source	Replacement Source	
NOx	3001.16	3180.54	TRUE
CO	791.51	370.95	FALSE
SO2	9.91	9.92	TRUE
PM10	0.41	-	TRUE
PM2.5	0.41	-	TRUE
H2S	912.87	932.26	TRUE

FL-2

g=	32.2	ft/sec^2	gravitational constant
h1=	100	feet	existing stack height
v1=	65.617	ft/s	existing velocity
c=	0.28	Btu/lb-degree F	Specific heat of exhayst
T1=	2292	K	absolute temperature of exhaust, existing source = degree F + 460
q1=	258.55	lb/hr	NOx
q1=	1047.50	lb/hr	CO
q1=	62.13	lb/hr	SO2
q1=	23.32	lb/hr	PM10
q1=	23.32	lb/hr	PM2.5
q1=	0.11	lb/hr	H2S
h2=	100	ft	replacement stack height, feet
v2=	65.617	ft/s	exhaust velocity, replacement source
T2=	2292	K	absolute temperature of exhaust, replacement source = degree F + 460
q2=	344.92	lb/hr	NOx
q2=	688.59	lb/hr	CO
q2=	33.20	lb/hr	SO2
q2=	0.00	lb/hr	PM10
q2=	0.00	lb/hr	PM2.5
q2=	0.35	lb/hr	H2S

emission rate, existing source, lbs/hr

emission rate, replacment source

	Existing Source	Replacement Source	
NOx	23.26	17.44	FALSE
CO	5.74	8.73	TRUE
SO2	96.81	181.18	TRUE
PM10	257.92	-	TRUE
PM2.5	257.92	-	TRUE
H2S	54212.47	17028.40	FALSE

HT-6

g=	32.2	ft/sec^2	gravitational constant
h1=	100	feet	existing stack height
v1=	65.617	ft/s	existing velocity
c=	0.28	Btu/lb-degree F	Specific heat of exhayst
T1=	2292	K	absolute temperature of exhaust, existing source = degree F + 460
q1=	0.00	lb/hr	NOx
q1=	0.00	lb/hr	CO
q1=	0.00	lb/hr	SO2
q1=	0.00	lb/hr	PM10
q1=	0.00	lb/hr	PM2.5
q1=	0.00	lb/hr	H2S
h2=	100	ft	replacement stack height, feet
v2=	65.617	ft/s	exhaust velocity, replacement source
T2=	2292	K	absolute temperature of exhaust, replacement source = degree F + 460
q2=	2.20	lb/hr	NOx
q2=	1.84	lb/hr	CO
q2=	0.01	lb/hr	SO2
q2=	0.17	lb/hr	PM10
q2=	0.17	lb/hr	PM2.5
q2=	-	lb/hr	H2S

emission rate, existing source, lbs/hr

emission rate, replacment source

	Existing Source	Replacement Source	
NOx	0.00	2738.77	TRUE
CO	0.00	3260.44	TRUE
SO2	0.00	456461.79	TRUE
PM10	0.00	36036.46	TRUE
PM2.5	0.00	36036.46	TRUE
H2S	0.00	0.00	TRUE

Appendix 6. Scaled Emission Rates and Scaled Concentrations.

Dagger Draw Gas Plant - Modeling Waiver using scaled emission rates and scaled concentrations.

	Pollutant	Averaging Period	Standard	Modeled Emission Rate	Model Facility Impacts	Model Facility + Neighbor Impacts	Previous Background Concentration Utilized	Previous Secondary Formation of $PM_{2.5}$ Utilized	Current Emission Rates	Scaled Facility Impact	Scaled Facility + Neighbor Impacts	Current Background Concentration	Current Secondary Formation of PM2.5	Cumulative Scaled Impact	% of Standard	
CASE 1	CO	8-hr SIL	500	1067.295	143.662	-	-	-	709.403	95.488	-	-	-	95.488	**19.10%**	**Case #1:** FL-2 SSM and normal operation of all other sources (No FL-1 SSM) **Last Modeled:6/2023**
	CO	1-hr SIL	2000	1067.295	191.812	-	-	-	709.403	127.492	-	-	-	127.492	**6.37%**	
	NO2	Annual NMAAQS	94.02	276.099	6.715	-	9.300	-	364.173	8.857	-	9.300	-	18.157	**19.31%**	
	NO2	Annual PSD Class II Increment	25	276.099	6.715	-	9.300	-	364.173	8.857	-	9.300	-	18.157	**72.63%**	
	PM10	Annual PSD Class II Increment	17	24.844	0.58	0.730	-	-	2.083	0.049	0.061	-	-	0.061	**0.36%**	
	PM10	24-hr NAAQS	150	24.844	8.258	5.439	37.300	-	2.083	0.692	0.456	37.300	-	37.992	**25.33%**	
	PM10	24-hr PSD Class II Increment	30	24.844	-	6.133	-	-	2.083	-	0.514	-	-	0.514	**1.71%**	
	$PM_{2.5}$	Annual NAAQS	9	24.612	0.603	0.926	7.100	0.0024	2.083	0.051	0.078	7.100	0.0010	7.179	**79.77%**	
	$PM_{2.5}$	Annual PSD Class II Increment	4	24.612	-	0.715	-	0.0024	2.083	-	0.061	-	0.0010	0.062	**1.54%**	
	$PM_{2.5}$	24-hr NAAQS	35	24.612	5.457	3.848	16.500	0.0872	2.083	0.462	0.326	16.500	0.0275	16.989	**48.54%**	
	$PM_{2.5}$	24-hr PSD Class II Increment	9	24.612	-	4.239	-	0.0872	2.083	-	0.359	-	0.0275	0.386	**4.29%**	
	H2S	1-hr NMAAQS	139.3	0.306	80.324	81.304	-	-	0.503	132.321	133.935	-	-	133.935	**96.15%**	
	SO2	1-hr NAAQS	196.4	62.381	3.25	64.781	-	-	33.290	1.734	34.570	-	-	34.570	**17.60%**	
	SO2	Annual NMAAQS	52.4	62.381	-	1.202	-	-	33.290	-	0.641	-	-	0.641	**1.22%**	
	SO2	3-hr PSD Class II Increment	512	62.381	3.613	3.613	-	-	33.290	1.928	1.928	-	-	1.928	**0.38%**	
	SO2	24-hr PSD Class II Increment	91	62.381	0.575	1.575	-	-	33.290	0.307	0.841	-	-	0.841	**0.92%**	
	SO2	Annual PSD Class II Increment	20	62.381	0.141	1.180	-	-	33.290	0.075	0.630	-	-	0.630	**3.15%**	
CASE 2	CO	8-hr SIL	500	33.400	146.3	-	-	-	45.797	200.603	-	-	-	200.603	**40.12%**	**Case #2:** FL-1 SSM and normal operation of all other sources. (No FL-2 SSM) **Last Modeled: 3/2024**
	CO	1-hr SIL	2000	33.400	197.52	-	-	-	45.797	270.835	-	-	-	270.835	**13.54%**	
	NO2	1-hr NAAQS	188.03	21.106	-	100.680	38.700	-	22.245	-	106.115	65.800	-	171.915	**91.43%**	
	PM2.5	Annual NAAQS	9	1.732	-	0.960	-	-	2.083	-	1.155	7.100	0.004	8.258	**91.76%**	
	PM2.5	24-hr NAAQS	35	1.732	-	3.590	-	-	2.083	-	4.318	16.500	0.150	20.968	**59.91%**	
	H2S	1-hr NMAAQS	139.3	10.236	-	68.000	-	-	10.056	-	66.801	-	-	66.801	**47.95%**	
	SO2	1-hr NAAQS	196.4	942.391	184.09	193.500	-	-	931.054	181.875	191.172	-	-	191.172	**97.34%**	

Appendix 7. H-1 and H-6 Replacement Reference Documents.

303 Veterans Airpark Ln.
Suite 2000
Midland, Texas 79705
432-789-1333

November 6, 2024

New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico, 87505

RE: Heater Replacement for Compliance with 20.2.50.119
Frontier Field Services, LLC
Dagger Draw Gas Plant
AI: 211, Permit Number 0001M13

Dear Air Quality Bureau,

Please see the enclosed NSR Equipment Substitution Form to replace the H-1 heater at Frontier Field Service's Dagger Draw Gas Plant. The new unit is a low emissions burner that will comply with the Ozone Precursor Rule standards for heaters constructed after the effective date 20.2.50 NMAC. The equipment substitution form provides the specification of the previous and new heater. The new unit will result in lower emissions of all criteria pollutants at the unit, and therefore lower emissions at the site.

Pollutant	Emission Factors		Unit
	Existing Permitted	New	
NOx	6.6	0.0401	lb/MMScf
CO	7.6	0.0407	lb/MMScf
VOC	5.6	0.0026	lb/MMScf
SO2	9.6	0	lb/MMScf
PM	8.6	0.0027	lb/MMScf

If you have any questions or need additional information, please contact me at mgreer@Kinetik.com or (432)236-0033.

Sincerely,

Molly Greer

Molly Greer
Environmental Project Manager

Attachments

Mail Application To: New Mexico Environment Department Air Quality Bureau 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		For Department use only: ☐ Approved ☐ Denied Permit revision number: Reviewed by & date:

NSR Equipment Substitution Form

Use this form to substitute equipment for 20.2.72 NMAC permits only, and only as authorized by your permit. Not for use for General Construction Permits (GCPs). This form will be processed as a 20.2.72.219.A NMAC administrative revision. Attach supporting documentation, if applicable.

Acknowledgements: ☒ I acknowledge that each piece of equipment requested in Table II must be authorized by the current permit.

Part I – General Information

I-A: Company Information

AI # (if known): 211	Permit #: NSR 0001M13	4-digit SIC code: 1311	6-digit NAICS code: 211120
1	Company name: Frontier Field Services, LLC		Date: 11/06/2024
2	Facility name: Dagger Draw Gas Plant		
3	Company mailing address: 303 Veterans Airpark Lane, Suite 2000		
4	Company contact person: Molly Greer		Title: Environmental Project Manager
5	Phone No: 432-236-0033	Fax No:	E-mail: mgreer@kinetik.com
6	Preparer/Consultant name (if different from above): N/A Address:		
7	Preparer/Consultant phone:	E-mail:	

I-B: Current Facility Status

1	Is this equipment substitution authorized by your 20.2.72 NMAC permit? X Yes No	Condition No.: H-1
2	The 20.2.72 NMAC construction permit number for this facility is: **NSR 0001M13**	
3	Does this facility have a Title V operating permit (20.2.70 NMAC)? Yes X No	If yes, the permit No. is: P-
4	Is this a PSD major source? Yes X No Unsure.	Is this a Title V major source? Yes X No Unsure
a	Is this a major modification under the PSD rules (20.2.74 NMAC)? Yes X No Unsure	
5	If *Yes* or *Unsure* to any of the answers to questions No. 3 & 5, contact the AQB to see if a pre-application meeting is required.	

Part II –Production and Control Equipment

Table II: Regulated Equipment List: Unit numbering must correspond with the permit unit numbering. All regulated equipment at this facility shall be listed here regardless whether it is remaining, being retired, or being replaced. All equipment listed must be authorized by the current permit. Duplicate this page as necessary.

Permitted Equipment List						New Equipment List				
Required: ☐ All the equipment listed below is authorized by the permit.						**Required:** ☐ All the replacement equipment listed below meets the replacement requirements of the permit. "Unchanged" equipment in this New Equipment List does not need Manufacturer, Model, and Capacity info.				
Unit # (from permit)	**Description**	**Manufacture** / **Serial No.**	**Model No.**	**Capacity** (Specify Units[1])	**For Each Piece of Equipment, Check One**	**Description**	**Manufacture** / **Serial No.**	**Model No.**	**Capacity** (Specify Units[1])	**For Each Piece of Equipment, Check One**
H-1	Hot Oil Heater	Parmac/Cyclonic 124984A-02	HDSX9G-400-B-RM7840L-M30VGD	5600 M BTU/h / 28 MM BTU/h	☐ Existing (unchanged) X To be Replaced ☐ To be Retired	Hot Oil Heater	Tulsa Heaters TBD	TBD	32.7 MMBTU /hr	☐ Existing (unchanged) X Replacing the same unit number listed at left.
					☐ Existing (unchanged) ☐ To be Replaced ☐ To be Retired					☐ Existing (unchanged) ☐ Replacing the same unit number listed at left.
					☐ Existing (unchanged) ☐ To be Replaced ☐ To be Retired					☐ Existing (unchanged) ☐ Replacing the same unit number listed at left.
					☐ Existing (unchanged) ☐ To be Replaced ☐ To be Retired					☐ Existing (unchanged) ☐ Replacing the same unit number listed at left.
					☐ Existing (unchanged) ☐ To be Replaced ☐ To be Retired					☐ Existing (unchanged) ☐ Replacing the same unit number listed at left.
					☐ Existing (unchanged) ☐ To be Replaced ☐ To be Retired					☐ Existing (unchanged) ☐ Replacing the same unit number listed at left.
					☐ Existing (unchanged) ☐ To be Replaced ☐ To be Retired					☐ Existing (unchanged) ☐ Replacing the same unit number listed at left.
					☐ Existing (unchanged) ☐ To be Replaced ☐ To be Retired					☐ Existing (unchanged) ☐ Replacing the same unit number listed at left.
					☐ Existing (unchanged) ☐ To be Replaced ☐ To be Retired					☐ Existing (unchanged) ☐ Replacing the same unit number listed at left.
					☐ Existing (unchanged) ☐ To be Replaced ☐ To be Retired					☐ Existing (unchanged) ☐ Replacing the same unit number listed at left.

[1] 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.

Certification

Company Name: __Frontier Field Services, LLC _

I, _Bryan Graham_, 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 _____ day of _November_, _2024_, upon my oath or affirmation, before a notary of the State of _Texas_.

Bryan Graham
Signature

11 Nov 2024
Date

_Bryan Graham___
Printed Name

VP, Operations
Title

Scribed and sworn before me on this 11 day of November, 2024.

My authorization as a notary of the State of _Texas_ expires on the

11 day of November, 2024.

Megan Lopez
Notary's Signature

11/11/2024
Date

MEGAN LOPEZ
Notary's Printed Name



Tulsa Heaters Midstream
1215 S. Boulder, Ste 1040
Tulsa, OK 74119
Ph: (918) 392-8000

Doyle.Bishop@tulsaheatersmidstream.com
www.tulsaheatersmidstream.com

Company Representative
Doyle Bishop

Tulsa Heaters Midstream Proposal

THM Proposal # P24-0919 rev 01

Frontier Field Services

Hot Oil Heater System Request – Dagger Draw Replacement Heater

Prepared for:

Rick Boyd

Kahuna

P (303) 437-3685 **E** rboyd@kahunaUSA.com

Proposal issued:
10.18.2024

Proposal Valid until:
11.18.2024

Statement of Confidentiality

This proposal and supporting materials contain confidential and proprietary business information of Tulsa Heaters Midstream. These materials may be printed or photocopied for use in evaluating the proposed project, but are not to be shared with other parties.

About Us

Whether you need to purchase a new Hot Oil or Regen gas heater, Tulsa Heaters Midstream strives to be the "best choice" for purchasers in the Gas Processing industry. Our SHO Heater line has been developed with your design criteria in mind.

Do not allow the SHO's clean appearance to fool you – SHO's are not like the thousands of other commercial heaters already in the market. The THM SHO line was developed to provide 'custom-engineered' industrial quality products to customers that desire more than a commercial product. Consequently, the SHO line has the industrial quality, durability, and robustness that tolerates years and years of continuous use – without fail. Furthermore, unlike a majority of package heaters, every SHO line module (heater, BMS, and/or hot oil system) is custom engineered to satisfy each project's specific requirements.

At Tulsa Heaters Midstream, we also focus on the delivering a quality experience. Since every SHO line module is custom engineered, we treat each project individually – assigning a project manager to each project. We want to give you the support you need to meet your project goals.

Whatever the level of support you require, we are sure that we have a solution that meets your needs. All of our professionals are highly experienced in the areas in which they work and have a passion to deliver a high-quality equipment package and experience to your business – each and every time.

	THM	OTHERS
thermal model per Meckler & Fairall	✓	✗
tube temperature calcs per API Std530 **	✓	✗
pressure part calcs per 530, VIII, or I	✓	*flawed*
structural model in RISA 3D	✓	✗
carbon, chrome or stainless coils per customer	✓	✗
conventional finned convection section	✓	✗
upgrades for ULTRA Low NOx without external FGR	✓	✗
optional radiant serpentine coil with 2D or 3D spacing	✓	✗

** Note without the basis of rigorous tube wall temperature calcs, supplied fluid and component pressure part calcs are erroneous at best – and dangerous at worst.

Who we are

We are a reliable, flexible heater company that specializes in the midstream Gas Processing industry. We work with clients to fulfil all of their heater needs. Whether you need a heater designed from scratch, or you are looking for a more pre-engineered design, we are confident you will be pleased with the results.

What we do

We strive to be the best at what we do and offer

- Industrial quality design and fabrication for every heater
- Flexibility – from equipment design to project work processes
- Individual project management for every project

Our Equipment

SHO Heaters



- **Custom Engineered**
- **Industrial Quality**

While each SHO heater is "custom engineered", THM has created 14 base designs with heat releases ranging from 2.5 to 60+ MMBtu/hr.

Each SHO heater features custom engineered coil and burner designs optimized for your application. We also offer several "options" that can be included in the SHO package to ensure all local environmental and regulatory requirements are met.

Burner Management



- **Reliability**
- **Flexibility**

THM offers a range of BMS packages to meet any projects requirements.

With inlet piping from 1" to 4" NPS, THM has a BMS to handle all heat releases. Several options are also available with our BMS packages, including those for different area classifications, control capabilities, and emissions monitoring.

Oil Circulation Skids



- **Robust**
- **Integrated Design**

Following our SHO heaters and BMS packages, the THM Oil Circulation Skids are pre-engineered to provide a fast solution, while still providing the flexibility needed to meet project specific requirements.

THM offers twin-100% job specific pumps and job specific expansion drums integrated into robust pre-engineered skids complete with interconnecting piping.

Using modular, pre-engineered packages to deliver 'right-sized' equipment packages and solutions.

Our Standards

THM's proposal is based on the data provided with the inquiry, except where noted. Unless superseded by the requisition, the THM proposal is in accordance with the following standards:

Design Standards

API	Std 530, Std 560 (some deviations), RP 535 (some deviations)
AISC	Manual of Steel Construction
ANSI/ASCE	7-05
ASME	B16.5, B16.9, B16.11, B31.3, B36.10, Boiler & Pressure Vessel Code, Section I, Section VIII, Section IX
ASTM	A193, A194, A-297, A-351, A384, A385, C64, C155, C332, E186
NFPA	87
ICBO	Universal Building Code V2
NEC	Electrical Code Book 2014 (Article 500 – Hazardous Locations)

Manufacturing Standards

ASTM	Coil: A106B, A161, A200, A213, A312, A335, B407 Fittings: A105, A182, A216, A217, A234, A351, A403, B366 Supports: A216, A217, A240, A283, A297, A447, A560, E165, E433, E446 Refractory: C27, C155, C401, C612 L&P's: A123, A143, A153, A384, A385 Casing: A36, A283C Structure: A36
AWS	D1.1 Structural Welding Code
SSPC	SP-3, SP-5, SP-6, SP10

Shop Fabrication/Assembly

Modular solutions that work

Using module designs help to minimize field erection time and labor. The size and weight of each module will be maximized (up to the purchaser's shipping constraints) to minimize the quantity of modules. Each module also has lifting lugs suitable for safe handling and erection*.



THM's standard practice is to **maximize** shop fabrication and assembly. This practice consistently yields the lowest installed cost to the **owner** for all types of fired heaters. The THM standard offer provides for:

Radiant Section

- Casing/structure will be shop fabricated in transportable modules, complete with internal and external coatings specified on the job specific GA/fab drawings
- Refractory systems, as specified on GA drawings, will be shop installed
- Coil supports will be shop installed
- Coil will be fabricated, assembled into "final" position in module before shipment

Stacks/Ducts

- Casing/structure will be shop fabricated in transportable modules, complete with internal and external coatings specified on the job specific GA/fab drawings
- Refractory systems, as specified on GA drawings, will be shop installed

Convection Section

- Casing/structure will be shop fabricated in transportable modules, complete with internal and external coatings specified on the job specific GA/fab drawings
- Refractory systems, as specified on GA drawings, will be shop installed
- Coil supports will be shop installed
- Coil will be finned/studded (as appropriate), fabricated, assembled/stabbed into final position in the module before shipment

Miscellaneous

All components and smaller items will be properly prepped for shipping:

- Burners, actuators, and small engineered components
- Sufficient refractory for field erection
- Sufficient bolting hardware for field erection
- Spare parts (if purchased)

*Spreader beams not included unless expressly stated.

Scope of Supply

Activities

This proposal provides for the following global activities:

- **Process design**
- **Mechanical design**
- **Structural design**
- **Project management**
- **Basic (GA) design drawings and documentation**
- **Fabrication (detail) drawings and documentation**
- **Component and materials procurement**
- **Shop fabrication and module assembly**
- **Expediting**
- **Quality Assurance/Quality Control**
- **Document control**
- **Shipping preparation**
- **Shipping to site/port (optional)**
- **Site supervision (optional)**
- **Commissioning and start-up (optional)**

Documentation

The above activities will typically yield the following relevant documentation. It will be delivered in electronic format. Hard copies can be supplied at additional cost :

- **Data Sheets:** fired heaters, APH and/or deNOx systems, burners, fans, etc.
- **Calculations:** draft, APH hydraulics, settings, coil wall, stack frequency, structural, etc.
- **Performance Curves:** burners, fans, etc.
- **Foundation Loading Diagram**
- **General Arrangement Drawings:** casing, structure, refractory, coil, components
- **Procedures (when applicable):** performance test, NDE, welding, PWHT, and erection procedures
- **Final Data Books:** collection of all historically important data in electronic format
- **Test and NDE Records (when applicable)**

Materials and Services

We have developed this offer in accordance with our understanding of your RFQ. Based on this understanding, and Industry Standard Practices, the following items are not included in our Base Offer:

- Foundation/Pier Design and Related Structural Engineering
- Interconnecting Piping, Design or Materials
- Field Erection/Supervision of heater and accessories
- Start-up/Commissioning Supervision and/or Assistance (although mandatory with BMS supply). Quoted at a daily rate separately.
- Design, Analysis and/or Review of any related component not expressly written into our Scope of Supply

Technical Offering

HEATER

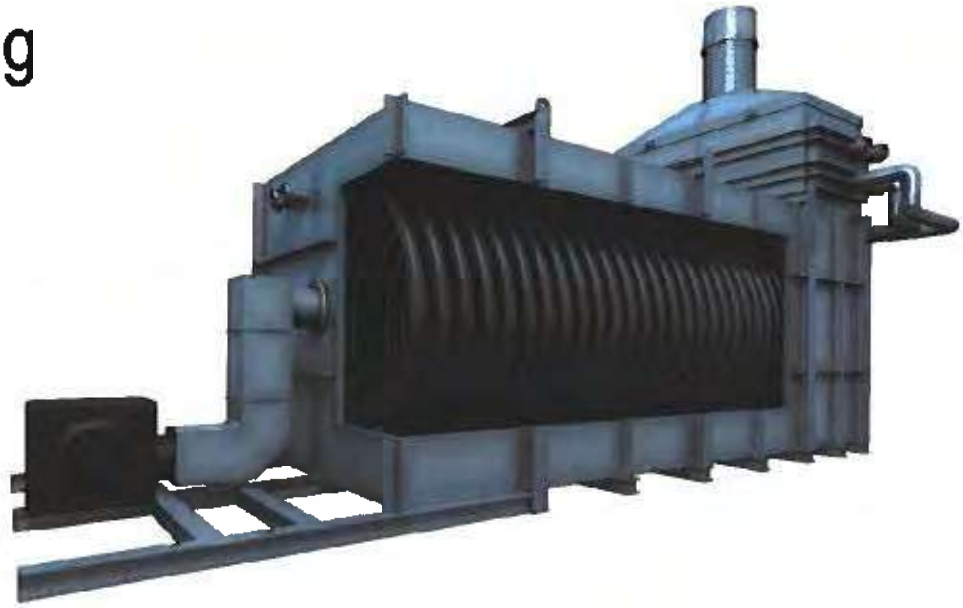
THM SHO Model Number: SHO3000

Service Application: Hot Oil Heater

Heater Tag Number: H-102

Absorbed Duty: 32.7 MMBtu/hr

Guaranteed Efficiency: 83.8%



Mechanical Design

Heater & Casing

- Radiant floor, sidewalls, roof, and end walls are seal welded carbon steel lined with ceramic fiber
- Convection casing is carbon steel and internally lined with ceramic fiber blanket
- Self-supporting carbon steel unlined stack
- Tubesheets of carbon steel lined with premix, castable refractory
- Structural steel is A-36
- Paint: 3-4 dftmil PPG Dimecote 9 IOZ Silicate on SP-6 Surface

  1.5-2 dftmil PPG Pitt-Therm 97-724 Series Air Dry Silicone (Federal Standard 595B #16132 Gray)

Coil

- Radiant section
  - Style/Passes: 2-pass helical
  - Coil Material: SA-106 Gr. B
  - Size/Schedule: 5" SCH 40
- Convection section
  - Style/Passes: 2-pass serpentine
  - Coil Material: SA-106 Gr. B
  - Size/Schedule: 5" SCH 40

Combustion Design

We utilize a single, forced-draft, horizontally firing burner in our heaters

- **Burner**

  Vendor: Callidus Technologies

  Model: CUBL-10W-HC-HZ

- **Blower**

  Vendor: Chicago Blower (or equal)

  Motor Rating: 20 HP, 1800 RPM

  * Blower motor VFD by others

Packaging

- The valve trains will be rack mounted and fixed to the heater for shipping
- The blower and burner will be shop mounted and shipped assembled with the exception of the scanner(s) which will need to be field installed
- The stack and convection section will be shipped loose for field erection by others
- Process & flue gas thermocouple assemblies shipped loose for field assembly

Technical Offering

BMS

The Burner Management System will be designed in accordance with industry standards, NFPA 87 and NEC (2014 Electrical Code Book).

System Philosophy

The below description is general in nature and each system is designed for the customers' exact needs and purpose.

The system permissives and "limits" must first be satisfied to start the system. These include:

Limits:

- High and low fuel pressures
- Process high temperature
- Stack high temperature
- Low low process flow (instrument by others)
- Low low oil system (when applicable)
- Loss of combustion air
- Flame failure
- ~~Low O2 alarm~~
- Blower motor run status
- Fuel valves proved closed for purge cycle

Permissives (from DCS):

- Remote ESD
- Remote heater run/stop

When the above conditions are satisfied, the purge cycle may begin. The purge cycle consists of a timed period with the forced draft (FD) blower at full capacity to provide at least four volume changes.

After the purge is completed, the pilot(s) may be started. Pilot ignition is achieved by opening the pilot fuel valve(s) and providing a ten second 6000 VAC spark from the ignition transformer. The flame scanner(s) must detect a flame within the ten second ignition period or the pilot fuel valves safely close and the system requires a re-start from the purge cycle. Once the pilot(s) has been established, the main burner(s) may be started.

The main burner valves are opened and the burner(s) lights from the pilot. The burner(s) is now lit and ready for service.

At any time that a system limit is not satisfied, the fuel valves are safely closed, and the system shuts down requiring a re-start from the purge cycle after the shutdown has been corrected.

Technical Offering

BMS

THM BMS Model Number: BMS5500

Area Classification: Unclassified



Combustion Control Panel

Our control panel is skid mounted for easy access

- **NEMA 4 Panel**
- **120 VAC Supply**
  external disconnect by others (if required)
- **Hinged window enclosure**
  for protection HMI
- **NFPA Listed flame safeguard**
- **NFPA Listed annunciator**
- **15" Color HMI**
- **Heater Process controller**
- **Minimum 250 W fan heater and thermostat**
- **Lights**
  Power on
  Shutdown
- **Switches**
  Burner ON/OFF switch
  Heater stop
  Power on/off

Pipe/Fuel train

Our pipe train is pre-piped for easy installation and setup

- **NFPA 87 / IRI Compliant**
- **Double block gas train for Primary Gas Train**
  ON/OFF actuator on both block valves
- **Double block gas train for Pilot Gas Train**
  ON/OFF actuator on both valves
- **Inlet pressure regulator (pressure not to exceed 270 psig)**
- **Modulating fuel control valve**
- **Strainer, manual block valves, pressure gauges**
- **Low/high pressure switches**

Additional Items

Additional control items not located on skid

- **Thermocouples for process control**
  Process high limit and stack high limit
- **Ignition transformer mounted in panel**
- **UV self check scanner**

Scope of Supply

	SUPPLIED BY		
ITEM	THM	OTHERS	NOTES
HEATER PACKAGE			
HEATER	X		
BURNER	X		
REFRACTORY & ANCHORS	X		
LADDER AND PLATFORMS		X	OPTIONAL
SINGLE POINT INLET/OUTLET PROCESS MANIFOLD(S)	X		
INTERFACE GASKETS	X		
FOUNDATION ANCHOR BOLTS		X	
HEATER PRESSURE SAFETY VALVE (PSV)		X	
CONTROLS (BMS) PACKAGE			
COMBUSTION AIR BLOWER (SKID MOUNTED)	X		
VARIABLE FREQUENCY DRIVE (VFD) FOR COMBUSTION AIR BLOWER		X	
BLOWER DUCTING (TO BURNER)	X		
SKIDDED BURNER MANAGEMENT SYSTEM (BMS) W/ CONTROL PANEL AND FUEL TRAINS	X		
HOT OIL CIRCULATION PACKAGE			
PUMP SKID		X	
PUMP(S)		X	
PUMP CONTROLS (START/STOP/SPEED)		X	
VARIABLE FREQUENCY DRIVE (VFD) FOR PUMPS		X	
MOTOR STARTER (FOR PUMPS)		X	
EXPANSION TANK		X	
EXPANSION TANK BLANKETING SYSTEM		X	
EXPANSION TANK PRESSURE SAFETY VALVE (PSV)		X	
SLIP STREAM FILTER & ASSOCIATED VALVES/INSTRUMENTS		X	
EXTERNAL INSULATION/JACKETING OF PUMP SKID		X	
BYPASS CONTROL VALVE		X	
HOT OIL STORAGE TANK		X	
ADDITIONAL ITEMS/SERVICES			
SPARE PARTS			OPTIONAL
AREA LIGHTING		X	
INTERCONNECTING PIPING BETWEEN PUMP SKID & HEATER		X	
INTERCONNECTING WIRING/CONDUIT BETWEEN PUMP SKID/HEATER/BMS		X	
DATABOOKS W/ MTR'S, WELD MAPS, VENDOR LITERATURE (DIGITAL COPY)	X		
INSTALLATION OF EQUIPMENT		X	
START-UP & COMMISSIONING OF EQUIPMENT	X*		*AT DAILY RATES

Warranties & Guarantees

Warranty Basis

THM proposes to warrant the proposed systems for a period of eighteen (18) months after shipment or twelve (12) months after start-up, whichever occurs first. **THM's** warranty specifically excludes damages or failures caused by factors outside of THM's span of control, such as the improper design by Others of adjoining systems, the improper operation of the said heater, or the intentional misapplication of same. Field evaluations of the proposed system(s) shall be performed at design conditions (as documented by **THM's** data sheets) and in strict accordance with the test methodologies set forth in ISO13705 / API Standard 560. Emissions testing will be per the EPA or state regulator requirements. Repair or replacement of any item(s) shall be to the Point of Sale specified in the contract.

Mechanical Guarantees

- **Materials:** THM guarantees that all materials and components shall be new and of the contract specified design (eg, sizes, types, materials, etc.) and origin
- **Structure:** THM guarantees that the stacks, ducts and supporting structures will be free of disfigurement and/or vibration, as defined by the contract and ISO 13705/API Std 560, including any site data (wind and seismic) provided by the customer
- **Settings:** THM guarantees that the average casing temperatures will not exceed the "indicated cold face temperatures +15°F", a tolerance factor, at design conditions during either natural draft or balanced draft operations

Process Guarantees

- **Duty:** THM guarantees that the process coil duty for each of the proposed heater(s) process coil duty will meet or exceed the duty figures set forth on THM's data sheets during either natural draft or balanced draft operations
- **Pressure Drop:** THM guarantees that the process pressure drop of the proposed heater(s) will not exceed the guaranteed pressure drop figures set forth on THM's data sheets
- **Efficiency:** THM guarantees that the thermal efficiency of the proposed heater(s) will meet or exceed the guaranteed thermal efficiency levels set forth on THM's data sheets
- **Flux Rates:** THM guarantees that the radiant and shield average flux rates will not exceed 110% of the average flux rates set forth on THM's data sheets

Emission Guarantees

- **Noise:** THM guarantees that noise emissions will not exceed 85 dBA @ 3 feet from the heater based on a free field
- **NOx, CO, VOC, PM: See Emissions Permit Datasheet. We can meet your requested emissions with exception to SOx as it is related to fuel sulfur only.**

Exceptions & Clarifications

This proposal meets RFQ with the following exceptions/clarifications:

Technical

The following exceptions and clarifications are taken with respect to the technical scope of supply:

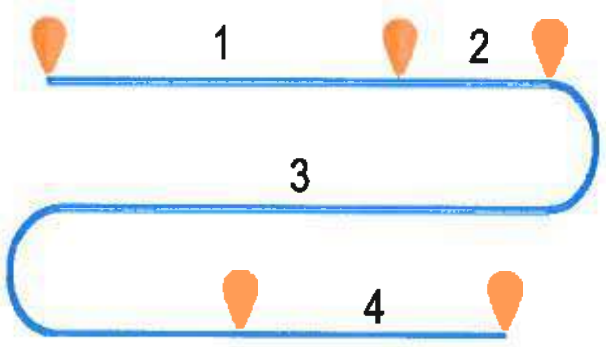
- Some process conditions estimated based on information provided. To be confirmed before detail design.
- We have provided a BMS system to meet an unclassified area classification. If Class 1, Division 2, Groups C & D is required, an adder can be provided.
    - THM has included a 3" 150# connection for O2 analyzer. No O2 analyzer has been included in our base offer.
- We have included a PSV for heater in our scope per RFQ. Location to be discussed.
- We have provided an estimated cost for two commissioning trips. Estimate includes daily rates for days traveling and on site, along with estimated costs for travel expenses (flights, hotel, car, food, etc). This is only an estimate at this time and will need to be modified based on actual costs at time of service. Trips are billed at daily service rates, plus all travel expenses billed at cost.
    - Flow rates and heater duties updated per client email on previous project
    - Fuel gas inlet regulator designed to handle 270 psig max pressure.
    - Please note other fuel train components max design pressure is 150 psig.
    - We can meet your requested emissions (see our Emissions datasheet) with the exception of SOx as it is totally related to fuel sulfur content.
- Final data book provided in electronic format (Upload to customer File Server, Compact Flash, DVD, CD).

Commercial

The following exceptions and clarifications are taken with respect to the commercial terms and conditions:

- Payment terms per client request.

Project Schedule



1	Issue GA & structural packages	**6– 7 weeks ARO**
	Issue electrical schematic package	**7 – 8 weeks ARO**
2	Receipt of customers' GA drawing comments	**8 – 9 weeks ARO**
3	Initial shipment from fabrication shop	**22 – 24 weeks ARAD**

Project Execution

While THM uses pre-engineered components to help with speed of delivery, we also recognize that each project is unique. Below we have outlined what each step of your project will involve.

1

Design of heater and associated equipment. Provide drawings.

While the broad-based design of your equipment is finished in the proposal phase, there are many details that need to be ironed out once the project has been officially awarded. During this phase, THM will create most of the documentation required for the project, including GA drawings, foundation loading diagrams, and relevant datasheets. Applicable documents are then submitted for approval.

2

Approve equipment design. Return drawings.

During the approval phase, we work closely with you to ensure all details pertaining the equipment design and fabrication are correct. All documents should be checked carefully to ensure that the exact scope of supply is understood, and all items meet required specifications. Once approved, the drawings and datasheets provide us the detail we need to begin fabrication and procurement of equipment.

3

Fabrication and procurement. Ready to ship.

After receiving approval, we begin the process of procuring material and equipment for your project. Only sub-vendors with proven quality and experience are used to fabricate equipment. Our team follows the order through the fabrication process, staying in regular contact with fabricators and suppliers. Necessary testing is done on applicable equipment (FAT for BMS, hydro-static testing, etc). All components of the package are then delivered to a single location to be installed with the heater (as applicable) and prepared for shipment.

4

Equipment delivery and start-up (optional).

While not standard, shipping can also be provided for equipment to the jobsite or location of choice. Our team can also be available during the start-up and commissioning of the equipment if requested. Our team has experience in starting up many heaters and know the typical problems that arise with the equipment. We want to ensure that your start-up is as successful as it can be. See our standard daily rates page for more details.

ITEM	QTY	DESCRIPTION
1	1	CALLIDUS BURNER (CTBL-30W-LE-HG)
2	1	RADIANT BOX ASSEMBLY - CS
3	1	RADIANT BURNER END WALL ASSEMBLY - CS
4	1	RADIANT TARGET END WALL ASSEMBLY - CS
5	1	304 - 20" ACCESS DOOR @ RADIANT END WALL -CS
6	1	BAFFLE - SUPPORT - CS
7	1	CONVECTION BOX ASSEMBLY - CS
8	1	CONVECTION TERMINAL END COVER ASSEMBLY - CS
9	1	CONVECTION RETURN END COVER ASSEMBLY - CS
10	1	STACK & TRANSITION ASSEMBLY - CS
11	1	CROSSOVER ASSEMBLY -SA/CL - CS
12	1	CROSSOVER ASSEMBLY -SA/CL - CS
13	1	[illegible]

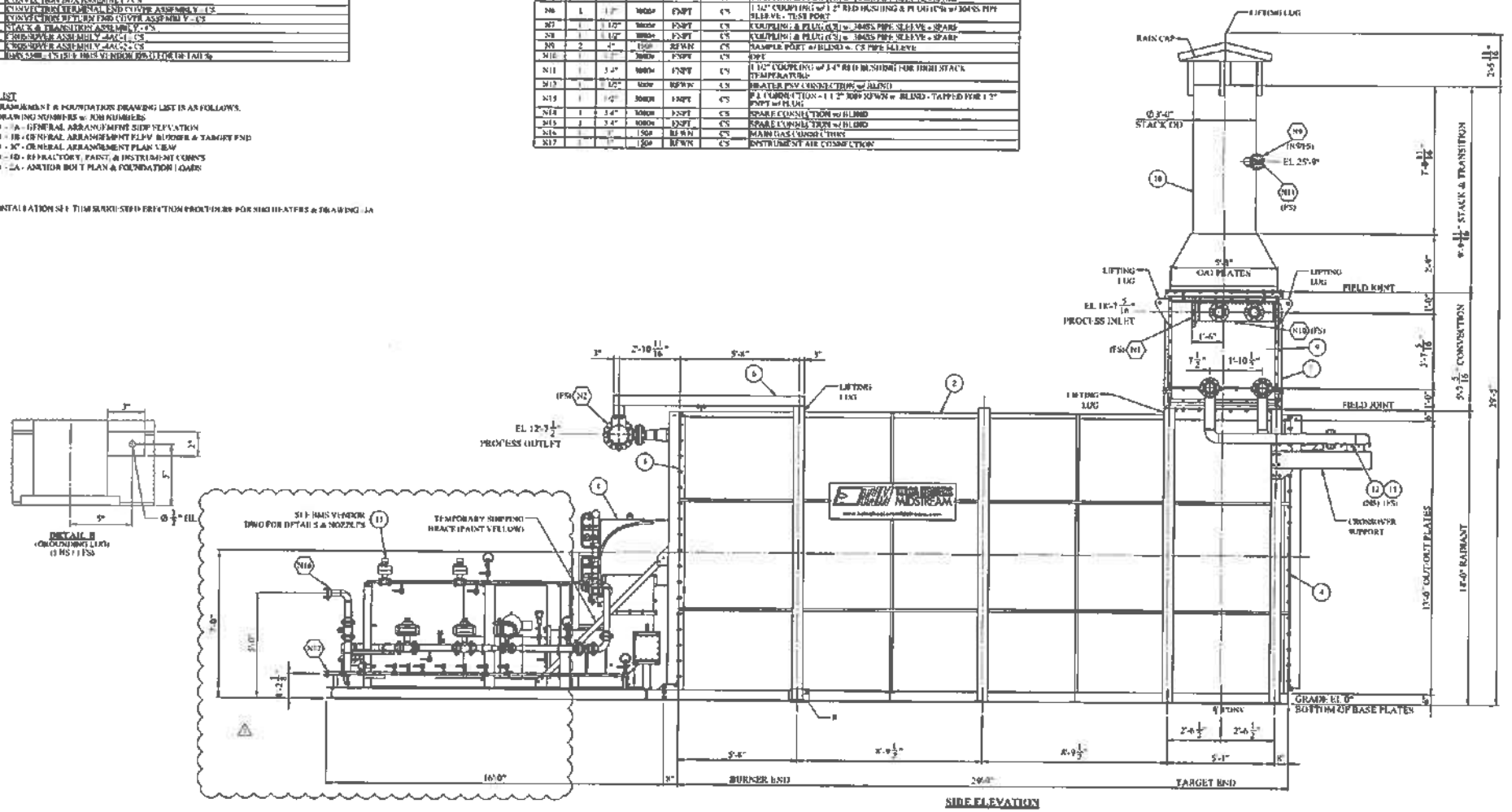
MARK	QTY	SIZE	RATING	TYPE	MATERIAL	SERVICE
N1	1	10"	300#	RFWN	CS	PROCESS INLET
N2	1	10"	300#	RFWN	CS	PROCESS OUTLET
N3	1	1 1/2"	3000#	SWE	CS	COUPLING & PLUG (CS) w/ 304SS PIPE SLEEVE - SPARE
N4	1	1 1/2"	3000#	SWE	CS	COUPLING & PLUG (CS) w/ 304SS PIPE SLEEVE - TEST PORT
N5	1	1 1/2"	3000#	SWE	CS	COUPLING & PLUG (CS) w/ 304SS PIPE SLEEVE - SPARE
N6	1	1"	3000#	SWE	CS	1 1/4" COUPLING w/ 1" RED BUSHING & PLUG (CS) w/ 304SS PIPE SLEEVE - TEST PORT
N7	1	1 1/2"	3000#	SWE	CS	COUPLING & PLUG (CS) w/ 304SS PIPE SLEEVE - SPARE
N8	1	1 1/2"	3000#	SWE	CS	COUPLING & PLUG (CS) w/ 304SS PIPE SLEEVE - SPARE
N9	2	4"	150#	RFWN	CS	SAMPLE PORT w/ BLIND w. CS PIPE SLEEVE
N10	1	1"	3000#	SWE	CS	PIPE
N11	1	3/4"	3000#	SWE	CS	1 1/2" COUPLING w/ 3/4" RED BUSHING FOR HIGH STACK TEMPERATURE
N12	1	1/2"	600#	RFWN	CS	HEATER PSV CONNECTION w/ BLIND
N13	1	1/2"	3000#	SWE	CS	P.I. CONNECTION - 1 1/2" 3000 SEWN w/ BLIND - TAPPED FOR 1/2" FNPT w/ PLUG
N14	1	3/4"	3000#	FNPT	CS	SPARE CONNECTION w/ BLIND
N15	1	3/4"	3000#	FNPT	CS	SPARE CONNECTION w/ BLIND
N16	1	4"	150#	RFWN	CS	MAIN GAS CONNECTION
N17	1	1"	150#	RFWN	CS	INSTRUMENT AIR CONNECTION

DRAWING LIST

GENERAL ARRANGEMENT & FOUNDATION DRAWING LIST IS AS FOLLOWS.
PRINT AS A DRAWING NUMBERS w. JOB NUMBERS
DRAWING NO - 1A - GENERAL ARRANGEMENT SIDE ELEVATION
DRAWING NO - 1B - GENERAL ARRANGEMENT ELEV. BURNER & TARGET END
DRAWING NO - 2C - GENERAL ARRANGEMENT PLAN VIEW
DRAWING NO - 3D - REFRACTORY, PAINT, & INSTRUMENT CONN'S
DRAWING NO - 4A - ANCHOR BOLT PLAN & FOUNDATION LOADS

NOTES

1. FOR FIELD INSTALLATION SEE THM SUBMITTED ERECTION PROCEDURE FOR SIMILAR HEATERS & DRAWING 4A



SIDE ELEVATION

PROPRIETARY INFORMATION

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CUSTOMER: KINETIK
KARLENA
LOCATION: PECOS, TX
UNIT: EAST 30 YAK FACILITY
SERVICE: HEAT MEDIUM HEATER
EQUIPMENT No.: H-2302
P.O. No.: 2024[illegible]
SHOP: 3000

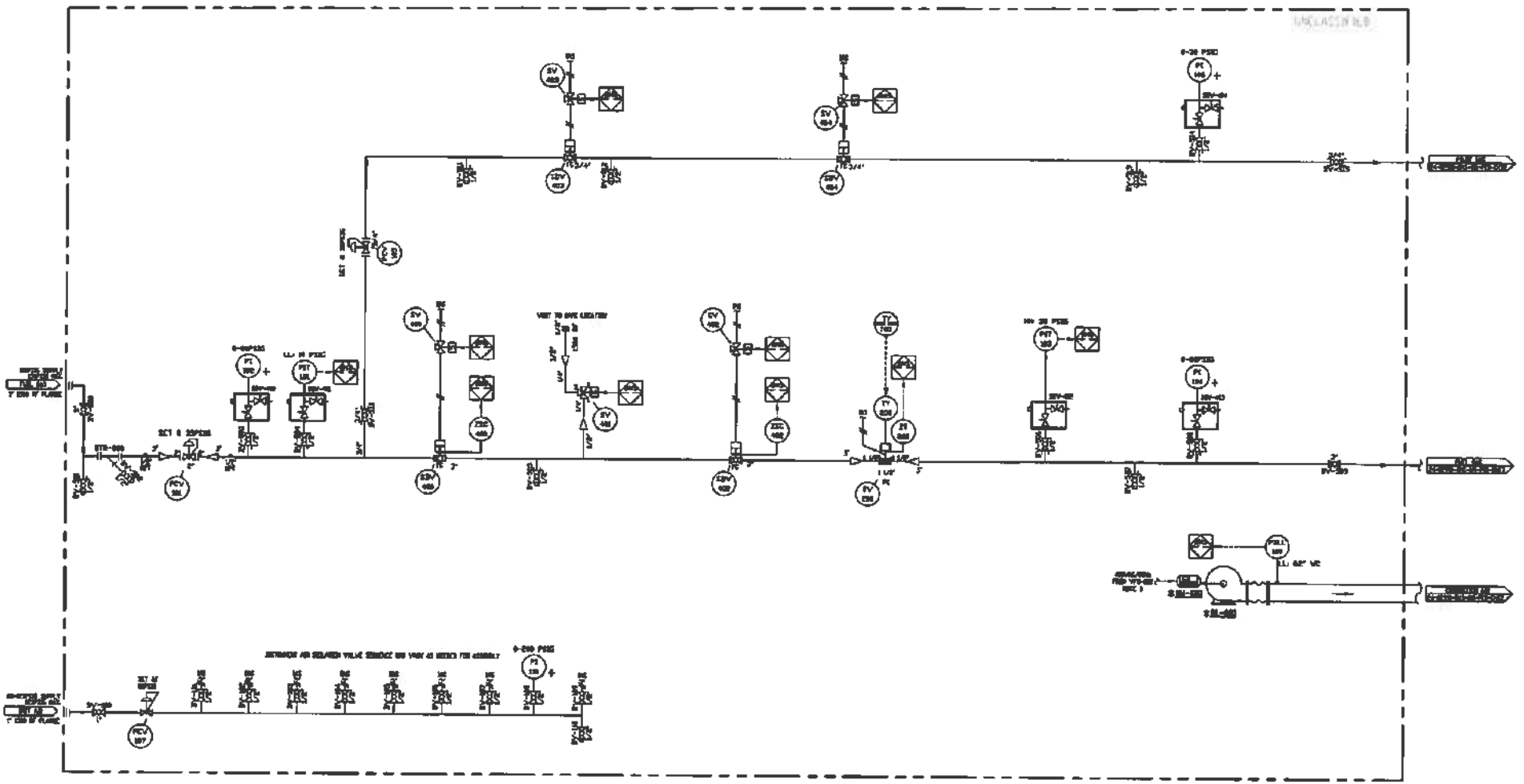
REV.	DATE	BY	REVISION DESCRIPTION
1	10/3/2024	SLB	REV PER CUSTOMER COMMENTS

TULSA HEATERS MIDSTREAM

TITLE: GENERAL ARRANGEMENT SIDE ELEV

DRAWN BY: SLB	DATE: 10/1/2024	JOB NO.: MJ24-669
CHECKED BY: ABV	DATE: 10/3/2024	DRAWING NO.: MJ24669-1A
APPROVED BY:	DATE:	REV: 1

H-101



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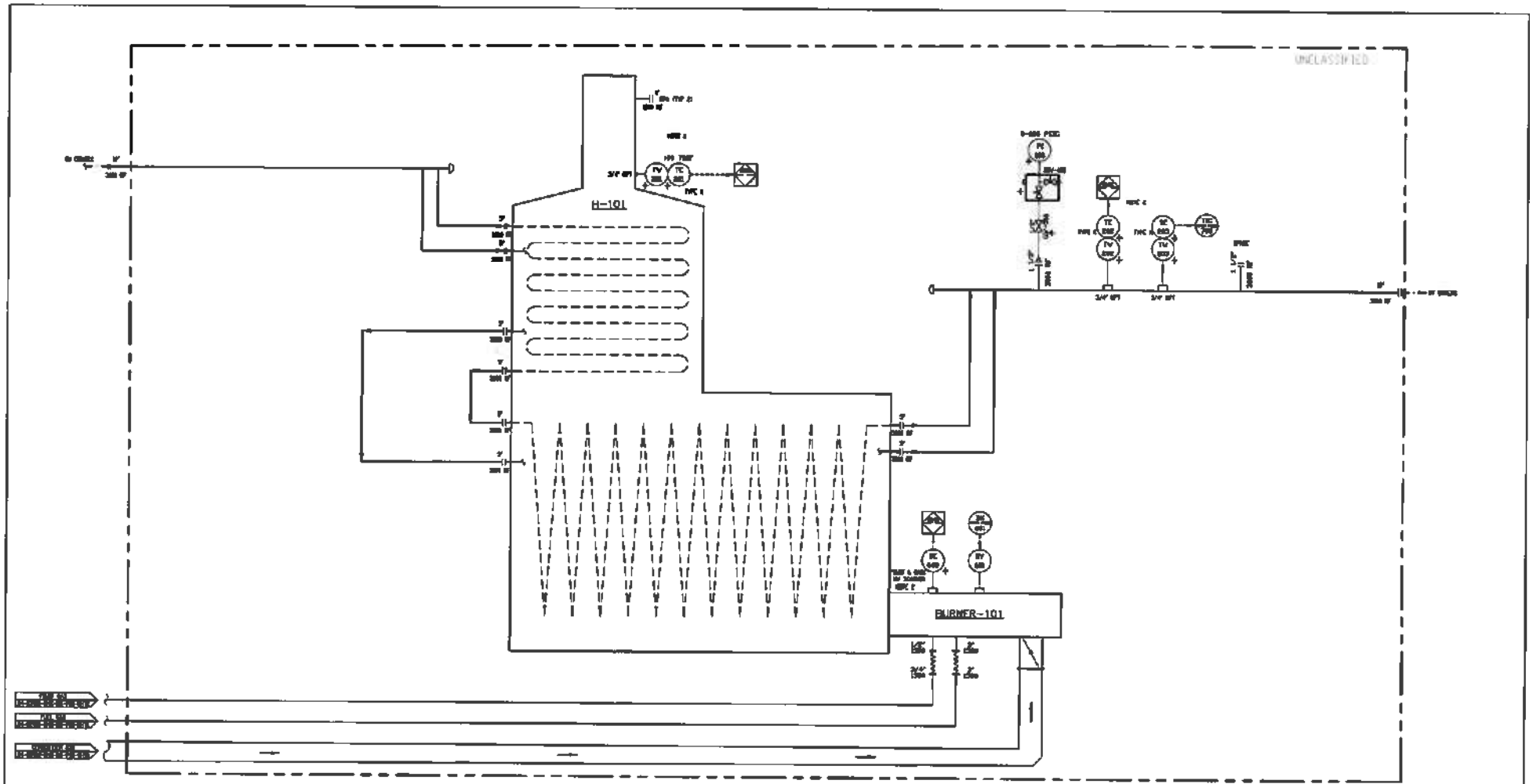
1. + SHIP-LOOSE EQUIPMENT FOR FIELD INSTALLATION.
2. FIELD SIGNAL BETWEEN CONTROL AND SHIP LOOSE ITEMS BY OTHERS.
3. VFD BY OTHERS.
4. * INSTRUMENTS BY ICC, ALL OTHERS BY OTHERS
5. ALARM/SIGNAL GENERATED BY OTHERS

REV	NOTE	DATE	DRAWN BY
0	[illegible]	9/30/2024	BV

ICC International Custom Controls
7855 SOUTH 88TH WEST AVENUE
SUITE 104, OK 74133 (918) 834-8000
PROUDLY MADE IN THE U.S.A

	NAME	DATE
DRAWN BY	BV	9/30/2024
CHECKED BY	MK	9/30/2024
ENG. APPR.	MK	9/30/2024

PROCESS AND INSTRUMENTATION DIAGRAM	
ICC PROJECT NO:	24-02910
CUSTOMER PROJECT NO:	THM MJ24-669
SHEET NAME:	24-02910-PHS-101-PID
REV 0	SHEET 1 OF 3



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2. FIELD TUBING BETWEEN ENCLOSURE AND SKID WHERE REQD BY OTHERS.
3. VFD BY OTHERS.
4. * INDICATES BY P&ID, ALL OTHERS BY ICC
5. ALARM/SIGNAL GENERATED BY OTHERS

NO.	REVISION	DATE	DRAWN BY

International Custom Controls
7855 SOUTH 87TH WEST AVENUE
TULSA, OK 74131 (918) 516-0888
PROUDLY MADE IN THE U.S.A.

	NAME	DATE
DRAWN BY	BK	9/27/2024
CHECKED BY	JH	9/27/2024
ENG APPR	MB	9/27/2024

PROCESS AND INSTRUMENTATION DIAGRAM

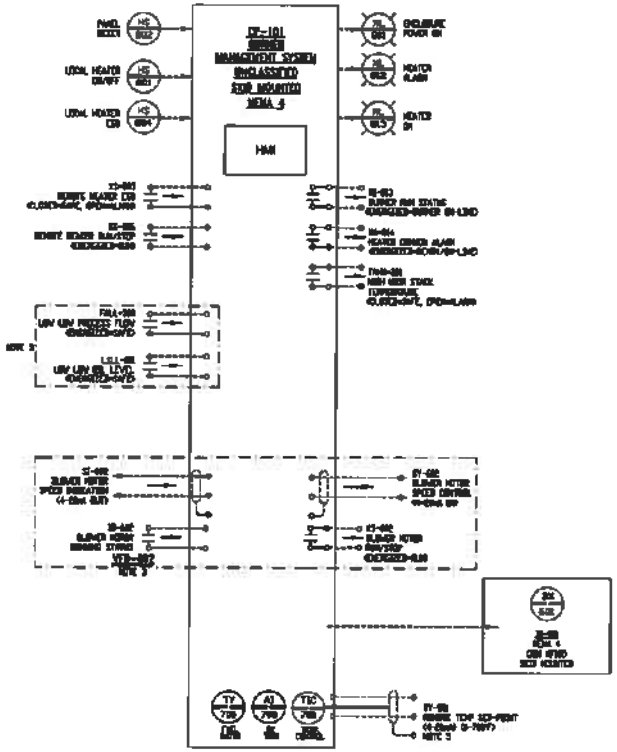
ICC PROJECT NO: 24-02910

CUSTOMER PROJECT NO: THM MJ24-669

SHEET NAME: 24-02910-BMS-101-PID

REV 0 | SHEET 2 OF 3

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1. 4 SHIP-LOOSE INSTRUMENT FOR FIELD INSTALLATION.
2. FIELD WIRING BETWEEN ENCLOSURE AND SHIP WIRE RUNS BY OTHERS.
3. VFD BY OTHERS.
4. * INSTRUMENTS BY ICC, ALL OTHERS BY ICC
5. ALARM/SIGNAL GENERATED BY OTHERS

REV	DESCRIPTION	DATE	DRAWN BY
0	FOR CUSTOMER APPROVAL	9/30/2024	BV

ICC International Custom Controls
7909 SOUTH 87TH WEST AVENUE
TULSA, OK 74131 (918) 835-8458
PROUDLY MADE IN THE U.S.A.

	NAME	DATE
DRAWN BY:	BV	9/30/2024
NEEDED BY:	JB	9/30/2024
ENG. APPV.	GH	10/1/2024

PROCESS AND INSTRUMENTATION DIAGRAM

ICC PROJECT NO: 24-03920

CUSTOMER PROJECT NO: THM MJ24-609

SHEET NAME: 24-03920-BMS-101-PID

REV 0

SHEET 3 OF 3

Owner:	Frontier Field Services		Owner Ref.:	H-102	
Purchaser:	Kahuna		Purchaser Ref.:	240076	
Manufacturer:	Tulsa Heaters Midstream, LLC		THM Ref.:	P24-0919	
Service:	Heat Medium Heater		Project:	Dagger Draw Replacement	
Quantity:	1		Location:	Pecos, TX	
SHO Duty:	32.70	MMBTU/ hr	SHO Model:	SHO3000	
BMS Release:	41.95	MMBTU/ hr	BMS Model:	BMS5500	

Rev

PROCESS DESIGN CONDITIONS

		Radiant / Convection	Radiant / Convection	Radiant / Convection	Radiant / Convection
Heater Section	---				
Operating Case	---	Design			
Service	---	Heat Medium Hea			
Heat Absorption (R/C)	MMBTU/ hr	21.99 / 10.71			
Process Fluid	---	Chemtherm 550			
Process Mass Flow Rate, Total	Lb/ hr	455,000			
Process Bulk Velocity (calc. R/C)	ft/ s	9 / 9			
Process Mass Velocity (calc. R/C)	Lb/ s ft2	455 / 455			
Coking Allowance (dP calcs)	In				
Pressure Drop, Clean (allow. / calc.)	psi	27 / 27			
Pressure Drop, Fouled (allow. / calc.)	psi				
Average Heat Flux (allowable)	BTU/ hr ft2	13,000			
Average Heat Flux (calculated)	BTU/ hr ft2	11,930			
Maximum Heat Flux (allowable)	BTU/ hr ft2				
Maximum Heat Flux (calc. R/C)	BTU/ hr ft2	22,600 / 31,000			
Fouling Factor, Internal	hr ft2 °F/ BTU	0.002			
Corrosion or Erosion Characteristics	---				
Max. Film Temperature (allow. / calc.)	°F	635 / 520			
Inlet Conditions:					
Temperature	°F	300			
Pressure	psig	70			
Mass Flow Rate, Liquid	Lb/ hr	455,000			
Mass Flow Rate, Vapor	Lb/ hr	0			
Weight Percent, Liquid / Vapor	wt%	100% / 0%			
Density, Liquid / Vapor	Lb/ ft3	50.99 / 0.00			
Molecular Weight, Liquid / Vapor	Lb/ Lbmole	--- / 0.0			
Viscosity, Liquid / Vapor	cp	1.9668 / 0.000			
Specific Heat, Liquid / Vapor	BTU/ Lb °F	0.57 / 0.000			
Thermal Conductivity, Liq./Vap.	BTU/hr ft °F	0.0701 / 0.000			
Outlet Conditions:					
Temperature	°F	420			
Pressure	psig	43			
Mass Flow Rate, Liquid	Lb/ hr	455,000			
Mass Flow Rate, Vapor	Lb/ hr	0			
Weight Percent, Liquid / Vapor	wt%	100% / 0%			
Density, Liquid / Vapor	Lb/ ft3	48.39 / 0.00			
Molecular Weight, Liquid / Vapor	Lb/ Lbmole	--- / 0.0			
Viscosity, Liquid / Vapor	cp	0.893 / 0.000			
Specific Heat, Liquid / Vapor	BTU/ Lb °F	0.628 / 0.000			
Thermal Conductivity, Liq./Vap.	BTU/hr ft °F	0.067 / 0.000			

A	18-Sep-24	Issued with Proposal	dcb		
revision	date	description	by	chk'd	appv'd

THM TULSA HEATERS MIDSTREAM

SHO = Superior Quality, Flexibility, Dependability & Modularity

HEATER DATA SHEET

AMERICAN ENGINEERING SYSTEM of UNITS

P24-0919-HTRDS

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COMBUSTION DESIGN CONDITIONS

Overall Performance:

Operating Case	---	Design
Service	---	Heat Medium Hea
Excess Air	mol%	15.0%
Calculated Heat Release (LHV)	MMBTU/ hr	38.13
Guaranteed Efficiency	HR%	83.8%
Calculated Efficiency	HR%	85.8%
Radiation Loss	HR%	2.00%
Flow Rate, Combustion Gen./ Imp.	Lb/ hr	37,118
Flue Gas Temp. Leaving (R/C)	°F	1,497 / 533
Flue Gas Mass Velocity	Lb/ sec ft2	0.448

Fuel(s) Data:		Gas 1 Mol.Wt.	Gas 2 Mol.Wt.	Gas 3 Mol.Wt.	Design Fuel Oil
LHV	BTU/ scf	958			---
LHV	BTU/ Lb	20,667			
P @ Burner	psig	270			
T @ Burner	°F	95			
MW	Lb/ Lbmole	17.60			---
Flow @ design	lb/hr	1,845			
Flow @ design	scfh	39,787			
Atomizing Media		---			
Atom. Media P & T		---			
Components:					
N	wt%	---			
S	wt%	---			
Ash	wt%	---			
Ni	ppm	---			
Va	ppm	---			
Na	ppm	---			
Fe	ppm	---			
H2	mol%	0.0%			---
O2	mol%	0.0%			---
N2 + Ar	mol%	1.9%			---
CO	mol%	0.0%			---
CO2	mol%	0.0%			---
CH4	mol%	89.1%			---
C2H6	mol%	8.5%			---
C2H4	mol%	0.0%			---
C3H8	mol%	0.5%			---
C3H6	mol%	0.0%			---
C4H10	mol%	0.0%			---
C4H8	mol%	0.0%			---
C5H12	mol%	0.0%			---
C5H10	mol%	0.0%			---
C6+	mol%	0.0%			---
H2S	ppmv	0.0%			---
SO2	mol%	0.0%			---
NH3	mol%	0.0%			---
H2O	mol%	0.0%			---
spare	mol%	0.0%			---

Blower/Fan Peformance:

Volumetric Flow	acfm	8,500
Rated Power	HP	20
Fan Speed	RPM	1,800
Sound Pressure	dBA	< 85
Area Classification	NEC	Unclassified

Burner Design:

OEM	---	Callidus Technologies, LLC	
Type	---	Enhanced IFGR	
Quantities	---	1	ULTRA Low NOx
Model No.	---	CUBL-10W-HC-HZ	Cylindrical
Windbox	---	yes ...	
Location	---	EndWall Center ...	Horizontally Fired

Pilot Design:

Type / Model		Self-Inspirating /	by O.E.M.
Ignition	---	Electric	requires elec.ign.system
Heat Release	--	> 350000 BTU/ hr on ...	Gas 1

Burner Performance:

Minimum Heat Release	MMBTU/ hr	8.39
Design Heat Release	MMBTU/ hr	38.13
Maximum Heat Release	MMBTU/ hr	41.95
Burner Turndown	Max:Min	5.00
Volumetric Ht. Release	BTU/ hr ft3	8,916
Pressure @ Arch	inH2O	0.80
Pressure @ Burner	inH2O	6.29
Combustion Air T @ Burner	°F	60
Flue Gas T @ Burner	°F	1,300

Guaranteed Emissions:

Basis of Guarantee	---	3.0% O2, dry (LHV)	
NOx Emissions	Lb/MMBTU	0.040	30 ppm
SOx Emissions	Lb/MMBTU	no quote	
CO Emissions	Lb/MMBTU	0.041	50 ppm
VOC Emissions	Lb/MMBTU	0.003	2 ppm
UHC Emissions	Lb/MMBTU	0.002	4 ppm
SPM10 Emissions	Lb/MMBTU	0.003	3 ppm
Noise Emissions	dBA @ 3ft	85	

Net Flame Clearances:

Est. Flame Size	approx. 24 ft L x 5 ft Diameter
Hor Clearance	3.13 ft NET Tube Clearance
Vert. Clearance	3.13 ft NET Tube Clearance
Axial Clearance	4.17 ft NET Refractory Clearance (to Target hot face)

Nominal Flame Clearances:

from burner CL ...		Vertical	Horizontal
to Tube CL, API	ft	17.98	11.99
to Tube CL, calc.	ft	5.63	5.63
to Refrac., calc.	ft	n / a	28.17

Owner Ref.: H-102 THM Ref.: P24-0919

PRESSURE PARTS DESIGN

Rev

			RADIANT	SHIELD	CONVECTION
Coil Design:					
Service			Heat Medium Hea	Heat Medium Hea	Heat Medium Heater
Design Basis for Tube Temperature			API 530	API 530	API 530
Design Basis for Tube Wall Thickness			ASME Sec. VIII-1	ASME Sec. VIII-1	ASME Sec. VIII-1
Design Life		hr	100,000	100,000	100,000
Design Pressure (elastic / rupture)		psig	150 /	150 /	150 /
Design Fluid Temperature		°F	420	420	420
Design Temperature Allowance		°F	25	25	25
Design Corrosion Allowance (tubes/fittings)		in	0.063 / 0.063	0.063 / 0.063	0.063 / 0.063
Maximum Tube Temperature (clean)		°F	540		
Maximum Tube Temperature (fouled)		°F	590	518	630
Design Tube Temperature		°F	615	655	655
Inside Film Coefficient		BTU/ hr ft2 °F	250	189	172
Weld Inspection		RT or Other	100 of 10%	100 of 10%	100 of 10%
Weld Heat Treatment		s.rel., t.stab. or none	None	None	None
Hydrostatic Test Pressure		psig	per API	per API	per API
Coil Arrangement:			Horizontal	Horizontal	Horizontal
Coil Type		---	Helical	Serpentine	Serpentine
Tube Material (pipe or tube spec)		ASTM	SA106GrB	SA106GrB	SA106GrB
Supplementary Mfg Requirements		ASTM	None	None	None
Tube Outside Diameter		in	5.563	5.563	5.563
Tube Wall Thickness (aw / mw)		in	0.258 / 0.226	0.258 / 0.226	0.258 / 0.226
Number of Cells (radiant or convection)		---	1	1	1
Number of Flow Passes (total / cell)		---	2 / 2	2 / 2	2 / 2
Number of Tubes per Row (total / cell)		---		5 / 5	5 / 5
Overall Tube (1 turn in radiant) Length		ft	35.35	14.04	14.04
Effective Tube Length / Helix Diameter		ft	35.35 / 11.25	12.46	12.46
Number of Turns or Tubes (total / pass)			36.0 / 18.0	5.0 / 5.0	0.0 / 0.0
Total Exposed Surface		ft2	1,842	91	0
Number of Ext.Surf. Tubes (total / cell)		---	0 / 0.0	0 / 0.0	25 / 25.0
Total Exposed Surface		ft2	0	0	4,931
Tube Spacing (horiz. / tube centers)		in	--- / 8.97	10.00 / 10.00	10.00 / 10.00
Tube Spacing (horiz. to refractory)		in	7.50	5.00	5.00
Coil Fluid Volume		USgal	1355	79	397
Coil Fittings:			Heat Medium Hea	Heat Medium Hea	Heat Medium Heater
Fitting Type		---	SR 90° Elbows	SR 180° U-Bends	SR 180° U-Bends
Fitting Material		ASTM	SA234 WPB	SA234 WPB	SA234 WPB
Supplementary Mfg Requirements		ASTM	None	None	None
Fitting Outside Diameter		In	5.563	5.563	5.563
Fitting Wall Thickness (aw / mw)		in	0.258 / 0.226	0.258 / 0.226	0.258 / 0.226
Fitting Location		internal or external	Internal	External	External
Tube Attachment		welded or rolled	Welded	Welded	Welded
Coil Terminals:			Outlet		Inlet
Terminal Type		beveled or flanged	Flanged		Flanged
Flange Material		ASTM	SA105N		SA105N
Supplementary Mfg Requirements		ASTM	None		None
Flange Size and Rating		NPS/ ASME	5" / 300#		5" / 300#
Flange Type		RFWN or RTJ	RFWN		RFWN
Location		---	Burner Endwall		Terminal End
Extended Surface:			CONVECTION	CONVECTION	CONVECTION
Service		---	Heat Medium Hea	Heat Medium Hea	Heat Medium Heater
Fin or Stud Row Number		starting @ bottom	No.1 / No.2	No.3-5 /	/
Ext. Surface Type		seg.fins, solid fins, studs	Segmented	Segmented	
Fin/Stud Material		---	C.S. / C.S.	C.S. /	/
Fin/Stud Height		in	0.50 / 0.75	1.00 /	/
Fin/Stud Thickness		in	0.11 / 0.11	0.11 /	/
Fin/Stud Density		fin/ in	5.00 / 5.00	5.00 /	/

PRESSURE PARTS DESIGN (continued)

			RADIANT	SHIELD	CONVECTION	
Crossovers:						
Type, location / connections	---		External	/ Flanged	None	
Tube / Fittings Material	ASTM		SA106GrB	/ SA234 WPB		
Tube & Fitting OD / Thickness (aw)	in		5.563	/ 0.258		
Inlet Manifold(s):	type				Simple LOG	
Location	---				Top - Term. End	
Design Basis for Manifold Thickness	---				ASME B31.3	
Design Conditions (temp./press.)	°F/ psig				655 / 150	
Pipe Material	ASTM				SA106GrB	
Fittings Material	ASTM				SA234 WPB	
Flange Material / Style	ASTM				SA105N/ RFWN	
Outside Diameters, each Branch	in				10" NPS	
Wall Thickness(es); aw ~~or mw~~	in				SCH40 (0.365)	
End Types (terminal/ dead)	beveled or flanged				Flanged / W.Cap	
Manifold Terminal Type	NPS/ ASME				10" NPS/ 300# Flg	
Coil Connection Type	extrusion, olet, etc.				Weld-O-Let	
Coil Terminal Type	NPS/ ASME				5" NPS / 300# Flg	
Outlet Manifold(s):	type		Simple LOG			
Location	---		Burner Endwall			
Design Basis for Manifold Thickness	---		ASME B31.3			
Design Conditions (temp./press.)	°F/ psig		615 / 150			
Pipe Material	ASTM		SA106GrB			
Fittings Material	ASTM		SA234 WPB			
Flange Material / Style	ASTM		SA105N/ RFWN			
Outside Diameters, each Branch	in		10" NPS			
Wall Thickness(es); aw ~~or mw~~	in		SCH40 (0.365)			
End Types (terminal/ dead)	beveled or flanged		Flanged / W.Cap			
Manifold Terminal Type	NPS/ ASME		10" NPS/ 300# Flg			
Coil Connection Type	extrusion, olet, etc.		Weld-O-Let			
Coil Terminal Type	NPS/ ASME		5" NPS / 300# Flg			

COIL & MANIFOLD SUPPORTS DESIGN

			RADIANT	SHIELD	CONVECTION	
Tube Supports:						
Service			Heat Medium Hea	Heat Medium Hea	Heat Medium Heater	
Location	Top, Bottom, Ends		Bottom	Ends	Ends	
Support Type	casting, tubesht, spring, etc.		SS Pipe Rail	Welded Tbsheets	Welded Tbsheets	
Support Thicknesses	in		SCH40	0.375	0.375	
Support Materials	ASTM		A240 T304	A36 CS	A36 CS	
Support Temperatures (calc./ design)	°F / °F		905 / 1,090	629 / 780	629 / 780	
TbSht Ferrules Thickness/Materials	in/ ASTM		--- / ---	14 ga. / 304 SS	14 ga. / 304 SS	
Refractory & Anchor Materials & Types			none	per refrac. section	per refrac. section	
Intermediate Guides & Supports:			None	None	None	
Location	---					
Guide/ Support Type	casting, spring, etc.					
Material	ASTM					
Spacing, average	ft					
Tube Guides:	Top, Bottom, Ends		None	None	None	
Material	ASTM					
Manifold Supports:			Outlet Manifold		Intlet Manifold	
Material	ASTM		A36		N/A	
Materials Design & Supply	---		by THM			
Location	Top, Bottom, Ends		Burner Endwall			
Support Type	roller, shoe, spring, etc.		Simple Shelf			
Number of Supports	---		One (1)			

Owner Ref.: H-102 THM Ref.: P24-0919 Rev

CASING / REFRACTORY SYSTEMS DESIGN

Radiant Section Design:		BURNER ENDWALL			SHIELDED SIDEWALLS	TARGET ENDWALL
Total Refractory Thickness	in	5.0			3.0	5.0
Hot Face Temperature (design)	°F	2,000			2,000	2,000
Hot Face Temperaure (calculated)	°F	1,497			905	1,497
Hot Face Layer	in/ - - -	1/ 8# CF Blanket			1/ 8# CF Blanket	1/ 8# CF Blanket
Back-Up Layer No.1	in/ - - -	1/ 8# CF Blanket			2/ 6# CF Blanket	1/ 8# CF Blanket
Back-Up Layer No.2	in/ - - -	3/ 6# CF Blanket			None	3/ 6# CF Blanket
Foil Vapor Barrier	in/ - - -	None			None	None
Castable Reinforcement (SS Needles)	wt%	None			None	None
Anchors / Tie Backs:	- - -	Pins & Clips			Pins & Clips	Pins & Clips
Material	- - -	310 S.S.			310 S.S.	310 S.S.
Attachment	- - -	Welded			Welded	Welded
Casing:						
Material	in/ ASTM	0.1875 / A36			0.1875 / A36	0.1875 / A36
Internal Coating	- - -	None			None	None
External Temperature, Typical	°F	180			180	180
Comments / Clarifications	- - -	w/ cfb wraps			w/o cfb wraps	w/ cfb wraps
		SHOP Installed			SHOP Installed	SHOP Installed

		SIDEWALLS		ENDWALLS	
Convection Section Design:		SHIELD	FINNED	TUBESHEETS	HEADER BOXES
Total Refractory Thickness	in	3.0	3.0	3.0	2.0
Hot Face Temperature (design)	°F	2,000	2,000	2,200	2,000
Hot Face Temperaure (calculated)	°F	1,015	1,015	1,015	745
Hot Face Layer	in/ - - -	1/ 8# CF Blanket	1/ 8# CF Blanket	3/ Sparlite HS	1/ 8# CF Blanket
Back-Up Layer No.1	in/ - - -	2/ 6# CF Blanket	2/ 6# CF Blanket	None	1/ 8# CF Blanket
Back-Up Layer No.2	in/ - - -	None	None	None	None
Foil Vapor Barrier	in/ - - -	None	None	None	None
Castable Reinforcement (SS Needles)	wt%	None	None	None	None
Anchors / Tie Backs:	- - -	Pins & Clips	Pins & Clips	Bullhorns	Pins & Clips
Material	- - -	310 S.S.	304 S.S.	304 S.S.	304 S.S.
Attachment	- - -	Welded	Welded	Welded	Welded
Casing:					
Material	in/ ASTM	0.1875 / A36	0.1875 / A36		0.1345 / A36
Internal Coating	- - -	None	None	None	None
External Temperature, Typical	°F	180	180		180
Comments / Clarifications	- - -	Cleaning/Sootblowing lanes: none			Bolted Assembly
	- - -	SHOP Installed	SHOP Installed	SHOP Installed	SHOP Installed

			FLUE GAS DUCTS			
Stack & Uptakes Design:		BREECHING	15° TRANSITION	DISCH. DUCT		
Quantity		One	One	One		
Type / Location	- - -	Full L / Conv	Full L / Conv	Self.Spt / Grade		
Length / Metal Outside Diameter (top)	ft/ ft	1.00 / n/ a	1.75 / n/ a	7 / 3.000		
Discharge Elev., minimum/ calculated	ft/ ft	n/ a / n/ a	n/ a / n/ a	20 / 28		
Total Refractory Thickness	in	3.0	0.0	0.0		
Hot Face Temperature (design)	°F	2,000				
Hot Face Temperaure (calculated)	°F	533	533	533		
Hot Face Layer	in/ - - -	1/ 8# CF Blanket	None	None		
Back-Up Layer No.1	in/ - - -	2/ 6# CF Blanket				
Castable Reinforcement (SS Needles)		None				
Anchors / Tie Backs:	- - -	Pins & Clips				
Material	- - -	304 S.S.				
Attachment	- - -	Welded				
Casing:						
Minimum Thickness/ Material	in/ ASTM	0.1875 / A36	0.1875 / A36	0.1875 / A36		
Corrosion Allowance	in	None	None	None		
Internal Coating	- - -	None	None	None		
External Temperature, Typical	°F	180	533	533		
Comments / Clarifications	- - -	SHOP Installed				

MECHANICAL / STRUCTURAL DESIGN BASIS

Refractory & Coatings Design:

Refractory Design	Per Std560: 180°F Avg. Casing Temperature @ Ambient Conditions of 0 MPH & 80°F
Refractory Dryout	SHOP dryout = None // FIELD dryout per THM standard.
Coating, Internal	None
Coating, External	Base Coat: 3-4 PPG Dimetcote 9 IOZ Silicate - Flat Green on SP-6
	Int. Coat: None
	Top Coat (casing): 1.5-2 PPG Hi-Temp 500 - Federal Standard 595B #16132 Gray
	Top Coat (stack): 1.5-2 PPG Hi-Temp 1000 - Federal Standard 595B #16132 Gray

Applicable Standards:

API	~~Std 560 (ISO 13705); Fired Heaters for ...~~	AISC	Specification for Design, ... Steel for Buildings
API	Std 530 (ISO 13704); Calc. of Heater Tube ...	AWS	D 1.1; Structural Welding Code
ASME	B31.3, Chemical Plant and ... Piping	ASTM	tube/ smls pipe/ fitting spec's noted herein
ASME	Sections I, II, VIII, IX; ASME B&PV Code	ASTM	refractories per C27, C155, C401 & C612
ASME	Section V; Non Destructive Examination	NFPA	NFPA 70; National Electrical Code

Wind Design:

Spec. or Standard	ASCE 7-10
Velocity/ Imp. Factor	120 mph / 1
Site Exposure	"C"

Physical Design:

Plot Limitations	None
Tube Limitations	None
Firebox Pressure	Positive; approximately +1.0 inH2O
Ambient Temp's	-20 °F Min/ 60 °F Dsn/ 105 °F Max

Seismic Design:

Spec. or Standard	ASCE 7-10
Risck Cat./Imp. Factor	III / 1.25
Ss/S1/Soil Class	0.5 / 0.15 / D

Site Design Basis:

Site Elevation	2600 ft AMSL
Stack Design Temp.	90 °F
FG Discharge Elev.	28 ft AG
Area Classification	Unclassified

MAJOR SUBSYSTEMS & ACCESSORIES

Major Services & Subsystems

Process Design	INCLUDED in base pricing
Mechanical Design	INCLUDED in base pricing
Structural Design	INCLUDED in base pricing
Radiant Section	INCLUDED in base pricing
Convection Section	INCLUDED in base pricing
Burner Mgmt	INCLUDED in base pricing
Burner Piping	INCLUDED in base pricing
Forced Draft System	INCLUDED in base pricing

Major Accessories:

Casing/ Tube Seals	None
Observation Doors	None
Observation Doors	1 4 in Dia. w/ HT glass on Arch
Access Doors	1 Std 24" x 24"
Expansion Joints	None
Ladders & Platforms	Not Included
L&P Coating	N/A

Casing Penetrations

Fbox Purge/ Snuff	None	
CA Temp/Pres	None	
FG Temperature	2	1.5" 3000# Coupling
FG Pressure	2	1.5" 3000# Coupling
FG Comp. (Sample)	2	1.5" 3000# Coupling
FG Sample	2	4" 150# RFWN
O2 Analyzer Port	1	3" NPS 150# RFWN

Pressure Part Penetrations

Coil TSTC's, Radiant	None	
Coil TSTC's, Convection	None	
Process TI conn's	3	1.5" NPS 300# RFWN
Process PI conn's	1	1.5" NPS 300# RFWN
PSV conn	1	
spare		
spare		

Dampers

	FD Fan (blower) qty = 0	Uptake Ducts	Stack qty = 0
Function	Note:		Note:
Design	Fan inlet damper is inappropriate		Stack Damper (which provides draft
Materials	for forced draft SHO's where O2		control) is inappropriate for forced
Bearings	Control is provided by the BMS O2		draft SHO's where the combustion
Operator	Trim Module which controls the fan		conditions are controlled real-time
Positioner	(blower) motor's VFD/ VSD.		via the BMS.
Instruments			

Sootblowers:	Qty.	Type	Location	FG T	Material	Steam T & P	O.E.M. / Ref.
Lane 1:	None						
Lane 2 :	None						

Owner:	Frontier Field Services		Owner Ref.:	H-102
Purchaser:	Kahuna		Purchaser Ref.:	240076
Manufacturer:	Tulsa Heaters Midstream		THM Ref.:	P24-0919
Service:	Heat Medium Heater		Project:	Dagger Draw Replacement
Number:	1		Location:	Pecos, TX
SHO Duty:	32.70	MMBTU/ hr	SHO Model:	SHO3000

Guarantees:

NOx	0.0401	Lb/MMBTU	30 ppm
SOx	no quote	Lb/MMBTU	- ppm
CO	0.0407	Lb/MMBTU	50 ppm
VOC	0.0026	Lb/MMBTU	2 ppm
UHC	0.0019	Lb/MMBTU	4 ppm
SPM	0.0027	Lb/MMBTU	3 ppm

		MW	Design Case				Maximum Case			
Heat Release	LHV Basis		38.13	MMBTU/hr			41.95	MMBTU/hr		
	HHV Basis		42.24	MMBTU/hr			46.47	MMBTU/hr		
Products of Combustion										
	O2	32.00	1,057	Lbm/ hr			1,163	Lbm/ hr		
	N2 + Ar	28.15	27,004	Lbm/ hr			29,704	Lbm/ hr		
	CO2	44.01	4,955	Lbm/ hr			5,450	Lbm/ hr		
	H2O	18.02	4,098	Lbm/ hr			4,508	Lbm/ hr		
	NOx	46.01	1.53	Lbm/ hr	/ 30	ppm	1.68	Lbm/ hr	/ 30	ppm
	SOx	64.06	0.00	Lbm/ hr	/ 0	ppm	0.00	Lbm/ hr	/ 0	ppm
	CO	28.01	1.55	Lbm/ hr	/ 50	ppm	1.71	Lbm/ hr	/ 50	ppm
	VOC	44.10	0.10	Lbm/ hr	/ 2	ppm	0.11	Lbm/ hr	/ 2	ppm
	UHC	16.04	0.07	Lbm/ hr	/ 4	ppm	0.08	Lbm/ hr	/ 4	ppm
	SPM		0.10	Lbm/ hr	/ 3	ppm	0.11	Lbm/ hr	/ 3	ppm
	Total		37,118	Lbm/ hr			40,829	Lbm/ hr		
Flue Gas Exit Temp.			533	°F						
Flue Gas Exit Velocity			42.7	Ft/sec			47.0	Ft/sec		
Stack Height			27.9	ft			27.9	ft		
Stack ID			36	in			36	in		

NOTES:

THM emissions guarantees applicable between 50-100% of Maximum Case combustion conditions w/ 15% excess air.

THM emissions guarantees applicable for firebox temperatures above 1100°F.

Emissions above are for Design and Max Case operation with air and fuel in ratio control. High turndown or start-up are not considered as guaranteed emissions cases.

The Maximum Case is the the specified heat release for the burner purchased. Extra duty is spec'd into the burner to ensure that the burner is never the limiting factor on duty.

revision	date	description	by	chk'd	appv'd
A	16-Sep-24	Issued with proposal	dcb		

THM TULSA HEATERS MIDSTREAM

SHO = Superior Quality, Flexibility, Dependability & Modularity

EMISSIONS PERMIT DATA SHEET

AMERICAN ENGINEERING SYSTEM of UNITS

P24-0919-EMISSIONSDS Pg 1 of 1

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STANDARD RATES for DOMESTIC ONSHORE SERVICES

FIELD RATES BASIS

	Standard Rates	Overtime Rates	Holiday Rates	Comments
Normal Business Hours:				
Time of the Day	8:00 AM - 5:00 PM			local time
Days of the Week	Monday - Friday			excl. Sat or Sun.
Billable Field Services:				
on Weekdays	< first 8.0 hrs/ day	> 8.0 hrs/ day	ALL Fed. Holidays	Monday - Friday
on Weekends	< first 8.0 hrs/ day	> 8.0 hrs/ day	ALL Fed. Holidays	Saturday & Sunday
Billable Travel Time:				
on Weekdays	< first 8.0 hrs/ day	> 8.0 hrs/ day	ALL Fed. Holidays	Monday - Friday
on Weekends	< first 8.0 hrs/ day	> 8.0 hrs/ day	ALL Fed. Holidays	Saturday & Sunday
Billable Expenses:				
Travel Expenses	billed @ 100% cost	billed @ 100% cost	billed @ 100% cost	coach class
Living Expenses	billed @ 100% cost	billed @ 100% cost	billed @ 100% cost	std. accommodations

FIELD SERVICE RATES - - DOMESTIC ONSHORE SERVICES

	Standard Rates		Overtime Rates		Holiday Rates		Comments
Field Erection Advisor:							
on Weekdays	2,200	US$/ day	413	US$/ hr	550	US$/ hr	Monday - Friday
on Weekends	3,300	US$/ day	550	US$/ hr	550	US$/ hr	Saturday & Sunday
Training Services:							
on Weekdays	2,200	US$/ day	413	US$/ hr	550	US$/ hr	Monday - Friday
on Weekends	3,300	US$/ day	550	US$/ hr	550	US$/ hr	Saturday & Sunday
Start-Up/ Commissioning Advisor:							
on Weekdays	2,200	US$/ day	413	US$/ hr	550	US$/ hr	Monday - Friday
on Weekends	3,300	US$/ day	550	US$/ hr	550	US$/ hr	Saturday & Sunday
Technical Assistance:							
on Weekdays	2,200	US$/ day	413	US$/ hr	550	US$/ hr	Monday - Friday
on Weekends	3,300	US$/ day	550	US$/ hr	550	US$/ hr	Saturday & Sunday

Comments & Abbreviations:

1) Normal workday includes 1 hour lunch break
2) Weekend overtime (OT) is billed at Holiday rates
3) Applicable Area(s): ENTIRE United States of America
... Lower 48 states + Alaska + Hawaii
4) Any / all safety training will be billed at standard rates.
5) Above rates are FIRM thru Warranty Period.
6) Rates reflect Net 30 day (ARI) payments.
7) ALL Fed. Holidays; all holidays formally recognized by the Federal Government of The USA.

Rev 1	2-Jan-24	THM Standard Rates	bfr	dcb	dcb
revision	date	description	by	chk'd	app'd

Job Specific Notes:

THM

TABLE 8.3 STANDARD RATES

THM Standard Rates 2024

www.tulsaheatersmidstream.com u TULSA HEATERS MIDSTREAM LLC u 1215 S. Boulder Ste 1040 u Tulsa, OK 74119 u (918) 392-8000 u (918) 582-9916 (fax)

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P: (918) 392-8000 | www.tulsaheatersmidstream.com | info@tulsaheatersmidstream.com

Appendix 8. Map of True-up of Emissions Stack Locations

551900 m E

552000 m E

552100 m E

552200 m E

552300 m E

PLANT NORTH

3620000 m N

3619900 m N

3619800 m N

3619700 m N

3619600 m N

3619500 m N

FENCE LINE

H-6

H-1

H-2

FL-2

FL-2

VCU-1

H-2

H-3

H-1

H-6

AJAX-2

AJAX-1

AJAX-1

AJAX-2

AGI COMPRESSION
QTY 2 AJAX

PIPELINE RD

GATE

WELDING AREA
NO HOT WORK PERMIT REQUIRED

NEC ELECTRICAL
CLASS 1 DIV 2

PIPE RACK

H-3

ACID GAS TO FLARE

T.W.

ENG-1

ENG-3

ENG-2

ENG-4

FL-1

WAU-2

WAU-3

WAU-1

WAU-4

PUMP
SHOP

OFFICE

DEGREASER/SOAP

MCC/CONTROL
ROOM

CONTRACTOR
PUMPS

DELMONE
BUILDING

CONTAINMENT

STORAGE
TANKS

STORAGE
BUILDING

R.O
STORAGE
TANK

SLOP
TANK

FILTER
BIN
AREA

SEPTIC

W KINCAID RANCH RD

Emission Point Number	Name
AJAX-1	AGI Compressor Engine
AJAX-2	AGI Compressor Engine
FL-1	Acid Gas Flare
FL-2	Process Flare
H-1	Hot Oil Heater
H-2	TEG Regen Heater (for dehy)
H-3	Mol Sieve Regen Heater
H-6	Hot Oil Heater (backup)
VCU-1	BTEX Combustor
WAU-1	Future Compressor Engine
WAU-2	Compressor Engine
WAU-3	Compressor Engine
WAU-4	Future Compressor Engine

Existing Point Source Locations

Updated Point Source Locations

0 25 50 100

SCALE IN METERS

Trinity Consultants

DAGGER DRAW GAS PLANT

ARTESIA, NM, EDDY COUNTY

Drawn By	Start Date	Rev. Date	DWG Name	Rev. No.
AMV	02/05/26	05/22/26	PLOT	3

KINETIK\DAGGER DRAW\254404.0535

Appendix 9. Engine Replacement Verification

Engine Replacement Form
Plume Dispersion Energy Comparison

Date:	5/21/2026
Company Name:	Frontier Field Services, LLC
Facility Name:	Dagger Draw Gas Plant
Unit No.	WAU-1 (ENG-1) and WAU-2 (ENG-3)
Unit Make & Model:	Waukesha L7044
Version: 4/25/11	Enter data only in the yellow fields.

Ok

Note: This spreadsheet is only to be used for permits that have a general condition titled 'Short Term Engine Replacement', to verify whether or not the replacement engine qualifies as a "replacement engine" under this General Condition. Enter any facility notes here:

Enter Plume Energy Equation Variables Here	Engine		
	Existing	Replacement	
Stack Height (f)	**30**	**21.6**	
Velocity (fps)	**91.4**	**144.18**	
Exhaust Temp (°F)	**867**	**1,209**	
Allowable/potential **NOx** Emission Rate (lb/hr)	**1.96**	**1.22**	
Allowable/potential **CO** Emission Rate (lb/hr)	**2.35**	**1.44**	
Calculated **NOx** Plume Energy	2818.42622	9455.54416	2818.42621753217 < 9455.54416363636 and
Calculated **CO** Plume Energy	2348.68851	8000.84506	2348.68851461014 < 8000.84506153846, OK

The replacement engine's stack height and flow parameters shall be at least as effective in the dispersion of air pollutants as the modeled stack height and flow parameters for the existing permitted engine. The following equation may be used to show that the replacement engine disperses pollutants as well as the existing engine. The value calculated for the replacement engine on the right side of the equation shall be equal to or greater than the value for the existing engine on the left side of the equation.

Equation used to determine 'existing' and 'replacement' plume energy (do not enter data here):

Plume Energy, Existing Engine 1	Must be <=	Plume Energy, Replacement Engine 2
$[(g) \times (h_1) + (v_1)^2/2 + (c) \times (T_1)]/(q_1)$	Must be <=	$[(g) \times (h_2) + (v_2)^2/2 + (c) \times (T_2)]/(q_2)$
30 + 91.4^2/2 + 0.28 x 1327)/1.95660257689079	is <= for NOx	(32.2 x 21.6 + 144.18^2/2 + 0.28 x 1669)/1.22222222222222 = 9455.5441636
30 + 91.4^2/2 + 0.28 x 1327)/2.34792309226895	is <= for CO	(32.2 x 21.6 + 144.18^2/2 + 0.28 x 1669)/1.44444444444444 = 8000.8450615

g - gravitational constant	32.2	ft/sec2
c - specific heat of exhaust	0.28	Btu/lb-°F
h_1 - existing stack height, feet	30	feet
v_1 - exhaust velocity, existing engine, feet per second	91.4	ft/sec
T_1 - absolute temperature of exhaust, existing engine (K) = degree F + 460	1327	Rankine
q_{1NOx} - permitted allowable emission rate, existing engine, lbs/hour	1.956602577	lb/hr
q_{1CO} - permitted allowable emission rate, existing engine, lbs/hour	2.347923092	lb/hr
h_2 - replacement stack height, feet	21.6	feet
v_2 - exhaust velocity, replacement engine, feet per second	144.18	ft/sec
T_2 - absolute temperature of exhaust, replacement engine (K) = degree F + 460	1669	Rankine
q_{2NOx} - manufacturer's potential emission rate, replacement engine, lbs/hour	1.222222222	lb/hr
q_{2CO} - manufacturer's potential emission rate, replacement engine, lbs/hour	1.444444444	lb/hr

Engine Replacement Form
Plume Dispersion Energy Comparison

Date:	5/21/2026
Company Name:	Frontier Field Services, LLC
Facility Name:	Dagger Draw Gas Plant
Unit No.	WAU-3 (ENG-2) and WAU-4 (ENG-4)
Unit Make & Model:	Waukesha P9394
Version: 4/25/11	Enter data only in the yellow fields.

Ok

Note: This spreadsheet is only to be used for permits that have a general condition titled 'Short Term Engine Replacement', to verify whether or not the replacement engine qualifies as a "replacement engine" under this General Condition. Enter any facility notes here:

Enter Plume Energy Equation Variables Here	Engine		
	Existing	Replacement	
Stack Height (f)	30	24	
Velocity (fps)	91.4	165.89	
Exhaust Temp (°F)	867	1,106	
Allowable/potential **NOx** Emission Rate (lb/hr)	1.96	2.63	
Allowable/potential **CO** Emission Rate (lb/hr)	2.35	2.63	
Calculated **NOx** Plume Energy	2818.42622	5682.72587	2818.42621753217 < 5682.72587136402 and
Calculated **CO** Plume Energy	2348.68851	5682.72587	2348.68851461014 < 5682.72587136402, OK

The replacement engine's stack height and flow parameters shall be at least as effective in the dispersion of air pollutants as the modeled stack height and flow parameters for the existing permitted engine. The following equation may be used to show that the replacement engine disperses pollutants as well as the existing engine. The value calculated for the replacement engine on the right side of the equation shall be equal to or greater than the value for the existing engine on the left side of the equation.

Equation used to determine 'existing' and 'replacement' plume energy (do not enter data here):

Plume Energy, Existing Engine 1	Must be <=	Plume Energy, Replacement Engine 2
$[(g) \times (h_1) + (v_1)^2/2 + (c) \times (T_1)]/(q_1)$	Must be <=	$[(g) \times (h_2) + (v_2)^2/2 + (c) \times (T_2)]/(q_2)$
30 + 91.4^2/2 + 0.28 x 1327)/1.95660257689079	is <= for NOx	(32.2 x 24 + 165.89^2/2 + 0.28 x 1566)/2.63447971781305 = 5682.725871364
30 + 91.4^2/2 + 0.28 x 1327)/2.34792309226895	is <= for CO	(32.2 x 24 + 165.89^2/2 + 0.28 x 1566)/2.63447971781305 = 5682.725871364

g - gravitational constant	32.2	ft/sec2
c - specific heat of exhaust	0.28	Btu/lb-°F
h_1 - existing stack height, feet	30	feet
v_1 - exhaust velocity, existing engine, feet per second	91.4	ft/sec
T_1 - absolute temperature of exhaust, existing engine (K) = degree F + 460	1327	Rankine
q_{1NOx} - permitted allowable emission rate, existing engine, lbs/hour	1.956602577	lb/hr
q_{1CO} - permitted allowable emission rate, existing engine, lbs/hour	2.347923092	lb/hr
h_2 - replacement stack height, feet	24	feet
v_2 - exhaust velocity, replacement engine, feet per second	165.89	ft/sec
T_2 - absolute temperature of exhaust, replacement engine (K) = degree F + 460	1566	Rankine
q_{2NOx} - manufacturer's potential emission rate, replacement engine, lbs/hour	2.634479718	lb/hr
q_{2CO} - manufacturer's potential emission rate, replacement engine, lbs/hour	2.634479718	lb/hr

AIR DISPERSION MODELING PROTOCOL

NSR Significant Revision

Frontier Field Services, LLC
Dagger Draw Gas Plant

Prepared By:

TRINITY CONSULTANTS
9327 Great Hills Trl
Ste 340
Austin, TX 78759
(512) 238-2336

June 2026

Project 254404.0535

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1. INTRODUCTION

1.1 Previously Approved Protocol

This modeling protocol for Dagger Draw Gas Plant was submitted and approved by the New Mexico Environment Department (NMED) on January 15, 2026. Since this approval, it has been identified that there are a few more changes required. Frontier Field Services, LLC is submitting this updated modeling protocol alongside an updated modeling waiver.

1.2 Purpose of Modeling

Dagger Draw Gas Plant (Dagger Draw) is a gas processing plant owned by and operated by Frontier Field Services, LLC (Frontier). The facility utilizes amine sweetening units to remove hydrogen sulfide (H_2S) and carbon dioxide (CO_2) from raw natural gas, followed by dehydration the eliminate moisture. The sweetened gas then enters cryogenic units, where it is cooled to separate valuable natural gas liquids (NGLs) from the gas stream and transported in a sales line. Produced water and condensate are primarily transported off site via truck loadout. Dagger Draw is currently permitted under NSR permit No. 0001-M13-R3. With the issuance of NSR permit No. 0001-M13, the Title V major source thresholds were exceeded and a Title V application for permit P157R4 is currently in process with NMED. Dagger Draw is located approximately 9.2 miles southwest of Artesia, New Mexico in Eddy County.

Frontier is submitting this application pursuant to 20.2.72.219.D.(1).(a) NMAC for a significant permit revision of NSR Permit No. 0001-M13-R3. The purpose of this revision is to update multiple emission sources for a revised BR&E ProMax simulation for the amine sweetening and dehydration section of the facility with optimized operations. The modifications to Dagger Draw Gas Plant are as follows:

- Update of multiple emission sources (dehy, amine unit streams) for a revised ProMax for the amine+dehy section of the station with optimized operations.
  - Max gas input to the station will be reduced to 75 MMSCFD from 90 MMSCFD.
  - Increase in inlet gas composition for H2S and CO2 to reflect future inlet gas composition. Update of other component speciation in inlet gas consistent with recent inlet gas sample.
- Update of emissions from flare FL-2.
  - The amine flash is now returned to inlet instead of flared at FL-2 during normal operations; the stream will now be flared 250 hours per year as FL-2 SSM.
  - Increase of Dehy Inlet Flaring from 175 hours to 250 hours at FL-2 SSM; updated stream characteristics per updated ProMax
  - Updated the characteristics per the updated ProMax for the dehy flash which is routed to FL-2 during SSM.
  - Updated the NOx emission factor per TCEQ high/low Btu content to the higher NOx factor.
  - Remove particulate matter emissions from this elevated flare, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.
- Update of emissions from flare FL-1.
  - FL-1 SSM updated acid gas composition consistent with updated ProMax.
  - Updated the CO emission factor per TCEQ high/low Btu content to the higher CO factor.
  - Increased annual number of hours of FL-1 SSM flaring from 425 hours up to 490 hours
  - Remove particulate matter emissions from this elevated flare, consistent with smokeless operation, AP-42, and TCEQ emission factor guidelines.

- Update the heat duty of the existing hot oil heater (H-1) from 32.7 MMBtu/hr to 41.95 MMBtu/hr. Update emissions for H-1 based on installation of a low-emissions burner for compliance with 20.2.50 requirements.
- Update the sulfur gas content of facility heaters (H-1, H-2, H-3) to a lower sulfur content, consistent with the AP-42 factor and the low sulfur fuel gas fired by these heaters.
- Add a backup hot oil heater operating a maximum of 876 hours/year (H-6). Hot oil heater H-6 will not operate at the same time as hot oil heater H-1. H-6 was previously H-1 before it was replaced with a new hot oil heater earlier in 2025.
- Add a BTEX combustor (VCU-1) to control the dehy still column.
- Replace existing compressor engines (ENG-1 to ENG-4) with Waukesha compressor engines (WAU-1 to WAU-4).

With this application, the following existing equipment will be modified:
- Hot oil heater (Unit ID: H-1);
- TEG regen heater (Unit ID: H-2);
- Molecular sieve regen heater (Unit ID: H-3)
- Amine treating units (Unit ID: AU-1 through AU-3);
- Acid gas flare (FL-1);
- Process flare (FL-2);
- Fugitives (FUG) and
- Flared startup, shutdown, maintenance emissions (FL-1 SSM and FL-2 SSM)

The following equipment will be removed and replaced:
- Caterpillar G3606 LE compressor engines (Unit ID: ENG-1 to ENG-4) will be replaced with WAU-1 to WAU-4.

The following new equipment will be added with this application:
- One (1) Hot Oil Heater (Unit ID: H-6) as a limited use backup unit;
- Two (2) Waukesha L7044 compressor engines (Unit ID: WAU-1, WAU-2);
- Two (2) Waukesha P9394 compressor engines (Unit ID: WAU-3, WAU-4); and
- One (1) BTEX Combustor (Unit ID: VCU-1)

Frontier seeks to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS), New Mexico Ambient Air Quality Standards (NMAAQS), and Prevention of Significant Deterioration (PSD) Increment standards as applicable for the following pollutants and averaging periods: NO_2 (1-hour, 24-hour, and annual), CO (1-hour and 8-hour), SO_2 (1-hour, 3-hour, 24-hour, and annual), H_2S (1/2-hour), $PM_{2.5}$ (24-hour and annual), and PM_{10} (24-hour and annual).

1.3 Facility Description and Location

The approximate UTM coordinates of the facility are 555,933 meters East and 3,619,808 meters North with WGS84 datum at an elevation of approximately 3,465 feet above mean sea level.

2. MODEL INPUT OPTIONS

The latest version of the AERMOD dispersion model (version 24142) will be used for this analysis. The model will be run in regulatory mode with all default options. The ARM2 method will be used to convert NO_X to NO_2. Default minimum and maximum ambient ratios will be utilized.

2.1 Alternate Operating Scenarios

There will be two proposed Alternate operating scenarios (AOS) to be modeled, since FL-1 SSM and FL-2 SSM cannot occur simultaneously:

- **Case #1**: FL-2 and FL-2 SSM operating at maximum requested allowable emissions, FL-1 pilot emissions. Normal operations of all other sources.
- **Case #2**: FL-1 SSM and normal operation of all other sources, including normal operation of FL-2. FL-1 SSM is considered to be emergency operation occurring less than 500 hours per year and therefore does not need to demonstrate compliance with PSD increment.

These AOS will be further detailed in Section 15 of the application package submittal and Section 16-J of the UA4 modeling report. For AOS that occur at different emission points, all scenarios will be modeled in the significant impact analysis, and the scenario that results in the most significant impact will be used to demonstrate compliance through a cumulative analysis.

2.2 Point Sources

Emissions that enter the atmosphere through a stack will be modeled as point sources as necessary. The tables below show the emission sources and stack parameters for point sources at the facility. Please note that emissions and stack parameters may vary throughout the development of this application.

Table 1- New point emission sources and stack parameters to be included in the air dispersion modeling.

Stack Number	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	H_2S	Height	Temp	Velocity	Diam.
	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	ft	F	ft/s	ft
VCU-1	0.14	0.27	0.010	-	-	-	20	1832	14.47	1.50

Table 2- Project point emission sources and stack parameters.

Stack Number	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	H_2S	Height	Temp	Velocity	Diam.
	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	ft	F	ft/s	ft
WAU-1	1.22	1.44	0.008	0.26	0.26	-	21.6	1,209	144.18	1.17
WAU-2	1.22	1.44	0.008	0.26	0.26	-	21.6	1,209	144.18	1.17
WAU-3	2.63	2.63	0.010	0.32	0.32	-	24.0	1,106	165.89	1.17
WAU-4	2.63	2.63	0.010	0.32	0.32	-	24.0	1,106	165.89	1.17
H-1	1.68	1.71	0.0247	0.11	0.11	-	30.00	600	55.29	3.00
H-2	0.15	0.12	0.0009	0.011	0.011	-	14.00	600	7.91	1.50
H-3	0.31	0.26	0.0019	0.024	0.024	-	25.00	600	16.76	1.50
H-6	2.20	1.84	0.013	0.17	0.17	-	17.00	600	41.41	2.67
FL-1*	Refer to Table 3- Case #1 Flare emission sources and stack parameters									

Stack Number	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	H_2S	Height	Temp	Velocity	Diam.
	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	ft	F	ft/s	ft
FL-2*	Refer to Table 4- Case #2 Flare emission sources and stack parameters									

* Emissions and stack parameters dependent on AOS.

Table 3- Unchanged point emission sources and stack parameters.

Stack Number	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	H_2S	Height	Temp	Velocity	Diam.
	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	ft	F	ft/s	ft
Ajax 1	3.53	4.06	0.0037	0.30	0.30	-	20.1	515	64.90	1.40
Ajax 2	3.53	4.06	0.0037	0.30	0.30	-	20.1	515	64.90	1.40

2.3 Flares

If necessary, emissions from flares will be modeled as point sources using the velocity, temperature, and effective stack diameter prescribed in Section 5.2.3 of the NMED Modeling Guidelines[1].

Table 4- Case #1 Flare emission sources and stack parameters

Stack Number	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	H_2S	Height	Temp	Velocity	Diam.
	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	ft	F	ft/s	ft
FL-1	0.013	0.11	0.00014	-	-	0.00007	200.00	1832	65.62	0.83*
FL-2	344.82	688.39	33.20	-	-	0.35	100.00	1832	65.62	38.45

*FL-1 actual diameter was used as effective diameter was smaller than actual.

Table 5- Case #2 Flare emission sources and stack parameters

Stack Number	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	H_2S	Height	Temp	Velocity	Diam.
	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	ft	F	ft/s	ft
FL-1	2.89	24.78	930.96	-	-	9.91	200.00	1832	65.62	5.09
FL-2	0.10	0.20	0.0005	-	-	0.000005	100.0	1832	65.62	2.00

2.4 Volume Sources

If necessary, fugitive H_2S from truck loading operation, facility components, and vented startup, shutdown, and maintenance activities will be modeled as volume sources. The volume source release height and initial lateral and vertical dimensions will follow NMED Modeling Guidelines[2] and are provided Table 5.

Table 6- Project volume emission sources and stack parameters.

Volume Source	H_2S	Release Height	Initial Lateral Dimension	Initial Vertical Dimension
	lb/hr	m	m	m
FUG	0.15	1.52	6.24	6.24

[1] New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines Revised June 2024

[2] New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines Revised June 2024

2.5 Building Downwash

A downwash analysis using the latest version of BPIP will be conducted and incorporated into the modeling analysis to account for potential effluent downwash due to structures at the facility. All building heights and dimensions will be confirmed before any modeling is done.

Table 7- Circular Building Downwash Structures

Building ID	X Coordinate m	Y Coordinate m	Height ft	Radius ft
DDTK1	552075	3619927	14.26	5.00
DDTK2	552029	3619898.7	22.5	6.00
DDTK3	552024	3619898.7	12	5.00
DDTK4	552018.4	3619898.5	12	4.00
DDTK5	552075.9	3619878.1	9	5.00
DDTK6	552058.8	3619867.4	14	5.00
ZQE6600C	552028.2	3619513.5	16	4.00
ZQE6600D	552024.8	3619513.5	16	4.00
ZQE6600E	552052	3619536.2	16	5.00
ZQE6600P	551992.8	3619532.9	14.7	4.00
ZQE6600Q	551992.6	3619529.2	14.7	4.00

Table 8- Rectangular Building Downwash Structures

Building ID	X Coordinate m	Y Coordinate m	Height ft	X Length ft	Y Length ft
DDBLDG1	552043.6	3619939.9	15	11.40	4.80
DDBLDG2	552061.2	3619946.7	10.3	2.20	3.80
DDBLDG3	552080.1	3619897.2	11	2.50	4.00
DDBLDG4	551988.3	3619897	14.5	4.88	6.80
DDBLDG5	552015.8	3619883.8	21	16.76	6.40
DDBTANK	552044.1	3619848.8	17	19.51	3.05
DDBLDG6	552011.6	3619831.1	38	15.54	23.80
DDBLDG7	551999.5	3619837	8.6	10.97	3.66
DDBLDG8	551999.8	3619846.3	8.6	10.97	3.66
DDBLDG9	552046.2	3619892.5	10	10.97	3.96
ZQE66002	552004.3	3619526.5	15.5	7.00	14.30
ZQE66009	552017.5	3619528.1	9.2	3.80	2.00
ZQE6600K	552019.2	3619548.1	9.2	3.05	5.49
ZQE6600N	551990.6	3619547	11.5	4.42	7.47
ZQE6600O	551997.9	3619536.5	11.5	3.51	4.72

2.6 Receptor Grid Description and Elevation Data

The center point of the facility will be designated at 552,073 meters East and 3,619,729 meters North. This center point will serve as the center point for a variable density square receptor grid. The facility will be modeled with the following receptor grid design:

- Fenceline: 50 m grid spacing

- Very Fine Grid Resolution: 50 m grid spacing from 0 m to 800 m of center point
- Fine Grid Resolution: 100 m spacing from 800 m to 3,000 m of center point
- Medium Grid Resolution: 250 m spacing from 3,000 m to 6,000 m of center point
- Course Grid Resolution: 500 m spacing from 6,000 m to 10,000 m of center point
- Very Course Grid Resolution: 1,000 m from 10,000 m to 50,000 m of center point

It is expected that the highest impacts from the proposed source will be at or near the facility property.

The elevations of receptors and facility sources will be determined using the most recent NED data currently available (1/3 arc-second DEM) from the USGS website.

2.7 Meteorological Data

The Carlsbad NWS dataset for five meteorological years (2020-2024) will be utilized in the analysis. The meteorological files will be obtained from NMED website.

3. PROPOSED MODELING

3.1 Modeling Waiver

An updated modeling waiver was submitted alongside this protocol. The new BTEX combustor (VCU-1) will be modeled for all pollutants for the SIL as a new source. A waiver was not requested for the NO_2 1-hr standard.

3.2 Significance Analysis (SIL)

The modeled ground-level concentrations will be compared to the corresponding significant impact levels (SILs) to determine whether any modeled ground-level concentrations at any receptor locations are greater than the SIL (i.e., "significant" receptors). If the significance analysis reveals that modeled ground-level concentrations for a particular pollutant and averaging period are greater than the applicable SIL, a Cumulative Impact Analysis (CIA) will be performed at the significant receptors.

3.3 Cumulative Impact Analysis (CIA)

The CIA will include impacts from the facility sources and background concentrations and/or surrounding sources as applicable. An inventory of surrounding sources within 25 km of the facility will be obtained from NMED MergeMaster for each pollutant.

The inclusion of background concentrations will follow the guidelines shown Table 20: "Modeling the Design Value Summary (Default Modeling)" from the Modeling Guidelines[3]. If necessary, the following monitors will be used for background concentrations:

- Del Norte High School (350010023) for CO;
- Hobbs-Jefferson Monitor (5ZS, 350250008) for NO_2;
- Hobbs-Jefferson Monitor (5ZS, 350250008) for $PM_{2.5}$; and
- Hobbs-Jefferson Monitor (5ZS, 350250008) for PM_{10};

Based on the NMED Modeling Guidelines, background concentrations will be added to the model results and compared to the NAAQS, NMAAQS, and PSD Increment standards for NO_2, CO, PM_{10} and $PM_{2.5}$ for all applicable averaging periods.

For PM_{10} and $PM_{2.5}$, the facility will be modeled with surrounding sources within 10 km of the facility and background concentration will be added to the modeling results and compared to the NAAQS standards for all applicable averaging periods. An inventory of the surrounding sources will be obtained from the NMED MergeMaster.

Based on EPA's Guidance for $PM_{2.5}$ Permit Modeling and NMED's Modeling Guidelines, sources that emit at least 40 tpy of NO_x or 40 tpy of SO_2 are considered to emit significant amounts of precursors. Sources with significant increases of $PM_{2.5}$ precursors must qualitatively and/or quantitatively account for the secondary formation of $PM_{2.5}$. The secondary formation of $PM_{2.5}$ will be calculated in this model following the NMED Modeling guidelines.

[3] New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines Revised June 2024

Based on the NMED Modeling Guidelines for H_2S modeling, if the facility is in the Pecos-Permian Basin Intrastate AQCR, H_2S will be modeling using the 1-hour averaging time and compared to the ½ hour averaging period.

Based on the NMED Modeling Guidelines for SO_2 modeling, if the facility is in the Pecos-Permian Basin Intrastate AQCR (AQCR 155), it will be modeled with surrounding sources, as representative monitoring is not available for background data. Short term/intermittent SSM emissions will be removed from surrounding sources for the 1-hour SO_2 CIA model based on additional NMED guidance presented in Appendix A.

3.4 PSD Increment Analysis

If the results of the ROI analysis for NO_2, SO_2, $PM_{2.5}$, or PM_{10} indicate concentrations greater than significance levels, PSD increment analysis will be conducted for the appropriate averaging periods. If required, the PSD increment analysis will be conducted including all PSD increment consuming and expanding sources within 25 km of the facility, plus sources emitting over 1000 pounds per hour within 50 km of the facility. The surrounding source information will be obtained from NMED MergeMaster. The predicted maximum concentrations will be compared to the appropriate Class II PSD Standard.

The AOS for Case #2, consists of modeled emissions as a result of FL-1 SSM and normal operation of all other sources, including normal operation of FL-2. FL-1 SSM is considered to be emergency operation occurring less than 500 hours per year and therefore does not need to demonstrate compliance with PSD increment.

3.5 Culpability Analysis

If any of the modeled pollutants and averaging periods exceed any applicable NAAQS, NMAAQS, or PSD Increment standards, a culpability analysis will be conducted for each receptor showing a modeled exceedance in accordance with NMED's Air Dispersion Modeling Guidelines[4]. Source contributions from the facility will be pared in time and space with contributions from surrounding area to show that the contribution from the facility is less than the significant levels for the specific pollutant and averaging period. For any culpability modeling, two (2) source groups will be created and analyzed:

- FACILITY group containing all the emission sources from the facility and
- PSD or NAAQS group, depending on the exceeded standard, containing the surrounding sources identified by NMED and the emission sources identified in the FACILITY group.

Post files will be extracted from the model(s), and the results of the above source groups will be compared against the significance level and applicable air quality standards (NAAQS and Class II Increment) for each of the above pollutants at the exceeding receptors. If the NAAQS/PSD result is greater than the air quality standard and the FACILITY result is greater than the Significance Level then the facility is culpable, otherwise the facility is not culpable. A table or a similar demonstration technique will be provided along with an explanation in the final report.

MAXDCONT may be utilized in lieu of a standard culpability analysis for 24-hour PM2.5, 1-hour NO2 and 1-hour SO2 standards.

[4] New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines Revised June 2024. Chapter 7.2.1.(V) page 79

3.6 Class I Areas Analysis

The nearest Class I area is Carlsbad Caverns National Park at 57.6 km from the facility. A Class I area analysis will not need to be performed as the national park is not within the 50 km inclusion zone for PSD minor sources.

APPENDIX A. ADDITIONAL NMED GUIDANCE

Adam Erenstein

From: Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Sent: Tuesday, July 15, 2025 12:06 PM
To: Adam Erenstein
Subject: RE: [EXTERNAL] RE: Monument Gas Plant

Adam
You may remove short term/intermittent SSM emission from other surrounding sources for 1- hour SO2 cumulative model.

Sufi A. Mustafa, Ph.D.
Manager Air Dispersion Modeling and Emission Inventory Section
New Mexico Environment Department's Air Quality Bureau
Office: (505) 629 6186
sufi.mustafa@state.nm.us
525 Camino de los Marquez
Suite 1
Santa Fe, New Mexico, 87505
https://www.env.nm.gov/air-quality/

"Innovation, Science, Collaboration, Compliance"

From: Adam Erenstein <AErenstein@trinityconsultants.com>
Sent: Tuesday, July 15, 2025 11:56 AM
To: Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Subject: RE: [EXTERNAL] RE: Monument Gas Plant

Sufi,
Thank you for getting back to me regarding Monument and for the below information regarding how to address SSM. I wanted to confirm that it would it be safe to appropriate to remove other sources of SSM from the surrounding sources too since they would also be short term/intermittent ?

Regards,

Adam Erenstein
Principal Consultant, Manager of Consulting Services

P 505.266.6611 M 480.760.3860
Email: aerenstein@trinityconsultants.com
9400 Holly Avenue NE, Building 3, Suite B, Albuquerque, NM 87122

Trinity Consultants

Connect with us: LinkedIn / YouTube / trinityconsultants.com

View our capabilities in the Environmental Consulting, Built Environment, Life Sciences, and Water & Ecology markets.

Book time to meet with me

From: Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Sent: Tuesday, July 15, 2025 11:43 AM
To: Adam Erenstein <AErenstein@trinityconsultants.com>
Subject: RE: [EXTERNAL] RE: Monument Gas Plant

Adam
You do not need to model the SSM emissions from Monument Gas Plant as surrounding source emission for your subject facility.
The SSM emissions at a facility are short term/intermittent and adding them in a subject facility's surrounding source list will make 1-hr SO2 modeled cumulative concentrations very conservative.
Please let me know if you want to discuss it any further.

Sufi A. Mustafa, Ph.D.
Manager Air Dispersion Modeling and Emission Inventory Section
New Mexico Environment Department's Air Quality Bureau
Office: (505) 629 6186
sufi.mustafa@state.nm.us
525 Camino de los Marquez
Suite 1
Santa Fe, New Mexico, 87505
https://www.env.nm.gov/air-quality/

"Innovation, Science, Collaboration, Compliance"

From: Adam Erenstein <AErenstein@trinityconsultants.com>
Sent: Monday, July 14, 2025 1:30 PM
To: Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Subject: [EXTERNAL] RE: Monument Gas Plant

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sufi,
Hope you had a good weekend. I wanted to follow up with you regarding our discussion on Monument GP to see if you had a chance to look into this?

Regards,

Adam Erenstein
Principal Consultant, Manager of Consulting Services

P 505.266.6611 M 480.760.3860
Email: aerenstein@trinityconsultants.com

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.

To save paper and to standardize the application format, delete this sentence and the samples in the Compliance Test History Table, and begin your submittal for this attachment on this page.

Compliance Test History Table

Unit No.	Test Description	Test Date
Facility	Annual Inlet Extended Analysis	6/8/2022
Facility	Annual Inlet Extended Analysis	8/3/2023
Facility	Annual Inlet Extended Analysis	8/3/2024
Facility	Annual Inlet Extended Analysis	8/15/2025
FL-1	Annual Method 22 visible emission monitoring event to demonstrate compliance with the no visible emission standard.	12/15/2022
FL-1	Annual Method 22 visible emission monitoring event to demonstrate compliance with the no visible emission standard.	12/19/2023
FL-1	Annual Method 22 visible emission monitoring event to demonstrate compliance with the no visible emission standard.	3/6/2024
FL-1	Annual Method 22 visible emission monitoring event to demonstrate compliance with the no visible emission standard.	11/25/2025
FL-2	Annual Method 22 visible emission monitoring event to demonstrate compliance with the no visible emission standard.	12/14/2022
FL-2	Annual Method 22 visible emission monitoring event to demonstrate compliance with the no visible emission standard.	10/12/23
FL-2	Annual Method 22 visible emission monitoring event to demonstrate compliance with the no visible emission standard.	3/5/2024
FL-2	Annual Method 22 visible emission monitoring event to demonstrate compliance with the no visible emission standard.	1/21/2025
FL-1	Perform an annual flare gas analysis to include H2S, Total Sulfur, VOC, and Heating Value.	2/24/2022
FL-1	Perform an annual flare gas analysis to include H2S, Total Sulfur, VOC, and Heating Value.	9/11/2023
FL-1	Perform an annual flare gas analysis to include H2S, Total Sulfur, VOC, and Heating Value.	5/1/2024
FL-1	Perform an annual flare gas analysis to include H2S, Total Sulfur, VOC, and Heating Value.	12/12/2025
FL-2	Perform an annual flare gas analysis to include H2S, Total Sulfur, VOC, and Heating Value.	3/31/2022
FL-2	Perform an annual flare gas analysis to include H2S, Total Sulfur, VOC, and Heating Value.	2/21/2023
FL-2	Perform an annual flare gas analysis to include H2S, Total Sulfur, VOC, and Heating Value.	12/18/2024
FL-2	Perform an annual flare gas analysis to include H2S, Total Sulfur, VOC, and Heating Value.	12/12/2025

ENG-1	Initial compliance tests shall be conducted within sixty days after the unit achieves the maximum normal production rate.	10/25/2022
ENG-2	Initial compliance tests shall be conducted within sixty days after the unit achieves the maximum normal production rate.	10/25/2022
ENG-3	Initial compliance tests shall be conducted within sixty days after the unit achieves the maximum normal production rate.	10/26/2022
Ajax 1	Initial compliance tests shall be conducted within sixty days after the unit achieves the maximum normal production rate.	10/26/2022
Ajax 2	Initial compliance tests shall be conducted within sixty days after the unit achieves the maximum normal production rate.	1/27/2023
ENG-1	Engine emissions testing required quarterly.	3/28/2023
ENG-1	Engine emissions testing required quarterly.	04/25/2023
ENG-1	Engine emissions testing required quarterly.	07/21/2023
ENG-1	Engine emissions testing required quarterly.	10/08/2023
ENG-1	Engine emissions testing required quarterly.	02/13/2024
ENG-1	Engine emissions testing required quarterly.	6/6/2024
ENG-1	Engine emissions testing required quarterly.	8/29/2024
ENG-1	Engine emissions testing required quarterly.	11/25/2024
ENG-1	Engine emissions testing required quarterly.	3/13/2025
ENG-1	Engine emissions testing required quarterly.	04/30/2025
ENG-1	Engine emissions testing required quarterly.	9/9/2025
ENG-1	Engine emissions testing required quarterly.	11/13/2025
ENG-1	Engine emissions testing required quarterly.	2/20/2026
ENG-2	Engine emissions testing required quarterly.	3/28/2023
ENG-2	Engine emissions testing required quarterly.	04/25/2023
ENG-2	Engine emissions testing required quarterly.	07/21/2023
ENG-2	Engine emissions testing required quarterly.	10/08/2023
ENG-2	Engine emissions testing required quarterly.	02/12/2024
ENG-2	Engine emissions testing required quarterly.	6/6/2024
ENG-2	Engine emissions testing required quarterly.	8/29/2024
ENG-2	Engine emissions testing required quarterly.	11/25/2024
ENG-2	Engine emissions testing required quarterly.	3/13/2025
ENG-2	Engine emissions testing required quarterly.	4/30/2025
ENG-2	Engine emissions testing required quarterly.	9/9/2025
ENG-2	Engine emissions testing required quarterly.	11/13/2025
ENG-2	Engine emissions testing required quarterly.	2/20/2026
ENG-3	Engine emissions testing required quarterly.	3/28/2023
ENG-3	Engine emissions testing required quarterly.	04/25/2023
ENG-3	Engine emissions testing required quarterly.	09/14/2023
ENG-3	Engine emissions testing required quarterly.	10/08/2023
ENG-3	Engine emissions testing required quarterly.	02/12/2024
ENG-3	Engine emissions testing required quarterly.	6/6/2024
ENG-3	Engine emissions testing required quarterly.	8/29/2024
ENG-3	Engine emissions testing required quarterly.	11/25/2024
ENG-3	Engine emissions testing required quarterly.	3/14/2025
ENG-3	Engine emissions testing required quarterly.	4/30/2025
ENG-3	Engine emissions testing required quarterly.	8/13/2025

ENG-3	Engine emissions testing required quarterly.	11/13/2025
ENG-3	Engine emissions testing required quarterly.	2/20/2026
Ajax 1	Engine emissions testing required quarterly.	3/28/2023
Ajax 1	Engine emissions testing required quarterly.	04/25/2023
Ajax 1	Engine emissions testing required quarterly.	09/14/2023
Ajax 1	Engine emissions testing required quarterly.	12/20/2023
Ajax 1	Engine emissions testing required quarterly.	3/14/2024
Ajax 1	Engine emissions testing required quarterly.	6/6/2024
Ajax 1	Engine emissions testing required quarterly.	8/29/2024
Ajax 1	Engine emissions testing required quarterly.	12/19/2024
Ajax 1	Engine emissions testing required quarterly.	3/9/2025
Ajax 1	Engine emissions testing required quarterly.	4/30/2025
Ajax 1	Engine emissions testing required quarterly.	9/29/2025
Ajax 1	Engine emissions testing required quarterly.	11/13/2025
Ajax 1	Engine emissions testing required quarterly.	3/27/2026
Ajax 2	Engine emissions testing required quarterly.	3/28/2023
Ajax 2	Engine emissions testing required quarterly.	4/25/2023
Ajax 2	Engine emissions testing required quarterly.	9/14/2023
Ajax 2	Engine emissions testing required quarterly.	3/14/2024
Ajax 2	Engine emissions testing required quarterly.	6/6/2024
Ajax 2	Engine emissions testing required quarterly.	8/29/2024
Ajax 2	Engine emissions testing required quarterly.	11/25/2024
Ajax 2	Engine emissions testing required quarterly.	3/9/2025
Ajax 2	Engine emissions testing required quarterly.	6/26/2025
Ajax 2	Engine emissions testing required quarterly.	8/13/2025
Ajax 2	Engine emissions testing required quarterly.	11/13/2025
Ajax 2	Engine emissions testing required quarterly.	2/18/2026

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.

Frontier is requesting a revision to existing Permit condition A208.A. This provision requires a monthly total sulfur extended gas analysis for the inlet gas. Frontier has been performing the sampling for over two years and the percentage that non-hydrogen sulfide (H2S) species contributes to the total sulfur concentration is de minimis compared to the contribution from hydrogen sulfide. These species include for example other sulfides, disulfides, mercaptans, etc. Frontier has provided below a two-year summary of the H2S compared to these other non-H2S species and included an example of an analysis in the next pages of this Section 20. Due to the very low amounts of non-H2S species in the inlet gas, Frontier is requesting the full sulfur extended gas analysis only be required on an annual basis. Below is the proposed revision to the permit language in red track changes for AQB consideration.

Calendar Year	Annual Average			Percent Sulfur from H2S
	Avg Total Mass Sulfur	Avg H2S PPMW	Avg Sulfur from H2S	
2024	19,383.40	20,294.00	19,093.55	98.5%
2025	16,904.30	17,730.00	16,681.21	98.7%

Proposed revisions to the Permit condition A208.A:

Monitoring:

1. The permittee shall inspect the amine unit and associated control equipment semi-annually to ensure they are controlled as required and operating in accordance with the manufacturer's recommended operating and maintenance procedures.

2. A gas flowmeter and flow totalizer shall be installed at the facility inlet, prior to entering the amine unit. The flowmeter shall measure the total standard cubic feet per hour of feedstock gas entering the facility.

3. An H2S inline monitor shall be installed at the facility inlet to measure the H2S content (in gr/100scf or ppmv) of the feedstock gas entering the facility. H2S shall be measured at a minimum of once every 24-hours.

4. At least ~~monthly~~ annually, a total sulfur extended gas analysis to measure mercaptans shall be completed on the feedstock gas at the facility inlet.

The flow meter, totalizer, and inline monitor shall be operated, calibrated, and maintained as specified by the manufacturer or equivalent and as necessary to ensure correct and accurate readings.

Dagger Draw Plant:Train 3:Plant Inlet:19G035409:10/9/2025

Section 20 supporting info - Example of extended Sulfur Analysis. Sulfur from H2S = 98.2%

SULFURspeciation: ASTM D5504

SUMMARY	PPMM	PPMV	G/100 SCF	PPMW	MASS SULFUR
TOTALS:	**7,359.8**	**7,431.1**	**467.36**	**12,540.0**	**11,612.5**

SULFIDE GROUP	PPMM	PPMV	G/100 SCF	PPMW	MASS SULFUR
hydrogen sulfide	7,238.0	7,307.8	459.61	12,121.0	11,405.9
carbonyl sulfide	0.0	0.0	0.00	0.0	0.0
Dimethyl Sulfide	6.0	6.0	0.38	18.2	9.4
Methyl Ethyl Sulfide	3.9	4.0	0.25	14.6	6.1
Diethyl Sulfide	1.5	1.4	0.09	6.4	2.3
t-Butyl Methyl Sulfide	0.0	0.0	0.00	0.0	0.0
Methyl sec-Butyl Sulfide	0.6	0.6	0.04	3.1	1.0
Ethyl n-Propyl Sulfide	0.0	0.0	0.00	0.0	0.0
Propyl Sulfide	0.6	0.5	0.03	3.2	0.9
Diisopropyl Sulfide	1.3	1.3	0.08	7.7	2.1
tert-Butyl Sulfide	0.0	0.0	0.00	0.0	0.0
SULFIDE TOTALS:	**7,251.9**	**7,321.6**	**460.48**	**12,174.2**	**11,427.7**

DISULFIDE GROUP	PPMM	PPMV	G/100 SCF	PPMW	MASS SULFUR
Carbon Disulfide	0.5	0.5	0.03	1.7	1.4
Dimethyl Disulfide	0.9	1.0	0.06	4.0	2.7
Ethyl Methyl Disulfide	1.1	1.1	0.07	5.9	3.5
Propyl Methyl Disulfide	0.4	0.3	0.02	2.2	1.2
Diethyl Disulfide	0.8	0.8	0.05	4.6	2.4
Methyl i-Propyl Disulfide	0.8	0.8	0.05	4.6	2.4
Methyl tert-Butyl Disulfide	0.0	0.0	0.00	0.0	0.0
Methyl sec-Butyl Disulfide	0.5	0.5	0.03	3.2	1.5
Ethyl i-Propyl Disulfide	0.9	1.0	0.06	6.0	2.8
i-Propyl Disulfide	0.4	0.3	0.02	2.7	1.2
n-Propyl Disulfide	0.0	0.0	0.00	0.0	0.0
tert-butyl disulfide	0.0	0.0	0.00	0.0	0.0
Diphenyl Disulfide	0.0	0.0	0.00	0.0	0.0
DISULFIDE TOTALS:	**6.3**	**6.3**	**0.39**	**34.9**	**19.1**

MERCAPTAN GROUP	PPMM	PPMV	G/100 SCF	PPMW	MASS SULFUR
Methyl Mercaptan	37.6	38.0	2.39	89.0	59.3
Ethyl Mercaptan	33.0	33.4	2.10	100.8	52.0
n-Propyl Mercaptan	2.1	2.2	0.14	8.0	3.4
i-Propyl Mercaptan	12.9	13.0	0.82	48.3	20.3
i-Butyl Mercaptan	0.0	0.0	0.00	0.0	0.0
n-Butyl Mercaptan	1.2	1.1	0.07	5.1	1.8
sec-Butyl Mercaptan	2.1	2.1	0.13	9.4	3.3
tert-Butyl Mercaptan	2.1	2.2	0.14	9.5	3.4
1,2-Ethanedithiol	0.0	0.0	0.00	0.0	0.0

2 and 3-Methyl-1-Butanethiol+Tetrahydrothiophene	0.4	0.5	0.03	2.1	1.4
1-Pentanethiol	0.4	0.3	0.02	1.8	0.6
Thiophenol	0.0	0.0	0.00	0.0	0.0
1-Hexanethiol	0.3	0.3	0.02	1.5	0.4
1,4-Butanedithiol	0.0	0.0	0.00	0.0	0.0
1-Heptanethiol+Ethyl Propyl Disulfide	0.3	0.3	0.02	1.8	1.3
1,5-Pentanedithiol	1.0	1.0	0.06	6.4	3.0
1-Octanethiol	0.3	0.3	0.02	2.4	0.5
1-Nonanethiol	0.4	0.5	0.03	3.4	0.7
1-Decanethiol	0.0	0.0	0.00	0.0	0.0
MERCAPTAN TOTALS:	**94.1**	**95.2**	**5.99**	**289.5**	**151.4**

THIOPHENE GROUP	PPMM	PPMV	G/100 SCF	PPMW	MASS SULFUR
Thiophene	4.0	4.0	0.25	17.3	6.3
2-Methylthiophene+3-Methylthiophene	0.0	0.0	0.00	0.0	0.0
2-Ethyl Thiophene	0.5	0.5	0.03	2.6	0.7
2-Propylthiophene	0.4	0.3	0.02	2.4	0.6
Benzothiophene	0.0	0.0	0.00	0.0	0.0
3-Butylthiophene	0.5	0.5	0.03	3.2	0.7
2-Butylthiophene	0.7	0.8	0.05	5.0	1.1
2-Methylbenzothiophene	0.0	0.0	0.00	0.0	0.0
2-Bromothiophene	0.4	0.5	0.03	3.3	0.6
THIOPHENE TOTALS:	**6.5**	**6.6**	**0.41**	**33.8**	**10.0**

OTHER SULFUR GROUP	PPMM	PPMV	G/100 SCF	PPMW	MASS SULFUR
Unidentified Sulfur	1.4	1.4	0.09	7.6	4.3
OTHER SULFUR TOTALS:	**1.4**	**1.4**	**0.09**	**7.6**	**4.3**

Value of "0.0" interpreted as below detectable limit of 0.1 PPM Mol.

Section 22: Certification

Company Name: Frontier Field Services, LLC

I, Molly Greer, 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 16 day of January, 2026 upon my oath or affirmation, before a notary of the State of Texas.

Molly Greer
*Signature

1/16/2026
Date

Molly Greer
Printed Name

Manager EV Projects
Title

Scribed and sworn before me on this 16 day of January, 2026

My authorization as a notary of the State of Texas expires on the 14th day of July, 2029.

Teffanie Fawks
Notary's Signature

01-16-2026
Date

Teffanie Fawks
Notary's Printed Name

NOTARY PUBLIC
Teffanie Fawks
Exp. 7/14/2029
ID No. 129963985
STATE OF TEXAS

*For Title V applications, the signature must be of the Responsible Official as defined in 20.2.70.7.AE NMAC