July 5, 2024

James Nellessen
New Mexico Environment Department
Air Quality Bureau
Permits Section
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505

RE: Significant Revision to NSR Permit 7747
Northwind Midstream Partners, LLC – Titan Treater Plant #1

Mr. Nellessen:

On behalf of Northwind Midstream Partners, LLC, PEI Consulting Group, Inc. (PEI) is submitting the attached application requesting revision to NSR Permit 7747. Section 3 of the application provides details of the revisions. Should you have any questions, please contact me at etullos@pei-tx.com or Jillian Yamartino at jyamartino@nwmidstream.com.

Sincerely,
PEI Consulting Group, Inc.

Evan Tullos
Vice President

Enclosure

New Source Review Significant Modification

NSR Permit No. 7747

Northwind Midstream Partners, LLC

Agency Interest No. 38342

Titan Treater Plant #1

Lea County, New Mexico

Prepared by:

PEI Consulting Group, Inc.

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**
Northwind Midstream Partners, LLC		July 8, 2024
Permittee/Company Contact	**Phone**	**Email**
Jillian Yamartino	(346) 613-1471	jyamartino@nwmidstream.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.	

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.: 1376 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: 38342	Updating Permit/NOI #: 7747-M4R4
1	Facility Name: Titan Treater Plant #1	Plant primary SIC Code (4 digits): 1311	
		Plant NAIC code (6 digits): 21113	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): From Jal, NM head south on NM-205 S for 6.8 miles. Turn right on Bechham Rd and travel for 1.4 miles. Turn right on unnamed road and follow for 1 mile, bearing right at the fork to facility.		
2	Plant Operator Company Name: Northwind Midstream Partners, LLC	Phone/Fax: (281)800-2120 / N/A	

a	Plant Operator Address: 811 Louisiana St., Suite 2500; Houston, TX 77002	
b	Plant Operator's New Mexico Corporate ID or Tax ID: Unknown	
3	Plant Owner(s) name(s): Northwind Midstream Partners, LLC	Phone/Fax: (281)800-2120 / N/A
a	Plant Owner(s) Mailing Address(s): 811 Louisiana St., Suite 2500; Houston, TX 77002	
4	Bill To (Company): Northwind Midstream Partners, LLC	Phone/Fax: (281)800-2120 / N/A
a	Mailing Address: 811 Louisiana St., Suite 2500; Houston, TX 77002	E-mail: jyamartino@nwmidstream.com
5	☐ Preparer: ☒ Consultant: Evan Tullos	Phone/Fax: (865) 850-2007 / N/A
a	Mailing Address: 1414 W Sam Houston Pkwy N; Suite 160; Houston, TX 77043	E-mail: etullos@pei-tx.com
6	Plant Operator Contact: Reagan Register	Phone/Fax: (432) 203-5315 / N/A
a	Address: 600 N Marienfeld St., Suite 900 Midland, TX 79701	E-mail: rregister@nwmidstream.com
7	Air Permit Contact: Jillian Yamartino	Title: Environmental - Air Manager
a	E-mail: jyamartino@nwmidstream.com	Phone/Fax: (346) 613-1471 / N/A
b	Mailing Address: 811 Louisiana St., Suite 2500; Houston, TX 77002	
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: 7747-M4R4
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: 1.83 MMscf/h (average)	Daily: 44 MMscfd	Annually: 16,104 MMscf/yr
b	Proposed	Hourly: 9.2 MMscf/h (average)	Daily: 221.44 MMscfd	Annually: 80,826 MMscf/yr
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: 1.67 MMscf/h	Daily: 40 MMscfd	Annually: 14,640 MMscf/yr
b	Proposed	Hourly: 9.2 MMscf/h (average)	Daily: 221.44 MMscfd	Annually: 80,826 MMscf/yr

Section 1-D: Facility Location Information

1	Latitude (decimal degrees): 32.02558	Longitude (decimal degrees): -103.27657	County: Lea	Elevation (ft): 2980
2	UTM Zone: ☐ 12 or ☒ 13	Datum: ☐ NAD 83 ☒ WGS 84		
a	UTM E (in meters, to nearest 10 meters): 662,750	UTM N (in meters, to nearest 10 meters): 3,544,570		
3	Name and zip code of nearest New Mexico town: Jal, NM 88252			
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From Jal, NM head south on NM-205 S for 6.8 miles. Turn right on Bechham Rd and travel for 1.4 miles. Turn right on unnamed road and follow for 1 mile, bearing right at the fork to facility.			
5	The facility is 7.8 miles southwest of Jal, NM.			
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: Jal, NM			
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: Texas ~2.83 km			
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): 120 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: 12 km			
12	Method(s) used to delineate the Restricted Area: fenceline "**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: Upon receipt of permit.					
4	Month and year of anticipated construction completion: N/A					
5	Month and year of anticipated startup of new or modified facility: N/A					
6	Will this facility operate at this site for more than one year? Yes					

Section 1-F: Other Facility Information

1	Are there any current Notice of Violations (NOV), compliance orders, or any other compliance or enforcement issues related to this facility? ☐ Yes ☒ No If yes, specify: N/A		
a	If yes, NOV date or description of issue: N/A		NOV Tracking No: N/A
b	Is this application in response to any issue listed in 1-F, 1 or 1a above? ☐ Yes ☒ No If Yes, provide the 1c & 1d info below:		
c	Document Title: N/A	Date: N/A	Requirement # (or page # and paragraph #): N/A
d	Provide the required text to be inserted in this permit: N/A		
2	Is air quality dispersion modeling or modeling waiver being submitted with this application? ☒ Yes ☐ No		
3	Does this facility require an "Air Toxics" permit under 20.2.72.400 NMAC & 20.2.72.502, Tables A and/or B? ☐ Yes ☒ No		
4	Will this facility be a source of federal Hazardous Air Pollutants (HAP)? ☒ Yes ☐ No		
a	If Yes, what type of source? ☐ **Major** (☐ ≥10 tpy of any single HAP **OR** ☐ ≥25 tpy of any combination of HAPS) **OR** ☒ **Minor** (☒ <10 tpy of any single HAP **A** ☒ <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: _____ 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.) N/A (20.2.70.300.D.2 NMAC):		Phone: N/A
a	R.O. Title: N/A	R.O. e-mail: N/A	
b	R. O. Address: N/A		
2	Alternate Responsible Official N/A (20.2.70.300.D.2 NMAC):		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.): N/A		
a	Address of Parent Company: N/A		
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.): N/A		
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: N/A		
7	Affected Programs to include Other States, local air pollution control programs (i.e. Bernalillo) and Indian tribes: Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B)? If yes, state which ones and provide the distances in kilometers: N/A		

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: Evan Tullos, Email: etullos@pei-tx.com,

Phone Number: (865) 850-2007.

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.

Table of Contents

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.
CE-1	Compressor Engine 1 (Old ENG-3)	Caterpillar	G3616	ZZY00814	5000 hp	5000 hp	7/12/2018 3/21/2019	OxCat-1 CE-1	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	4SLB	
CE-2	Compressor Engine 2 (Old ENG-5)	Caterpillar	G3616	ZZY00813	5000 hp	5000 hp	7/10/2018 3/21/2019	OxCat-2 CE-2	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	4SLB	
CE-3	Compressor Engine 3 (Old ENG-2)	Caterpillar	G3516B	4EK04915-REF-JEF	1380 hp	1380 hp	12/16/2010 TBD	OxCAT-3 CE-3	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	4SLB	
CE-4	Compressor Engine 4	Caterpillar	G3516J	TBD	1380 hp	1380 hp	TBD TBD	OxCat-4 CE-4	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	
CE-5	Compressor Engine 5	Caterpillar	G3516J	TBD	1380 hp	1380 hp	TBD TBD	OxCat-5 CE-5	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	
CE-6	Compressor Engine 6	Caterpillar	G3516J	TBD	1380 hp	1380 hp	TBD TBD	OxCat-6 CE-6	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	
CE-7	Compressor Engine 7	Caterpillar	G3606	TBD	1875 hp	1875 hp	TBD TBD	OxCat-7 CE-7	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	
CE-8	Compressor Engine 8	Caterpillar	G3606	TBD	1875 hp	1875 hp	TBD TBD	OxCat-8 CE-8	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	
CE-9	Compressor Engine 9	Caterpillar	G3606	TBD	1875 hp	1875 hp	TBD TBD	OxCat-9 CE-9	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	
CE-10	Compressor Engine 10	Caterpillar	G3608	TBD	2750 hp	2750 hp	TBD TBD	OxCat-10 CE-10	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	
DHY-1	Glycol Dehydrator	Reset Energy	N/A	N/A	50 MMSCFD	50 MMSCFD	11/1/2018 11/1/2018	EC-1 EC-1	31000304	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
DHR-1	Glycol Reboiler (Old GR-1)	Reset Energy	N/A	N/A	0.5 MMBtu/hr	0.5 MMBtu/hr	11/1/2018 11/1/2018	N/A DHR-1	31000228	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
DHY-2	Glycol Dehydrator	Reset Energy	N/A	N/A	113 MMSCFD	113 MMSCFD	TBD TBD	EC-1 EC-1	31000304	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
DHR-2	Glycol Reboiler	Reset Energy	N/A	N/A	1.5 MMBtu/hr	1.5 MMBtu/hr	TBD TBD	N/A DHR-2	31000228	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
DHY-3	Glycol Dehydrator	Reset Energy	N/A	N/A	56.8 MMSCFD	56.8 MMSCFD	TBD TBD	EC-1 EC-1	31000304	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
DHR-3	Glycol Reboiler	Reset Energy	N/A	N/A	0.5 MMBtu/hr	0.5 MMBtu/hr	TBD TBD	N/A DHR-3	31000228	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		

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.
F-7005	Process Flare	Unknown	Unknown	Unknown	56 MMscf/yr	56 MMscf/yr	3/1/2019 3/1/2019	N/A F-7005	31000228	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced		
FL-1	Main Flare	Zeeco	N/A	N/A	550,000 lb/hr	550,000 lb/hr	TBD TBD	N/A FL-1	31000216	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced		F-7005
F-400	Tank Flare	Unknown	Unknown	Unknown	0.41 MMscf/yr	0.41 MMscf/yr	3/1/2019 3/1/2019	N/A F-400	31000216	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced		
EC-1	Enclosed Flare	Zeeco	N/A	N/A	7.6 MMBtu/hr	7.6 MMBtu/hr	TBD TBD	N/A EC-1	31000216	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced		F-400
F-Temp	Amgas Flare	Unknown	Unknown	Unknown	Unknown	Unknown	3/1/2019 3/1/2019	N/A F-Temp	31000228	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
FUG-1	Piping Fugitives	N/A	N/A	N/A	N/A	N/A	11/1/2018 11/1/2018	N/A N/A	31000311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
FUG-2	Piping Fugitives	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000311	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
TO-1	Temporary Acid Gas Thermal Oxidizer	Zeeco	Zephyr-7_5-40	Unknown	42 MMBtu/hr	42 MMBtu/hr	TBD TBD	N/A TO-1	31000404	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced		
AGFL	Acid Gas Flare	Zeeco	N/A	N/A	79,412 lb/hr	79,412 lb/hr	TBD TBD	N/A AGFL	31000216	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced		TO-1
LOAD-1	Slop Oil Load (Old OILLOAD-1)	N/A	N/A	N/A	610 BBL/day	610 BBL/day	Nov-18 11/1/2018	EC-1 EC-1	40400250	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
LOAD-2	Condensate Loading	N/A	N/A	N/A	784,578 BBL/YR	784,578 BBL/YR	Nov-18 11/1/2018	EC-1 EC-1	40400250	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
AGI-COMP1	AGI Compressors (Electric)	N/A	N/A	N/A	N/A	N/A	After 12/6/2022 TBD	N/A N/A	31088811	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
AGI-COMP2	AGI Compressors (Electric)	N/A	N/A	N/A	N/A	N/A	After 12/6/2022 TBD	N/A N/A	31088811	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
AGI-COMP3	AGI Compressors (Electric)	N/A	N/A	N/A	N/A	N/A	After 12/6/2022 TBD	N/A N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
AGI-COMP4	AGI Compressors (Electric)	N/A	N/A	N/A	N/A	N/A	After 12/6/2022 TBD	N/A N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
TK-1	Slop Water Tank (Old T-800)	N/A	N/A	N/A	400 bbl	400 bbl	3/1/2019 3/1/2019	EC-1 EC-1	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
TK-2	Slop Water Tank (Old T-801)	N/A	N/A	N/A	400 bbl	400 bbl	3/1/2019 3/1/2019	EC-1 EC-1	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		

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.
TK-3	Condensate Tank	N/A	N/A	N/A	1000 bbl	1000 bbl	TBD / TBD	EC-1 / EC-1	40400311	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
TK-4	Condensate Tank	N/A	N/A	N/A	1000 bbl	1000 bbl	TBD / TBD	EC-1 / EC-1	40400311	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
TK-5	Condensate Tank	N/A	N/A	N/A	1000 bbl	1000 bbl	TBD / TBD	EC-1 / EC-1	40400311	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
TK-6	Condensate Tank	N/A	N/A	N/A	1000 bbl	1000 bbl	TBD / TBD	EC-1 / EC-1	40400311	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
AM-1	Amine Unit	N/A	N/A	N/A	50 MMscfd	50 MMscfd	TBD / TBD	AGFL / AGFL	31000305	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
AM-2	Amine Unit	N/A	N/A	N/A	113 MMscfd	113 MMscfd	TBD / TBD	AGFL / AGFL	31000305	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
AM-3	Amine Unit	N/A	N/A	N/A	57 MMscfd	57 MMscfd	TBD / TBD	AGFL / AGFL	31000305	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
HOH-1	Hot Oil Heater for Amine Unit (Old AR-1)	Tulsa	SHO3500	N/A	35 MMBtu/hr	35 MMBtu/hr	TBD / TBD	N/A / HOH-1	31000404	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
HOH-2	Hot Oil Heater for Amine Unit	N/A	N/A	N/A	45 MMBtu/hr	45 MMBtu/hr	TBD / TBD	N/A / HOH-2	31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
HOH-3	Hot Oil Heater for Amine Unit	N/A	N/A	N/A	45 MMBtu/hr	45 MMBtu/hr	TBD / TBD	N/A / HOH-3	31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
HOH-4	Hot Oil Heater for Amine Unit	N/A	N/A	N/A	50 MMBtu/hr	50 MMBtu/hr	TBD / TBD	N/A / HOH-4	31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
ROAD	Haul Roads	N/A	N/A	N/A	N/A	N/A	N/A / N/A	N/A / N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
SOH-COMP1	Stabilizer Over Head Compressor (Electric)	N/A	N/A	N/A	N/A	N/A	N/A / N/A	N/A / N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
SOH-COMP2	Stabilizer Over Head Compressor (Electric)	N/A	N/A	N/A	N/A	N/A	N/A / N/A	N/A / N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		

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

[2] Specify dates required to determine regulatory applicability.

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

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

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

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at 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
Small Tanks	Small tanks for storing glycol make-up, Amine make-up, lube oil	N/A	N/A N/A	55 gallons	20.2.72.202.B.2 NMAC N/A	Nov-18 Nov-18	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-17000	Water Tank	N/A	N/A N/A	500 barrels	20.2.72.202.B.2 NMAC N/A	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-17100	Treater Water Tank	N/A	N/A N/A	500 barrels	20.2.72.202.B.2 NMAC N/A	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-17200	RO Wastewater Tank	N/A	N/A N/A	500 barrels	20.2.72.202.B.2 NMAC N/A	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-17300	Amine Storage Tank	N/A	N/A N/A	500 barrels	20.2.72.202.B.2 NMAC N/A	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-17400	TEG Storage Tank	N/A	N/A N/A	500 barrels	20.2.72.202.B.2 NMAC N/A	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-17015	Lube Oil Storage Tank	N/A	N/A N/A	500 barrels	20.2.72.202.B.2 NMAC N/A	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-17016	Lube Oil Storage Tank	N/A	N/A N/A	500 barrels	20.2.72.202.B.2 NMAC N/A	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							Existing (unchanged) To be Removed New/Additional Replacement Unit To Be Modified To be Replaced
							Existing (unchanged) To be Removed New/Additional Replacement Unit To Be Modified To be Replaced
							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 15, 2008. Emissions from these insignificant activities do not need to be reported, unless specifically requested.

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

Table 2-C: Emissions Control Equipment

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

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
OxCat-1	Oxidation Catalyst	Jul-18	CO, VOC, HAP	CE-1	CO: 80% VOC: 64% HCHO: 86%	Manufacturer
OxCat-2	Oxidation Catalyst	Nov-18	CO, VOC, HAP	CE-2	CO: 80% VOC: 64% HCHO: 86%	Manufacturer
OxCat-3	Oxidation Catalyst	TBD	CO, VOC, HAP	CE-3	CO: 75% VOC: 42% HCHO: 88%	Manufacturer
OxCat-4	Oxidation Catalyst	TBD	CO, VOC, HAP	CE-4	CO: 75% VOC: 42% HCHO: 88%	Manufacturer
OxCat-5	Oxidation Catalyst	TBD	CO, VOC, HAP	CE-5	CO: 75% VOC: 42% HCHO: 88%	Manufacturer
OxCat-6	Oxidation Catalyst	TBD	CO, VOC, HAP	CE-6	CO: 75% VOC: 42% HCHO: 88%	Manufacturer
OxCat-7	Oxidation Catalyst	TBD	CO, VOC, HAP	CE-7	CO: 80% VOC: 38% HCHO: 84%	Manufacturer
OxCat-8	Oxidation Catalyst	TBD	CO, VOC, HAP	CE-8	CO: 80% VOC: 38% HCHO: 84%	Manufacturer
OxCat-9	Oxidation Catalyst	TBD	CO, VOC, HAP	CE-9	CO: 80% VOC: 38% HCHO: 84%	Manufacturer
OxCat-10	Oxidation Catalyst	TBD	CO, VOC, HAP	CE-10	CO: 77% VOC: 0% HCHO: 75%	Manufacturer
EC-1	Vapor Combustor	TBD	VOC, HAP, H2S	TK-1 to TK-6, DHY-1, DHY-2, DHY-3, LOAD1, LOAD2	98%	Manufacturer
FL-7005 and FL-1	Process/SSM Flare (FL-1 will eventually replace FL-7005)	TBD	VOC, HAP, H2S	Drain system and various SSM gas streams	98%	Manufacturer
AG FLARE	Acid gas/SSM Flare	TBD	VOC, HAP, H2S	AGI-COMP1 to AGI-COMP2, AM-1, AM-2, AM-3	98%	Manufacturer
AGI	Acid gas injection (underground)	N/A	H2S	AM-1, AM-2, AM-3 (Regen Still Vent)	100%	Engineering Estimate
VRU	Vapor Recovery Unit	TBD	VOC, HAP, H2S	TK-1 to TK-6, LOAD1, LOAD2	95% (uptime)	Engineering Estimate

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

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

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

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

Unit No.	NOx		CO		VOC		SO2		PM[1]		PM10		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
HOH-1	1.40	6.13	1.44	6.29	0.67	2.91	0.03	0.15	0.46	1.99	0.46	1.99	0.46	1.99	-	0.001	-	-
HOH-2	1.80	7.88	1.85	8.08	0.86	3.74	0.04	0.19	0.59	2.56	0.59	2.56	0.59	2.56	-	0.001	-	-
HOH-3	1.80	7.88	1.85	8.08	0.86	3.74	0.04	0.19	0.59	2.56	0.59	2.56	0.59	2.56	-	0.001	-	-
HOH-4	2.00	8.76	2.05	8.98	0.95	4.16	0.05	0.21	0.65	2.85	0.65	2.85	0.65	2.85	-	0.002	-	-
DHR-1	0.06	0.25	0.05	0.21	0.003	0.01	-	-	0.004	0.02	0.004	0.019	0.004	0.019	-	-	-	-
DHR-2	0.17	0.76	0.15	0.64	0.01	0.04	0.00	-	0.01	0.06	0.01	0.06	0.01	0.06	-	-	-	-
DHR-3	0.06	0.25	0.05	0.21	0.003	0.01	-	-	0.004	0.02	0.004	0.02	0.004	0.02	-	-	-	-
CE-1	5.51	24.14	27.01	118.29	6.17	27.04	0.03	0.12	0.38	1.67	0.38	1.67	0.38	1.67	-	0.001	-	-
CE-2	5.51	24.14	27.01	118.29	6.17	27.04	0.03	0.12	0.38	1.67	0.38	1.67	0.38	1.67	-	0.001	-	-
CE-3	1.52	6.66	6.15	26.92	1.31	5.73	0.01	0.04	0.11	0.50	0.11	0.50	0.11	0.50	-	-	-	-
CE-4	1.52	6.66	6.15	26.92	1.31	5.73	0.008	0.03	0.11	0.49	0.11	0.49	0.11	0.49	-	-	-	-
CE-5	1.52	6.66	6.15	26.92	1.31	5.73	0.01	0.03	0.11	0.49	0.11	0.49	0.11	0.49	-	-	-	-
CE-6	1.52	6.66	6.15	26.92	1.31	5.73	0.008	0.03	0.11	0.49	0.11	0.49	0.11	0.49	-	-	-	-
CE-7	1.24	5.43	10.33	45.26	1.32	5.79	0.01	0.05	0.15	0.65	0.15	0.65	0.15	0.65	-	-	-	-
CE-8	1.24	5.43	10.33	45.26	1.32	5.79	0.01	0.05	0.15	0.65	0.15	0.65	0.15	0.65	-	-	-	-
CE-9	1.24	5.43	10.33	45.26	1.32	5.79	0.01	0.05	0.15	0.65	0.15	0.65	0.15	0.65	-	-	-	-
CE-10	1.82	7.97	13.03	57.09	1.03	4.51	0.01	0.07	0.21	0.94	0.21	0.94	0.21	0.94	-	-	-	-
FUG	-	-	-	-	16.62	72.78	-	-	-	-	-	-	-	-	0.865	3.788	-	-
EC-1 (Pilot)	0.01	0.05	0.02	0.11	-	-	-	-	-	0.003	-	0.003	-	0.003	-	-	-	-
AG Flare (Pilot)	0.19	0.85	0.77	3.37	0.00	0.01	-	-	0.01	0.05	0.01	0.05	0.01	0.05	-	-	-	-
FL-1 (Pilot)	0.19	0.85	0.39	1.69	0.00	0.02	-	-	0.01	0.05	0.01	0.05	0.01	0.05	-	-	-	-
LOAD1	-	-	-	-	3.59	1.93	-	-	-	-	-	-	-	-	0.787	0.423	-	-
LOAD2	-	-	-	-	46.73	84.46	-	-	-	-	-	-	-	-	-	-	-	-
TK-1	-	-	-	-	13.27	58.10	-	-	-	-	-	-	-	-	2.191	9.595	-	-
TK-2	-	-	-	-	13.27	58.10	-	-	-	-	-	-	-	-	2.19	9.59	-	-
TK-3	-	-	-	-	3.61	15.82	-	-	-	-	-	-	-	-	-	-	-	-
TK-4	-	-	-	-	3.61	15.82	-	-	-	-	-	-	-	-	-	-	-	-
TK-5	-	-	-	-	3.61	15.82	-	-	-	-	-	-	-	-	-	-	-	-
TK-6	-	-	-	-	3.61	15.82	-	-	-	-	-	-	-	-	-	-	-	-
ROAD	-	-	-	-	-	-	-	-	1.66	4.39	0.24	0.63	0.02	0.06	-	-	-	-
Totals	30.34	132.87	131.23	574.80	133.84	452.20	0.30	1.31	5.86	22.77	4.43	19.00	4.22	18.43	6.03	23.41	-	-

[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		SO2		PM[1]		PM10		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
HOH-1	1.40	6.13	1.44	6.29	0.67	2.91	0.03	0.15	0.46	1.99	0.46	1.99	0.46	1.99	-	0.001	-	-
HOH-2	1.80	7.88	1.85	8.08	0.86	3.74	0.04	0.19	0.59	2.56	0.59	2.56	0.59	2.56	-	0.001	-	-
HOH-3	1.80	7.88	1.85	8.08	0.86	3.74	0.04	0.19	0.59	2.56	0.59	2.56	0.59	2.56	-	0.001	-	-
HOH-4	2.00	8.76	2.05	8.98	0.95	4.16	0.05	0.21	0.65	2.85	0.65	2.85	0.65	2.85	-	0.002	-	-
DHR-1	0.06	0.25	0.05	0.21	0.00	0.01	-	-	0.004	0.02	0.004	0.02	0.004	0.02	-	-	-	-
DHR-2	0.17	0.76	0.15	0.64	0.01	0.04	0.00	-	0.01	0.06	0.01	0.06	0.01	0.06	-	-	-	-
DHR-3	0.06	0.25	0.05	0.21	0.00	0.01	-	-	0.004	0.02	0.004	0.02	0.004	0.02	-	-	-	-
CE-1	5.51	24.14	5.51	24.14	2.61	11.43	0.03	0.12	0.38	1.67	0.38	1.67	0.38	1.67	-	0.001	-	-
CE-2	5.51	24.14	5.51	24.14	2.61	11.43	0.03	0.12	0.38	1.67	0.38	1.67	0.38	1.67	-	0.001	-	-
CE-3	1.52	6.66	1.52	6.66	0.93	4.08	0.01	0.04	0.11	0.50	0.11	0.50	0.11	0.50	-	-	-	-
CE-4	1.52	6.66	1.52	6.66	0.93	4.08	0.01	0.03	0.11	0.49	0.11	0.49	0.11	0.49	-	-	-	-
CE-5	1.52	6.66	1.52	6.66	0.93	4.08	0.01	0.03	0.11	0.49	0.11	0.49	0.11	0.49	-	-	-	-
CE-6	1.52	6.66	1.52	6.66	0.93	4.08	0.01	0.03	0.11	0.49	0.11	0.49	0.11	0.49	-	-	-	-
CE-7	1.24	5.43	2.07	9.05	0.98	4.30	0.01	0.05	0.15	0.65	0.15	0.65	0.15	0.65	-	-	-	-
CE-8	1.24	5.43	2.07	9.05	0.98	4.30	0.01	0.05	0.15	0.65	0.15	0.65	0.15	0.65	-	-	-	-
CE-9	1.24	5.43	2.07	9.05	0.98	4.30	0.01	0.05	0.15	0.65	0.15	0.65	0.15	0.65	-	-	-	-
CE-10	1.82	7.97	3.03	13.28	1.47	6.42	0.01	0.07	0.21	0.94	0.21	0.94	0.21	0.94	-	-	-	-
FUG	-	-	-	-	16.62	72.78	-	-	-	-	-	-	-	-	0.86	3.79	-	-
EC-1	1.05	2.76	2.09	5.51	4.56	17.42	1.47	0.81	0.06	0.15	0.06	0.15	0.06	0.15	0.02	0.009	-	-
EC-1 SSM	See Table 2-F																	
AGFL	0.19	0.85	0.77	3.39	0.00	0.01	0.26	1.17	0.01	0.05	0.01	0.05	0.01	0.05	0.003	0.01	-	-
AGFL SSM	See Table 2-F																	
FL-1	0.53	2.34	1.07	4.67	1.19	5.22	9.07	39.73	0.03	0.13	0.03	0.13	0.03	0.13	0.10	0.42		
FL-1 SSM	See Table 2-F																	
LOAD1	-	-	-	-	0.03	0.01	-	-	-	-	-	-	-	-	0.01	0.006	-	-
LOAD2	-	-	-	-	0.61	1.10	-	-	-	-	-	-	-	-	-	-	-	-
ROAD	-	-	-	-	-	-	-	-	1.66	4.39	0.24	0.63	0.02	0.06	-	-	-	-
SSMBD1	See Table 2-F																	
SSMBD2	See Table 2-F																	
SSMBD3	See Table 2-F																	
Totals	31.71	137.07	37.69	161.42	39.70	169.68	11.10	43.03	5.93	22.99	4.51	19.22	4.29	18.66	0.99	4.25	-	-

[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 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		SO2		PM[2]		PM10		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
EC-1 SSM	1.05	0.08	2.10	0.16	179.60	2.15	8.24	1.80	0.06	0.004	0.06	0.004	0.06	0.004	0.09	0.02	-	-
AGFL SSM	80.59	7.30	320.95	29.07	0.97	0.08	3523.29	109.44	4.35	0.39	4.35	0.394	4.35	0.394	38.25	1.16	-	-
FL-1 SSM	36.79	5.36	73.44	10.69	69.92	11.39	761.34	86.17	1.99	0.29	1.99	0.289	1.99	0.289	8.10	0.92	-	-
MSSBD1	-	-	-	-	269.33	24.24	-	-	-	-	-	-	-	-	0.001	0.000	-	-
MSSBD2	-	-	-	-	438.15	6.57	-	-	-	-	-	-	-	-	0.001	0.000	-	-
MSSBD3	-	-	-	-	439.91	3.30	-	-	-	-	-	-	-	-	0.001	0.000	-	-
Totals	80.59	12.74	320.95	39.93	1396.91	47.73	3523.29	197.42	4.41	0.69	4.41	0.69	4.41	0.69	38.34	2.10	-	-

[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
N/A																	
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)			
HOH-1	HOH-1	V	No	33	489	216.53	-	-	22.51	3.50
HOH-2	HOH-2	V	No	33	489	278.40	-	-	28.94	3.50
HOH-3	HOH-3	V	No	33	489	278.40	-	-	28.94	3.50
HOH-4	HOH-4	V	No	33	489	309.33	-	-	32.15	3.50
DHR-1	DHR-1	V	No	25	400	2.80	-	-	2.95	1.10
DHR-2	DHR-2	V	No	25	400	8.41	-	-	8.85	1.10
DHR-3	DHR-3	V	No	25	400	2.80	-	-	2.95	1.10
CE-1	CE-1	V	No	45	838	513.88	-	-	104.69	2.50
CE-2	CE-2	V	No	45	838	513.88	-	-	104.69	2.50
CE-3	CE-3	V	No	30	971	145.33	-	-	104.61	1.33
CE-4	CE-4	V	No	30	813	132.55	-	-	95.41	1.33
CE-5	CE-5	V	No	30	813	132.55	-	-	95.41	1.33
CE-6	CE-6	V	No	30	813	132.55	-	-	95.41	1.33
CE-7	CE-7	V	No	40	823	199.75	-	-	63.58	2.00
CE-8	CE-8	V	No	40	823	199.75	-	-	63.58	2.00
CE-9	CE-9	V	No	40	823	199.75	-	-	63.58	2.00
CE-10	CE-10	V	No	30	789	289.10	-	-	132.51	1.67
EC-1	EC-1, TK-1, TK-2, TK-3, TK-4, TK-5, TK-6, DHY-1, DHY-2, and DHY-3	V	No	30	1400	111.69	-	-	9.90	3.79
AG FLARE	AGFLARE, AGICOMP-1, AGICOMP-2, AGICOMP-3, AGDRAIN	V	No	150	1832	8271.30	-	-	65.62	3.00
FL-1	COMP-1, COMP-2, COMP-6, COMP-7, COMP-8, COMP-9, V-21000, T-100, MSS-PIG1, MSS-PIG2, DRAIN, PSVs	V	No	118	1832	3666.67	-	-	65.62	3.00
FL-1 (Future)	COMP-1, COMP-2, COMP-6, COMP-7, COMP-8, COMP-9, V-21000, T-100, MSS-PIG1, MSS-PIG2, DRAIN, PSVs	V	No	150	1832	3666.67	-	-	65.62	3.00

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

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

Stack No.	Unit No.(s)	Total HAPs		Acetaldehyde ☑ HAP or TAP		Benzene ☑ HAP or TAP		Formaldehyde ☑ HAP or TAP		Methanol ☑ HAP or TAP		n-Hexane ☑ HAP or TAP		Toluene ☑ HAP or TAP		Provide Pollutant Name Here HAP or TAP		Provide Pollutant Name Here HAP or TAP	
		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
HOH-1	HOH-1	0.09	0.40	-	-	-	-	0.004	0.02	-	-	0.09	0.38	-	-				
HOH-2	HOH-2	0.12	0.52	-	-	-	-	0.005	0.02	-	-	0.11	0.49	-	-				
HOH-3	HOH-3	0.12	0.52	-	-	-	-	0.005	0.02	-	-	0.11	0.49	-	-				
HOH-4	HOH-4	0.13	0.57	-	-	-	-	0.005	0.02	-	-	0.13	0.55	-	0.001				
DHR-1	DHR-1	0.001	0.01	-	-	-	-	-	-	-	-	0.001	0.01	-	-				
DHR-2	DHR-2	0.004	0.02	-	-	-	-	-	-	-	-	0.004	0.02	-	-				
DHR-3	DHR-3	0.001	0.01	-	-	-	-	-	-	-	-	0.001	0.01	-	-				
CE-1	CE-1	0.48	1.91	0.05	0.20	0.01	0.03	0.33	1.45	0.03	0.15	0.02	0.07	0.01	0.02				
CE-2	CE-2	0.48	1.91	0.05	0.20	0.01	0.03	0.33	1.45	0.03	0.15	0.02	0.07	0.01	0.02				
CE-3	CE-3	0.21	0.85	0.01	0.05	0.003	0.01	0.15	0.67	0.02	0.07	0.01	0.03	0.003	0.01				
CE-4	CE-4	0.21	0.84	0.01	0.05	0.003	0.01	0.15	0.67	0.02	0.07	0.01	0.03	0.003	0.01				
CE-5	CE-5	0.21	0.84	0.01	0.05	0.003	0.01	0.15	0.67	0.02	0.07	0.01	0.03	0.003	0.01				
CE-6	CE-6	0.21	0.84	0.01	0.05	0.003	0.01	0.15	0.67	0.02	0.07	0.01	0.03	0.003	0.01				
CE-7	CE-7	0.21	0.81	0.02	0.09	0.004	0.02	0.12	0.54	0.02	0.10	0.01	0.05	0.004	0.02				
CE-8	CE-8	0.21	0.81	0.02	0.09	0.004	0.02	0.12	0.54	0.02	0.10	0.01	0.05	0.004	0.02				
CE-9	CE-9	0.21	0.81	0.02	0.09	0.004	0.02	0.12	0.54	0.02	0.10	0.01	0.05	0.004	0.02				
CE-10	CE-10	0.38	1.41	0.04	0.20	0.01	0.04	0.18	0.80	0.05	0.23	0.02	0.10	0.01	0.04				
FUG	FUG	0.87	3.75	-	-	0.31	1.37	-	-	-	-	0.46	2.03	0.08	0.35				
EC-1	EC-1	74.17	6.49	-	-	48.73	4.32	-	-	-	-	2.40	0.29	21.26	1.88				
EC-1 SSM	EC-1 SSM		0.81	-	-		0.54	-	-	-	-		0.03		0.24				
AGFL	AGFL	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
AGFL SSM	AGFL SSM	0.16	0.00	-	-	0.13	0.00	-	-	-	-	-	-	0.03	-				
FL-1	FL-1	0.05	0.21	-	-	0.02	0.07	-	-	-	-	0.02	0.10	0.01	0.04				
FL-1 SSM	FL-1 SSM	0.35	0.08	-	-	0.15	0.03	-	-	-	-	0.18	0.04	0.02	0.01				
LOAD1	LOAD1	0.01	0.003	-	-	0.002	0.001	-	-	-	-	0.003	0.001	0.001	-				
LOAD2	LOAD2	0.05	0.10	-	-	0.02	0.03	-	-	-	-	0.03	0.05	0.00	0.01				

Stack No.	Unit No.(s)	Total HAPs		Acetaldehyde ☑ HAP or TAP		Benzene ☑ HAP or TAP		Formaldehyde ☑ HAP or TAP		Methanol ☑ HAP or TAP		n-Hexane ☑ HAP or TAP		Toluene ☑ HAP or TAP		Provide Pollutant Name Here HAP or TAP		Provide Pollutant Name Here HAP or TAP	
		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
ROAD	ROAD	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
SSMBD1	SSMBD1	2.46	0.22	-	-	0.83	0.08	-	-	-	-	1.35	0.12	0.25	0.02				
SSMBD2	SSMBD2	4.20	0.06	-	-	1.49	0.02	-	-	-	-	2.20	0.03	0.46	0.01				
SSMBD3	SSMBD3	4.01	0.03	-	-	1.36	0.01	-	-	-	-	2.20	0.02	0.41	0.00				
Totals:		89.59	24.84	0.24	1.05	53.09	6.68	1.84	8.07	0.26	1.13	9.40	5.16	22.57	2.75				

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 (Btu/scf)	Hourly Usage (scf)	Annual Usage (MMscf)	% Sulfur	% Ash
HOH-1	Natural Gas	Purchased	1,206	29,020	254.2	0.00	0
HOH-2	Natural Gas	Purchased	1,206	37,311	326.8	0.00	0
HOH-3	Natural Gas	Purchased	1,206	37,311	326.8	0.00	0
HOH-4	Natural Gas	Purchased	1,206	41,457	363.2	0.00	0
DHR-1	Natural Gas	Purchased	1,206	415	3.6	0.00	0
DHR-2	Natural Gas	Purchased	1,206	1,244	10.9	0.00	0
DHR-3	Natural Gas	Purchased	1,206	415	3.6	0.00	0
CE-1	Natural Gas	Purchased	1,206	31,561	276.5	0.00	0
CE-2	Natural Gas	Purchased	1,206	31,561	276.5	0.00	0
CE-3	Natural Gas	Purchased	1,206	9,508	83.3	0.00	0
CE-4	Natural Gas	Purchased	1,206	9,362	82.0	0.00	0
CE-5	Natural Gas	Purchased	1,206	9,362	82.0	0.00	0
CE-6	Natural Gas	Purchased	1,206	9,362	82.0	0.00	0
CE-7	Natural Gas	Purchased	1,206	12,411	108.7	0.00	0
CE-8	Natural Gas	Purchased	1,206	12,411	108.7	0.00	0
CE-9	Natural Gas	Purchased	1,206	12,411	108.7	0.00	0
CE-10	Natural Gas	Purchased	1,206	17,733	155.3	0.00	0
EC-1	Natural Gas	Purchased	1001	90	0.8	0.00	0
AGFL	Natural Gas	Purchased	1001	1400	12.3	0.00	0
FL-1	Natural Gas	Purchased	1001	1400	12.3	0.00	0

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)
TK-1	40400311	Slop Water	99.5% Water/0.5% Oil	8.31	75.74	67.58	4.77	76.20	5.73
TK-2	40400311	Slop Water	99.5% Water/0.5% Oil	8.31	75.74	67.58	4.77	76.20	5.73
TK-3	40400311	Condensate	Condensate	5.69	50.26	67.67	11.57	76.27	13.26
TK-4	40400311	Condensate	Condensate	5.69	50.26	67.67	11.57	76.27	13.26
TK-5	40400311	Condensate	Condensate	5.69	50.26	67.67	11.57	76.27	13.26
TK-6	40400311	Condensate	Condensate	5.69	50.26	67.67	11.57	76.27	13.26

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			
TK-1	3/1/2019	Slop Water	FR	N/A	400 bbl	64	3.66	6.10	OT (Tan)	OT (Tan)	Good	4,708,344	309.15
TK-2	3/1/2019	Slop Water	FR	N/A	400 bbl	64	3.66	6.10	OT (Tan)	OT (Tan)	Good	4,708,344	309.15
TK-3	TBD	Condensate	FR	N/A	1000 bbl	119	4.72	9.14	OT (Tan)	OT (Tan)	Good	13,673,609	358.75
TK-4	TBD	Condensate	FR	N/A	1000 bbl	119	5	9	OT (Tan)	OT (Tan)	Good	13,673,609	358.75
TK-5	TBD	Condensate	FR	N/A	1000 bbl	119	5	9	OT (Tan)	OT (Tan)	Good	13,673,609	358.75
TK-6	TBD	Condensate	FR	N/A	1000 bbl	119	5	9	OT (Tan)	OT (Tan)	Good	13,673,609	358.75

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 (MMscfd)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (MMscfd)**
Natural Gas	Natural Gas	Gas	221.4	Natural Gas	Natural Gas	Gas	218.94

Table 2-N: CEM Equipment

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

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

Table 2-O: Parametric Emissions Measurement Equipment

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

Unit No.	Parameter/Pollutant Measured	Location of Measurement	Unit of Measure	Acceptable Range	Frequency of Maintenance	Nature of Maintenance	Method of Recording	Averaging Time
N/A								

Table 2-P: Greenhouse Gas Emissions

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

By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]								**Total GHG** Mass Basis ton/yr[4]	**Total CO_2e** ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**									
HOH-1	**mass GHG**	20.79	-	-										20.8	
	CO_2e	20.79	-	0.01											20.8
HOH-2	**mass GHG**	26.73	-	-										26.7	
	CO_2e	26.73	-	0.01											26.7
HOH-3	**mass GHG**	26.73	-	-										26.7	
	CO_2e	26.73	-	0.01											26.7
HOH-4	**mass GHG**	29.70	-	-										29.7	
	CO_2e	29.70	-	0.01											29.7
DHR-1	**mass GHG**	0.30	-	-										0.3	
	CO_2e	0.30	-	-											0.3
DHR-2	**mass GHG**	0.89	-	-										0.9	
	CO_2e	0.89	-	-											0.9
DHR-3	**mass GHG**	0.30	-	-										0.3	
	CO_2e	0.30	-	-											0.3
CE-1	**mass GHG**	21340.42	-	0.37										21340.8	
	CO_2e	21340.42	-	9.19											21349.6
CE-2	**mass GHG**	21340.42	-	0.37										21340.8	
	CO_2e	21340.42	-	9.19											21349.6
CE-3	**mass GHG**	6076.51	-	0.11										6076.6	
	CO_2e	6076.51	-	2.77											6079.3
CE-4	**mass GHG**	6076.51	-	0.00										6076.5	
	CO_2e	6076.51	-	0.12											6076.6
CE-5	**mass GHG**	6076.51	-	0.00										6076.5	
	CO_2e	6076.51	-	0.12											6076.6
CE-6	**mass GHG**	6076.51	-	0.00										6076.5	
	CO_2e	6076.51	-	0.12											6076.6
CE-7	**mass GHG**	7930.23	-	0.14										7930.4	
	CO_2e	7930.23	-	3.61											7933.8
CE-8	**mass GHG**	7930.23	-	0.14										7930.4	
	CO2e	7930.23	-	3.61											7933.8
CE-9	**mass GHG**	7930.23	-	0.14										7930.4	
	CO_2e	7930.23	-	3.61											7933.8
CE-10	**mass GHG**	11312.35	-	0.21										11312.6	
	CO_2e	11312.35	-	5.16											11317.5
FUG	**mass GHG**	21.42	-	51.99										73.4	
	CO_2e	21.42	-	1299.78											1321.2

EC-1	**mass GHG**	111.98	-	0.72										112.7	
	CO2e	111.98	-	17.95											129.9
EC-1 SSM	**mass GHG**	1.38	-	0.37										1.7	
	CO_2e	1.38	-	9.19											10.6
AGFL	**mass GHG**	714.74	-	7.97										722.7	
	CO_2e	714.74	-	199.23											914.0
AGFL SSM	**mass GHG**	6332.04	-	45.05										6377.1	
	CO_2e	6332.04	-	1126.36											7458.4
FL-1	**mass GHG**	2190.38	-	13.08										2203.5	
	CO2e	2190.38	-	327.05											2517.4
FL-1 SSM	**mass GHG**	5135.91	-	15.51										5151.4	
	CO_2e	5135.91	-	387.70											5523.6
LOAD1	**mass GHG**	0.00	-	-										0.0	
	CO_2e	0.00	-	-											0.0
LOAD2	**mass GHG**	-	-	-										-	
	CO_2e	-	-	-											-
ROAD	**mass GHG**	-	-	-										-	
	CO2e	-	-	-											-
SSMBD1	**mass GHG**	3.19	-	38.81										42.0	
	CO_2e	3.19	-	970.21											973.4
SSMBD2	**mass GHG**	1.20	-	10.50										11.7	
	CO2e	1.20	-	262.61											263.8
SSMBD3	**mass GHG**	0.43	-	5.28										5.7	
	CO_2e	0.43	-	132.06											132.5
Total	**mass GHG**	116708.07	-	190.79										116898.9	
	CO_2e	116708.07	-	4769.72											121477.8

[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.

In accordance with 20.2.72.203.A. NMAC, Northwind Midstream Partners, LLC (Northwind) is submitting this application for a significant revision to NSR Permit No. 7747. Titan Treater Plant #1 receives sour natural gas from field production and treats it to remove acid gas (CO_2 and H_2S) and water. The treated gas is compressed and sent-off site via pipeline.

Northwind is proposing the following modifications to existing equipment:

- Unit ENG-2 is now CE-3.
- Unit ENG-3 is now CE-1.
- Unit ENG-5 is now CE-2.
- All engine emission rates are being slightly adjusted based on updated catalyst specifications.
- Unit GR-1 is now DHR-1. DHR-1 and DHY-1 emissions are updated based on increased gas flow.
- Unit OILLOAD-1 is now LOAD-1. Emissions are updated based on increased volume.
- Units T-800 and T-801 are now TK-1 and TK-2 with emissions increased based on increased throughput.
- Unit AR-1 is now HOH-1. The capacity is being updated to 35 MMBtu/hr.
- Unit DHY-1 emissions are being updated based on throughput increase and operating parameters.

With this application Northwind is proposing to add the following equipment:

- Three (3) Caterpillar G3516J compressor engines rated at 1380 horsepower (hp) – CE-4, CE-5, and CE-6,
- Three (3) Caterpillar G3606 compressor engines rated at 1875 horsepower (hp) – CE-7, CE-8, and CE-9,
- One (1) Caterpillar G3608 compressor engine rated at 2750 horsepower (hp) – CE-10,
- Two (2) triethylene glycol dehydrators (DHY-2, DHY-3) and associated glycol regenerator heaters (DHR-2, DHR-3),
- One (1) vapor combustor (EC-1) to control dehydrator emissions and storage tank emissions during VRU downtime,
    - EC-1 will replace F-400.
- One (1) acid gas flare (AGFL),
    - AGFL will replace TO-1.
- Condensate loading (LOAD-2) during pipeline unavailability, with emissions routed to EC-1 during VRU downtime,
- Four (4) condensate storage tanks (TK-3 to TK-6) with emissions routed to EC-1 during VRU downtime,
- Four (4) electric-drive acid gas compressors (AGI-COMP1 to AGI-COMP4),
- Haul roads (ROAD),
- Three (3) hot oil heaters (HOH-2 to HOH-4), and,
- Two (2) electric-drive stabilizer overhead compressors (SOH-COMP1 to SOH-COMP2)

Titan Treater Plant #1 is a 220 million standard cubic feet per day (MMscfd) sour gas treating facility designed to handle both high-pressure and low-pressure field gas. The facility compresses low-pressure inlet gas using natural gas-fired engines (CE-1 and CE-2) and high-pressure natural gas-fired using gas engines (CE-7 through CE-10). Post-compression, the inlet gas undergoes amine treatment (AM-1 through AM-3) using hot oil heaters (HOH-1 through HOH-4) to remove acid gases such as H2S and CO2. The resulting acid gas stream is directed to four electric-driven compressors (AGI-COMP1 through AGI-COMP4), which inject the acid gas underground via acid gas injection (AGI) wells. The sweetened gas is dehydrated using triethylene glycol units (DHY-1, DHY-2, and DHY-3) then compressed using four natural gas-fired compressors (CE-3 through CE-6) for sales.

Condensate separated in the inlet slug catcher undergoes further processing in the stabilization train. Stabilizer overhead gas is recycled into the plant inlet via two electric-driven compressors (SOH-COMP1 and SOH-COMP2), while the stabilized condensate is stored in four (4) 1000-barrel tanks (TK-3, TK-4, TK-5, and TK-6) before being pumped offsite. In case of pipeline unavailability, condensate is loaded out via truck (LOAD-2). Additionally, liquids collected via the closed drain system are directed to two 400-barrel slop water tanks (TK-1 and TK-2) and hauled offsite via truck (LOAD-1). Emissions from LOAD-1 and LOAD-2 are routed to the tank header via a vapor return line. A Vapor Recovery Unit (VRU) controls emissions from the condensate and slop water tanks and truck loading, routing vapors back to the inlet. An intermediate flash vessel, upstream of the slop tanks, reduces potential flashing emissions from the closed drain system prior to the tanks. Gas from the intermediate flash vessel is routed to the main process flare (FL-1). Sweep gas is introduced to the flare header for FL-1 and AGFL to prevent oxygen ingress into the system.

Startup, Shutdown, and Maintenance (SSM) Emissions

SSM emissions are accounted for in this application. They are a result of equipment blowdowns for maintenance as well as equipment downtime. Some sweet gas SSM is vented and some is flared, while all sour gas SSM is routed to a control device. Each SSM stream is discussed in more detail below.

Sweet Gas Blowdowns – Sweet gas is blown down to the atmosphere from compressors (SSM-BD1), dehydrator contactors (SSM-BD2), and miscellaneous piping (SSM-BD3). Worst case volumes were calculated and/or estimated. Emissions were estimated based on the number of blowdowns expected during the year. Stream compositions were obtained from Promax.

Acid Gas Blowdowns – During SSM events, acid gas is routed to the flare (AGFL). AGI compressors are blown down during maintenance activities. Compressor volumes were calculated, with up to three potentially blown down at the same time. Equipment used in the sweetening process may also be blown down to the flare, both individually and together. Various equipment volumes were calculated and included to estimate the hourly flow rate. Stream compositions were obtained from Promax.

Inlet Gas Blowdowns – During SSM events, inlet gas would be routed to the plant flare (FL-1). The volume of the amine contactor was used to estimate maximum hourly emissions. For annual rates, the volumes of each piece of equipment and the estimated number of events were used. Stream compositions were obtained from Promax.

VRU Downtime – During VRU downtime, tank vapor is routed to the enclosed combustor (EC-1). This is assumed to occur up to 438 hours per year.

Enclosed Combustor Downtime – In the event of a temporary shutdown of EC-1, vapor from the dehydration system could flow to EC-1 for a very limited amount of time (0.25% or 21.9 hours).

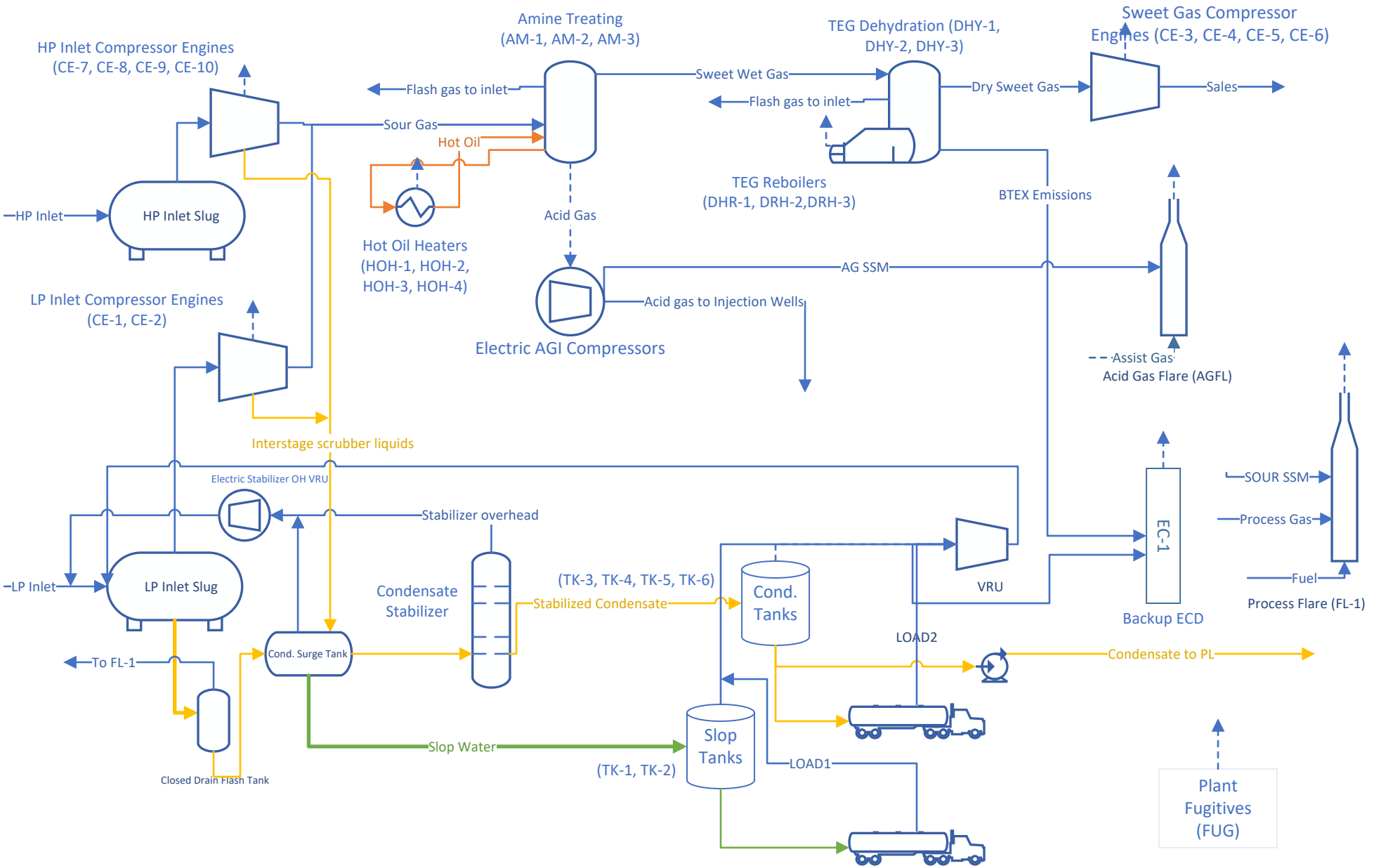
SSM events at AGFL cannot occur at the same time as FL-1SSM or EC-1SSM events.

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 has been attached on the following page.



NORTHWIND MIDSTREAM

Process Gas
Emissions
Slop Water
Condensate
Hot Oil

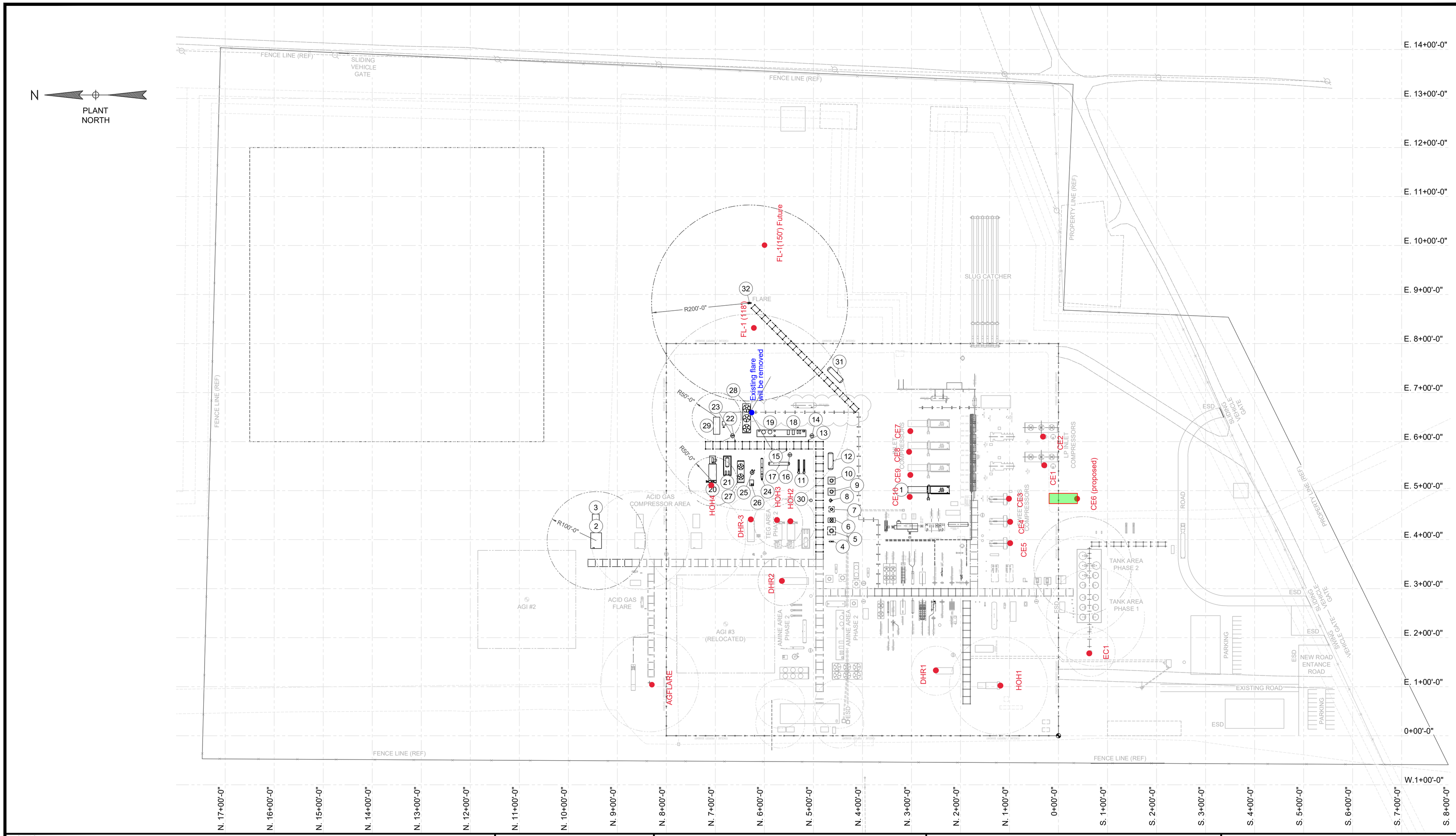
Process Flow Diagram
Titan Treater Plant #1
April 2024

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 of the entire facility has been attached on the following page.



NOTES:

STAMP & SEAL

REFERENCE DRAWINGS	
NO.	TITLE
D-11154-C03-101	EQUIPMENT LEGEND
D-10991-C03-100	PLOT PLAN PHASE 0
D-10991-C03-100A	PLOT PLAN PHASE I
D-10991-C03-100B	PLOT PLAN PHASE II

SAULSBURY
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REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SI	4/24/24	ISSUED FOR APPROVAL	LRI	SSR	MDP

ENGINEERING RECORD			
PROJ. MANAGER:	MF	SI JOB NUMBER:	10991
PROJ. ENGR:	MDP	AFE NUMBER:	
PROJ. DESIGN:	LRI	WELD CODE:	

NORTHWIND MIDSTREAM

TITAN TREATER - PLANT #1
200 MMSCFD GAS TREATING FACILITY
PLOT PLAN
PHASE III
JAL, NM

PLOT SCALE: NONE	DWG. NO.	REV
FILE NAME: CO3-100	D-11154-C03-100	A

J:\Northwind Midstream (EVX)\11154 - Northwind Titan Treater - Phase 3\03 ENGINEERING, DESIGN\3.4 Piping\3.4.3 Drawings - Plot Plans\D-11154-C03-100 (4/26/2024 9:12:32 AM)

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.

Calculations are provided with detailed notes explaining the methodology.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Emissions Summary

EPN	Units	VOC	NOx	CO	PM10	PM2.5	SO2	H2S	Methane	CO2	N2O	Acetaldehyde	Benzene	Formaldehyde	Methanol	n-Hexane	Toluene	Sum HAP
HOH-1	tpy	2.91	6.13	6.29	1.99	1.99	0.15	0.001	--	20.79	--	--	--	0.02	--	0.38	--	0.40
HOH-2	tpy	3.74	7.88	8.08	2.56	2.56	0.19	0.001	--	26.73	--	--	--	0.02	--	0.49	--	0.52
HOH-3	tpy	3.74	7.88	8.08	2.56	2.56	0.19	0.001	--	26.73	--	--	--	0.02	--	0.49	--	0.52
HOH-4	tpy	4.16	8.76	8.98	2.85	2.85	0.21	0.002	--	29.70	--	--	--	0.02	--	0.55	0.001	0.57
DHR-1	tpy	0.01	0.25	0.21	0.02	0.02	--	--	--	0.30	--	--	--	--	--	0.005	--	0.006
DHR-2	tpy	0.04	0.76	0.64	0.06	0.06	--	--	--	0.89	--	--	--	--	--	0.02	--	0.02
DHR-3	tpy	0.01	0.25	0.21	0.02	0.02	--	--	--	0.30	--	--	--	--	--	0.005	--	0.006
CE-1	tpy	11.43	24.14	24.14	1.67	1.67	0.12	0.001	0.37	21340.42	0.02	0.20	0.03	1.45	0.15	0.07	0.02	1.91
CE-2	tpy	11.43	24.14	24.14	1.67	1.67	0.12	0.001	0.37	21340.42	0.02	0.20	0.03	1.45	0.15	0.07	0.02	1.91
CE-3	tpy	4.08	6.66	6.66	0.50	0.50	0.04	--	0.11	6076.51	0.005	0.05	0.01	0.67	0.07	0.03	0.01	0.85
CE-4	tpy	4.08	6.66	6.66	0.49	0.49	0.03	--	0.005	6076.51	0.005	0.05	0.01	0.67	0.07	0.03	0.01	0.84
CE-5	tpy	4.08	6.66	6.66	0.49	0.49	0.03	--	0.005	6076.51	0.005	0.05	0.01	0.67	0.07	0.03	0.01	0.84
CE-6	tpy	4.08	6.66	6.66	0.49	0.49	0.03	--	0.005	6076.51	0.005	0.05	0.01	0.67	0.07	0.03	0.01	0.84
CE-7	tpy	4.30	5.43	9.05	0.65	0.65	0.05	--	0.14	7930.23	0.007	0.09	0.02	0.54	0.10	0.05	0.02	0.81
CE-8	tpy	4.30	5.43	9.05	0.65	0.65	0.05	--	0.14	7930.23	0.007	0.09	0.02	0.54	0.10	0.05	0.02	0.81
CE-9	tpy	4.30	5.43	9.05	0.65	0.65	0.05	--	0.14	7930.23	0.007	0.09	0.02	0.54	0.10	0.05	0.02	0.81
CE-10	tpy	6.42	7.97	13.28	0.94	0.94	0.07	--	0.21	11312.35	0.009	0.20	0.04	0.80	0.23	0.10	0.04	1.41
FUG	tpy	72.78	--	--	--	--	--	3.79	51.99	21.42	--	--	1.37	--	--	2.03	0.35	3.75
EC-1	tpy	17.42	2.76	5.51	0.15	0.15	0.81	0.009	0.72	111.98	--	--	4.32	--	--	0.29	1.88	6.49
EC-1 SSM	tpy	2.15	0.08	0.16	0.004	0.004	1.80	0.02	0.37	1.38	--	--	0.54	--	--	0.03	0.24	0.81
AGFL	tpy	0.01	0.85	3.39	0.05	0.05	1.17	0.01	7.97	714.74	--	--	--	--	--	--	--	--
AGFL SSM	tpy	0.08	7.30	29.07	0.39	0.39	109.44	1.16	45.05	6332.04	--	--	0.004	--	--	--	--	0.005
FL-1	tpy	5.22	2.34	4.67	0.13	0.13	39.73	0.42	13.08	2190.38	--	--	0.07	--	--	0.10	0.04	0.21
FL-1 SSM	tpy	11.39	5.36	10.69	0.29	0.29	86.17	0.92	15.51	5135.91	--	--	0.03	--	--	0.04	0.007	0.08
LOAD1	tpy	0.01	--	--	--	--	--	0.006	--	0.005	--	--	0.001	--	--	0.001	--	0.003
LOAD2	tpy	1.10	--	--	--	--	--	--	--	--	--	--	0.03	--	--	0.05	0.009	0.10
ROAD	tpy	--	--	--	0.63	0.06	--	--	--	--	--	--	--	--	--	--	--	--
SSMBD1	tpy	24.24	--	--	--	--	--	--	38.81	3.19	--	--	0.08	--	--	0.12	0.02	0.22
SSMBD2	tpy	6.57	--	--	--	--	--	--	10.50	1.20	--	--	0.02	--	--	0.03	0.007	0.06
SSMBD3	tpy	3.30	--	--	--	--	--	--	5.28	0.43	--	--	0.01	--	--	0.02	0.003	0.03
Total	**tpy**	**217.41**	**149.81**	**201.35**	**19.91**	**19.35**	**240.44**	**6.35**	**190.79**	**116708.07**	**0.08**	**1.05**	**6.68**	**8.07**	**1.13**	**5.16**	**2.75**	**24.84**
Total minus Fugitives	**tpy**	**144.63**	**149.81**	**201.35**	**19.91**	**19.35**	**240.44**	**2.56**	**138.80**	**116686.64**	**0.08**	**1.05**	**5.31**	**8.07**	**1.13**	**3.13**	**2.39**	**21.08**

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Emissions Summary

EPN	Units	VOC	NOx	CO	PM10	PM2.5	SO2	H2S	Methane	CO2	N2O	Acetaldehyde	Benzene	Formaldehyde	Methanol	n-Hexane	Toluene	Sum HAP
HOH-1	lb/hr	0.67	1.40	1.44	0.46	0.46	0.03	--	--	4.75	--	--	--	0.004	--	0.09	--	0.09
HOH-2	lb/hr	0.86	1.80	1.85	0.59	0.59	0.04	--	--	6.10	--	--	--	0.005	--	0.11	--	0.12
HOH-3	lb/hr	0.86	1.80	1.85	0.59	0.59	0.04	--	--	6.10	--	--	--	0.005	--	0.11	--	0.12
HOH-4	lb/hr	0.95	2.00	2.05	0.65	0.65	0.05	--	--	6.78	--	--	--	0.005	--	0.13	--	0.13
DHR-1	lb/hr	0.003	0.06	0.05	0.004	0.004	--	--	--	0.07	--	--	--	--	--	0.001	--	0.001
DHR-2	lb/hr	0.010	0.17	0.15	0.01	0.01	0.002	--	--	0.20	--	--	--	--	--	0.004	--	0.004
DHR-3	lb/hr	0.003	0.06	0.05	0.004	0.004	--	--	--	0.07	--	--	--	--	--	0.001	--	0.001
CE-1	lb/hr	2.61	5.51	5.51	0.38	0.38	0.03	--	0.08	4872.24	0.004	0.05	0.006	0.33	0.03	0.02	0.006	0.48
CE-2	lb/hr	2.61	5.51	5.51	0.38	0.38	0.03	--	0.08	4872.24	0.004	0.05	0.006	0.33	0.03	0.02	0.006	0.48
CE-3	lb/hr	0.93	1.52	1.52	0.11	0.11	0.008	--	0.03	1387.33	0.001	0.01	0.003	0.15	0.02	0.007	0.003	0.21
CE-4	lb/hr	0.93	1.52	1.52	0.11	0.11	0.008	--	0.001	1387.33	0.001	0.01	0.003	0.15	0.02	0.007	0.003	0.21
CE-5	lb/hr	0.93	1.52	1.52	0.11	0.11	0.008	--	0.001	1387.33	0.001	0.01	0.003	0.15	0.02	0.007	0.003	0.21
CE-6	lb/hr	0.93	1.52	1.52	0.11	0.11	0.008	--	0.001	1387.33	0.001	0.01	0.003	0.15	0.02	0.007	0.003	0.21
CE-7	lb/hr	0.98	1.24	2.07	0.15	0.15	0.01	--	0.03	1810.56	0.001	0.02	0.004	0.12	0.02	0.01	0.004	0.21
CE-8	lb/hr	0.98	1.24	2.07	0.15	0.15	0.01	--	0.03	1810.56	0.001	0.02	0.004	0.12	0.02	0.01	0.004	0.21
CE-9	lb/hr	0.98	1.24	2.07	0.15	0.15	0.01	--	0.03	1810.56	0.001	0.02	0.004	0.12	0.02	0.01	0.004	0.21
CE-10	lb/hr	1.47	1.82	3.03	0.21	0.21	0.01	--	0.05	2582.73	0.002	0.04	0.009	0.18	0.05	0.02	0.009	0.38
FUG	lb/hr	16.62	--	--	--	--	--	0.86	11.87	4.89	--	--	0.31	--	--	0.46	0.08	0.87
EC-1	lb/hr	4.56	1.05	2.09	0.06	0.06	1.47	0.02	2.11	26.33	--	--	48.73	--	--	2.40	21.26	74.17
EC-1 SSM	lb/hr	179.60					8.24	0.09	5.37	25.48	--	--		--	--			
AGFL	lb/hr	0.003	0.19	0.77	0.01	0.01	0.26	0.003	1.82	0.84	--	--	--	--	--	--	--	--
AGFL SSM	lb/hr	0.97	80.59	320.95	4.35	4.35	3523.29	38.25	456.55	8942.45	--	--	0.13	--	--	--	0.03	0.16
FL-1	lb/hr	1.19	0.53	1.07	0.03	0.03	9.07	0.10	2.99	20.65	--	--	0.02	--	--	0.02	0.010	0.05
FL-1 SSM	lb/hr	69.92	36.79	73.44	1.99	1.99	761.34	8.10	114.84	2355.16	--	--	0.15	--	--	0.18	0.02	0.35
LOAD1	lb/hr	0.03	--	--	--	--	--	0.01	--	0.009	--	--	0.002	--	--	0.003	0.001	0.006
LOAD2	lb/hr	0.61	--	--	--	--	--	--	--	--	--	--	0.02	--	--	0.03	0.005	0.05
ROAD	lb/hr	--	--	--	0.24	0.02	--	--	--	--	--	--	--	--	--	--	--	--
SSMBD1	lb/hr	269.33	--	--	--	--	--	--	431.20	35.48	--	--	0.83	--	--	1.35	0.25	2.46
SSMBD2	lb/hr	438.15	--	--	--	--	--	0.001	700.30	79.71	--	--	1.49	--	--	2.20	0.46	4.20
SSMBD3	lb/hr	439.91	--	--	--	--	--	--	704.30	57.95	--	--	1.36	--	--	2.20	0.41	4.01
Total	**lb/hr**	**1436.61**	**112.30**	**358.64**	**8.86**	**8.64**	**3534.39**	**39.33**	**2311.48**	**32526.06**	**0.02**	**0.24**	**53.09**	**1.84**	**0.26**	**9.40**	**22.57**	**89.59**
Total minus Fugitives	**lb/hr**	**1419.99**	**112.30**	**358.64**	**8.86**	**8.64**	**3534.39**	**38.47**	**2299.61**	**32521.17**	**0.02**	**0.24**	**52.77**	**1.84**	**0.26**	**8.93**	**22.48**	**88.72**

1 AGFL SSM will not occur at the same time as FL-1 SSM. The higher of the two rates is included in the sum of hourly emissions

2 AGFL SSM will not occur at the same time as EC-1 SSM. The higher of the two rates is included in the sum of hourly emissions

3 The SSM streams flowing to EC-1, AGFL, and FL-1 can occur at the same time as the streams occuring during normal operation.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Hot Oil Heater - Natural Gas

EMISSION POINT ID: HOH-1

Background Information	
Name	Hot Oil Heater
Heater/Boiler rating (MMBtu/hr):	35.00
Rating above is:	below 100 MMBtu/hr,
Operating hours/year:	8760
Natural Gas Heat Value (Btu/scf)[a]:	1,020
Fuel Gas Heat Value (Btu/scf)[b]:	1,005
Max Permitted Fuel Gas Heat Value (Btu/scf):	1,206
Fuel Rate (scf/hr):	29,020
Fuel Rate (scf/yr):	254,214,185

a) Heating value for natural gas taken from Section 1.4 of AP-42 (dated 7/98). 20% was added as a safety factor.
b) Heating value for fuel gas was taken from 08/30/23 analysis.

Pollutant	Emission Factor[a] (lb/MMBtu)	lb/hr[c]	tpy
VOC	0.019	0.67	2.91
NOx	0.04	1.40	6.13
CO	0.041	1.44	6.29
PM_{10}	0.013	0.46	1.99
$PM_{2.5}$	0.013	0.46	1.99
SO_2	0.001	0.03	0.15
CO2	117.00	4.75	20.79
Methane	0.002	8.95E-05	3.92E-04
HAPS	**Emission Factor[a] (lb/MMscf)**	**lb/hr[c]**	**tpy**
Arsenic	0.0002	9.74E-06	4.27E-05
Benzene	0.0021	1.02E-04	4.48E-04
Beryllium	0.000012	5.84E-07	2.56E-06
Cadmium	0.0011	5.36E-05	2.35E-04
Chromium	0.0014	6.82E-05	2.99E-04
Cobalt	0.000084	4.09E-06	1.79E-05
Dichlorobenzene	0.0012	5.84E-05	2.56E-04
Formaldehyde	0.075	3.65E-03	0.02
n-Hexane	1.8	0.09	0.38
Lead	0.0005	2.43E-05	1.07E-04
Manganese	0.00038	1.85E-05	8.10E-05
Mercury	0.00026	1.27E-05	5.54E-05
Naphthalene	0.00061	2.97E-05	1.30E-04
Nickel	0.0021	1.02E-04	4.48E-04
POM	0.000088	4.28E-06	1.88E-05
Toluene	0.0034	1.66E-04	7.25E-04
Selenium	0.000024	1.17E-06	5.12E-06
Total HAPs		**0.09**	**0.40**
Other Pollutants			
H_2S	N/A[c]	2.61E-04	1.14E-03

a) Emission factors are taken from AP-42, Chapter 1, Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4, dated July 1998. NOx, CO, VOC, and PM are from heater manufacturer.
b) H_2S emissions are conservatively based on 98% conversion of H_2S to SO_2.
c) lb/hr and TPY emissions rates adjusted for site specific fuel gas. AP-42 SO2 factor is based on 0.2 gr/100 scf.

Parameter	Value
scf/lbmole	379.3
Btu/MMBtu	1,000,000
scf/MMscf	1,000,000
lb/ton	2,000
H_2S MW	34.08
SO_2 MW	64.06

H_2S Max Concentration (ppmv)	H_2S Mass to Heater (lb/hr)	H_2S Mass to Heater (tpy)	Grains/100 scf
5.00	0.01	0.06	0.33

a) H_2S Mass to Heater Treater (lb/hr) = H_2S Max Concentration (ppmv) /10^6 * Fuel Rate (scf/hr) / Standard Molar Volume (scf/lbmol) * H_2S MW (lb/lbmol)
b) 15.05 ppm H2S = 1 gr/100 scf per the Sulfur Measurement Handbook

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Hot Oil Heater - Natural Gas

EMISSION POINT ID: HOH-2 & HOH-3

Background Information	
Name	Hot Oil Heaters 2 & 3
Heater/Boiler rating (MMBtu/hr):	45.00
Rating above is:	below 100 MMBtu/hr,
Operating hours/year:	8760
Natural Gas Heat Value (Btu/scf)[a]:	1,020
Fuel Gas Heat Value (Btu/scf)[b]:	1,005
Max Permitted Fuel Gas Heat Value (Btu/scf):	1,206
Fuel Rate (scf/hr):	37,311
Fuel Rate (scf/yr):	326,846,809

a) Heating value for natural gas taken from Section 1.4 of AP-42 (dated 7/98).
b) Heating value for fuel gas was taken from 08/30/23 analysis.

Pollutant	Emission Factor[a] (lb/MMBtu)	lb/hr[c]	tpy
VOC	0.019	0.86	3.74
NOx	0.04	1.80	7.88
CO	0.041	1.85	8.08
PM_{10}	0.013	0.59	2.56
$PM_{2.5}$	0.013	0.59	2.56
SO_2	0.001	0.04	0.19
CO2	117.00	6.10	26.73
Methane	0.002	1.15E-04	5.04E-04
HAPS	**Emission Factor[a] (lb/MMscf)**	**lb/hr[c]**	**tpy**
Arsenic	0.0002	1.25E-05	5.48E-05
Benzene	0.0021	1.31E-04	5.76E-04
Beryllium	0.000012	7.51E-07	3.29E-06
Cadmium	0.0011	6.89E-05	3.02E-04
Chromium	0.0014	8.76E-05	3.84E-04
Cobalt	0.000084	5.26E-06	2.30E-05
Dichlorobenzene	0.0012	7.51E-05	3.29E-04
Formaldehyde	0.075	4.69E-03	0.02
n-Hexane	1.8	0.11	0.49
Lead	0.0005	3.13E-05	1.37E-04
Manganese	0.00038	2.38E-05	1.04E-04
Mercury	0.00026	1.63E-05	7.13E-05
Naphthalene	0.00061	3.82E-05	1.67E-04
Nickel	0.0021	1.31E-04	5.76E-04
POM	0.000088	5.51E-06	2.41E-05
Toluene	0.0034	2.13E-04	9.32E-04
Selenium	0.000024	1.50E-06	6.58E-06
Total HAPs		**0.12**	**0.52**
Other Pollutants			
H_2S	N/A[c]	3.35E-04	1.47E-03

a) Emission factors are taken from AP-42, Chapter 1, Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4, dated July 1998. NOx, CO, VOC, and PM are from heater manufacturer.
b) H_2S emissions are conservatively based on 98% conversion of H_2S to SO_2.
c) lb/hr and TPY emissions rates adjusted for site specific fuel gas. AP-42 SO2 factor is based on 0.2 gr/100 scf.

Parameter	Value
scf/lbmole	379.3
Btu/MMBtu	1,000,000
scf/MMscf	1,000,000
lb/ton	2,000
H_2S MW	34.08
SO_2 MW	64.06

H_2S Max Concentration (ppmv)	H_2S Mass to Heater (lb/hr)	H_2S Mass to Heater (tpy)	Grains/100 scf
5.00	0.02	0.07	0.33

a) H_2S Mass to Heater Treater (lb/hr) = H_2S Max Concentration (ppmv) /10^6 * Fuel Rate (scf/hr) / Standard Molar Volume (scf/lbmol) * H_2S MW (lb/lbmol)
b) 15.05 ppm H2S = 1 gr/100 scf per the Sulfur Measurement Handbook

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Hot Oil Heater - Natural Gas

EMISSION POINT ID: HOH-4

Background Information	
Name	Hot Oil Heater 4
Heater/Boiler rating (MMBtu/hr):	50.00
Rating above is:	below 100 MMBtu/hr,
Operating hours/year:	8760
Natural Gas Heat Value (Btu/scf)[a]:	1,020
Fuel Gas Heat Value (Btu/scf)[b]:	1,005
Max Permitted Fuel Gas Heat Value (Btu/scf):	1,206
Fuel Rate (scf/hr):	41,457
Fuel Rate (scf/yr):	363,163,121

a) Heating value for natural gas taken from Section 1.4 of AP-42 (dated 7/98).

b) Heating value for fuel gas was taken from 08/30/23 analysis.

Pollutant	Emission Factor[a] (lb/MMBtu)	lb/hr[c]	tpy
VOC	0.019	0.95	4.16
NOx	0.04	2.00	8.76
CO	0.041	2.05	8.98
PM_{10}	0.013	0.65	2.85
$PM_{2.5}$	0.013	0.65	2.85
SO_2	0.001	0.05	0.21
CO2	117.00	6.78	29.70
Methane	0.002	1.28E-04	5.60E-04
HAPS	**Emission Factor[a] (lb/MMscf)**	**lb/hr[c]**	**tpy**
Arsenic	0.0002	1.39E-05	6.09E-05
Benzene	0.0021	1.46E-04	6.40E-04
Beryllium	0.000012	8.35E-07	3.66E-06
Cadmium	0.0011	7.65E-05	3.35E-04
Chromium	0.0014	9.74E-05	4.27E-04
Cobalt	0.000084	5.84E-06	2.56E-05
Dichlorobenzene	0.0012	8.35E-05	3.66E-04
Formaldehyde	0.075	5.22E-03	0.02
n-Hexane	1.8	0.13	0.55
Lead	0.0005	3.48E-05	1.52E-04
Manganese	0.00038	2.64E-05	1.16E-04
Mercury	0.00026	1.81E-05	7.92E-05
Naphthalene	0.00061	4.24E-05	1.86E-04
Nickel	0.0021	1.46E-04	6.40E-04
POM	0.000088	6.12E-06	2.68E-05
Toluene	0.0034	2.36E-04	1.04E-03
Selenium	0.000024	1.67E-06	7.31E-06
Total HAPs		**0.13**	**0.58**
Other Pollutants			
H_2S	N/A[c]	3.72E-04	1.63E-03

a) Emission factors are taken from AP-42, Chapter 1, Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4, dated July 1998. NOx, CO, VOC, and PM are from heater manufacturer.

b) H_2S emissions are conservatively based on 98% conversion of H_2S to SO_2.

c) lb/hr and TPY emissions rates adjusted for site specific fuel gas. AP-42 SO2 factor is based on 0.2 gr/100 scf.

Parameter	Value
scf/lbmole	379.3
Btu/MMBtu	1,000,000
scf/MMscf	1,000,000
lb/ton	2,000
H_2S MW	34.08
SO_2 MW	64.06

H_2S Max Concentration (ppmv)	H_2S Mass to Heater (lb/hr)	H_2S Mass to Heater (tpy)	Grains/100 scf
5.00	0.02	0.08	0.33

a) H_2S Mass to Heater Treater (lb/hr) = H_2S Max Concentration (ppmv) /10^6 * Fuel Rate (scf/hr) / Standard Molar Volume (scf/lbmol) * H_2S MW (lb/lbmol)

b) 15.05 ppm H2S = 1 gr/100 scf per the Sulfur Measurement Handbook

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Dehydrator Reboiler - Natural Gas

EMISSION POINT ID: DHR-1

Background Information	
Name	Dehydrator Glycol Reboiler
Heater/Boiler rating (MMBtu/hr):	0.5
Rating above is:	below 100 MMBtu/hr,
Operating hours/year:	8760
Natural Gas Heat Value (Btu/scf)[a]:	1,020
Fuel Gas Heat Value (Btu/scf)[b]:	1,005
Max Permitted Fuel Gas Heat Value (Btu/scf):	1,206
Fuel Rate (scf/hr):	415
Fuel Rate (scf/yr):	3,631,631

a) Heating value for natural gas taken from Section 1.4 of AP-42 (dated 7/98).
b) Heating value for fuel gas was taken from 08/30/23 analysis.

Pollutant	Emission Factor[a] (lb/MMscf)	lb/hr[b]	tpy
VOC	5.5	3.19E-03	0.01
NOx	100	0.06	0.25
CO	84	0.05	0.21
PM_{10}	7.6	4.41E-03	0.02
$PM_{2.5}$	7.6	4.41E-03	0.02
SO_2	1.00	5.78E-04	2.95E-04
CO2	117.00	0.07	0.30
Methane	0.002	1.28E-06	5.60E-06
HAPS			
Arsenic	0.0002	1.39E-07	6.09E-07
Benzene	0.0021	1.46E-06	6.40E-06
Beryllium	0.000012	8.35E-09	3.66E-08
Cadmium	0.0011	7.65E-07	3.35E-06
Chromium	0.0014	9.74E-07	4.27E-06
Cobalt	0.000084	5.84E-08	2.56E-07
Dichlorobenzene	0.0012	8.35E-07	3.66E-06
Formaldehyde	0.075	5.22E-05	2.28E-04
n-Hexane	1.8	1.25E-03	5.48E-03
Lead	0.0005	3.48E-07	1.52E-06
Manganese	0.00038	2.64E-07	1.16E-06
Mercury	0.00026	1.81E-07	7.92E-07
Naphthalene	0.00061	4.24E-07	1.86E-06
Nickel	0.0021	1.46E-06	6.40E-06
POM	0.000088	6.12E-08	2.68E-07
Toluene	0.0034	2.36E-06	1.04E-05
Selenium	0.000024	1.67E-08	7.31E-08
Total HAPs		**1.31E-03**	**5.75E-03**
Other Pollutants			
H_2S	N/A	3.72E-06	1.63E-05

a) Emission factors are taken from AP-42, Chapter 1, Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4, dated July 1998.
b) H_2S emissions are conservatively based on 98% conversion of H_2S to SO_2.
c) lb/hr and TPY emissions rates adjusted for site specific fuel gas. AP-42 SO2 factor is based on 0.2 gr/100 scf.

Parameter	Value
scf/lbmole	379.3
Btu/MMBtu	1,000,000
scf/MMscf	1,000,000
lb/ton	2,000
H_2S MW	34.08
SO_2 MW	64.06

H_2S Max Concentration (ppmv)	H_2S Mass to Heater (lb/hr)[a]	H_2S Mass to Heater (tpy)	Grains/100 scf[b]
5.00	1.86E-04	8.16E-04	0.33

[a] H_2S Mass to Heater Treater (lb/hr) = H_2S Max Concentration (ppmv) /10^6 * Fuel Rate (scf/hr) / Standard Molar Volume (scf/lbmol) * H_2S MW (lb/lbmol)
[b] 15.05 ppm H2S = 1 gr/100 scf per the Sulfur Measurement Handbook

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Dehydrator Reboiler - Natural Gas

EMISSION POINT ID: DHR-2

Background Information	
Name	Dehydrator Glycol Reboiler 2
Heater/Boiler rating (MMBtu/hr):	1.5
Rating above is:	below 100 MMBtu/hr,
Operating hours/year:	8760
Natural Gas Heat Value (Btu/scf)[a]:	1,020
Fuel Gas Heat Value (Btu/scf)[b]:	1,005
Max Permitted Fuel Gas Heat Value (Btu/scf):	1,206
Fuel Rate (scf/hr):	1,244
Fuel Rate (scf/yr):	10,894,894

a) Heating value for natural gas taken from Section 1.4 of AP-42 (dated 7/98).
b) Heating value for fuel gas was taken from 08/30/23 analysis.

Pollutant	Emission Factor[a] (lb/MMscf)	lb/hr[b]	tpy
VOC	5.5	9.56E-03	0.04
NOx	100	0.17	0.76
CO	84	0.15	0.64
PM_{10}	7.6	0.01	0.06
$PM_{2.5}$	7.6	0.01	0.06
SO_2	1.00	1.73E-03	8.84E-04
HAPS			
Arsenic	0.0002	4.17E-07	1.83E-06
Benzene	0.0021	4.38E-06	1.92E-05
Beryllium	0.000012	2.50E-08	1.10E-07
Cadmium	0.0011	2.30E-06	1.01E-05
Chromium	0.0014	2.92E-06	1.28E-05
Cobalt	0.000084	1.75E-07	7.68E-07
Dichlorobenzene	0.0012	2.50E-06	1.10E-05
Formaldehyde	0.075	1.56E-04	6.85E-04
n-Hexane	1.8	3.76E-03	0.02
Lead	0.0005	1.04E-06	4.57E-06
Manganese	0.00038	7.93E-07	3.47E-06
Mercury	0.00026	5.43E-07	2.38E-06
Naphthalene	0.00061	1.27E-06	5.58E-06
Nickel	0.0021	4.38E-06	1.92E-05
POM	0.000088	1.84E-07	8.04E-07
Toluene	0.0034	7.09E-06	3.11E-05
Selenium	0.000024	5.01E-08	2.19E-07
Total HAPs		**3.94E-03**	**0.02**
Other Pollutants			
H_2S	N/A	1.12E-05	4.89E-05

a) Emission factors are taken from AP-42, Chapter 1, Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4, dated July 1998.
b) H_2S emissions are conservatively based on 98% conversion of H_2S to SO_2.
c) lb/hr and TPY emissions rates adjusted for site specific fuel gas. AP-42 SO2 factor is based on 0.2 gr/100 scf.

Parameter	Value
scf/lbmole	379.3
Btu/MMBtu	1,000,000
scf/MMscf	1,000,000
lb/ton	2,000
H_2S MW	34.08
SO_2 MW	64.06

H_2S Max Concentration (ppmv)	H_2S Mass to Heater (lb/hr)[a]	H_2S Mass to Heater (tpy)	Grains/100 scf[b]
5.00	5.59E-04	2.45E-03	0.33

[a] H_2S Mass to Heater Treater (lb/hr) = H_2S Max Concentration (ppmv) /10^6 * Fuel Rate (scf/hr) / Standard Molar Volume (scf/lbmol) * H_2S MW (lb/lbmol)
[b] 15.05 ppm H2S = 1 gr/100 scf per the Sulfur Measurement Handbook

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Dehydrator Reboiler - Natural Gas

EMISSION POINT ID: DHR-3

Background Information	
Name	Dehydrator Glycol Reboiler 3
Heater/Boiler rating (MMBtu/hr):	0.5
Rating above is:	below 100 MMBtu/hr,
Operating hours/year:	8760
Natural Gas Heat Value (Btu/scf)[a]:	1,020
Fuel Gas Heat Value (Btu/scf)[b]:	1,005
Max Permitted Fuel Gas Heat Value (Btu/scf):	1,206
Fuel Rate (scf/hr):	415
Fuel Rate (scf/yr):	3,631,631

a) Heating value for natural gas taken from Section 1.4 of AP-42 (dated 7/98).
b) Heating value for fuel gas was taken from 08/30/23 analysis.

Pollutant	Emission Factor[a] (lb/MMscf)	lb/hr[b]	tpy
VOC	5.5	3.19E-03	0.01
NOx	100	0.06	0.25
CO	84	0.05	0.21
PM_{10}	7.6	4.41E-03	0.02
$PM_{2.5}$	7.6	4.41E-03	0.02
SO_2	1.00	5.78E-04	2.95E-04
HAPS			
Arsenic	0.0002	1.39E-07	6.09E-07
Benzene	0.0021	1.46E-06	6.40E-06
Beryllium	0.000012	8.35E-09	3.66E-08
Cadmium	0.0011	7.65E-07	3.35E-06
Chromium	0.0014	9.74E-07	4.27E-06
Cobalt	0.000084	5.84E-08	2.56E-07
Dichlorobenzene	0.0012	8.35E-07	3.66E-06
Formaldehyde	0.075	5.22E-05	2.28E-04
n-Hexane	1.8	1.25E-03	5.48E-03
Lead	0.0005	3.48E-07	1.52E-06
Manganese	0.00038	2.64E-07	1.16E-06
Mercury	0.00026	1.81E-07	7.92E-07
Naphthalene	0.00061	4.24E-07	1.86E-06
Nickel	0.0021	1.46E-06	6.40E-06
POM	0.000088	6.12E-08	2.68E-07
Toluene	0.0034	2.36E-06	1.04E-05
Selenium	0.000024	1.67E-08	7.31E-08
Total HAPs		**1.31E-03**	**5.75E-03**
Other Pollutants			
H_2S	N/A	3.72E-06	1.63E-05

a) Emission factors are taken from AP-42, Chapter 1, Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4, dated July 1998.
b) H_2S emissions are conservatively based on 98% conversion of H_2S to SO_2.
c) lb/hr and TPY emissions rates adjusted for site specific fuel gas. AP-42 SO2 factor is based on 0.2 gr/100 scf.

Parameter	Value
scf/lbmole	379.3
Btu/MMBtu	1,000,000
scf/MMscf	1,000,000
lb/ton	2,000
H_2S MW	34.08
SO_2 MW	64.06

H_2S Max Concentration (ppmv)	H_2S Mass to Heater (lb/hr)[a]	H_2S Mass to Heater (tpy)	Grains/100 scf[b]
5.00	1.86E-04	8.16E-04	0.33

[a] H_2S Mass to Heater Treater (lb/hr) = H_2S Max Concentration (ppmv) /10^6 * Fuel Rate (scf/hr) / Standard Molar Volume (scf/lbmol) * H_2S MW (lb/lbmol)
[b] 15.05 ppm H2S = 1 gr/100 scf per the Sulfur Measurement Handbook

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT ID: CE-1 to CE-2

Site Location		
Engine Data		
EPN	CE-1 - CE-2	
Name	Compressor Engine	
Manufacturer	Caterpillar	
Model Number	3616	
Serial Number	See table on right.	
Manufacture Date	See table on right.	
Last Rebuild Date	N/A	
Application	gas compression	
Ignition/Injection Timing	variable	
Horsepower:	5,000	Scf/hr
Fuel consumption (Btu/hp-hr):	7,613	31,561
Hours of operation per year:	8,760	MMscf/yr
Engine Type:	4 Stroke Lean-Burn	276.5

Discharge Parameters	
Stack height (feet)	45
Stack diameter (feet)	2.5
Stack Temperature (°F)	838
Exit Velocity (fps)	104.7
Exhaust Flow (cfm)	30833
Method of Emission Control	Yes/No
NSCR Catalyst	No
SCR Catalyst	YES
JLCC Catalyst	No
Parameter Adjustment	No
Stratified Charge	No
Other (Specify)	AFRC, Oxi-Cat

Fuel Data	
Fuel Type	field gas
Fuel Consumption (BTU/bhp-hr)	7,613
Heat Value (HHV)	1,206
Heat Value (LHV)	1,005
Sulfur Content (grains/100scf)	0.3322
Federal/State Standards	Yes/No
NSPS Subpart JJJJ	See table on right
MACT Subpart ZZZZ	Yes
30 TAC, Chapter 117	No

Unit/EPN	Serial Number	Install Date	DOM	JJJJ applicability
CE-1	ZZY00814	TBD	3/29/2019	NSPS JJJJ
CE-2	ZZY00813	TBD	3/21/2019	NSPS JJJJ

SO_2 Mass Balance calculation for sour gas fuel:

			MW H_2S =	34.08	grams/mole
			MW SO_2 =	64.06	grams/mole
Fuel Heat Value (Btu/SCF)	1,206.07			379.3	SCF/lb-mole
Fuel H_2S content (mol%)	0.00050	*Not sour			
SO_2 produced (lb/hr) =	0.03	H2S produced (lb/hr) =	0.000		
SO_2 produced (tpy) =	0.12	H2S produced (tpy) =	0.001		

Calculation:

VOC (tpy) emissions: (g/hp-hr)*(%VOC)*(hp)*(8760hr/yr)/454/2000

CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000

NOx (tpy) emissions: CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000

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)

Does the VOC emission factor being used below include formaldehyde? (pick Yes or No from list)	No

To Determine Emissions for Air Permitting

		from AP-42:												
	If available, enter the test results or manufacturer's emission factors before control (g/hp-hr)	Table 3.2-1 2 stroke, lean-burn engine emission factors (lb/MMBtu)	Table 3.2-2 4 stroke, lean-burn engine emission factors (lb/MMBtu)	Table 3.2-3 4 stroke, rich burn engine emission factors (lb/MMBtu)	appropriate AP-42 factor	emission factor used	units	Uncontrolled lb/hr	Uncontrolled tpy	If present, enter the efficiency of any control device (as a %)	If present, enter the controlled emission factor (as g/hp-hr)	control factor used	lb/hr	tpy
VOC	0.56	0.12	0.118	0.0296	0.118	0.56	g/hp-hr	6.173	27.038	64.29	0.2	64.3	2.61	11.43
NOx	0.5	3.17	4.08	2.21	4.08	0.5	g/hp-hr	5.512	24.141		0.5	0.5	5.51	24.14
CO	2.45	0.386	0.317	3.72	0.317	2.45	g/hp-hr	27.007	118.290	79.59	0.5	79.6	5.51	24.14
PM_{10}		0.04831	0.0099871	0.01941	0.0099871	0.0099871	lb/MMBtu	0.380	1.665			0	0.38	1.67
$PM_{2.5}$		0.04831	0.0099871	0.01941	0.0099871	0.0099871	lb/MMBtu	0.380	1.665			0	0.38	1.67
SO_2												0	0.03	0.12
Formaldehyde	0.21	0.0552	0.0528	0.0205	0.0528	0.21	g/hp-hr	2.315	10.139	85.71	0.03	85.7	0.33	1.45
Benzene		0.00194	0.000404	0.00158	0.000404	0.000404	lb/MMBtu	0.015	0.067			0	0.02	0.07
Methane					0.002205	0.002205	lb/MMBtu	0.084	0.368				0.08	0.37
CO2											442	442	4,872.24	21,340.42
N2O					0.0001	0.0001	lb/MMBtu	0.004	0.017				0.004	0.02

Emission Type: (pick from list)
Steady State (continuous)

Enter any notes here:	* Uncontrolled factors were obtained from the manufacturer and controlled factors were selected for operational flexibility. The VOC control factor was applied to all HAPs, except formaldehyde which has its own control efficiency and acetaldehyde and acrolein which utilize the formaldehyde control efficiency. Fuel is not sour, used conservative 5 ppm H2S fuel gas as fuel in lieu of AP-42 factors.

Calculation:

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

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

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT ID: CE-1 to CE-2

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

HAP Emission Calculations								
Pollutant	4 Stroke Lean-Burn	Engines CE-1 - CE-2		Engines CE-1 - CE-2		2 Stroke Lean-Burn	4 Stroke Lean-Burn	4 Stroke Rich-Burn
	AP-42 Table 3.2-2 Emission Factor (lb/MMBtu)	Emissions lb/hr	Emissions tpy	UC Emissions lb/hr	UC Emissions tpy	AP-42 Table 3.2-1 Emission Factor (lb/MMBtu)	AP-42 Table 3.2-2 Emission Factor (lb/MMBtu)	AP-42 Table 3.2-3 Emission Factor (lb/MMBtu)
1,1,2,2-Tetrachloroethane	4.00E-05	5.44E-04	2.38E-03	1.52E-03	0.01	6.63E-05	4.00E-05	2.53E-05
1,1,2-Trichloroethane	3.18E-05	4.32E-04	1.89E-03	1.21E-03	0.01	5.27E-05	3.18E-05	1.53E-05
1,3-Butadiene	2.67E-04	3.63E-03	0.02	0.01	0.04	8.20E-04	2.67E-04	6.63E-04
1,3-Dichloropropene	2.64E-05	3.59E-04	1.57E-03	1.00E-03	4.40E-03	4.38E-05	2.64E-05	1.27E-05
2,2,4-Trimethylbenzne	--	--	--	--	--	8.46E-04		
2-Methylnaphthalene	3.32E-05	4.51E-04	1.98E-03	1.26E-03	0.01	2.14E-05	3.32E-05	
2,2,4-Trimethylpentane	2.50E-04	3.40E-03	0.01	0.01	0.04		2.50E-04	
Acenaphthene	1.25E-06	1.70E-05	7.44E-05	4.76E-05	2.08E-04	1.33E-06	1.25E-06	
Acenaphthylene	5.53E-06	7.52E-05	3.29E-04	2.10E-04	9.22E-04	3.17E-06	5.53E-06	
Acetaldehyde	0.01	0.05	0.20	0.32	1.39	7.76E-03	8.36E-03	2.79E-03
Acrolein	0.01	0.03	0.12	0.20	0.86	7.78E-03	5.14E-03	2.63E-03
Anthracene	--	--	--	--	--	7.18E-07		
Benz(a)anthracene	--	--	--	--	--	3.36E-07		
Benzene	4.40E-04	0.01	0.03	0.02	0.07	1.94E-03	4.40E-04	1.58E-03
Benzo(a)pyrene	--	--	--	--	--	5.68E-09		
Benzo(b)flouanthene	1.66E-07	2.26E-06	9.88E-06	6.32E-06	2.77E-05	8.51E-09	1.66E-07	
Benzo(e)pyrene	4.15E-07	5.64E-06	2.47E-05	1.58E-05	6.92E-05	2.34E-08	4.15E-07	
Benzo(g,h,i)perylene	4.14E-07	5.63E-06	2.47E-05	1.58E-05	6.90E-05	2.48E-08	4.14E-07	
Benzo(k)fluoranthene	--	--	--	--	--	4.26E-09		
Biphenyl	2.12E-04	2.88E-03	0.01	0.01	0.04	3.95E-06	2.12E-04	
Carbon Tetrachloride	3.67E-05	4.99E-04	2.19E-03	1.40E-03	0.01	6.07E-05	3.67E-05	1.77E-05
Chlorobenzene	3.04E-05	4.13E-04	1.81E-03	1.16E-03	0.01	4.44E-05	3.04E-05	1.29E-05
Chloroform	2.85E-05	3.87E-04	1.70E-03	1.08E-03	4.75E-03	4.71E-05	2.85E-05	1.37E-05
Chrysene	6.93E-07	9.42E-06	4.13E-05	2.64E-05	1.16E-04	6.72E-07	6.93E-07	
Ethylbenzene	3.97E-05	5.40E-04	2.36E-03	1.51E-03	0.01	1.08E-04	3.97E-05	2.48E-05
Ethylene Dibromide	4.43E-05	6.02E-04	2.64E-03	1.69E-03	0.01	7.34E-05	4.43E-05	2.13E-05
Flouranthene	1.11E-06	1.51E-05	6.61E-05	4.23E-05	1.85E-04	3.61E-07	1.11E-06	
Flourene	5.67E-06	7.71E-05	3.38E-04	2.16E-04	9.45E-04	1.69E-06	5.67E-06	
Formaldehyde	engine specific	0.33	1.45	2.31	10.14	5.52E-02	5.28E-02	2.05E-02
Indeno(1,2,3-c,d)pyrene	--	--	--	--	--	9.93E-09		
Methanol	2.50E-03	0.03	0.15	0.10	0.42	2.48E-03	2.50E-03	3.06E-03
Methylene Chloride	2.00E-05	2.72E-04	1.19E-03	7.61E-04	3.33E-03	1.47E-04	2.00E-05	4.12E-05
n-Hexane	1.11E-03	0.02	0.07	0.04	0.19	4.45E-04	1.11E-03	
Naphthalene	7.44E-05	1.01E-03	4.43E-03	2.83E-03	0.01	9.63E-05	7.44E-05	9.71E-05
PAH	2.69E-05	3.66E-04	1.60E-03	1.02E-03	4.48E-03	1.34E-04	2.69E-05	1.41E-04
Perylene	--	--	--	--	--	4.97E-09		
Phenanthrene	1.04E-05	1.41E-04	6.19E-04	3.96E-04	1.73E-03	3.53E-06	1.04E-05	
Phenol	2.40E-05	3.26E-04	1.43E-03	9.14E-04	4.00E-03	4.21E-05	2.40E-05	
Pyrene	1.36E-06	1.85E-05	8.10E-05	5.18E-05	2.27E-04	5.84E-07	1.36E-06	
Styrene	2.36E-05	3.21E-04	1.41E-03	8.98E-04	3.93E-03	5.48E-05	2.36E-05	1.19E-05
Tetrachloroethane	2.48E-06	3.37E-05	1.48E-04	9.44E-05	4.13E-04		2.48E-06	
Toluene	4.08E-04	0.01	0.02	0.02	0.07	9.63E-04	4.08E-04	5.58E-04
Vinyl Chloride	1.49E-05	2.03E-04	8.87E-04	5.67E-04	2.48E-03	2.47E-05	1.49E-05	7.18E-06
Xylene	1.84E-04	2.50E-03	0.01	0.01	0.03	2.68E-04	1.84E-04	1.95E-04
Total HAPs Minus HCOH		**0.15**	**0.67**	**0.74**	**3.23**			
Total HAPs		**0.48**	**2.12**	**3.05**	**13.37**			

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT ID: CE-3

Site Location

Engine Data

EPN	CE-3
Name	Compressor Engine
Manufacturer	Caterpillar
Model Number	3516B
Serial Number	See table on right.
Manufacture Date	See table on right.
Last Rebuild Date	N/A
Application	gas compression
Ignition/Injection Timing	variable

Horsepower:	1,380	Scf/hr
Fuel consumption (Btu/hp-hr):	8,310	9,508
Hours of operation per year:	8,760	MMscf/yr
Engine Type:	4 Stroke Lean-Burn	83.3

Discharge Parameters

Stack height (feet)	30
Stack diameter (feet)	1.33
Stack Temperature (°F)	971
Exit Velocity (fps)	104.61
Exhaust Flow (cfm)	8720

Method of Emission Control

	Yes/No
NSCR Catalyst	No
SCR Catalyst	No
JLCC Catalyst	No
Parameter Adjustment	No
Stratified Charge	No
Other (Specify)	AFRC, Oxi-Cat

Fuel Data

Fuel Type	field gas
Fuel Consumption (BTU/bhp-hr)	8,310
Heat Value (HHV)	1,206
Heat Value (LHV)	1,005
Sulfur Content (grains/100scf)	0.3322

0

Federal/State Standards

	Yes/No
NSPS Subpart JJJJ	See table on right
MACT Subpart ZZZZ	Yes
30 TAC, Chapter 117	No

Unit/EPN	Serial Number	Install Date	DOM	JJJJ applicability
CE-3	4EK04915	TBD	12/16/2010	NSPS JJJJ

SO_2 Mass Balance calculation for sour gas fuel:

		MW H_2S =	34.08	grams/mole
		MW SO_2 =	64.06	grams/mole
Fuel Heat Value (Btu/SCF)	1,206.07			
Fuel H_2S content (mol%)	0.00050	*Not sour	379.3	SCF/lb-mole

SO_2 produced (lb/hr) =	0.008	H2S produced (lb/hr) =	0.000
SO_2 produced (tpy) =	0.04	H2S produced (tpy) =	0.000

Calculation:

VOC (tpy) emissions: (g/hp-hr)*(%VOC)*(hp)*(8760hr/yr)/454/2000
CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000
NOx (tpy) emissions: CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000
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)

Does the VOC emission factor being used below include formaldehyde? (pick Yes or No from list)	No

To Determine Emissions for Air Permitting

	If available, enter the test results or manufacturer's emission factors before control (g/hp-hr)	from AP-42: Table 3.2-1 2 stroke, lean-burn engine emission factors (lb/MMBtu)	Table 3.2-2 4 stroke, lean-burn engine emission factors (lb/MMBtu)	Table 3.2-3 4 stroke, rich burn engine emission factors (lb/MMBtu)	appropriate AP-42 factor	emission factor used	units	Uncontrolled lb/hr	Uncontrolled tpy	If present, enter the efficiency of any control device (as a %)	If present, enter the controlled emission factor (as g/hp-hr)	control factor used	lb/hr	tpy
VOC	0.43	0.12	0.118	0.0296	0.118	0.43	g/hp-hr	1.308	5.730	41.86	0.25	41.9	0.93	4.08
NOx	0.5	3.17	4.08	2.21	4.08	0.5	g/hp-hr	1.521	6.663		0.5	0.5	1.52	6.66
CO	2.02	0.386	0.317	3.72	0.317	2.02	g/hp-hr	6.146	26.918	75.25	0.5	75.2	1.52	6.66
PM_{10}		0.04831	0.0099871	0.01941	0.0099871	0.0099871	lb/MMBtu	0.115	0.502			0	0.11	0.50
$PM_{2.5}$		0.04831	0.0099871	0.01941	0.0099871	0.0099871	lb/MMBtu	0.115	0.502			0	0.11	0.50
SO_2												0	0.008	0.04
Formaldehyde	0.42	0.0552	0.0528	0.0205	0.0528	0.42	g/hp-hr	1.278	5.597	88.10	0.05	88.1	0.15	0.67
Benzene		0.00194	0.000404	0.00158	0.000404	0.000404	lb/MMBtu	0.005	0.020			0	0.005	0.02
Methane					0.002205	0.002205	lb/MMBtu	0.025	0.111				0.03	0.11
CO2											456	456	1,387.33	6,076.51
N2O					0.0001	0.0001	lb/MMBtu	0.001	0.005				0.001	0.01

Enter any notes here:	* Uncontrolled factors were obtained from the manufacturer and controlled factors were selected for operational flexibility. The VOC control factor was applied to all HAPs, except formaldehyde which has its own control efficiency and acetaldehyde and acrolein which utilize the formaldehyde control efficiency. Fuel is not sour, used conservative 5 ppm H2S fuel gas as fuel in lieu of AP-42 factors.

Calculation:

For emission factors in terms of g/hp-hr:
(Emission factor) * (Horsepower) / (Conversion factor)
(g/hp-hr) * (hp) / (453.59 g/lb)

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)

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT ID: CE-3

HAP Emission Calculations								
	4 Stroke Lean-Burn	Engines CE-3		Engines CE-3		2 Stroke Lean-Burn	4 Stroke Lean-Burn	4 Stroke Rich-Burn
Pollutant	AP-42 Table 3.2-2 Emission Factor (lb/MMBtu)	Emissions lb/hr	Emissions tpy	UC Emissions lb/hr	UC Emissions tpy	AP-42 Table 3.2-1 Emission Factor (lb/MMBtu)	AP-42 Table 3.2-2 Emission Factor (lb/MMBtu)	AP-42 Table 3.2-3 Emission Factor (lb/MMBtu)
1,1,2,2-Tetrachloroethane	4.00E-05	2.67E-04	1.17E-03	4.59E-04	2.01E-03	6.63E-05	4.00E-05	2.53E-05
1,1,2-Trichloroethane	3.18E-05	2.12E-04	9.29E-04	3.65E-04	1.60E-03	5.27E-05	3.18E-05	1.53E-05
1,3-Butadiene	2.67E-04	1.78E-03	0.01	3.06E-03	0.01	8.20E-04	2.67E-04	6.63E-04
1,3-Dichloropropene	2.64E-05	1.76E-04	7.71E-04	3.03E-04	1.33E-03	4.38E-05	2.64E-05	1.27E-05
2,2,4-Trimethylbenzne	--	--	--	--	--	8.46E-04		
2-Methylnaphthalene	3.32E-05	2.21E-04	9.70E-04	3.81E-04	1.67E-03	2.14E-05	3.32E-05	
2,2,4-Trimethylpentane	2.50E-04	1.67E-03	0.01	2.87E-03	0.01		2.50E-04	
Acenaphthene	1.25E-06	8.33E-06	3.65E-05	1.43E-05	6.28E-05	1.33E-06	1.25E-06	
Acenaphthylene	5.53E-06	3.69E-05	1.61E-04	6.34E-05	2.78E-04	3.17E-06	5.53E-06	
Acetaldehyde	0.01	0.01	0.05	0.10	0.42	7.76E-03	8.36E-03	2.79E-03
Acrolein	0.01	0.01	0.03	0.06	0.26	7.78E-03	5.14E-03	2.63E-03
Anthracene	--	--	--	--	--	7.18E-07		
Benz(a)anthracene	--	--	--	--	--	3.36E-07		
Benzene	4.40E-04	2.93E-03	0.01	0.01	0.02	1.94E-03	4.40E-04	1.58E-03
Benzo(a)pyrene	--	--	--	--	--	5.68E-09		
Benzo(b)flouanthene	1.66E-07	1.11E-06	4.85E-06	1.90E-06	8.34E-06	8.51E-09	1.66E-07	
Benzo(e)pyrene	4.15E-07	2.77E-06	1.21E-05	4.76E-06	2.08E-05	2.34E-08	4.15E-07	
Benzo(g,h,i)perylene	4.14E-07	2.76E-06	1.21E-05	4.75E-06	2.08E-05	2.48E-08	4.14E-07	
Benzo(k)fluoranthene	--	--	--	--	--	4.26E-09		
Biphenyl	2.12E-04	1.41E-03	0.01	2.43E-03	0.01	3.95E-06	2.12E-04	
Carbon Tetrachloride	3.67E-05	2.45E-04	1.07E-03	4.21E-04	1.84E-03	6.07E-05	3.67E-05	1.77E-05
Chlorobenzene	3.04E-05	2.03E-04	8.88E-04	3.49E-04	1.53E-03	4.44E-05	3.04E-05	1.29E-05
Chloroform	2.85E-05	1.90E-04	8.32E-04	3.27E-04	1.43E-03	4.71E-05	2.85E-05	1.37E-05
Chrysene	6.93E-07	4.62E-06	2.02E-05	7.95E-06	3.48E-05	6.72E-07	6.93E-07	
Ethylbenzene	3.97E-05	2.65E-04	1.16E-03	4.55E-04	1.99E-03	1.08E-04	3.97E-05	2.48E-05
Ethylene Dibromide	4.43E-05	2.95E-04	1.29E-03	5.08E-04	2.23E-03	7.34E-05	4.43E-05	2.13E-05
Flouranthene	1.11E-06	7.40E-06	3.24E-05	1.27E-05	5.58E-05	3.61E-07	1.11E-06	
Flourene	5.67E-06	3.78E-05	1.66E-04	6.50E-05	2.85E-04	1.69E-06	5.67E-06	
Formaldehyde	engine specific	0.15	0.67	1.28	5.60	5.52E-02	5.28E-02	2.05E-02
Indeno(1,2,3-c,d)pyrene	--	--	--	--	--	9.93E-09		
Methanol	2.50E-03	0.02	0.07	0.03	0.13	2.48E-03	2.50E-03	3.06E-03
Methylene Chloride	2.00E-05	1.33E-04	5.84E-04	2.29E-04	1.00E-03	1.47E-04	2.00E-05	4.12E-05
n-Hexane	1.11E-03	0.01	0.03	0.01	0.06	4.45E-04	1.11E-03	
Naphthalene	7.44E-05	4.96E-04	2.17E-03	8.53E-04	3.74E-03	9.63E-05	7.44E-05	9.71E-05
PAH	2.69E-05	1.79E-04	7.86E-04	3.08E-04	1.35E-03	1.34E-04	2.69E-05	1.41E-04
Perylene	--	--	--	--	--	4.97E-09		
Phenanthrene	1.04E-05	6.93E-05	3.04E-04	1.19E-04	5.22E-04	3.53E-06	1.04E-05	
Phenol	2.40E-05	1.60E-04	7.01E-04	2.75E-04	1.21E-03	4.21E-05	2.40E-05	
Pyrene	1.36E-06	9.07E-06	3.97E-05	1.56E-05	6.83E-05	5.84E-07	1.36E-06	
Styrene	2.36E-05	1.57E-04	6.89E-04	2.71E-04	1.19E-03	5.48E-05	2.36E-05	1.19E-05
Tetrachloroethane	2.48E-06	1.65E-05	7.24E-05	2.84E-05	1.25E-04		2.48E-06	
Toluene	4.08E-04	2.72E-03	0.01	4.68E-03	0.02	9.63E-04	4.08E-04	5.58E-04
Vinyl Chloride	1.49E-05	9.93E-05	4.35E-04	1.71E-04	7.48E-04	2.47E-05	1.49E-05	7.18E-06
Xylene	1.84E-04	1.23E-03	0.01	2.11E-03	0.01	2.68E-04	1.84E-04	1.95E-04
Total HAPs Minus HCOH		**0.06**	**0.25**	**0.22**	**0.97**			
Total HAPs		**0.21**	**0.92**	**1.50**	**6.57**			

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT ID: CE-4 to CE-6

Site Location

Engine Data

EPN	CE-4 - CE-6
Name	Compressor Engine
Manufacturer	Caterpillar
Model Number	3516J
Serial Number	See table on right.
Manufacture Date	See table on right.
Last Rebuild Date	N/A
Application	gas compression
Ignition/Injection Timing	variable
Horsepower:	1,380 Scf/hr
Fuel consumption (Btu/hp-hr):	8,182 9,362
Hours of operation per year:	8,760 MMscf/yr
Engine Type:	4 Stroke Lean-Burn 82.0

Discharge Parameters

Stack height (feet)	30
Stack diameter (feet)	1.33
Stack Temperature (°F)	813
Exit Velocity (fps)	95.41
Exhaust Flow (cfm)	7953

Method of Emission Control

	Yes/No
NSCR Catalyst	No
SCR Catalyst	No
JLCC Catalyst	No
Parameter Adjustment	No
Stratified Charge	No
Other (Specify)	AFRC, Oxi-Cat

Fuel Data

Fuel Type	field gas
Fuel Consumption (BTU/bhp-hr)	8,182
Heat Value (HHV)	1,206
Heat Value (LHV)	1,005
Sulfur Content (grains/100scf)	0.3322 0

Federal/State Standards

	Yes/No
NSPS Subpart JJJJ	See table on right
MACT Subpart ZZZZ	Yes
30 TAC, Chapter 117	No

Unit/EPN	Serial Number	Install Date	DOM	JJJJ applicability
CE-4	4EK041-45-J	TBD	8/15/2024	NSPS JJJJ
CE-5	TBD	TBD	TBD	NSPS JJJJ

SO_2 Mass Balance calculation for sour gas fuel:

		MW H_2S =	34.08	grams/mole
		MW SO_2 =	64.06	grams/mole
Fuel Heat Value (Btu/SCF)	1,206.07			
Fuel H_2S content (mol%)	0.00050 *Not sour		379.3	SCF/lb-mole
SO_2 produced (lb/hr) =	0.01	H2S produced (lb/hr) =	0.000	
SO_2 produced (tpy) =	0.03	H2S produced (tpy) =	0.000	

Calculation:

VOC (tpy) emissions: (g/hp-hr)*(%VOC)*(hp)*(8760hr/yr)/454/2000
CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000
NOx (tpy) emissions: CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000
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)

Does the VOC emission factor being used below include formaldehyde? (pick Yes or No from list)	No

To Determine Emissions for Air Permitting

	If available, enter the test results or manufacturer's emission factors before control (g/hp-hr)	from AP-42: Table 3.2-1 2 stroke, lean-burn engine emission factors (lb/MMBtu)	Table 3.2-2 4 stroke, lean-burn engine emission factors (lb/MMBtu)	Table 3.2-3 4 stroke, rich burn engine emission factors (lb/MMBtu)	appropriate AP-42 factor	emission factor used	units	Uncontrolled lb/hr	Uncontrolled tpy	If present, enter the efficiency of any control device (as a %)	If present, enter the controlled emission factor (as g/hp-hr)	control factor used	lb/hr	tpy
VOC	0.43	0.12	0.118	0.0296	0.118	0.43	g/hp-hr	1.308	5.730	41.86	0.25	41.9	0.93	4.08
NOx	0.5	3.17	4.08	2.21	4.08	0.5	g/hp-hr	1.521	6.663		0.5	0.5	1.52	6.66
CO	2.02	0.386	0.317	3.72	0.317	2.02	g/hp-hr	6.146	26.918	75.25	0.5	75.2	1.52	6.66
PM_{10}		0.04831	0.0099871	0.01941	0.0099871	0.0099871	lb/MMBtu	0.113	0.494			0	0.11	0.49
$PM_{2.5}$		0.04831	0.0099871	0.01941	0.0099871	0.0099871	lb/MMBtu	0.113	0.494			0	0.11	0.49
SO_2												0	0.008	0.03
Formaldehyde	0.42	0.0552	0.0528	0.0205	0.0528	0.42	g/hp-hr	1.278	5.597	88.10	0.05	88.1	0.15	0.67
Benzene		0.00194	0.000404	0.00158	0.000404	0.000404	lb/MMBtu	0.005	0.020			0	0.00	0.02
Methane					0.0001	0.0001	lb/MMBtu	0.001	0.005				0.00	0.00
CO2											456	456	1,387.33	6,076.51
N2O					0.0001	0.0001	lb/MMBtu	0.001	0.005				0.001	0.00

Enter any notes here:	* Uncontrolled factors were obtained from the manufacturer and controlled factors were selected for operational flexibility. The VOC control factor was applied to all HAPs, except formaldehyde which has its own control efficiency and acetaldehyde and acrolein which utilize the formaldehyde control efficiency. Fuel is not sour, used conservative 5 ppm H2S fuel gas as fuel in lieu of AP-42 factors.

Calculation:

For emission factors in terms of g/hp-hr:
(Emission factor) * (Horsepower) / (Conversion factor)
(g/hp-hr) * (hp) / (453.59 g/lb)

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)

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT ID: CE-4 to CE-6

HAP Emission Calculations								
Pollutant	4 Stroke Lean-Burn	Engines CE-4 - CE-6		Engines CE-4 - CE-6		2 Stroke Lean-Burn	4 Stroke Lean-Burn	4 Stroke Rich-Burn
	AP-42 Table 3.2-2 Emission Factor (lb/MMBtu)	Emissions lb/hr	Emissions tpy	UC Emissions lb/hr	UC Emissions tpy	AP-42 Table 3.2-1 Emission Factor (lb/MMBtu)	AP-42 Table 3.2-2 Emission Factor (lb/MMBtu)	AP-42 Table 3.2-3 Emission Factor (lb/MMBtu)
1,1,2,2-Tetrachloroethane	4.00E-05	2.63E-04	1.15E-03	4.52E-04	1.98E-03	6.63E-05	4.00E-05	2.53E-05
1,1,2-Trichloroethane	3.18E-05	2.09E-04	9.14E-04	3.59E-04	1.57E-03	5.27E-05	3.18E-05	1.53E-05
1,3-Butadiene	2.67E-04	1.75E-03	0.01	3.01E-03	0.01	8.20E-04	2.67E-04	6.63E-04
1,3-Dichloropropene	2.64E-05	1.73E-04	7.59E-04	2.98E-04	1.31E-03	4.38E-05	2.64E-05	1.27E-05
2,2,4-Trimethylbenzne	--	--	--	--	--	8.46E-04		
2-Methylnaphthalene	3.32E-05	2.18E-04	9.55E-04	3.75E-04	1.64E-03	2.14E-05	3.32E-05	
2,2,4-Trimethylpentane	2.50E-04	1.64E-03	0.01	2.82E-03	0.01		2.50E-04	
Acenaphthene	1.25E-06	8.21E-06	3.59E-05	1.41E-05	6.18E-05	1.33E-06	1.25E-06	
Acenaphthylene	5.53E-06	3.63E-05	1.59E-04	6.24E-05	2.73E-04	3.17E-06	5.53E-06	
Acetaldehyde	0.01	0.01	0.05	0.09	0.41	7.76E-03	8.36E-03	2.79E-03
Acrolein	0.01	0.01	0.03	0.06	0.25	7.78E-03	5.14E-03	2.63E-03
Anthracene	--	--	--	--	--	7.18E-07		
Benz(a)anthracene	--	--	--	--	--	3.36E-07		
Benzene	4.40E-04	2.89E-03	0.01	4.97E-03	0.02	1.94E-03	4.40E-04	1.58E-03
Benzo(a)pyrene	--	--	--	--	--	5.68E-09		
Benzo(b)flouanthene	1.66E-07	1.09E-06	4.77E-06	1.87E-06	8.21E-06	8.51E-09	1.66E-07	
Benzo(e)pyrene	4.15E-07	2.72E-06	1.19E-05	4.69E-06	2.05E-05	2.34E-08	4.15E-07	
Benzo(g,h,i)perylene	4.14E-07	2.72E-06	1.19E-05	4.67E-06	2.05E-05	2.48E-08	4.14E-07	
Benzo(k)fluoranthene	--	--	--	--	--	4.26E-09		
Biphenyl	2.12E-04	1.39E-03	0.01	2.39E-03	0.01	3.95E-06	2.12E-04	
Carbon Tetrachloride	3.67E-05	2.41E-04	1.06E-03	4.14E-04	1.82E-03	6.07E-05	3.67E-05	1.77E-05
Chlorobenzene	3.04E-05	2.00E-04	8.74E-04	3.43E-04	1.50E-03	4.44E-05	3.04E-05	1.29E-05
Chloroform	2.85E-05	1.87E-04	8.19E-04	3.22E-04	1.41E-03	4.71E-05	2.85E-05	1.37E-05
Chrysene	6.93E-07	4.55E-06	1.99E-05	7.82E-06	3.43E-05	6.72E-07	6.93E-07	
Ethylbenzene	3.97E-05	2.61E-04	1.14E-03	4.48E-04	1.96E-03	1.08E-04	3.97E-05	2.48E-05
Ethylene Dibromide	4.43E-05	2.91E-04	1.27E-03	5.00E-04	2.19E-03	7.34E-05	4.43E-05	2.13E-05
Flouranthene	1.11E-06	7.29E-06	3.19E-05	1.25E-05	5.49E-05	3.61E-07	1.11E-06	
Flourene	5.67E-06	3.72E-05	1.63E-04	6.40E-05	2.80E-04	1.69E-06	5.67E-06	
Formaldehyde	engine specific	0.15	0.67	1.28	5.60	5.52E-02	5.28E-02	2.05E-02
Indeno(1,2,3-c,d)pyrene	--	--	--	--	--	9.93E-09		
Methanol	2.50E-03	0.02	0.07	0.03	0.12	2.48E-03	2.50E-03	3.06E-03
Methylene Chloride	2.00E-05	1.31E-04	5.75E-04	2.26E-04	9.89E-04	1.47E-04	2.00E-05	4.12E-05
n-Hexane	1.11E-03	0.01	0.03	0.01	0.05	4.45E-04	1.11E-03	
Naphthalene	7.44E-05	4.88E-04	2.14E-03	8.40E-04	3.68E-03	9.63E-05	7.44E-05	9.71E-05
PAH	2.69E-05	1.77E-04	7.73E-04	3.04E-04	1.33E-03	1.34E-04	2.69E-05	1.41E-04
Perylene	--	--	--	--	--	4.97E-09		
Phenanthrene	1.04E-05	6.83E-05	2.99E-04	1.17E-04	5.14E-04	3.53E-06	1.04E-05	
Phenol	2.40E-05	1.58E-04	6.90E-04	2.71E-04	1.19E-03	4.21E-05	2.40E-05	
Pyrene	1.36E-06	8.93E-06	3.91E-05	1.54E-05	6.73E-05	5.84E-07	1.36E-06	
Styrene	2.36E-05	1.55E-04	6.79E-04	2.66E-04	1.17E-03	5.48E-05	2.36E-05	1.19E-05
Tetrachloroethane	2.48E-06	1.63E-05	7.13E-05	2.80E-05	1.23E-04		2.48E-06	
Toluene	4.08E-04	2.68E-03	0.01	4.61E-03	0.02	9.63E-04	4.08E-04	5.58E-04
Vinyl Chloride	1.49E-05	9.78E-05	4.28E-04	1.68E-04	7.37E-04	2.47E-05	1.49E-05	7.18E-06
Xylene	1.84E-04	1.21E-03	0.01	2.08E-03	0.01	2.68E-04	1.84E-04	1.95E-04
Total HAPs Minus HCOH		**0.06**	**0.25**	**0.22**	**0.96**			
Total HAPs		**0.21**	**0.92**	**1.50**	**6.56**			

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT ID: CE-7 to CE-9

Site Location

Engine Data

EPN	CE-7 - CE-9
Name	Compressor Engine
Manufacturer	Caterpillar
Model Number	3606
Serial Number	See table on right.
Manufacture Date	See table on right.
Last Rebuild Date	N/A
Application	gas compression
Ignition/Injection Timing	variable

Horsepower:	1,875	Scf/hr
Fuel consumption (Btu/hp-hr):	7,983	12,411
Hours of operation per year:	8,760	MMscf/yr
Engine Type:	4 Stroke Lean-Burn	108.7

Discharge Parameters

Stack height (feet)	40
Stack diameter (feet)	2.00
Stack Temperature (°F)	823
Exit Velocity (fps)	63.58
Exhaust Flow (cfm)	11985

Method of Emission Control

	Yes/No
NSCR Catalyst	No
SCR Catalyst	YES
JLCC Catalyst	No
Parameter Adjustment	No
Stratified Charge	No
Other (Specify)	AFRC, Oxi-Cat

Fuel Data

Fuel Type	field gas
Fuel Consumption (BTU/bhp-hr)	7,983
Heat Value (HHV)	1,206
Heat Value (LHV)	1,005
Sulfur Content (grains/100scf)	0.3322

Federal/State Standards

	Yes/No
NSPS Subpart JJJJ	See table on right
MACT Subpart ZZZZ	Yes
30 TAC, Chapter 117	No

Unit/EPN	Serial Number	Install Date	DOM	JJJJ applicability
CE-6	TBD	TBD	TBD	NSPS JJJJ
CE-7	TBD	TBD	TBD	NSPS JJJJ
CE-8	TBD	TBD	TBD	NSPS JJJJ
CE-9	TBD	TBD	TBD	NSPS JJJJ

SO_2 Mass Balance calculation for sour gas fuel:

		MW H_2S =	34.08	grams/mole
		MW SO_2 =	64.06	grams/mole
Fuel Heat Value (Btu/SCF)	1,206.07			
Fuel H_2S content (mol%)	0.00050	*Not sour	379.3	SCF/lb-mole

SO_2 produced (lb/hr) =	0.01	H2S produced (lb/hr) =	0.000
SO_2 produced (tpy) =	0.05	H2S produced (tpy) =	0.000

Calculation:

VOC (tpy) emissions: (g/hp-hr)*(%VOC)*(hp)*(8760hr/yr)/454/2000
CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000
NOx (tpy) emissions: CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000
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)

Does the VOC emission factor being used below include formaldehyde? (pick Yes or No from list)	No

To Determine Emissions for Air Permitting

	If available, enter the test results or manufacturer's emission factors before control (g/hp-hr)	from AP-42: Table 3.2-1 2 stroke, lean-burn engine emission factors (lb/MMBtu)	Table 3.2-2 4 stroke, lean-burn engine emission factors (lb/MMBtu)	Table 3.2-3 4 stroke, rich burn engine emission factors (lb/MMBtu)	appropriate AP-42 factor	emission factor used	units	Uncontrolled lb/hr	Uncontrolled tpy	If present, enter the efficiency of any control device (as a %)	If present, enter the controlled emission factor (as g/hp-hr)	control factor used	lb/hr	tpy
VOC	0.32	0.12	0.118	0.0296	0.118	0.32	g/hp-hr	1.323	5.794	37.50	0.20	37.5	0.98	4.30
NOx	0.3	3.17	4.08	2.21	4.08	0.3	g/hp-hr	1.240	5.432		0.30	0.3	1.24	5.43
CO	2.5	0.386	0.317	3.72	0.317	2.5	g/hp-hr	10.334	45.264	80.00	0.50	80.0	2.07	9.05
PM_{10}		0.04831	0.0099871	0.01941	0.0099871	0.0099871	lb/MMBtu	0.149	0.655			0	0.15	0.65
$PM_{2.5}$		0.04831	0.0099871	0.01941	0.0099871	0.0099871	lb/MMBtu	0.149	0.655			0	0.15	0.65
SO_2												0	0.01	0.05
Formaldehyde	0.19	0.0552	0.0528	0.0205	0.0528	0.19	g/hp-hr	0.785	3.440	84.21	0.03	84.2	0.12	0.54
Benzene		0.00194	0.000404	0.00158	0.000404	0.000404	lb/MMBtu	0.006	0.026			0	0.01	0.03
Methane					0.002205	0.002205	lb/MMBtu	0.033	0.145				0.03	0.14
CO2											438	438	1,810.56	7,930.23
N2O					0.0001	0.0001	lb/MMBtu	0.001	0.007				0.001	0.01

Enter any notes here:	* Uncontrolled factors were obtained from the manufacturer and controlled factors were selected for operational flexibility. The VOC control factor was applied to all HAPs, except formaldehyde which has its own control efficiency and acetaldehyde and acrolein which utilize the formaldehyde control efficiency. Fuel is not sour, used conservative 5 ppm H2S fuel gas as fuel in lieu of AP-42 factors.

Calculation:

For emission factors in terms of g/hp-hr:
(Emission factor) * (Horsepower) / (Conversion factor)
(g/hp-hr) * (hp) / (453.59 g/lb)

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)

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT ID: CE-7 to CE-9

HAP Emission Calculations					
Pollutant	4 Stroke Lean-Burn	Engines CE-7 - CE-9		Engines CE-7 - CE-9	
	AP-42 Table 3.2-2 Emission Factor (lb/MMBtu)	Emissions lb/hr	Emissions tpy	UC Emissions lb/hr	UC Emissions tpy
1,1,2,2-Tetrachloroethane	4.00E-05	3.74E-04	1.64E-03	5.99E-04	2.62E-03
1,1,2-Trichloroethane	3.18E-05	2.97E-04	1.30E-03	4.76E-04	2.08E-03
1,3-Butadiene	2.67E-04	2.50E-03	0.01	4.00E-03	0.02
1,3-Dichloropropene	2.64E-05	2.47E-04	1.08E-03	3.95E-04	1.73E-03
2,2,4-Trimethylbenzne	--	--	--	--	--
2-Methylnaphthalene	3.32E-05	3.11E-04	1.36E-03	4.97E-04	2.18E-03
2,2,4-Trimethylpentane	2.50E-04	2.34E-03	0.01	3.74E-03	0.02
Acenaphthene	1.25E-06	1.17E-05	5.12E-05	1.87E-05	8.20E-05
Acenaphthylene	5.53E-06	5.17E-05	2.27E-04	8.28E-05	3.63E-04
Acetaldehyde	0.01	0.02	0.09	0.13	0.55
Acrolein	0.01	0.01	0.05	0.08	0.34
Anthracene	--	--	--	--	--
Benz(a)anthracene	--	--	--	--	--
Benzene	4.40E-04	4.12E-03	0.02	0.01	0.03
Benzo(a)pyrene	--	--	--	--	--
Benzo(b)flouanthene	1.66E-07	1.55E-06	6.80E-06	2.48E-06	1.09E-05
Benzo(e)pyrene	4.15E-07	3.88E-06	1.70E-05	6.21E-06	2.72E-05
Benzo(g,h,i)perylene	4.14E-07	3.87E-06	1.70E-05	6.20E-06	2.71E-05
Benzo(k)fluoranthene	--	--	--	--	--
Biphenyl	2.12E-04	1.98E-03	0.01	3.17E-03	0.01
Carbon Tetrachloride	3.67E-05	3.43E-04	1.50E-03	5.49E-04	2.41E-03
Chlorobenzene	3.04E-05	2.84E-04	1.25E-03	4.55E-04	1.99E-03
Chloroform	2.85E-05	2.67E-04	1.17E-03	4.27E-04	1.87E-03
Chrysene	6.93E-07	6.48E-06	2.84E-05	1.04E-05	4.54E-05
Ethylbenzene	3.97E-05	3.71E-04	1.63E-03	5.94E-04	2.60E-03
Ethylene Dibromide	4.43E-05	4.14E-04	1.82E-03	6.63E-04	2.90E-03
Flouranthene	1.11E-06	1.04E-05	4.55E-05	1.66E-05	7.28E-05
Flourene	5.67E-06	5.30E-05	2.32E-04	8.49E-05	3.72E-04
Formaldehyde	engine specific	0.12	0.54	0.79	3.44
Indeno(1,2,3-c,d)pyrene	--	--	--	--	--
Methanol	2.50E-03	0.02	0.10	0.04	0.16
Methylene Chloride	2.00E-05	1.87E-04	8.20E-04	2.99E-04	1.31E-03
n-Hexane	1.11E-03	0.01	0.05	0.02	0.07
Naphthalene	7.44E-05	6.96E-04	3.05E-03	1.11E-03	4.88E-03
PAH	2.69E-05	2.52E-04	1.10E-03	4.03E-04	1.76E-03
Perylene	--	--	--	--	--
Phenanthrene	1.04E-05	9.73E-05	4.26E-04	1.56E-04	6.82E-04
Phenol	2.40E-05	2.25E-04	9.83E-04	3.59E-04	1.57E-03
Pyrene	1.36E-06	1.27E-05	5.57E-05	2.04E-05	8.92E-05
Styrene	2.36E-05	2.21E-04	9.67E-04	3.53E-04	1.55E-03
Tetrachloroethane	2.48E-06	2.32E-05	1.02E-04	3.71E-05	1.63E-04
Toluene	4.08E-04	3.82E-03	0.02	0.01	0.03
Vinyl Chloride	1.49E-05	1.39E-04	6.11E-04	2.23E-04	9.77E-04
Xylene	1.84E-04	1.72E-03	0.01	2.75E-03	0.01
Total HAPs Minus HCOH		**0.09**	**0.38**	**0.29**	**1.27**
Total HAPs		**0.21**	**0.92**	**1.08**	**4.71**

2 Stroke Lean-Burn	4 Stroke Lean-Burn	4 Stroke Rich-Burn
AP-42 Table 3.2-1 Emission Factor (lb/MMBtu)	AP-42 Table 3.2-2 Emission Factor (lb/MMBtu)	AP-42 Table 3.2-3 Emission Factor (lb/MMBtu)
6.63E-05	4.00E-05	2.53E-05
5.27E-05	3.18E-05	1.53E-05
8.20E-04	2.67E-04	6.63E-04
4.38E-05	2.64E-05	1.27E-05
8.46E-04		
2.14E-05	3.32E-05	
	2.50E-04	
1.33E-06	1.25E-06	
3.17E-06	5.53E-06	
7.76E-03	8.36E-03	2.79E-03
7.78E-03	5.14E-03	2.63E-03
7.18E-07		
3.36E-07		
1.94E-03	4.40E-04	1.58E-03
5.68E-09		
8.51E-09	1.66E-07	
2.34E-08	4.15E-07	
2.48E-08	4.14E-07	
4.26E-09		
3.95E-06	2.12E-04	
6.07E-05	3.67E-05	1.77E-05
4.44E-05	3.04E-05	1.29E-05
4.71E-05	2.85E-05	1.37E-05
6.72E-07	6.93E-07	
1.08E-04	3.97E-05	2.48E-05
7.34E-05	4.43E-05	2.13E-05
3.61E-07	1.11E-06	
1.69E-06	5.67E-06	
5.52E-02	5.28E-02	2.05E-02
9.93E-09		
2.48E-03	2.50E-03	3.06E-03
1.47E-04	2.00E-05	4.12E-05
4.45E-04	1.11E-03	
9.63E-05	7.44E-05	9.71E-05
1.34E-04	2.69E-05	1.41E-04
4.97E-09		
3.53E-06	1.04E-05	
4.21E-05	2.40E-05	
5.84E-07	1.36E-06	
5.48E-05	2.36E-05	1.19E-05
	2.48E-06	
9.63E-04	4.08E-04	5.58E-04
2.47E-05	1.49E-05	7.18E-06
2.68E-04	1.84E-04	1.95E-04

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT ID: CE-10

Site Location

Engine Data

EPN	CE-10
Name	Compressor Engine
Manufacturer	Caterpillar
Model Number	3608
Serial Number	See table on right.
Manufacture Date	See table on right.
Last Rebuild Date	N/A
Application	gas compression
Ignition/Injection Timing	variable

Horsepower:	2,750	Scf/hr
Fuel consumption (Btu/hp-hr):	7,777	17,733
Hours of operation per year:	8,760	MMscf/yr
Engine Type:	4 Stroke Lean-Burn	155.3

Discharge Parameters

Stack height (feet)	30
Stack diameter (feet)	1.67
Stack Temperature (°F)	789
Exit Velocity (fps)	132.51
Exhaust Flow (cfm)	17346

Method of Emission Control

	Yes/No
NSCR Catalyst	No
SCR Catalyst	No
JLCC Catalyst	No
Parameter Adjustment	No
Stratified Charge	No
Other (Specify)	AFRC, Oxi-Cat

Fuel Data

Fuel Type	natural gas
Fuel Consumption (BTU/bhp-hr)	7,777
Heat Value (HHV)	1,206
Heat Value (LHV)	1,005
Sulfur Content (grains/100scf)	0.3322

Federal/State Standards

	Yes/No
NSPS Subpart JJJJ	See table on right
MACT Subpart ZZZZ	Yes
30 TAC, Chapter 117	No

Unit/EPN	Serial Number	Install Date	DOM	JJJJ applicability
CE-10	TBD	TBD	TBD	NSPS JJJJ

SO_2 Mass Balance calculation for sour gas fuel:

		MW H_2S =	34.08	grams/mole
		MW SO_2 =	64.06	grams/mole
Fuel Heat Value (Btu/SCF)	1,206.07			
Fuel H_2S content (mol%)	0.00050	*Not sour	379.3	SCF/lb-mole

SO_2 produced (lb/hr) =	0.01	H2S produced (lb/hr) =	0.000
SO_2 produced (tpy) =	0.07	H2S produced (tpy) =	0.001

Calculation:

VOC (tpy) emissions: (g/hp-hr)*(%VOC)*(hp)*(8760hr/yr)/454/2000
CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000
NOx (tpy) emissions: CO (tpy) emissions: (g/hp-hr)*(hp)*(8760hr/yr)/454/2000
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)

Does the VOC emission factor being used below include formaldehyde? (pick Yes or No from list)	No

To Determine Emissions for Air Permitting

	If available, enter the test results or manufacturer's emission factors before control (g/hp-hr)	from AP-42: Table 3.2-1 2 stroke, lean-burn engine emission factors (lb/MMBtu)	Table 3.2-2 4 stroke, lean-burn engine emission factors (lb/MMBtu)	Table 3.2-3 4 stroke, rich burn engine emission factors (lb/MMBtu)	appropriate AP-42 factor	emission factor used	units	Uncontrolled lb/hr	Uncontrolled tpy	If present, enter the efficiency of any control device (as a %)	If present, enter the controlled emission factor (as g/hp-hr)	control factor used	lb/hr	tpy
VOC	0.17	0.12	0.118	0.0296	0.118	0.17	g/hp-hr	1.031	4.514	0.00	0.2	0.2	1.47	6.42
NOx	0.3	3.17	4.08	2.21	4.08	0.3	g/hp-hr	1.819	7.966		0.3	0.3	1.82	7.97
CO	2.15	0.386	0.317	3.72	0.317	2.15	g/hp-hr	13.035	57.093	76.74	0.5	76.7	3.03	13.28
PM_{10}		0.04831	0.0099871	0.01941	0.0099871	0.0099871	lb/MMBtu	0.214	0.936			0	0.21	0.94
$PM_{2.5}$		0.04831	0.0099871	0.01941	0.0099871	0.0099871	lb/MMBtu	0.214	0.936			0	0.21	0.94
SO_2												0	0.01	0.07
Formaldehyde	0.12	0.0552	0.0528	0.0205	0.0528	0.12	g/hp-hr	0.728	3.187	75.00	0.03	75.0	0.18	0.80
Benzene		0.00194	0.000404	0.00158	0.000404	0.000404	lb/MMBtu	0.009	0.038			0	0.01	0.04
Methane					0.002205	0.002205	lb/MMBtu	0.047	0.207				0.05	0.21
CO2	426										426		2,582.73	11,312.35
N2O					0.0001	0.0001	lb/MMBtu	0.002	0.009				0.002	0.01

Enter any notes here:	* Uncontrolled factors were obtained from the manufacturer and controlled factors were selected for operational flexibility. The VOC control factor was applied to all HAPs, except formaldehyde which has its own control efficiency and acetaldehyde and acrolein which utilize the formaldehyde control efficiency. Fuel is not sour, used conservative 5 ppm H2S fuel gas as fuel in lieu of AP-42 factors.

Calculation:

For emission factors in terms of g/hp-hr:
(Emission factor) * (Horsepower) / (Conversion factor)
(g/hp-hr) * (hp) / (453.59 g/lb)

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)

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT ID: CE-10

HAP Emission Calculations					
Pollutant	4 Stroke Lean-Burn	Engines CE-10		Engines CE-10	
	AP-42 Table 3.2-2 Emission Factor (lb/MMBtu)	Emissions lb/hr	Emissions tpy	UC Emissions lb/hr	UC Emissions tpy
1,1,2,2-Tetrachloroethane	4.00E-05	8.55E-04	3.75E-03	8.55E-04	3.75E-03
1,1,2-Trichloroethane	3.18E-05	6.80E-04	2.98E-03	6.80E-04	2.98E-03
1,3-Butadiene	2.67E-04	0.01	0.03	0.01	0.03
1,3-Dichloropropene	2.64E-05	5.65E-04	2.47E-03	5.65E-04	2.47E-03
2,2,4-Trimethylbenzne	--	--	--	--	--
2-Methylnaphthalene	3.32E-05	7.10E-04	3.11E-03	7.10E-04	3.11E-03
2,2,4-Trimethylpentane	2.50E-04	0.01	0.02	0.01	0.02
Acenaphthene	1.25E-06	2.67E-05	1.17E-04	2.67E-05	1.17E-04
Acenaphthylene	5.53E-06	1.18E-04	5.18E-04	1.18E-04	5.18E-04
Acetaldehyde	0.01	0.04	0.20	0.18	0.78
Acrolein	0.01	0.03	0.12	0.11	0.48
Anthracene	--	--	--	--	--
Benz(a)anthracene	--	--	--	--	--
Benzene	4.40E-04	0.01	0.04	0.01	0.04
Benzo(a)pyrene	--	--	--	--	--
Benzo(b)flouanthene	1.66E-07	3.55E-06	1.55E-05	3.55E-06	1.55E-05
Benzo(e)pyrene	4.15E-07	8.88E-06	3.89E-05	8.88E-06	3.89E-05
Benzo(g,h,i)perylene	4.14E-07	8.85E-06	3.88E-05	8.85E-06	3.88E-05
Benzo(k)fluoranthene	--	--	--	--	--
Biphenyl	2.12E-04	4.53E-03	0.02	4.53E-03	0.02
Carbon Tetrachloride	3.67E-05	7.85E-04	3.44E-03	7.85E-04	3.44E-03
Chlorobenzene	3.04E-05	6.50E-04	2.85E-03	6.50E-04	2.85E-03
Chloroform	2.85E-05	6.10E-04	2.67E-03	6.10E-04	2.67E-03
Chrysene	6.93E-07	1.48E-05	6.49E-05	1.48E-05	6.49E-05
Ethylbenzene	3.97E-05	8.49E-04	3.72E-03	8.49E-04	3.72E-03
Ethylene Dibromide	4.43E-05	9.47E-04	4.15E-03	9.47E-04	4.15E-03
Flouranthene	1.11E-06	2.37E-05	1.04E-04	2.37E-05	1.04E-04
Flourene	5.67E-06	1.21E-04	5.31E-04	1.21E-04	5.31E-04
Formaldehyde	engine specific	0.18	0.80	0.73	3.19
Indeno(1,2,3-c,d)pyrene	--	--	--	--	--
Methanol	2.50E-03	0.05	0.23	0.05	0.23
Methylene Chloride	2.00E-05	4.28E-04	1.87E-03	4.28E-04	1.87E-03
n-Hexane	1.11E-03	0.02	0.10	0.02	0.10
Naphthalene	7.44E-05	1.59E-03	0.01	1.59E-03	0.01
PAH	2.69E-05	5.75E-04	2.52E-03	5.75E-04	2.52E-03
Perylene	--	--	--	--	--
Phenanthrene	1.04E-05	2.22E-04	9.74E-04	2.22E-04	9.74E-04
Phenol	2.40E-05	5.13E-04	2.25E-03	5.13E-04	2.25E-03
Pyrene	1.36E-06	2.91E-05	1.27E-04	2.91E-05	1.27E-04
Styrene	2.36E-05	5.05E-04	2.21E-03	5.05E-04	2.21E-03
Tetrachloroethane	2.48E-06	5.30E-05	2.32E-04	5.30E-05	2.32E-04
Toluene	4.08E-04	0.01	0.04	0.01	0.04
Vinyl Chloride	1.49E-05	3.19E-04	1.40E-03	3.19E-04	1.40E-03
Xylene	1.84E-04	3.94E-03	0.02	3.94E-03	0.02
Total HAPs Minus HCOH		**0.20**	**0.87**	**0.41**	**1.82**
Total HAPs		**0.38**	**1.67**	**1.14**	**5.00**

2 Stroke Lean-Burn	4 Stroke Lean-Burn	4 Stroke Rich-Burn
AP-42 Table 3.2-1 Emission Factor (lb/MMBtu)	AP-42 Table 3.2-2 Emission Factor (lb/MMBtu)	AP-42 Table 3.2-3 Emission Factor (lb/MMBtu)
6.63E-05	4.00E-05	2.53E-05
5.27E-05	3.18E-05	1.53E-05
8.20E-04	2.67E-04	6.63E-04
4.38E-05	2.64E-05	1.27E-05
8.46E-04		
2.14E-05	3.32E-05	
	2.50E-04	
1.33E-06	1.25E-06	
3.17E-06	5.53E-06	
7.76E-03	8.36E-03	2.79E-03
7.78E-03	5.14E-03	2.63E-03
7.18E-07		
3.36E-07		
1.94E-03	4.40E-04	1.58E-03
5.68E-09		
8.51E-09	1.66E-07	
2.34E-08	4.15E-07	
2.48E-08	4.14E-07	
4.26E-09		
3.95E-06	2.12E-04	
6.07E-05	3.67E-05	1.77E-05
4.44E-05	3.04E-05	1.29E-05
4.71E-05	2.85E-05	1.37E-05
6.72E-07	6.93E-07	
1.08E-04	3.97E-05	2.48E-05
7.34E-05	4.43E-05	2.13E-05
3.61E-07	1.11E-06	
1.69E-06	5.67E-06	
5.52E-02	5.28E-02	2.05E-02
9.93E-09		
2.48E-03	2.50E-03	3.06E-03
1.47E-04	2.00E-05	4.12E-05
4.45E-04	1.11E-03	
9.63E-05	7.44E-05	9.71E-05
1.34E-04	2.69E-05	1.41E-04
4.97E-09		
3.53E-06	1.04E-05	
4.21E-05	2.40E-05	
5.84E-07	1.36E-06	
5.48E-05	2.36E-05	1.19E-05
	2.48E-06	
9.63E-04	4.08E-04	5.58E-04
2.47E-05	1.49E-05	7.18E-06
2.68E-04	1.84E-04	1.95E-04

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Fugitive Emissions

EMISSION POINT: FUG

Emissions Estimate

Liquid Equipment/Service	Oil and Gas Production Operations Emission Factor[a] (Light Oil)	Oil and Gas Production Operations Emission Factor[a] (Gas)	Oil and Gas Production Operations Emission Factor[a] (Water/Oil)	Oil and Gas Production Operations Emission Factor[a] (Heavy Oil)	# Light Oil Components	# Gas Components	# Water/Oil Components	# Heavy Oil Components[a]	Reduction Factor[b]	Light Oil Service Hourly Emissions[c]	Gas Service Hourly Emissions[d]	Oil/Water Service Hourly Emissions[d]	Heavy Oil Service Hourly Emissions[d]
	(lb/hr/component)	(lb/hr/component)	(lb/hr/component)	(lb/hr/component)						(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Connectors	0.000463	0.00044	0.000243	0.0000165	3300	7100		2037		1.53	3.12	0.00	0.03
Valves	0.0055	0.00992	0.000216	0.0000185	1035	1700		643		5.69	16.86	0.00	0.01
Flanges	0.000243	0.00086	0.000006	0.00000086	1050	2600		386		0.26	2.24	0.00	0.00
Pump Seals	0.02866	0.00529	0.000052	0.00113	47	0		22		1.35	0.00	0.00	0.02
Other	0.0165	0.0194	0.0309	0.0000683	30	86		22		0.50	1.67	0.00	0.00
Totals TOC										**9.32**	**23.89**	**0.00**	**0.07**

[a] Emission factors have been obtained from the TCEQ's website (Emissions Factors for Equipment Leak Fugitive Components; Addendum to RG-360, Table 4). Per Table 2-4, water streams greater than 99% water is considered negligible and those components are not included.

[b] If applicable, emission reductions for LDAR28MID obtained from APDG 6422V2. For flanges and connectors, all service types claim reductions. For valves, gas and light oil use 97%. For pumps, only light oil service claims a reduction.

[c] Controlled Short-Term ER (lb/hr) = (100% - Reduction Factor) *Σ(Number of Components * Emissions Factor [lb/hr/component]).

[d] Controlled Annual ER (tpy) = Controlled Short-Term ER (lb/hr) * 8,760 (hr/yr) / 2,000 (lb/ton).

Speciated Fugitve Emissions

Component	Light Oil[a] (lb/hr)	Light Oil[a] (ton/year)	Gas[b] (lb/hr)	Gas[b] (ton/year)	Oil/Water[c] (lb/hr)	Oil/Water[c] (ton/year)	Total (lb/hr)	Total (ton/year)
H2S	--	--	0.84	3.67	0.03	0.12	0.86	3.79
H2O	--	--	4.62E-03	0.02	3.08E-03	0.01	0.01	0.03
TEG	8.00E-13	3.50E-12	--	--	1.11E-14	4.88E-14	8.11E-13	3.55E-12
N2	--	--	0.58	2.52	2.96E-07	1.30E-06	0.58	2.52
CO2	--	--	4.87	21.32	0.02	0.10	4.89	21.42
Methane	--	--	11.87	51.99	8.56E-05	3.75E-04	11.87	51.99
Ethane	--	--	4.80	21.00	6.82E-04	2.99E-03	4.80	21.01
Propane	3.41E-10	1.49E-09	4.14	18.15	2.61E-03	0.01	4.15	18.16
Isobutane	3.67E-05	1.61E-04	0.69	3.04	1.67E-03	0.01	0.69	3.04
n-Butane	0.01	0.04	1.73	7.59	0.01	0.03	1.75	7.67
Isopentane	3.51	15.37	0.31	1.36	0.01	0.03	3.83	16.77
n-Pentane	3.20	14.00	0.23	1.02	0.01	0.04	3.44	15.06
i-Hexane	1.49	6.53	0.07	0.31	0.02	0.08	1.58	6.92
Heptane	0.24	1.05	0.01	0.03	0.01	0.03	0.25	1.11
Octane	0.05	0.23	7.74E-04	3.39E-03	1.78E-03	0.01	0.05	0.24
Nonane	3.49E-03	0.02	1.96E-05	8.56E-05	1.31E-04	5.74E-04	3.64E-03	0.02
Decane	3.61E-04	1.58E-03	1.25E-06	5.48E-06	1.34E-05	5.87E-05	3.76E-04	1.65E-03
n-Hexane	0.44	1.92	0.02	0.08	0.01	0.03	0.46	2.03
Benzene	0.29	1.28	0.02	0.07	0.01	0.02	0.31	1.37
Toluene	0.08	0.33	2.47E-03	0.01	2.81E-03	0.01	0.08	0.35
Ethylbenzene	3.64E-03	0.02	6.84E-05	3.00E-04	1.84E-04	8.06E-04	3.89E-03	0.02
o-Xylene	4.95E-03	0.02	7.69E-05	3.37E-04	2.29E-04	1.00E-03	0.01	0.02
MDEA	3.10E-06	1.36E-05	1.65E-09	7.23E-09	7.86E-05	3.44E-04	8.17E-05	3.58E-04
Phosphoric Acid	9.79E-18	4.29E-17	--	--	1.15E-26	5.02E-26	9.79E-18	4.29E-17
Total	**9.32**	**40.81**	**30.18**	**132.18**	**0.13**	**0.55**	**39.62**	**173.54**
Total TOC	**9.32**	**40.81**	**23.89**	**104.65**	**0.07**	**0.32**	**33.28**	**145.78**
Percent VOC in TOC	**1.00**	**1.00**	**0.30**	**0.30**	**0.99**	**0.99**	**0.50**	**0.50**
VOC	**9.32**	**40.81**	**7.23**	**31.65**	**0.07**	**0.31**	**16.62**	**72.78**
Total HAP	**0.81**	**3.57**	**0.04**	**0.16**	**0.02**	**0.07**	**0.87**	**3.79**

Light Oil TOC wt%	100.00	Cond. Tank Emissions
Gas TOC wt%	79.17	Slug Catcher
Oil/Water TOC wt%	57.39	TKW

[a] Light Oil Speciated Fugitive Emissions Composition obtained from NGL Stream.

[b] Gas Speciated Fugitive Emissions Composition obtained from gas stream exiting the inlet slug catcher.

[c] Water/Oil Speciated Fugitive Emissions Composition obtained from Slop Oil inlet stream.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Slop Tanks

EMISSION POINT: EC-1
SOURCE: TK-1, TK-2

Identification - Vertical Fixed Roof Tanks		
	Tank ID	TK-1, TK-2
	Throughput (BPD)	614.3
	Throughput (BPY)	224,207
Tank Dimensions		
	Shell Height (ft)	20.0
	Diameter (ft)	12.0
	Volume (gal)	16,800
	Turnovers[a]	618.30
	Net Throughput (gal/yr)	9,416,688
Other Inputs		
	Shell & Roof Color/Shade	Tan
	Shell & Roof Condition	Tan
	Meteorological Data	Midland/Odessa
Tank Contents		
	Liquid TVP[b]	11.6
	Water, Mole %	99.8%
Total Uncontrolled Tank VOC Emissions		
	VOC Working & Breathing Losses (ton/yr)[b]	17.41
	VOC Flashing Losses (ton/yr)[b]	98.79
	Total Uncontrolled VOC Losses (ton/yr)[b]	116.20
Tank Collection Efficiency		
	Collection Efficiency[c]	100%

NSPS OOOO/OOOOa/b Evaluation	
# of Tanks	2
Event	VOC Rate (tpy)
Tank Emissions	--
Controlled by Combustor	0.12
Combustor Downtime	--
Total Emissions	0.12
Emissions Per Tank	0.06
Per Tank Threshold	6.00

*Threshold obtained from 60.5365(e) and 60.5365a(e).

[a] Turnovers calculated using equation 1-30 of AP-42, Chapter 7, assuming a maximum fill height of 90% of the tank shell height.

[b] From Promax AP-42 Emissions Report - Maximum value.

[c] Tank vapors are routed to vapor recovery for 95% of the year. During downtime, they are routed to an enclosed combustor (EC-1).

Uncontrolled Speciated Slop Tanks Emissions

	Hourly Emissions, lb/hr			Annual Emissions, TPY		
Component	**Working & Standing**	**Flash**	**Total**	**Working & Standing**	**Flash**	**Total**
H2S	1.54	2.85	4.38	6.72	12.47	19.19
H2O	0.17	0.38	0.55	0.75	1.68	2.43
TEG	6.20E-13	2.34E-12	2.96E-12	2.72E-12	1.03E-11	1.30E-11
N2	1.65E-05	1.87E-03	1.89E-03	7.22E-05	0.01	0.01
CO2	1.28	3.59	4.87	5.59	15.73	21.33
Methane	4.77E-03	0.26	0.26	0.02	1.14	1.16
Ethane	0.04	1.25	1.29	0.17	5.46	5.63
Propane	0.15	4.41	4.55	0.64	19.31	19.95
Isobutane	0.09	1.79	1.88	0.41	7.83	8.23
n-Butane	0.43	5.78	6.21	1.90	25.31	27.21
Isopentane	0.44	2.81	3.25	1.93	12.32	14.25
n-Pentane	0.56	2.85	3.41	2.46	12.48	14.94
i-Hexane	0.98	2.14	3.12	4.31	9.38	13.69
Heptane	0.36	0.78	1.14	1.58	3.40	4.97
Octane	0.10	0.22	0.32	0.43	0.96	1.39
Nonane	0.01	0.02	0.02	0.03	0.07	0.11
Decane	7.45E-04	1.76E-03	2.51E-03	3.26E-03	0.01	0.01
n-Hexane	0.38	0.79	1.17	1.66	3.45	5.11
Benzene	0.29	0.59	0.88	1.26	2.58	3.84
Toluene	0.16	0.33	0.48	0.68	1.44	2.12
Ethylbenzene	0.01	0.02	0.03	0.04	0.10	0.14
o-Xylene	0.01	0.03	0.04	0.06	0.12	0.18
MDEA	4.37E-03	0.01	0.01	0.02	0.03	0.05
Phosphoric Acid	6.38E-25	8.07E-21	8.07E-21	2.79E-24	3.53E-20	3.53E-20
Total	**7.00**	**30.89**	**37.89**	**30.67**	**135.28**	**165.94**
VOC	**3.98**	**22.55**	**26.53**	**17.41**	**98.79**	**116.20**
Total HAP	**0.85**	**1.76**	**2.60**	**3.71**	**7.70**	**11.40**

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Condensate Tanks

EMISSION POINT: EC-1
SOURCE: TK-3 TO TK-6

Identification - Vertical Fixed Roof Tanks		
	Tank ID	TK-3 to TK-6
	Throughput (BPD)	3,567.8
	Throughput (BPY)	1,302,248
Tank Dimensions		
	Shell Height (ft)	30.0
	Diameter (ft)	15.5
	Volume (gal)	31,500
	Turnovers[a]	1,434.99
	Net Throughput (gal/yr)	54,694,437
Other Inputs		
	Shell & Roof Color/Shade	Tan
	Shell & Roof Condition	Tan
	Meteorological Data	Midland/Odessa
Tank Contents		
	Liquid TVP[b]	25.3
	Water, Mole %	0.0%
Total Uncontrolled Tank VOC Emissions		
	VOC Working & Breathing Losses (ton/yr)[b]	63.28
	VOC Flashing Losses (ton/yr)[b]	0.00
	Total Uncontrolled VOC Losses (ton/yr)[b]	63.28
Tank Collection Efficiency		
	Collection Efficiency[c]	100%

20.2.50 Applicability	
# of Tanks	4
Event	VOC Rate (tpy)
Tank Emissions	--
Controlled by Combustor	0.06
Combustor Downtime	--
Total Emissions	0.06
Emissions Per Tank	0.02
Per Tank Threshold	6.00

*Threshold obtained from 60.5365(e) and 60.5365a(e).

[a] Turnovers calculated using equation 1-30 of AP-42, Chapter 7, assuming a maximum fill height of 90% of the tank shell height.

[b] From Promax AP-42 Emissions Report - Maximum value.

[c] Tank vapors are routed to vapor recovery for 95% of the year. During downtime, they are routed to an enclosed combustor (EC-1).

Uncontrolled Speciated Condensate Tanks Emissions

	Hourly Emissions, lb/hr			**Annual Emissions, TPY**		
Component	**Working & Standing**	**Flash**	**Total**	**Working & Standing**	**Flash**	**Total**
H2S	--	--	--	--	--	--
H2O	--	--	--	--	--	--
TEG	1.24E-12	--	1.24E-12	5.43E-12	--	5.43E-12
N2	--	--	--	--	--	--
CO2	--	--	--	--	--	--
Methane	--	--	--	--	--	--
Ethane	--	--	--	--	--	--
Propane	5.28E-10	--	5.28E-10	2.31E-09	--	2.31E-09
Isobutane	5.69E-05	--	5.69E-05	2.49E-04	--	2.49E-04
n-Butane	0.01	--	0.01	0.06	--	0.06
Isopentane	5.44	--	5.44	23.83	--	23.83
n-Pentane	4.96	--	4.96	21.71	--	21.71
i-Hexane	2.31	--	2.31	10.13	--	10.13
Heptane	0.37	--	0.37	1.63	--	1.63
Octane	0.08	--	0.08	0.36	--	0.36
Nonane	0.01	--	0.01	0.02	--	0.02
Decane	5.60E-04	--	5.60E-04	2.45E-03	--	2.45E-03
n-Hexane	0.68	--	0.68	2.98	--	2.98
Benzene	0.45	--	0.45	1.98	--	1.98
Toluene	0.12	--	0.12	0.51	--	0.51
Ethylbenzene	0.01	--	0.01	0.02	--	0.02
o-Xylene	0.01	--	0.01	0.03	--	0.03
MDEA	4.81E-06	--	4.81E-06	2.11E-05	--	2.11E-05
Phosphoric Acid	1.52E-17	--	1.52E-17	6.65E-17	--	6.65E-17
Total	**14.45**	**--**	**14.45**	**63.28**	**--**	**63.28**
VOC	**14.45**	**--**	**14.45**	**63.28**	**--**	**63.28**
Total HAP	**1.26**	**--**	**1.26**	**5.53**	**--**	**5.53**

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Slop Loading

EMISSION POINT: LOAD1

Hourly	
Saturation Factor, S[b]	0.6
Number of Loading Arms	1
Produced Water Reduction (%)[g]	95%
Max True Vapor Pressure, P[a] (psia)	13.260
Molecular Weight of Vapors, M[a] (lb/lb-mol)	50.3
Max Temp of Loaded Liquid[a], T (°F)	95.00
Emission Factor[b] (lb/10^3 gal)	8.98
Estimated Hourly Throughput[c] (gal/hr)	8,000
Total Uncontrolled Hourly Emissions[d] (lb/hr)	3.59
Collection Efficiency (%)	98.7%
Loading Fugitive Hourly Emissions[e] (lb/hr)	0.05
Maximum Hourly Gas to Control Device[f]	3.54

Annual	
Saturation Factor, S[b]	0.6
Number of Loading Arms	1
Produced Water Reduction (%)[g]	95%
True Vapor Pressure, P[a] (psia)	11.567
Molecular Weight of Vapors, M[a] (lb/lb-mol)	50.3
Temp of Loaded Liquid[a], T (°F)	66.55
Emission Factor[b] (lb/10^3 gal)	8.25
Estimated Annual Throughput[c] (gal/yr)	9,353,288
Total Uncontrolled Annual Emissions[d] (tpy)	1.93
Collection Efficiency (%)	98.7%
Loading Fugitive Annual Emissions (tpy)	0.03
Maximum Annual Gas to Control Device[f] (tpy)	1.90

[a] Estimated by ProMax.

[b] Per AP-42, 5th Edition (6/08), Section 5.2, Equation 1

$$\text{Emission Factor (lb/10}^3\text{gal)} = \frac{S \times P \times M \times 12.46}{T + 460}$$

Saturation Factor = 0.6

[c] Assumes liquid can be loaded at a maximum of 8,000 gal/hour per truck. Annual rates are based on production rate.

[d] Emissions (lb/hr) = Hourly Throughput (gal/hr) / 1000 x Emission Factor (lb/10^3 gal)

[e] Loading Fugitive Emissions (lb/hr) = Uncontrolled Hourly Emissions (lb/hr) x (100% - 98.7% control efficiency)

[f] Maximum Hourly to Control (lb/hr) = Uncontrolled Hourly Emissions (lb/hr) x 98.7% control efficiency.

[g] Percent Reduction for Produced Water Tank Calc. as Oil/Cond. Tank calculated using condensate properties with a produced water throughput.

Speciated Loading Emissions

Loading Fugitive VOC Emissions (EPN LOAD1)

Component	**lb/hr**	**ton/year**
Promax Stream Name	**TKW**	**TKW**
H2S	0.010	0.006
H2O	1.14E-03	6.15E-04
TEG	4.14E-15	2.22E-15
N2	1.10E-07	5.90E-08
CO2	0.01	4.57E-03
Methane	3.18E-05	1.71E-05
Ethane	2.53E-04	1.36E-04
Propane	9.67E-04	5.20E-04
Isobutane	6.21E-04	3.34E-04
n-Butane	2.89E-03	1.55E-03
Isopentane	2.94E-03	1.58E-03
n-Pentane	3.75E-03	2.01E-03
i-Hexane	0.01	3.52E-03
Heptane	2.40E-03	1.29E-03
Octane	6.59E-04	3.54E-04
Nonane	4.86E-05	2.61E-05
Decane	4.97E-06	2.67E-06
n-Hexane	2.52E-03	1.36E-03
Benzene	1.92E-03	1.03E-03
Toluene	1.04E-03	5.60E-04
Ethylbenzene	6.83E-05	3.67E-05
o-Xylene	8.48E-05	4.56E-05
MDEA	2.91E-05	1.57E-05
Phosphoric Acid	4.25E-27	2.29E-27
Total	**0.05**	**0.03**
VOC	**0.03**	**0.01**
Total HAP	**0.01**	**3.03E-03**

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Condensate Loading

EMISSION POINT: LOAD2

Hourly	
Saturation Factor, S[b]	0.6
Number of Loading Arms	1
Produced Water Reduction (%)[g]	0%
Max True Vapor Pressure, P[a] (psia)	5.726
Molecular Weight of Vapors, M[a] (lb/lb-mol)	75.7
Max Temp of Loaded Liquid[a], T (°F)	95.00
Emission Factor[b] ($lb/10^3$ gal)	5.84
Estimated Hourly Throughput[c] (gal/hr)	8,000
Total Uncontrolled Hourly Emissions[d] (lb/hr)	46.73
Collection Efficiency (%)	98.7%
Loading Fugitive Hourly Emissions[e] (lb/hr)	0.61
Maximum Hourly Gas to Control Device[f]	46.12

Annual	
Saturation Factor, S[b]	0.6
Number of Loading Arms	1
Produced Water Reduction (%)[g]	0%
True Vapor Pressure, P[a] (psia)	4.767
Molecular Weight of Vapors, M[a] (lb/lb-mol)	75.7
Temp of Loaded Liquid[a], T (°F)	66.55
Emission Factor[b] ($lb/10^3$ gal)	5.13
Estimated Annual Throughput[c] (gal/yr)	32,952,292
Total Uncontrolled Annual Emissions[d] (tpy)	84.46
Collection Efficiency (%)	98.7%
Loading Fugitive Annual Emissions (tpy)	1.10
Maximum Annual Gas to Control Device[f] (tpy)	83.36

[a] Estimated by ProMax.

[b] Per AP-42, 5th Edition (6/08), Section 5.2, Equation 1

$$\text{Emission Factor } (lb/10^3 gal) = \frac{S \times P \times M \times 12.46}{T + 460}$$

Saturation Factor = 0.6

[c] Assumes liquid can be loaded at a maximum of 8,000 gal/hour per truck. Annual rates are based on production rate.

[d] Emissions (lb/hr) = Hourly Throughput (gal/hr) / 1000 x Emission Factor ($lb/10^3$ gal)

[e] Loading Fugitive Emissions (lb/hr) = Uncontrolled Hourly Emissions (lb/hr) x (100% - 98.7% control efficiency)

[f] Maximum Hourly to Control (lb/hr) = Uncontrolled Hourly Emissions (lb/hr) x 98.7% control efficiency.

Speciated Loading Emissions

Loading Fugitive VOC Emissions (EPN LOAD2)

Component	**lb/hr**	**ton/year**
Promax Stream Name	**Condensate Load Comp**	**Condensate Load Comp**
H2S	--	--
H2O	--	--
TEG	4.98E-14	9.00E-14
N2	--	--
CO2	--	--
Methane	--	--
Ethane	--	--
Propane	2.24E-11	4.04E-11
Isobutane	2.41E-06	4.36E-06
n-Butane	6.15E-04	1.11E-03
Isopentane	0.23	0.41
n-Pentane	0.21	0.38
i-Hexane	0.10	0.18
Heptane	0.02	0.03
Octane	3.34E-03	0.01
Nonane	2.21E-04	3.99E-04
Decane	2.27E-05	4.10E-05
n-Hexane	0.03	0.05
Benzene	0.02	0.03
Toluene	4.86E-03	0.01
Ethylbenzene	2.32E-04	4.20E-04
o-Xylene	3.16E-04	5.70E-04
MDEA	2.01E-07	3.63E-07
Phosphoric Acid	6.14E-19	1.11E-18
Total	**0.61**	**1.10**
VOC	**0.61**	**1.10**
Total HAP	**0.05**	**0.10**

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT: ROAD

Table 1. Summary of Maximum Hourly and Annual Fugitive Particulate Emissions from Unpaved Roads

Pollutant					
TSP		PM_{10}		$PM_{2.5}$	
lb/hr[1]	tpy[2]	lb/hr[1]	tpy[2]	lb/hr[1]	tpy[2]
1.7	4.395	0.24	0.63	0.02	0.06

Notes:

[1] Maximum hourly emissions are based on the annual emissions divided by one hour per truck trip.

[2] Maximum annual emissions are based on the maximum annual throughput and truck trips as calculated below in Table 2.

Table 2. Maximum Annual Fugitive Particulate Emissions from Unpaved Roads

Parameter	Slop Oil Tank Pick-Ups		
	TSP	PM_{10}	$PM_{2.5}$
Empty Truck Weight (ton)[1]	16	16	16
Load Size (ton)[2]	33	33	33
Loaded Vehicle Weight (ton)	49	49	49
Average Truck Weight (ton)	32.7	32.7	32.7
Maximum Annual Throughput (gal)[3]	42,305,579	42,305,579	42,305,579
Vehicle Miles Traveled (VMT) round trip[4]	0.22	0.22	0.22
# of Truck Trips per year[5]	5288	5288	5288
VMT/year[6]	1163.4	1163.4	1163.4
Emission factor (lb/VMT)[7]	7.6	1.9	0.2
TSP Emissions (tpy)	**4.39**	**0.63**	**0.06**

Notes:

[1] Empty vehicle weight includes driver and occupants and full fuel load.

[2] Each truck has a capacity of 8000 gallons.

Slop Oil tank contents are mostly water, therefore density is same as water: 8.34 lb/gal.

Load Size = 8000 gal truck * 8.34 lb/gal /2000 lb/ton

[3] Requested annual throughput

[4] VMT distance assumes 1300' per trip

[5] Number of truck trips per year calculated based on the requested annual throughput and the truck capacity, then rounding up to the next whole number as there cannot be a partial trip.

[6] VMT per year calculated as the product of the VMT roundtrip and number of truck trips per year.

[7] Emission factor calculated per AP-42 5th Ed., Vol.1, Section 13.2.2 (11/06), Equation 1a. PM10 and PM2.5 have a control efficiency of 44% applied per WRAP guidance for a speed limit of 25mph. The actual site speed limit is 10 mph.

$E = k * (s/12)^a * (W/3)^b$

Where

E = size-specific emission factor (lb/VMT)

k = 4.9 (empirical constant for PM_{30}, per AP-42, Ch. 13.2.2, Table 13.2.2-2 (11/06) for Industrial Roads)

a = 0.7 (empirical constant for PM_{30}, per AP-42, Ch. 13.2.2, Table 13.2.2-2 (11/06) for Industrial Roads)

b = 0.45 (empirical constant for PM_{30}, per AP-42, Ch. 13.2.2, Table 13.2.2-2 (11/06) for Industrial Roads)

k = 1.5 (empirical constant for PM_{10}, per AP-42, Ch. 13.2.2, Table 13.2.2-2 (11/06) for Industrial Roads)

a = 0.9 (empirical constant for PM_{10}, per AP-42, Ch. 13.2.2, Table 13.2.2-2 (11/06) for Industrial Roads)

b = 0.45 (empirical constant for PM_{10}, per AP-42, Ch. 13.2.2, Table 13.2.2-2 (11/06) for Industrial Roads)

k = 0.15 (empirical constant for $PM_{2.5}$, per AP-42, Ch. 13.2.2, Table 13.2.2-2 (11/06) for Industrial Roads)

a = 0.9 (empirical constant for $PM_{2.5}$, per AP-42, Ch. 13.2.2, Table 13.2.2-2 (11/06) for Industrial Roads)

b = 0.45 (empirical constant for $PM_{2.5}$, per AP-42, Ch. 13.2.2, Table 13.2.2-2 (11/06) for Industrial Roads)

s = 4.8 (surface material silt content (%), per AP-42, Ch. 13.2.2, Table 13.2.2-1 (11/06) for sand and gravel processing on a plant road)

W = mean vehicle weight (tons)

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Summary of Enclosed Combustor Emissions

Stream	NOx		CO		VOC		SO2		PM10		H2S		n-Hexane		Benzene		Toluene		O-Xylene	
	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	lb/hr	TPY
Table 2-D Emissions																				
Pilot Emissions	0.01	0.05	0.02	0.11	--	--	--	--	--	0.003	--	--	--	--	--	--	--	--	--	--
Table 2-E Emissions (including pilot emissions)																				
Steady State Emissions	1.05	2.76	2.09	5.51	4.56	17.42	1.47	0.81	0.06	0.15	0.02	0.009	0.09	0.29	1.01	4.32	0.43	1.88	0.04	0.16
Table 2-F Emissions																				
SSM Emissions (includes downtime)	1.05	0.08	2.10	0.16	179.60	2.15	8.24	1.80	0.06	0.004	0.09	0.02	2.40	0.03	48.73	0.54	21.26	0.24	1.77	0.02
Maximum Emission Rate	**1.05**	**2.84**	**2.10**	**5.67**	**179.60**	**19.57**	**9.70**	**2.61**	**0.06**	**0.15**	**0.10**	**0.03**	**2.40**	**0.32**	**48.73**	**4.86**	**21.26**	**2.11**	**1.77**	**0.18**

1 Maximum hourly NOx, CO, and PM emissions are taken as the maximum emissions for any stream since supplemental gas is used to reach combustor capacity. Steady State and SSM are combined for other pollutants since they are based on stream composition.
2 Maximum hourly H2S and SO2 emissions are the sum of both Steady State and SSM since the TEG could be routed to the combustor at the same time tank vapor is routed to the combustor during VRU downtime.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Enclosed Vapor Combustor - Hourly

Equipment and Discharge Parameters		
Flare Height	30	ft
Flare Diameter	3.79	ft
Velocity	9.90	ft/s
Temp	1,400.00	°F

11.28154

EMISSION POINT: EC-1
SOURCE: EC-1, DHY1 - DHY3, LOAD1, LOAD2

Enclosed Vapor Combustor Feed Rates and Composition[a]							EC DRE%	EC Exhaust Components[b]	Criteria Pollutant Emissions[c]	
Source	**Pilot and Assist Gas**	**Supplemental Gas (for Hourly Max)**	**TEG Dehydrator Still Vents**	**Slop Loading**	**Condensate Loading**	**Total**				
Promax Stream	FG Makeup	FG Makeup	TEG BTEX To EC	Slop Load Composition	Condensate Load Comp					
Component	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(%)**	**(lb/hr)**		
H2S	--	--	3.06E-03	0.78	--	0.78	98%	**0.02**	NO_x factor:	0.1380 lb/MMBtu
H2O	--	--	10.45	0.09	--	10.53	0%	**10.53**	CO factor:	0.2755 lb/MMBtu
TEG	--	--	3.11E-09	3.14E-13	3.78E-12	3.12E-09	98%	**6.23E-11**		
N2	0.18	4.91	0.02	8.34E-06	--	5.11	0%	**5.11**	PM_{10} factor:	7.60 lb/MMscf
CO2	0.01	0.19	25.48	0.65	--	26.33	0%	**26.33**	$PM_{2.5}$ factor:	7.60 lb/MMscf
Methane	3.61	97.19	4.59	2.41E-03	--	105.39	98%	**2.11**		
Ethane	0.17	4.61	15.38	0.02	--	20.18	98%	**0.40**	NOx	**1.05 lb/hr**
Propane	0.01	0.16	33.04	0.07	1.70E-09	33.28	98%	**0.67**	CO	**2.09 lb/hr**
Isobutane	6.90E-05	1.86E-03	7.30	0.05	1.83E-04	7.35	98%	**0.15**	PM_{10}	**0.06 lb/hr**
n-Butane	8.28E-05	2.23E-03	33.64	0.22	0.05	33.91	98%	**0.68**	$PM_{2.5}$	**0.06 lb/hr**
Isopentane	--	--	10.11	0.22	17.43	27.76	98%	**0.56**		
n-Pentane	--	--	10.66	0.28	15.84	26.78	98%	**0.54**		
i-Hexane	--	--	5.88	0.50	7.36	13.74	98%	**0.27**		
Heptane	--	--	2.76	0.18	1.17	4.12	98%	**0.08**		
Octane	--	--	0.77	0.05	0.25	1.07	98%	**0.02**		
Nonane	--	--	0.04	3.69E-03	0.02	0.06	98%	**1.25E-03**		
Decane	--	--	2.87E-03	3.77E-04	1.72E-03	4.97E-03	98%	**9.94E-05**		
n-Hexane	--	--	2.40	0.19	2.15	4.74	98%	**0.09**		
Benzene	--	--	48.73	0.15	1.44	50.31	98%	**1.01**		
Toluene	--	--	21.26	0.08	0.37	21.70	98%	**0.43**		
Ethylbenzene	--	--	1.17	0.01	0.02	1.20	98%	**0.02**		
o-Xylene	--	--	1.77	0.01	0.02	1.80	98%	**0.04**		
MDEA	--	--	0.07	2.21E-03	1.53E-05	0.07	98%	**1.38E-03**		
Phosphoric Acid	--	--	--	3.23E-25	4.66E-17	4.66E-17	0%	**4.66E-17**		
Total	**3.98**	**107.07**	**235.51**	**3.54**	**46.12**	**396.23**	**--**	**49.05**		
VOC	**0.01**	**0.16**	**179.60**	**2.01**	**46.12**	**227.91**	**--**	**4.56**		
Total HAP	**--**	**--**	**75.32**	**0.43**	**4.00**	**79.75**	**--**	**1.60**		
						Total				
Heat Value of Stream (Btu/scf)	1,000.74	1,000.74	2,275.82	1,951.15	4,172.18	**1,666.95**				
Molecular Weight (lb/lb-mole)	16.74	16.74	49.98	50.82	75.71	**32.96**				
SO_2 emissions (lb/hr)	--	--	0.01	1.46	--	**1.47**				
Volumetric Flow (scf/hr)	**90.00**	**2,423.79**	1,788.12	26.43	230.90	**4,559.23**				
Heat Release (MMBtu/hr)	0.09	2.43	4.07	0.05	0.96	**7.60**				

[a] Uncontrolled stream properties determined via ProMax. The supplemental stream is used for hourly emissions only to match combustor capacity.
[b] EC Exhaust (lb/hr) = Total Uncontrolled Emissions (lb/hr) x (100-DRE (%)).
[c] Flare CO and NO_x emission factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers, October 2000 RG-109 (Draft), Table 4. PM and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Enclosed Vapor Combustor - Annual

VRU Downtime
5%

*VRU normally recovers all streams except for the TEG Dehydrator Still Vents.

EMISSION POINT: EC-1
SOURCE: EC-1, DHY1 - DHY3, LOAD1, LOAD2

Enclosed Vapor Combustor Feed Rates and Composition[a]						EC DRE%	EC Exhaust Components[b]
Source	**Pilot and Assist Gas**	**TEG Dehydrator Still Vents**	**Slop Loading**	**Condensate Loading**	**Total**		
Promax Stream	FG Makeup	TEG BTEX To EC	Slop Load Composition	Condensate Load Comp			
Component	**8760 hr/yr (tpy)**	**8760 hr/yr (tpy)**	**(tpy)**	**(tpy)**	**(tpy)**	**(%)**	**(tpy)**
H2S	--	0.01	0.42	--	0.43	98%	**0.01**
H2O	--	45.76	0.05	--	45.80	0%	**45.80**
TEG	--	0.00	1.69E-13	6.83E-12	1.36E-08	98%	**2.73E-10**
N2	0.80	0.07	4.48E-06	--	0.87	0%	**0.87**
CO2	0.03	111.60	0.35	--	111.98	0%	**111.98**
Methane	15.81	20.09	1.30E-03	--	35.90	98%	**0.72**
Ethane	0.75	67.35	0.01	--	68.11	98%	**1.36**
Propane	0.03	144.72	0.04	3.07E-09	144.79	98%	**2.90**
Isobutane	3.02E-04	31.97	0.03	3.31E-04	32.00	98%	**0.64**
n-Butane	3.63E-04	147.36	0.12	0.08	147.56	98%	**2.95**
Isopentane	--	44.29	0.12	31.49	75.90	98%	**1.52**
n-Pentane	--	46.67	0.15	28.63	75.46	98%	**1.51**
i-Hexane	--	25.76	0.27	13.31	39.33	98%	**0.79**
Heptane	--	12.11	0.10	2.11	14.32	98%	**0.29**
Octane	--	3.36	0.03	0.46	3.85	98%	**0.08**
Nonane	--	0.18	1.98E-03	0.03	0.22	98%	**4.32E-03**
Decane	--	0.01	2.03E-04	3.11E-03	0.02	98%	**3.18E-04**
n-Hexane	--	10.50	0.10	3.89	14.49	98%	**0.29**
Benzene	--	213.42	0.08	2.60	216.09	98%	**4.32**
Toluene	--	93.10	0.04	0.67	93.81	98%	**1.88**
Ethylbenzene	--	5.14	2.79E-03	0.03	5.17	98%	**0.10**
o-Xylene	--	7.76	3.46E-03	0.04	7.81	98%	**0.16**
MDEA	--	0.29	1.19E-03	2.76E-05	0.29	98%	**0.01**
Phosphoric Acid	--	0.00	1.74E-25	8.42E-17	8.42E-17	0%	**8.42E-17**
Total	**17.41**	**1,031.53**	**1.90**	**83.36**	**1,134.21**	**--**	**178.17**
VOC	**0.03**	**786.64**	**1.08**	**83.36**	**871.11**	**--**	**17.42**
Total HAP	**--**	**329.91**	**0.23**	**7.24**	**337.37**	**--**	**6.75**
Total CO_2	**45.60**	**2,593.64**	**2.72**	**241.82**	**2,883.78**	**--**	**2,883.78**
Total N_2O	**8.70E-08**	**3.93E-06**	**6.11E-09**	**3.84E-07**	**4.41E-06**	**--**	**4.41E-06**
					Total		
Heat Value of Stream (Btu/scf)	1,000.74	2,275.82	1,951.15	4,172.18	**2,308.63**		
Molecular Weight (lb/lb-mole)	16.74	49.98	50.82	75.71	**49.71**		
SO_2 emissions (tpy)	--	0.03	0.79	--	**0.81**		
Volumetric Flow (scf/yr)	788,400.00	15,663,936.97	28,412.35	834,577.04	**17,315,326.35**		
Heat Release (MMBtu/yr)	788.99	35,648.28	55.44	3,482.00	**39,974.71**		

Criteria Pollutant Emissions[c]		
NO_x factor:	0.1380	lb/MMBtu
CO factor:	0.2755	lb/MMBtu
PM_{10} factor:	7.60	lb/MMscf
$PM_{2.5}$ factor:	7.60	lb/MMscf
NOx	**2.76**	**tpy**
CO	**5.51**	**tpy**
PM_{10}	**0.15**	**tpy**
$PM_{2.5}$	**0.15**	**tpy**

5.99

[a] Uncontrolled stream properties determined via ProMax.
[b] EC Exhaust (tpy) = Total Uncontrolled Emissions (lb/hr) x (100-DRE (%)) x Annual Hours Routed to EC (hr/yr) / 2000 (lb/ton).
[c] Flare CO and NO_x emission factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers, October 2000 RG-109 (Draft), Table 4. PM and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Enclosed Vapor Combustor - Hourly (SSM)

EMISSION POINT: EC-1 SSM (VRU Downtime)
SOURCE: EC-1, TK-1 - TK-6

* During VRU downtime, dehydrator vapors are still routed to the control device.

Equipment and Discharge Parameters		
Flare Height	30	ft
Flare Diameter	3.79	ft
Velocity	9.90	ft/s
Temp	1,400.00	°F

Enclosed Vapor Combustor Feed Rates and Composition[a]										
Source	**Pilot and Assist Gas**	**Supplemental Gas (for Hourly Max)**	**Slop Tank**		**Condensate Tank**		**Total**	**EC DRE%**	**EC Exhaust Components[b]**	**Criteria Pollutant Emissions[c]**
			Working & Breathing	**Flash**	**Working & Breathing**	**Flash**				
Promax Stream	FG Makeup	FG Makeup	TKW & TKB	TKFlash	CondB & CondW	CondFlash				
Component	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(%)**	**(lb/hr)**	
H2S	--	--	1.54	2.85	--	--	4.38	98%	**0.09**	NO_x factor: 0.1380 lb/MMBtu
H2O	--	--	0.17	0.38	--	--	0.55	0%	**0.55**	CO factor: 0.2755 lb/MMBtu
TEG	--	--	6.20E-13	2.34E-12	1.24E-12	--	4.20E-12	98%	**8.40E-14**	
N2	0.18	13.35	1.65E-05	1.87E-03	--	--	13.54	0%	**13.54**	PM_{10} factor: 7.60 lb/MMscf
CO2	0.01	0.53	1.28	3.59	--	--	5.40	0%	**5.40**	$PM_{2.5}$ factor: 7.60 lb/MMscf
Methane	3.61	264.48	4.77E-03	0.26	--	--	268.35	98%	**5.37**	
Ethane	0.17	12.55	0.04	1.25	--	--	14.01	98%	**0.28**	NOx **1.05 lb/hr**
Propane	0.01	0.44	0.15	4.41	5.28E-10	--	5.00	98%	**0.10**	CO **2.10 lb/hr**
Isobutane	6.90E-05	0.01	0.09	1.79	5.69E-05	--	1.89	98%	**0.04**	PM_{10} **0.06 lb/hr**
n-Butane	8.28E-05	0.01	0.43	5.78	0.01	--	6.23	98%	**0.12**	$PM_{2.5}$ **0.06 lb/hr**
Isopentane	--	--	0.44	2.81	5.44	--	8.69	98%	**0.17**	
n-Pentane	--	--	0.56	2.85	4.96	--	8.37	98%	**0.17**	
i-Hexane	--	--	0.98	2.14	2.31	--	5.44	98%	**0.11**	
Heptane	--	--	0.36	0.78	0.37	--	1.51	98%	**0.03**	
Octane	--	--	0.10	0.22	0.08	--	0.40	98%	**0.01**	
Nonane	--	--	0.01	0.02	0.01	--	0.03	98%	**5.88E-04**	
Decane	--	--	7.45E-04	1.76E-03	5.60E-04	--	3.07E-03	98%	**6.13E-05**	
n-Hexane	--	--	0.38	0.79	0.68	--	1.85	98%	**0.04**	
Benzene	--	--	0.29	0.59	0.45	--	1.33	98%	**0.03**	
Toluene	--	--	0.16	0.33	0.12	--	0.60	98%	**0.01**	
Ethylbenzene	--	--	0.01	0.02	0.01	--	0.04	98%	**7.72E-04**	
o-Xylene	--	--	0.01	0.03	0.01	--	0.05	98%	**9.71E-04**	
MDEA	--	--	4.37E-03	0.01	4.81E-06	--	0.01	98%	**2.41E-04**	
Phosphoric Acid	--	--	6.38E-25	8.07E-21	1.52E-17	--	1.52E-17	0%	**1.52E-17**	
Total	**3.98**	**291.36**	**7.00**	**30.89**	**14.45**	**--**	**347.67**	**--**	**26.06**	
VOC	**0.01**	**0.45**	**3.98**	**22.55**	**14.45**	**--**	**41.43**	**--**	**0.83**	
Total HAP	**--**	**--**	**0.85**	**1.76**	**1.26**	**--**	**3.87**	**--**	**0.08**	
							Total			
Heat Value of Stream (Btu/scf)	1,000.74	1,000.74	1,809.60	2,298.88	4,173.40	4,179.03	**1,081.90**			
Molecular Weight (lb/lb-mole)	16.74	16.74	50.97	50.78	75.74	75.86	**18.72**			
SO_2 emissions (lb/hr)	--	--	2.89	5.35	--	--	**8.24**			
Volumetric Flow (scf/hr)	**90.00**	**6,595.48**	52.12	230.80	72.38	--	**7,040.78**			
Heat Release (MMBtu/hr)	0.09	6.60	0.09	0.53	0.30	--	**7.62**			

[a] Uncontrolled stream properties determined via ProMax. Assumed 100% of storage tank vapors are routed to combustor during VRU downtime. The supplemental stream is used for hourly emissions only to match combustor capacity.
[b] EC Exhaust (lb/hr) = Total Uncontrolled Emissions (lb/hr) x (100-DRE (%)).
[c] Flare CO and NO_x emission factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers, October 2000 RG-109 (Draft), Table 4. PM and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Enclosed Vapor Combustor - Annual (SSM)

VRU Downtime
5%

*VRU normally recovers all streams except for the TEG Dehydrator Still Vents.
* During VRU downtime, dehydrator vapors are still routed to the control device.

EMISSION POINT: EC-1 SSM (VRU Downtime)
SOURCE: EC-1, TK-1 - TK-6

Enclosed Vapor Combustor Feed Rates and Composition[a]									
Source	**Pilot and Assist Gas**	**Slop Tank**		**Condensate Tank**		**Total**	**EC DRE%**	**EC Exhaust Components[b]**	**Criteria Pollutant Emissions[c]**
		Working & Breathing	**Flash**	**Working & Breathing**	**Flash**				
Promax Stream	FG Makeup	TKW & TKB	TKFlash	CondB & CondW	CondFlash				
Component	**8760 hr/yr (tpy)**	**438 hr/yr (tpy)**	**438 hr/yr (tpy)**	**438 hr/yr (tpy)**	**438 hr/yr (tpy)**	**(tpy)**	**(%)**	**(tpy)**	
H2S	--	0.34	0.62	--	--	0.96	98%	**0.02**	NO_x factor: 0.1380 lb/MMBtu
H2O	--	0.04	0.08	--	--	0.12	0%	**0.12**	CO factor: 0.2755 lb/MMBtu
TEG	--	1.36E-13	5.13E-13	2.71E-13	--	9.20E-13	98%	**1.84E-14**	
N2	0.80	3.61E-06	4.10E-04	--	--	0.80	0%	**0.80**	PM_{10} factor: 7.60 lb/MMscf
CO2	0.03	0.28	0.79	--	--	1.10	0%	**1.10**	$PM_{2.5}$ factor: 7.60 lb/MMscf
Methane	15.81	1.04E-03	0.06	--	--	15.87	98%	**0.32**	
Ethane	0.75	0.01	0.27	--	--	1.03	98%	**0.02**	NOx **0.08 tpy**
Propane	0.03	0.03	0.97	1.16E-10	--	1.02	98%	**0.02**	CO **0.16 tpy**
Isobutane	3.02E-04	0.02	0.39	1.25E-05	--	0.41	98%	**0.01**	PM_{10} **4.45E-03 tpy**
n-Butane	3.63E-04	0.09	1.27	3.18E-03	--	1.36	98%	**0.03**	$PM_{2.5}$ **4.45E-03 tpy**
Isopentane	--	0.10	0.62	1.19	--	1.90	98%	**0.04**	
n-Pentane	--	0.12	0.62	1.09	--	1.83	98%	**0.04**	
i-Hexane	--	0.22	0.47	0.51	--	1.19	98%	**0.02**	
Heptane	--	0.08	0.17	0.08	--	0.33	98%	**0.01**	
Octane	--	0.02	0.05	0.02	--	0.09	98%	**1.75E-03**	
Nonane	--	1.60E-03	3.66E-03	1.19E-03	--	0.01	98%	**1.29E-04**	
Decane	--	1.63E-04	3.86E-04	1.23E-04	--	6.72E-04	98%	**1.34E-05**	
n-Hexane	--	0.08	0.17	0.15	--	0.40	98%	**0.01**	
Benzene	--	0.06	0.13	0.10	--	0.29	98%	**0.01**	
Toluene	--	0.03	0.07	0.03	--	0.13	98%	**2.64E-03**	
Ethylbenzene	--	2.24E-03	4.97E-03	1.24E-03	--	0.01	98%	**1.69E-04**	
o-Xylene	--	2.79E-03	0.01	1.68E-03	--	0.01	98%	**2.13E-04**	
MDEA	--	9.57E-04	1.68E-03	1.05E-06	--	2.64E-03	98%	**5.28E-05**	
Phosphoric Acid	--	1.40E-25	1.77E-21	3.32E-18	--	3.32E-18	0%	**3.32E-18**	
Total	**17.41**	**1.53**	**6.76**	**3.16**	**--**	**28.87**	**--**	**2.56**	
VOC	**0.03**	**0.87**	**4.94**	**3.16**	**--**	**9.00**	**16.66**	**0.18**	
Total HAP	**--**	**0.19**	**0.38**	**0.28**	**--**	**0.85**	**4.90**	**0.02**	
Total CO_2	**45.60**	**5.34**	**16.10**	**18.37**	**--**	**85.41**	**--**	**85.41**	
Total N_2O	**8.70E-08**	**4.55E-09**	**2.56E-08**	**1.46E-08**	**--**	**1.32E-07**	**--**	**1.32E-07**	
						Total			
Heat Value of Stream (Btu/scf)	1,000.74	1,809.60	2,298.88	4,173.40	4,179.03	**1,265.86**			
Molecular Weight (lb/lb-mole)	16.74	50.97	50.78	75.74	75.86	**23.20**			
SO_2 emissions (tpy)	--	0.63	1.17	--	--	**1.80**			
Volumetric Flow (scf/yr)	788,400.00	22,830.34	101,088.54	31,704.16	--	**944,023.03**			
Heat Release (MMBtu/yr)	788.99	41.31	232.39	132.31	--	**1,195.00**			

[a] Uncontrolled stream properties determined via ProMax.
[b] EC Exhaust (tpy) = Total Uncontrolled Emissions (lb/hr) x (100-DRE (%)) x Annual Hours Routed to EC (hr/yr) / 2000 (lb/ton).
[c] Flare CO and NO_x emission factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers, October 2000 RG-109 (Draft), Table 4. PM and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Enclosed Vapor Combustor Downtime - Hourly (SSM)

EMISSION POINT: EC-1
SOURCE: DHY1 - DHY3

Enclosed Vapor Combustor Feed Rates and Composition[a]			EC DRE%	EC Exhaust Components[b]
Source	**TEG Dehydrator Still Vents**	**Total**		
Promax Stream	TEG BTEX To EC			
Component	**(lb/hr)**	**(lb/hr)**	**(%)**	**(lb/hr)**
H2S	3.06E-03	3.06E-03	0%	**3.06E-03**
H2O	10.45	10.45	0%	**10.45**
TEG	3.11E-09	3.11E-09	0%	**3.11E-09**
N2	0.02	0.02	0%	**0.02**
CO2	25.48	25.48	0%	**25.48**
Methane	4.59	4.59	0%	**4.59**
Ethane	15.38	15.38	0%	**15.38**
Propane	33.04	33.04	0%	**33.04**
Isobutane	7.30	7.30	0%	**7.30**
n-Butane	33.64	33.64	0%	**33.64**
Isopentane	10.11	10.11	0%	**10.11**
n-Pentane	10.66	10.66	0%	**10.66**
i-Hexane	5.88	5.88	0%	**5.88**
Heptane	2.76	2.76	0%	**2.76**
Octane	0.77	0.77	0%	**0.77**
Nonane	0.04	0.04	0%	**0.04**
Decane	2.87E-03	2.87E-03	0%	**2.87E-03**
n-Hexane	2.40	2.40	0%	**2.40**
Benzene	48.73	48.73	0%	**48.73**
Toluene	21.26	21.26	0%	**21.26**
Ethylbenzene	1.17	1.17	0%	**1.17**
o-Xylene	1.77	1.77	0%	**1.77**
MDEA	0.07	0.07	0%	**0.07**
Phosphoric Acid	--	--	0%	**--**
Total	**235.51**	**235.51**	**--**	**235.51**
VOC	**179.60**	**179.60**	**--**	**179.60**
Total HAP	**75.32**	**75.32**	**--**	**75.32**

[a] Uncontrolled stream properties determined via ProMax.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Enclosed Vapor Combustor Downtime - Annual (SSM)

EC Downtime VRU Down	EC Downtime VRU Up
0%	0.25%

EMISSION POINT: EC-1
SOURCE: DHY1 - DHY3

Enclosed Vapor Combustor Feed Rates and Composition[a]			EC DRE%	EC Exhaust Components[b]
Source	**TEG Dehydrator Still Vents**	**Total**		
Promax Stream	TEG BTEX To EC			
Component	**21.9 hr/yr (tpy)**	**(tpy)**	**(%)**	**(tpy)**
H2S	0.00	3.35E-05	0%	**3.35E-05**
H2O	0.11	0.11	0%	**0.11**
TEG	0.00	3.41E-11	0%	**3.41E-11**
N2	0.00	1.85E-04	0%	**1.85E-04**
CO2	0.28	0.28	0%	**0.28**
Methane	0.05	0.05	0%	**0.05**
Ethane	0.17	0.17	0%	**0.17**
Propane	0.36	0.36	0%	**0.36**
Isobutane	0.08	0.08	0%	**0.08**
n-Butane	0.37	0.37	0%	**0.37**
Isopentane	0.11	0.11	0%	**0.11**
n-Pentane	0.12	0.12	0%	**0.12**
i-Hexane	0.06	0.06	0%	**0.06**
Heptane	0.03	0.03	0%	**0.03**
Octane	0.01	0.01	0%	**0.01**
Nonane	0.00	4.59E-04	0%	**4.59E-04**
Decane	0.00	3.14E-05	0%	**3.14E-05**
n-Hexane	0.03	0.03	0%	**0.03**
Benzene	0.53	0.53	0%	**0.53**
Toluene	0.23	0.23	0%	**0.23**
Ethylbenzene	0.01	0.01	0%	**0.01**
o-Xylene	0.02	0.02	0%	**0.02**
MDEA	0.00	7.32E-04	0%	**7.32E-04**
Phosphoric Acid	0.00	--	0%	**--**
Total	**2.58**	**2.58**	**--**	**2.58**
VOC	**1.97**	**1.97**	**--**	**1.97**
Total HAP	**0.82**	**0.82**	**--**	**0.82**

[a] Uncontrolled stream properties determined via ProMax.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Summary of Acid Gas Flare Emissions

Stream	NOx		CO		VOC		SO2		PM10		H2S		n-Hexane		Benzene		Toluene		O-Xylene	
	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	lb/hr	TPY
Table 2-D Emissions																				
Pilot Emissions	0.19	0.85	0.77	3.37	0.003	0.01	--	--	0.01	0.05	--	--	--	--	--	--	--	--	--	--
Table 2-E Emissions (including pilot emissions)																				
Steady State Emissions	0.19	0.85	0.77	3.39	0.003	0.01	0.26	1.17	0.01	0.05	0.003	0.01	--	--	--	--	--	--	--	--
Table 2-F Emissions																				
SSM Emissions (includes downtime)	80.59	7.30	320.95	29.07	0.97	0.08	3523.29	109.44	4.35	0.39	38.25	1.16	--	--	0.13	0.004	0.03	--	0.001	--
Maximum Emission Rate	**80.78**	**8.15**	**321.72**	**32.46**	**0.98**	**0.10**	**3523.29**	**110.61**	**4.36**	**0.44**	**38.25**	**1.18**	**--**	**--**	**0.13**	**0.004**	**0.03**	**--**	**0.001**	**--**

1 Maximum hourly rates include both steady state and SSM emissions since both could occur at the same time.

2 Annual SSM emissions are taken as the sum of emissions for all streams.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Acid Gas Flare- Hourly

EMISSION POINT: AGFL

Equipment and Discharge Parameters		
Flare Height	150	ft
Flare Diameter	3.00	ft
Tip Exit Area	7.07	ft^2
Velocity	65.60	ft/s
Temp	1,832.00	°F

Flare Feed Rates and Composition[a]				FL DRE%	FL Exhaust Components[b]
Source	**Pilot and Purge Gas**	**SS Packing/Purge**	**Total**		
Promax Stream	FG Makeup	SS Packing/Purge			
Component	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(%)**	**(lb/hr)**
H2S	--	0.14	0.14	98%	**2.84E-03**
H2O	--	0.03	0.03	0%	**0.03**
TEG	--	--	--	98%	**--**
N2	4.58	0.01	4.59	0%	**4.59**
CO2	0.18	0.66	0.84	0%	**0.84**
Methane	90.77	0.20	90.97	98%	**1.82**
Ethane	4.31	0.01	4.32	98%	**0.09**
Propane	0.15	4.21E-04	0.15	98%	**3.00E-03**
Isobutane	1.74E-03	1.22E-05	1.75E-03	98%	**3.50E-05**
n-Butane	2.08E-03	4.24E-05	2.13E-03	98%	**4.25E-05**
Isopentane	--	1.23E-06	1.23E-06	98%	**2.46E-08**
n-Pentane	--	1.77E-06	1.77E-06	98%	**3.54E-08**
i-Hexane	--	4.35E-07	4.35E-07	98%	**8.70E-09**
Heptane	--	1.93E-08	1.93E-08	98%	**3.87E-10**
Octane	--	4.80E-09	4.80E-09	98%	**9.59E-11**
Nonane	--	8.81E-16	8.81E-16	98%	**1.76E-17**
Decane	--	--	--	98%	**--**
n-Hexane	--	1.27E-07	1.27E-07	98%	**2.55E-09**
Benzene	--	4.79E-04	4.79E-04	98%	**9.59E-06**
Toluene	--	1.17E-04	1.17E-04	98%	**2.33E-06**
Ethylbenzene	--	3.05E-06	3.05E-06	98%	**6.10E-08**
o-Xylene	--	4.81E-06	4.81E-06	98%	**9.61E-08**
MDEA	--	6.99E-10	6.99E-10	98%	**1.40E-11**
Phosphoric Acid	--	--	--	0%	**--**
Total	**100.00**	**1.06**	**101.06**	**--**	**7.38**
VOC	**0.15**	**1.08E-03**	**0.15**	**--**	**3.09E-03**
Total HAP	**--**	**6.04E-04**	**6.04E-04**	**--**	**1.21E-05**
			Total		
Heat Value of Stream (Btu/scf)	1,000.74	466.99	**995.83**		
Molecular Weight (lb/lb-mole)	16.74	30.88	**16.87**		
SO_2 emissions (lb/hr)	--	0.26	**0.26**		
Volumetric Flow (scf/hr)	**1,400.00**	13.00	**1,413.00**		
Heat Release (MMBtu/hr)	1.40	0.01	**1.41**		

Criteria Pollutant Emissions[c]		
NO_x factor:	0.1380	lb/MMBtu
CO factor:	0.5496	lb/MMBtu
PM_{10} factor:	7.60	lb/MMscf
$PM_{2.5}$ factor:	7.60	lb/MMscf
NOx	**0.19**	**lb/hr**
CO	**0.77**	**lb/hr**
PM_{10}	**0.01**	**lb/hr**
$PM_{2.5}$	**0.01**	**lb/hr**

[a] Uncontrolled stream properties determined via ProMax. The fuel gas makup volume is calculated based on the effective diameter needed to comly with the NAAQS.

[b] FL Exhaust (lb/hr) = Total Uncontrolled Emissions (lb/hr) x (100-DRE (%)).

[c] Flare CO and NO_x emission factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers, October 2000 RG-109 (Draft), Table 4. PM and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2. Since the Btu content of the makeup gas is sometimes just above 1000 Btu/scf, the most conservative emission

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Acid Gas Flare - Annual

EMISSION POINT: AGFL

Flare Feed Rates and Composition[a]				FL DRE%	FL Exhaust Components[b]	Criteria Pollutant Emissions[c]	
Source	**Pilot and Purge Gas**	**Packing Purge**	**Total**				
Promax Stream	FG Makeup	SS Packing/Purge					
Component	**8760 hr/yr (tpy)**	**8760 hr/yr (tpy)**	**(tpy)**	**(%)**	**(tpy)**		
H2S	--	0.62	0.62	98%	**0.01**	NO_x factor:	0.1380 lb/MMBtu
H2O	--	0.15	0.15	0%	**0.15**	CO factor:	0.5496 lb/MMBtu
TEG	--	--	--	98%	**--**		
N2	20.08	0.04	20.12	0%	**20.12**	PM_{10} factor:	7.60 lb/MMscf
CO2	0.79	2.89	3.68	0%	**3.68**	$PM_{2.5}$ factor:	7.60 lb/MMscf
Methane	397.59	0.88	398.47	98%	**7.97**		
Ethane	18.87	0.04	18.91	98%	**0.38**	NOx	**0.85 tpy**
Propane	0.66	1.84E-03	0.66	98%	**0.01**	CO	**3.39 tpy**
Isobutane	0.01	5.36E-05	0.01	98%	**1.53E-04**	PM_{10}	**0.05 tpy**
n-Butane	0.01	1.86E-04	0.01	98%	**1.86E-04**	$PM_{2.5}$	**0.05 tpy**
Isopentane	--	5.38E-06	5.38E-06	98%	**1.08E-07**		
n-Pentane	--	7.76E-06	7.76E-06	98%	**1.55E-07**		
i-Hexane	--	1.91E-06	1.91E-06	98%	**3.81E-08**		
Heptane	--	8.47E-08	8.47E-08	98%	**1.69E-09**		
Octane	--	2.10E-08	2.10E-08	98%	**4.20E-10**		
Nonane	--	3.86E-15	3.86E-15	98%	**7.72E-17**		
Decane	--	--	--	98%	**--**		
n-Hexane	--	5.57E-07	5.57E-07	98%	**1.11E-08**		
Benzene	--	2.10E-03	2.10E-03	98%	**4.20E-05**		
Toluene	--	5.11E-04	5.11E-04	98%	**1.02E-05**		
Ethylbenzene	--	1.34E-05	1.34E-05	98%	**2.67E-07**		
o-Xylene	--	2.11E-05	2.11E-05	98%	**4.21E-07**		
MDEA	--	3.06E-09	3.06E-09	98%	**6.12E-11**		
Phosphoric Acid	--	--	--	0%	**--**		
Total	**438.00**	**4.63**	**442.63**	**--**	**32.33**		
VOC	**0.67**	**4.74E-03**	**0.68**	**--**	**0.01**		
Total HAP	**--**	**2.65E-03**	**2.65E-03**	**--**	**5.29E-05**		
Total CO_2	**709.30**	**5.44**	**714.74**	**--**	**714.74**		
Total N_2O	**1.35E-06**	**5.86E-09**	**1.36E-06**	**--**	**1.36E-06**		
			Total				
Heat Value of Stream (Btu/scf)	1,000.74	466.99	**995.83**				
Molecular Weight (lb/lb-mole)	16.74	30.88	**16.87**				
SO_2 emissions (tpy)	--	1.17	**1.17**				
Volumetric Flow (scf/yr)	12,264,000.00	113,880.00	**12,377,880.00**				
Heat Release (MMBtu/yr)	12,273.12	53.18	**12,326.30**				

[a] Uncontrolled stream properties determined via ProMax.

[b] FL Exhaust (tpy) = Total Uncontrolled Emissions (lb/hr) x (100-DRE (%)) x Annual Hours Routed to FL (hr/yr) / 2000 (lb/ton).

[c] Flare CO and NO_x emission factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers, October 2000 RG-109 (Draft), Table 4. PM and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2. Since the Btu content of the makeup gas is sometimes just above 1000 Btu/scf, the most conservative emission factors were used for both NOx

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Acid Gas Flare- Hourly (SSM)

EMISSION POINT: AGFL SSM

Equipment and Discharge Parameters		
Flare Height	150	ft
Flare Diameter	3.00	ft
Tip Exit Area	7.07	ft^2
Velocity	65.60	ft/s
Temp	1,832.00	°F

Flare Feed Rates and Composition[a]					FL DRE%	FL Exhaust Components[b]
Source	**Assist Gas**	**Acid Gas SSM**	**AGI Compressor Blowdown**	**Total**		
Promax Stream	FG Makeup	Acid Gas SSM	Acid Gas to Flare			
Component	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(%)**	**(lb/hr)**
H2S	--	1,865.11	47.54	1,912.65	98%	**38.25**
H2O	--	445.88	11.36	457.25	0%	**457.25**
TEG	--	--	--	--	98%	**--**
N2	1,133.89	0.02	18.59	1,152.50	0%	**1,152.50**
CO2	44.67	8,675.92	221.85	8,942.45	0%	**8,942.45**
Methane	22,455.89	3.40	368.32	22,827.61	98%	**456.55**
Ethane	1,065.86	2.46	17.54	1,085.86	98%	**21.72**
Propane	37.01	1.19	0.64	38.84	98%	**0.78**
Isobutane	0.43	0.11	0.01	0.55	98%	**0.01**
n-Butane	0.52	0.50	0.02	1.03	98%	**0.02**
Isopentane	--	0.02	4.11E-04	0.02	98%	**3.31E-04**
n-Pentane	--	0.02	5.93E-04	0.02	98%	**4.77E-04**
i-Hexane	--	0.01	1.46E-04	0.01	98%	**1.17E-04**
Heptane	--	2.54E-04	6.47E-06	2.60E-04	98%	**5.21E-06**
Octane	--	6.30E-05	1.61E-06	6.46E-05	98%	**1.29E-06**
Nonane	--	--	1.52E-17	1.52E-17	98%	**3.04E-19**
Decane	--	--	--	--	98%	**--**
n-Hexane	--	1.67E-03	4.26E-05	1.71E-03	98%	**3.43E-05**
Benzene	--	6.30	0.16	6.46	98%	**0.13**
Toluene	--	1.53	0.04	1.57	98%	**0.03**
Ethylbenzene	--	0.04	1.02E-03	0.04	98%	**8.22E-04**
o-Xylene	--	0.06	1.61E-03	0.06	98%	**1.30E-03**
MDEA	--	9.18E-06	2.34E-07	9.42E-06	98%	**1.88E-07**
Phosphoric Acid	--	--	--	--	0%	**--**
Total	**24,738.26**	**11,002.58**	**686.08**	**36,426.92**	**--**	**11,069.69**
VOC	**37.95**	**9.78**	**0.87**	**48.61**	**--**	**0.97**
Total HAP	**--**	**7.94**	**0.20**	**8.14**	**--**	**0.16**
				Total		
Heat Value of Stream (Btu/scf)	1,000.74	133.39	805.02	**862.76**		
Molecular Weight (lb/lb-mole)	16.74	39.71	21.93	**20.40**		
SO_2 emissions (lb/hr)	--	3,435.72	87.56	**3,523.29**		
Volumetric Flow (scf/hr)	560,000.00	105,000.00	11,859.00	**676,859.00**		
Heat Release (MMBtu/hr)	560.42	14.01	9.55	**583.97**		

Criteria Pollutant Emissions[c]	
NO_x factor:	0.1380 lb/MMBtu
CO factor:	0.5496 lb/MMBtu
PM_{10} factor:	7.60 lb/MMscf
$PM_{2.5}$ factor:	7.60 lb/MMscf
NOx	**80.59 lb/hr**
CO	**320.95 lb/hr**
PM_{10}	**4.35 lb/hr**
$PM_{2.5}$	**4.35 lb/hr**

[a] Uncontrolled stream properties determined via ProMax. The fuel gas makup volume is calculated based on the effective diameter needed to comly with the NAAQS.

[b] FL Exhaust (lb/hr) = Total Uncontrolled Emissions (lb/hr) x (100-DRE (%)).

[c] Flare CO and NO_x emission factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers, October 2000 RG-109 (Draft), Table 4. PM and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2. Since the Btu content of the makeup gas is sometimes just above 1000 Btu/scf, the most conservative emission factors were used for both NOx and CO.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Acid Gas Flare - Annual (SSM)

EMISSION POINT: AGFL SSM

Flare Feed Rates and Composition[a]							FL DRE%	FL Exhaust Components[b]	Criteria Pollutant Emissions[c]	
Source	**Pilot and Purge Gas**	**Packing Purge**	**Assist Gas**	**Acid Gas SSM**	**AGI Compressor Blowdown**	**Total**				
Promax Stream	N/A	SS Packing/Purge	FG Makeup	Acid Gas SSM	Acid Gas to Flare					
Component	**8760 hr/yr**	**8760 hr/yr**	**164 hr/yr**	**60 hr/yr**	**208 blowdowns/yr**	**(tpy)**	**(%)**	**(tpy)**		
	(tpy)	**(tpy)**	**(tpy)**	**(tpy)**	**(tpy)**					
H2S	--	0.62	--	55.95	1.65	58.22	98%	**1.16**	NO_x factor:	0.1380 lb/MMBtu
H2O	--	0.15	--	13.38	0.39	13.92	0%	**13.92**	CO factor:	0.5496 lb/MMBtu
TEG	--	--	--	--	--	--	98%	**--**		
N2	20.08	0.04	92.98	4.94E-04	0.64	113.74	0%	**113.74**	PM_{10} factor:	7.60 lb/MMscf
CO2	0.79	2.89	3.66	260.28	7.69	275.32	0%	**275.32**	$PM_{2.5}$ factor:	7.60 lb/MMscf
Methane	397.59	0.88	1,841.38	0.10	12.77	2,252.72	98%	**45.05**		
Ethane	18.87	0.04	87.40	0.07	0.61	107.00	98%	**2.14**	NOx	**7.30 tpy**
Propane	0.66	1.84E-03	3.03	0.04	0.02	3.75	98%	**0.07**	CO	**29.07 tpy**
Isobutane	0.01	5.36E-05	0.04	3.31E-03	3.42E-04	0.05	98%	**9.30E-04**	PM_{10}	**0.39 tpy**
n-Butane	0.01	1.86E-04	0.04	0.01	7.32E-04	0.07	98%	**1.34E-03**	$PM_{2.5}$	**0.39 tpy**
Isopentane	--	5.38E-06	--	4.84E-04	1.43E-05	5.04E-04	98%	**1.01E-05**		
n-Pentane	--	7.76E-06	--	6.98E-04	2.06E-05	7.27E-04	98%	**1.45E-05**		
i-Hexane	--	1.91E-06	--	1.72E-04	5.05E-06	1.79E-04	98%	**3.57E-06**		
Heptane	--	8.47E-08	--	7.62E-06	2.24E-07	7.93E-06	98%	**1.59E-07**		
Octane	--	2.10E-08	--	1.89E-06	5.57E-08	1.97E-06	98%	**3.94E-08**		
Nonane	--	3.86E-15	--	--	5.26E-19	3.86E-15	98%	**7.72E-17**		
Decane	--	--	--	--	--	--	98%	**--**		
n-Hexane	--	5.57E-07	--	5.02E-05	1.48E-06	5.22E-05	98%	**1.04E-06**		
Benzene	--	2.10E-03	--	0.19	0.01	0.20	98%	**3.93E-03**		
Toluene	--	5.11E-04	--	0.05	1.35E-03	0.05	98%	**9.57E-04**		
Ethylbenzene	--	1.34E-05	--	1.20E-03	3.54E-05	1.25E-03	98%	**2.50E-05**		
o-Xylene	--	2.11E-05	--	1.90E-03	5.58E-05	1.97E-03	98%	**3.94E-05**		
MDEA	--	3.06E-09	--	2.75E-07	8.11E-09	2.87E-07	98%	**5.73E-09**		
Phosphoric Acid	--	--	--	--	--	--	0%	**--**		
Total	**438.00**	**4.63**	**2,028.54**	**330.08**	**23.78**	**2,825.03**	**--**	**451.42**		
VOC	**0.67**	**4.74E-03**	**3.11**	**0.29**	**0.03**	**4.11**	**--**	**0.08**		
Total HAP	**--**	**2.65E-03**	**--**	**0.24**	**0.01**	**0.25**	**--**	**4.96E-03**		
Total CO_2	**709.30**	**5.44**	**5,311.63**	**261.16**	**44.51**	**6,332.04**	**--**	**6,332.04**		
Total N_2O	**1.36E-06**	**5.86E-09**	**1.01E-05**	**9.26E-08**	**7.30E-08**	**1.17E-05**	**--**	**1.17E-05**		
						Total				
Heat Value of Stream (Btu/scf)	1,005.06	466.99	1,000.74	133.39	805.02	**950.15**				
Molecular Weight (lb/lb-mole)	16.74	30.88	16.74	39.71	21.93	**18.09**				
SO_2 emissions (tpy)	--	1.17	--	105.18	3.10	**109.44**				
Volumetric Flow (scf/yr)	12,264,000.00	113,880.00	91,840,000.00	6,300,000.00	822,224.00	**111,340,104.00**				
Heat Release (MMBtu/yr)	12,326.03	53.18	91,908.26	840.39	661.91	**105,789.77**				

[a] Uncontrolled stream properties determined via ProMax.

[b] FL Exhaust (tpy) = Total Uncontrolled Emissions (lb/hr) x (100-DRE (%)) x Annual Hours Routed to FL (hr/yr) / 2000 (lb/ton).

[c] Flare CO and NO_x emission factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers, October 2000 RG-109 (Draft), Table 4. PM and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2. Since the Btu content of the makeup gas is sometimes just above 1000 Btu/scf, the most conservative emission factors were used for both NOx and CO.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Summary of Flare Emissions (FL-1)

Stream	NOx		CO		VOC		SO2		PM10		H2S		n-Hexane		Benzene		Toluene		O-Xylene	
	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	lb/hr	TPY
Table 2-D Emissions																				
Pilot Emissions	0.19	0.85	0.39	1.69	0.004	0.02	--	--	0.01	0.05	--	--	--	--	--	--	--	--	--	--
Table 2-E Emissions (including pilot emissions)																				
Steady State Emissions	0.53	2.34	1.07	4.67	1.19	5.22	9.07	39.73	0.03	0.13	0.10	0.42	0.02	0.10	0.02	0.07	0.01	0.04	0.001	0.005
Table 2-F Emissions																				
SSM Emissions (includes downtime)	36.79	5.36	73.44	10.69	69.92	11.39	761.34	86.17	1.99	0.29	8.10	0.92	0.18	0.04	0.15	0.03	0.02	0.007	--	--
Maximum Emission Rate	**37.52**	**7.69**	**74.90**	**15.36**	**71.12**	**16.61**	**770.41**	**125.90**	**2.03**	**0.42**	**8.20**	**1.34**	**0.20**	**0.14**	**0.16**	**0.10**	**0.03**	**0.05**	**0.002**	**0.006**

1 Maximum hourly rates include both steady state and SSM emissions since both could occur at the same time.

2 Annual SSM emissions are taken as the sum of emissions for all streams.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Process Gas Flare- Hourly

EMISSION POINT: FL-1

Equipment and Discharge Parameters		
Flare Height	150	ft
Flare Diameter	3.00	ft
Tip Exit Area	7.07	ft^2
Velocity	65.60	ft/s
Temp	1,832.00	°F

Flare Feed Rates and Composition[a]				FL DRE%	FL Exhaust Components[b]	Criteria Pollutant Emissions[c]	
Source	**Pilot and Purge Gas**	**Process Flare Gas**	**Total**				
Promax Stream	FG Makeup	SS to FL-1					
Component	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(%)**	**(lb/hr)**		
H2S	--	4.83	4.83	98%	**0.10**	NO_x factor:	0.1380 lb/MMBtu
H2O	--	0.64	0.64	0%	**0.64**	CO factor:	0.2755 lb/MMBtu
TEG	--	3.18E-12	3.18E-12	98%	**6.36E-14**		
N2	6.25	0.39	6.64	0%	**6.64**	PM_{10} factor:	7.60 lb/MMscf
CO2	0.25	20.41	20.65	0%	**20.65**	$PM_{2.5}$ factor:	7.60 lb/MMscf
Methane	123.77	25.57	149.34	98%	**2.99**		
Ethane	5.87	25.10	30.97	98%	**0.62**	NOx	**0.53 lb/hr**
Propane	0.20	26.36	26.56	98%	**0.53**	CO	**1.07 lb/hr**
Isobutane	2.37E-03	4.77	4.77	98%	**0.10**	PM_{10}	**0.03 lb/hr**
n-Butane	2.84E-03	12.34	12.34	98%	**0.25**	$PM_{2.5}$	**0.03 lb/hr**
Isopentane	--	4.25	4.25	98%	**0.08**		
n-Pentane	--	4.07	4.07	98%	**0.08**		
i-Hexane	--	2.92	2.92	98%	**0.06**		
Heptane	--	1.51	1.51	98%	**0.03**		
Octane	--	0.62	0.62	98%	**0.01**		
Nonane	--	0.06	0.06	98%	**1.13E-03**		
Decane	--	0.01	0.01	98%	**1.26E-04**		
n-Hexane	--	1.12	1.12	98%	**0.02**		
Benzene	--	0.79	0.79	98%	**0.02**		
Toluene	--	0.49	0.49	98%	**0.01**		
Ethylbenzene	--	0.04	0.04	98%	**8.51E-04**		
o-Xylene	--	0.06	0.06	98%	**1.21E-03**		
MDEA	--	3.08E-07	3.08E-07	98%	**6.15E-09**		
Phosphoric Acid	--	3.85E-24	3.85E-24	0%	**3.85E-24**		
Total	**136.35**	**136.35**	**272.69**	**--**	**32.83**		
VOC	**0.21**	**59.41**	**59.61**	**--**	**1.19**		
Total HAP	**--**	**2.51**	**2.51**	**--**	**0.05**		
			Total				
Heat Value of Stream (Btu/scf)	1,000.74	1,560.08	**1,297.53**				
Molecular Weight (lb/lb-mole)	16.74	32.65	**25.18**				
SO_2 emissions (lb/hr)	--	9.07	**9.07**				
Volumetric Flow (scf/hr)	**1,400.00**	1,582.54	**2,982.54**				
Heat Release (MMBtu/hr)	1.40	2.47	**3.87**				

[a] Uncontrolled stream properties determined via ProMax.

[b] FL Exhaust (lb/hr) = Total Uncontrolled Emissions (lb/hr) x (100-DRE (%)).

[c] Flare CO and NO_x emission factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers, October 2000 RG-109 (Draft), Table 4. PM and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Process Gas Flare - Annual

EMISSION POINT: FL-1

Flare Feed Rates and Composition[a]				FL DRE%	FL Exhaust Components[b]	Criteria Pollutant Emissions[c]	
Source	**Pilot and Purge Gas**	**Process Flare Gas**	**Total**				
Promax Stream	FG Makeup	SS to FL-1					
Component	**8760 hr/yr (tpy)**	**8760 hr/yr (tpy)**	**(tpy)**	**(%)**	**(tpy)**		
H2S	--	21.14	21.14	98%	**0.42**	NO_x factor:	0.1380 lb/MMBtu
H2O	--	2.82	2.82	0%	**2.82**	CO factor:	0.2755 lb/MMBtu
TEG	--	0.00	1.39E-11	98%	**2.78E-13**		
N2	27.37	1.72	29.09	0%	**29.09**	PM_{10} factor:	7.60 lb/MMscf
CO2	1.08	89.39	90.46	0%	**90.46**	$PM_{2.5}$ factor:	7.60 lb/MMscf
Methane	542.10	112.01	654.11	98%	**13.08**		
Ethane	25.73	109.94	135.67	98%	**2.71**	NOx	**2.34 tpy**
Propane	0.89	115.45	116.34	98%	**2.33**	CO	**4.67 tpy**
Isobutane	0.01	20.89	20.90	98%	**0.42**	PM_{10}	**0.13 tpy**
n-Butane	0.01	54.05	54.07	98%	**1.08**	$PM_{2.5}$	**0.13 tpy**
Isopentane	--	18.61	18.61	98%	**0.37**		
n-Pentane	--	17.82	17.82	98%	**0.36**		
i-Hexane	--	12.80	12.80	98%	**0.26**		
Heptane	--	6.61	6.61	98%	**0.13**		
Octane	--	2.70	2.70	98%	**0.05**		
Nonane	--	0.25	0.25	98%	**4.94E-03**		
Decane	--	0.03	0.03	98%	**5.50E-04**		
n-Hexane	--	4.91	4.91	98%	**0.10**		
Benzene	--	3.47	3.47	98%	**0.07**		
Toluene	--	2.16	2.16	98%	**0.04**		
Ethylbenzene	--	0.19	0.19	98%	**3.73E-03**		
o-Xylene	--	0.27	0.27	98%	**0.01**		
MDEA	--	0.00	1.35E-06	98%	**2.70E-08**		
Phosphoric Acid	--	0.00	1.69E-23	0%	**1.69E-23**		
Total	**597.20**	**597.20**	**1,194.40**	**--**	**143.82**		
VOC	**0.92**	**260.20**	**261.11**	**--**	**5.22**		
Total HAP	**--**	**10.99**	**10.99**	**--**	**0.22**		
Total CO_2	**709.30**	**1,481.08**	**2,190.38**	**--**	**2,190.38**		
Total N_2O	**1.35E-06**	**2.38E-06**	**3.74E-06**	**--**	**3.74E-06**		
			Total				
Heat Value of Stream (Btu/scf)	1,000.74	1,560.08	**1,297.53**				
Molecular Weight (lb/lb-mole)	16.74	32.65	**25.18**				
SO_2 emissions (tpy)	--	39.73	**39.73**				
Volumetric Flow (scf/yr)	12,264,000.00	13,863,086.25	**26,127,086.25**				
Heat Release (MMBtu/yr)	12,273.12	21,627.51	**33,900.62**				

[a] Uncontrolled stream properties determined via ProMax.

[b] FL Exhaust (tpy) = Total Uncontrolled Emissions (lb/hr) x (100-DRE (%)) x Annual Hours Routed to FL (hr/yr) / 2000 (lb/ton).

[c] Flare CO and NO_x emission factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers, October 2000 RG-109 (Draft), Table 4. PM and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Process Gas Flare- Hourly (SSM)

EMISSION POINT: FL-1 SSM

Equipment and Discharge Parameters		
Flare Height	150	ft
Flare Diameter	3.00	ft
Tip Exit Area	7.07	ft^2
Velocity	65.60	ft/s
Temp	1,832.00	°F

Flare Feed Rates and Composition[a]			FL DRE%	FL Exhaust Components[b]
Source	**SSM Flare Gas**	**Total**		
Promax Stream	Slug Catcher			
Component	**(lb/hr)**	**(lb/hr)**	**(%)**	**(lb/hr)**
H2S	405.03	405.03	98%	**8.10**
H2O	2.23	2.23	0%	**2.23**
TEG	--	--	98%	**--**
N2	278.16	278.16	0%	**278.16**
CO2	2,355.16	2,355.16	0%	**2,355.16**
Methane	5,742.22	5,742.22	98%	**114.84**
Ethane	2,319.85	2,319.85	98%	**46.40**
Propane	2,004.12	2,004.12	98%	**40.08**
Isobutane	335.31	335.31	98%	**6.71**
n-Butane	838.67	838.67	98%	**16.77**
Isopentane	150.63	150.63	98%	**3.01**
n-Pentane	112.21	112.21	98%	**2.24**
i-Hexane	33.96	33.96	98%	**0.68**
Heptane	3.33	3.33	98%	**0.07**
Octane	0.37	0.37	98%	**0.01**
Nonane	0.01	0.01	98%	**1.89E-04**
Decane	6.06E-04	6.06E-04	98%	**1.21E-05**
n-Hexane	8.76	8.76	98%	**0.18**
Benzene	7.43	7.43	98%	**0.15**
Toluene	1.19	1.19	98%	**0.02**
Ethylbenzene	0.03	0.03	98%	**6.62E-04**
o-Xylene	0.04	0.04	98%	**7.44E-04**
MDEA	7.99E-07	7.99E-07	98%	**1.60E-08**
Phosphoric Acid	--	--	0%	**--**
Total	**14,598.75**	**14,598.75**	**--**	**2,874.82**
VOC	**3,496.09**	**3,496.09**	**--**	**69.92**
Total HAP	**17.46**	**17.46**	**--**	**0.35**
		Total		
Heat Value of Stream (Btu/scf)	1,211.74	**1,211.74**		
Molecular Weight (lb/lb-mole)	25.15	**25.15**		
SO_2 emissions (lb/hr)	761.34	**761.34**		
Volumetric Flow (scf/hr)	220,000.00	**220,000.00**		
Heat Release (MMBtu/hr)	266.58	**266.58**		

Criteria Pollutant Emissions[c]		
NO_x factor:	0.1380	lb/MMBtu
CO factor:	0.2755	lb/MMBtu
PM_{10} factor:	7.60	lb/MMscf
$PM_{2.5}$ factor:	7.60	lb/MMscf
NOx	**36.79**	**lb/hr**
CO	**73.44**	**lb/hr**
PM_{10}	**1.99**	**lb/hr**
$PM_{2.5}$	**1.99**	**lb/hr**

[a] Uncontrolled stream properties determined via ProMax. The max hourly flow is based on a blowdown of the amine contactor.

[b] FL Exhaust (lb/hr) = Total Uncontrolled Emissions (lb/hr) x (100-DRE (%)).

[c] Flare CO and NO_x emission factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers, October 2000 RG-109 (Draft), Table 4. PM and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2.

Northwind Midstream Partners, LLC
Titan Treater Plant #1
Process Gas Flare - Annual (SSM)

EMISSION POINT: FL-1 SSM

Flare Feed Rates and Composition[a]			FL DRE%	FL Exhaust Components[b]	Criteria Pollutant Emissions[c]	
Source	**SSM Flare Gas**	**Total**				
Promax Stream	N/A					
Component	**(tpy)**	**(tpy)**	**(%)**	**(tpy)**		
H2S	45.84	45.84	98%	**0.92**	NO_x factor:	0.1380 lb/MMBtu
H2O	1.35	1.35	0%	**1.35**	CO factor:	0.2755 lb/MMBtu
TEG	0.00	4.59E-03	98%	**9.19E-05**		
N2	35.65	35.65	0%	**35.65**	PM_{10} factor:	7.60 lb/MMscf
CO2	287.16	287.16	0%	**287.16**	$PM_{2.5}$ factor:	7.60 lb/MMscf
Methane	775.39	775.39	98%	**15.51**		
Ethane	348.65	348.65	98%	**6.97**	NOx	**5.36 tpy**
Propane	319.43	319.43	98%	**6.39**	CO	**10.69 tpy**
Isobutane	53.79	53.79	98%	**1.08**	PM_{10}	**0.29 tpy**
n-Butane	138.78	138.78	98%	**2.78**	$PM_{2.5}$	**0.29 tpy**
Isopentane	25.82	25.82	98%	**0.52**		
n-Pentane	19.99	19.99	98%	**0.40**		
i-Hexane	6.74	6.74	98%	**0.13**		
Heptane	0.98	0.98	98%	**0.02**		
Octane	0.16	0.16	98%	**3.15E-03**		
Nonane	0.01	0.01	98%	**1.14E-04**		
Decane	0.00	3.65E-04	98%	**7.29E-06**		
n-Hexane	1.89	1.89	98%	**0.04**		
Benzene	1.65	1.65	98%	**0.03**		
Toluene	0.35	0.35	98%	**0.01**		
Ethylbenzene	0.01	0.01	98%	**2.48E-04**		
o-Xylene	0.01	0.01	98%	**2.87E-04**		
MDEA	0.00	1.42E-03	98%	**2.85E-05**		
Phosphoric Acid	0.00	1.49E-14	0%	**1.49E-14**		
Total	**2,063.66**	**2,063.66**	**--**	**358.95**		
VOC	**569.62**	**569.62**	**--**	**11.39**		
Total HAP	**3.92**	**3.92**	**--**	**0.08**		
Total CO_2	**5,135.91**	**5,135.91**	**--**	**5,135.91**		
Total N_2O	**8.56E-06**	**8.56E-06**	**--**	**8.56E-06**		

		Total
Heat Value of Stream (Btu/scf)	1,272.47	**1,272.47**
Molecular Weight (lb/lb-mole)	25.64	**25.64**
SO_2 emissions (tpy)	86.17	**86.17**
Volumetric Flow (scf/yr)	61,000,000	**61,000,000**
Heat Release (MMBtu/yr)	77,620.37	**77,620.37**

[a] Uncontrolled stream properties determined via ProMax.

[b] FL Exhaust (tpy) = Total Uncontrolled Emissions (lb/hr) x (100-DRE (%)) x Annual Hours Routed to FL (hr/yr) / 2000 (lb/ton).

[c] Flare CO and NO_x emission factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers, October 2000 RG-109 (Draft), Table 4. PM and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2.

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT: SSM-BD1

EPN	SSM-BD1
FIN	SSM-BD1
Identifier	Sweet Gas Compressor Blowdowns

Describe this MSS event in detail, include specifically what is being done and how it is being done.	Compressors are blown down for maintenance and other purposes. A total of 45 compressor blowdowns per year per compressor. Volumes are calculated using inlet and discharge pressures/temperatures from each stage of compression.

Venting Emission Calculation

Ideal Gas Constant, [(ft3*psia)/(R*lb-mol)

10.73159

Volume of the Vented Unit (scf - standard cubic feet)	15000.0
Duration of Each Event (hours/event)	1
Frequency of Events (events/year)	180
Venting Gas Molecular Weight (lb/lb-mol)	23.54
VOC wt %	28.93
benzene wt%	0.09
HAP wt%	0.26
H_2S wt%	6.22E-05
Are planned MSS vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	(A) uncontrolled

Planned MSS Emissions

Results:	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOC	269.33	24.24
Benzene	0.83	0.08
Total HAP	2.46	0.22
H_2S	5.79E-04	5.21E-05
CO_2	35.48	3.19
Methane	431.20	38.81
Ethane	173.87	15.65
Propane	149.91	13.49
Isobutane	25.09	2.26
n-Butane	62.83	5.65
Isopentane	13.05	1.17
n-Pentane	10.45	0.94
i-Hexane	4.36	0.39
Heptane	0.96	0.09
Octane	0.20	0.02
Nonane	0.01	7.20E-04
Decane	4.32E-04	3.89E-05
n-Hexane	1.35	0.12
Toluene	0.25	0.02
Ethylbenzene	0.01	9.83E-04
o-Xylene	0.01	1.16E-03
MDEA	4.23E-04	3.80E-05
Phosphoric Acid	--	--

Gas Molecular Weight and Weight Percents From Analyses Tab:

Molecular Weight	23.54
VOC wt %	28.93
Benzene wt %	0.09
HAP wt %	0.26
H2S wt %	6.22E-05
CO2 wt %	3.81
CH4 wt %	46.32
Ethane wt %	18.68
Propane wt %	16.10
Isobutane wt %	2.70
n-Butane wt %	6.75
Isopentane wt %	1.40
n-Pentane wt %	1.12
i-Hexane wt %	0.47
Heptane wt %	0.10
Octane wt %	0.02
Nonane wt %	8.59E-04
Decane wt %	4.64E-05
n-Hexane wt %	0.14
Toluene wt %	0.03
Ethylbenzene wt %	1.17E-03
o-Xylene wt %	1.38E-03
MDEA wt %	4.54E-05
Phosphoric Acid wt %	--

VOC Type: (pick from list)
Natural Gas VOC

Emission Type: (pick from list)
Low Pressure Periodic

Enter any notes here:	Physical properties of the vapor are based on the properties of the inlet to the sweet gas compression stream.

Calculations / Equations used

$$\text{VOC result (lb/hr)} = \frac{\text{(Standard Volume of Gas Vented per Event)} * \text{(Molecular Weight)} * \text{VOC wt\%}}{\text{(379.3 scf/lb-mol)} * \text{(Duration of Event}}$$

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT: SSM-BD2

EPN	SSM-BD2
FIN	SSM-BD2
Identifier	Dehydrator Contactor Blowdowns

Describe this MSS event in detail, include specifically what is being done and how it is being done.	Dehydrator contactors are blown down for maintenance and other purposes. A total of 10 blowdowns per year per contactor. Volumes are calculated using inlet and discharge pressures/temperatures.

Venting Emission Calculation

Ideal Gas Constant, [(ft3*psia)/(R*lb-mol)

10.73159

Volume of the Vented Unit (scf - standard cubic feet)	24000.0
Duration of Each Event (hours/event)	1
Frequency of Events (events/year)	30
Venting Gas Molecular Weight (lb/lb-mol)	23.71
VOC wt %	29.20
benzene wt%	0.10
HAP wt%	0.28
H_2S wt%	8.21E-05
Are planned MSS vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	(A) uncontrolled

Planned MSS Emissions

	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOC	438.15	6.57
Benzene	1.49	0.02
Total HAP	4.20	0.06
H_2S	1.23E-03	1.85E-05
CO_2	79.71	1.20
Methane	700.30	10.50
Ethane	282.53	4.24
Propane	243.69	3.66
Isobutane	40.79	0.61
n-Butane	102.20	1.53
Isopentane	21.24	0.32
n-Pentane	17.02	0.26
i-Hexane	7.11	0.11
Heptane	1.57	0.02
Octane	0.32	4.82E-03
Nonane	0.01	1.97E-04
Decane	7.11E-04	1.07E-05
n-Hexane	2.20	0.03
Toluene	0.46	0.01
Ethylbenzene	0.02	3.16E-04
o-Xylene	0.03	3.89E-04
MDEA	1.60E-04	2.40E-06
Phosphoric Acid	--	--

Gas Molecular Weight and Weight Percents From Analyses Tab:

Molecular Weight	23.71
VOC wt %	29.20
Benzene wt %	0.10
HAP wt %	0.28
H2S wt %	8.21E-05
CO2 wt %	5.31
CH4 wt %	46.67
Ethane wt %	18.83
Propane wt %	16.24
Isobutane wt %	2.72
n-Butane wt %	6.81
Isopentane wt %	1.42
n-Pentane wt %	1.13
i-Hexane wt %	0.47
Heptane wt %	0.10
Octane wt %	0.02
Nonane wt %	8.74E-04
Decane wt %	4.74E-05
n-Hexane wt %	0.15
Toluene wt %	0.03
Ethylbenzene wt %	1.41E-03
o-Xylene wt %	1.73E-03
MDEA wt %	1.07E-05
Phosphoric Acid wt %	--

VOC Type: (pick from list)
Natural Gas VOC

Emission Type: (pick from list)
Low Pressure Periodic

Enter any notes here:	Physical properties of the vapor are based on the properties of the glycol contactor inlet stream.

Calculations / Equations used

$$\text{VOC result (lb/hr)} = \frac{\text{(Standard Volume of Gas Vented per Event)} * \text{(Molecular Weight)} * \text{VOC wt\%}}{\text{(379.3 scf/lb-mol)} * \text{(Duration of Event}}$$

Northwind Midstream Partners, LLC
Titan Treater Plant #1

EMISSION POINT: SSM-BD3

EPN	SSM-BD3
FIN	SSM-BD3
Identifier	Sweet Gas Piping Blowdowns

Describe this MSS event in detail, include specifically what is being done and how it is being done.	Sweet gas pipes are blown down for maintenance and other purposes. A total of 15 blowdowns per year. Volumes are calculated using conservative pressures/temperatures and acft of piping.

Venting Emission Calculation

Ideal Gas Constant, [(ft3*psia)/(R*lb-mol)

10.73159

Volume of the Vented Unit (scf - standard cubic feet)	24500.0
Duration of Each Event (hours/event)	1
Frequency of Events (events/year)	15
Venting Gas Molecular Weight (lb/lb-mol)	23.54
VOC wt %	28.93
benzene wt%	0.09
HAP wt%	0.26
H_2S wt%	6.22E-05
Are planned MSS vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	(A) uncontrolled

Planned MSS Emissions

	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOC	439.91	3.30
Benzene	1.36	0.01
Total HAP	4.01	0.03
H_2S	9.46E-04	7.09E-06
CO_2	57.95	0.43
Methane	704.30	5.28
Ethane	283.99	2.13
Propane	244.85	1.84
Isobutane	40.98	0.31
n-Butane	102.62	0.77
Isopentane	21.32	0.16
n-Pentane	17.07	0.13
i-Hexane	7.13	0.05
Heptane	1.57	0.01
Octane	0.32	2.41E-03
Nonane	0.01	9.80E-05
Decane	7.06E-04	5.30E-06
n-Hexane	2.20	0.02
Toluene	0.41	3.04E-03
Ethylbenzene	0.02	1.34E-04
o-Xylene	0.02	1.58E-04
MDEA	6.90E-04	5.18E-06
Phosphoric Acid	--	--

Gas Molecular Weight and Weight Percents From Analyses Tab:

Molecular Weight	23.54
VOC wt %	28.93
Benzene wt %	0.09
HAP wt %	0.26
H2S wt %	6.22E-05
CO2 wt %	3.81
CH4 wt %	46.32
Ethane wt %	18.68
Propane wt %	16.10
Isobutane wt %	2.70
n-Butane wt %	6.75
Isopentane wt %	1.40
n-Pentane wt %	1.12
i-Hexane wt %	0.47
Heptane wt %	0.10
Octane wt %	0.02
Nonane wt %	8.59E-04
Decane wt %	4.64E-05
n-Hexane wt %	0.14
Toluene wt %	0.03
Ethylbenzene wt %	1.17E-03
o-Xylene wt %	1.38E-03
MDEA wt %	4.54E-05
Phosphoric Acid wt %	--

VOC Type: (pick from list)
Natural Gas VOC

Emission Type: (pick from list)
Low Pressure Periodic

Enter any notes here:	Physical properties of the vapor are based on the properties of the sweet gas stream.

Calculations / Equations used

$$\text{VOC result (lb/hr)} = \frac{\text{(Standard Volume of Gas Vented per Event)} * \text{(Molecular Weight)} * \text{VOC wt\%}}{\text{(379.3 scf/lb-mol)} * \text{(Duration of Event}}$$

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)

Section 7

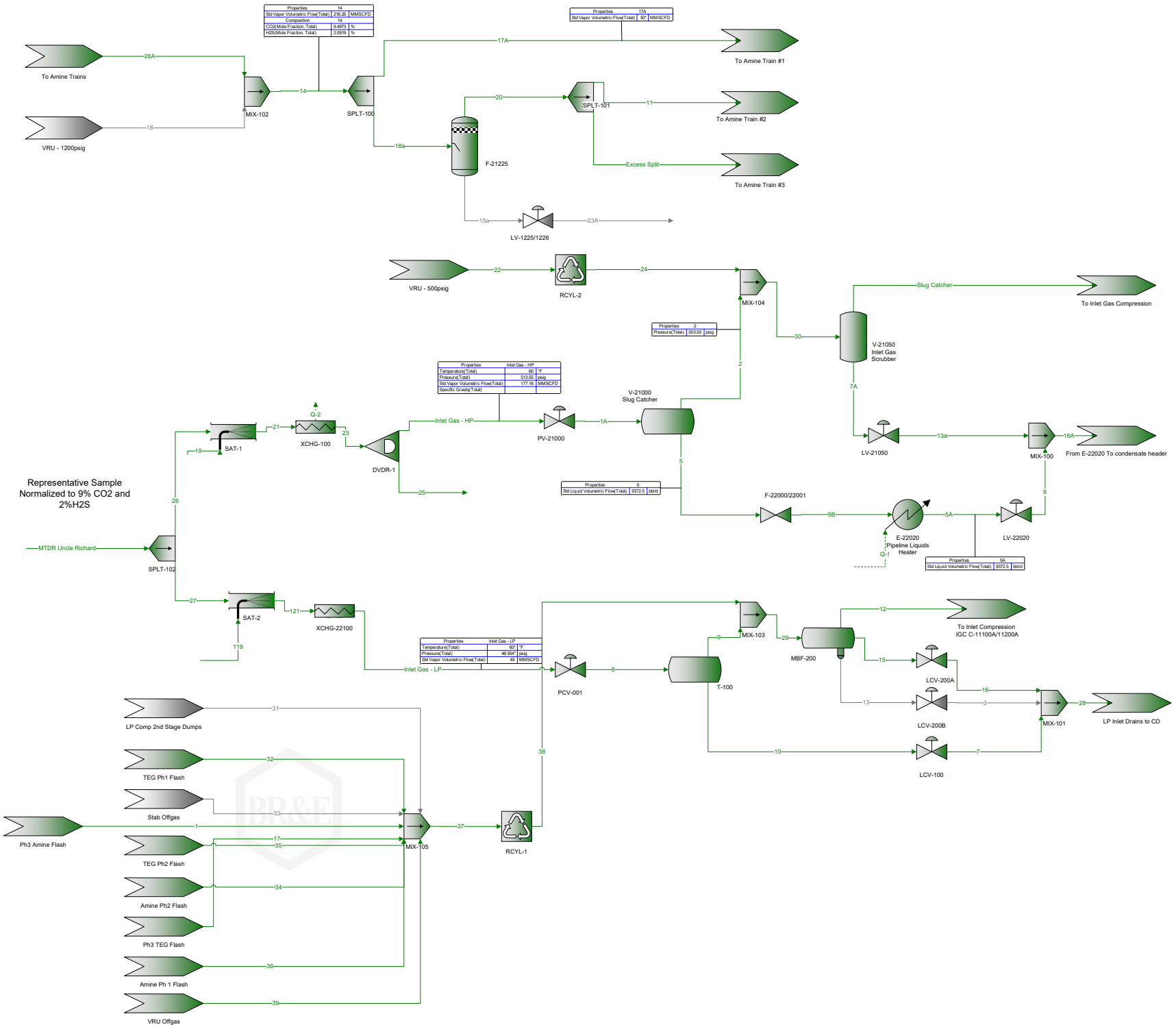
Information Used to Determine Emissions

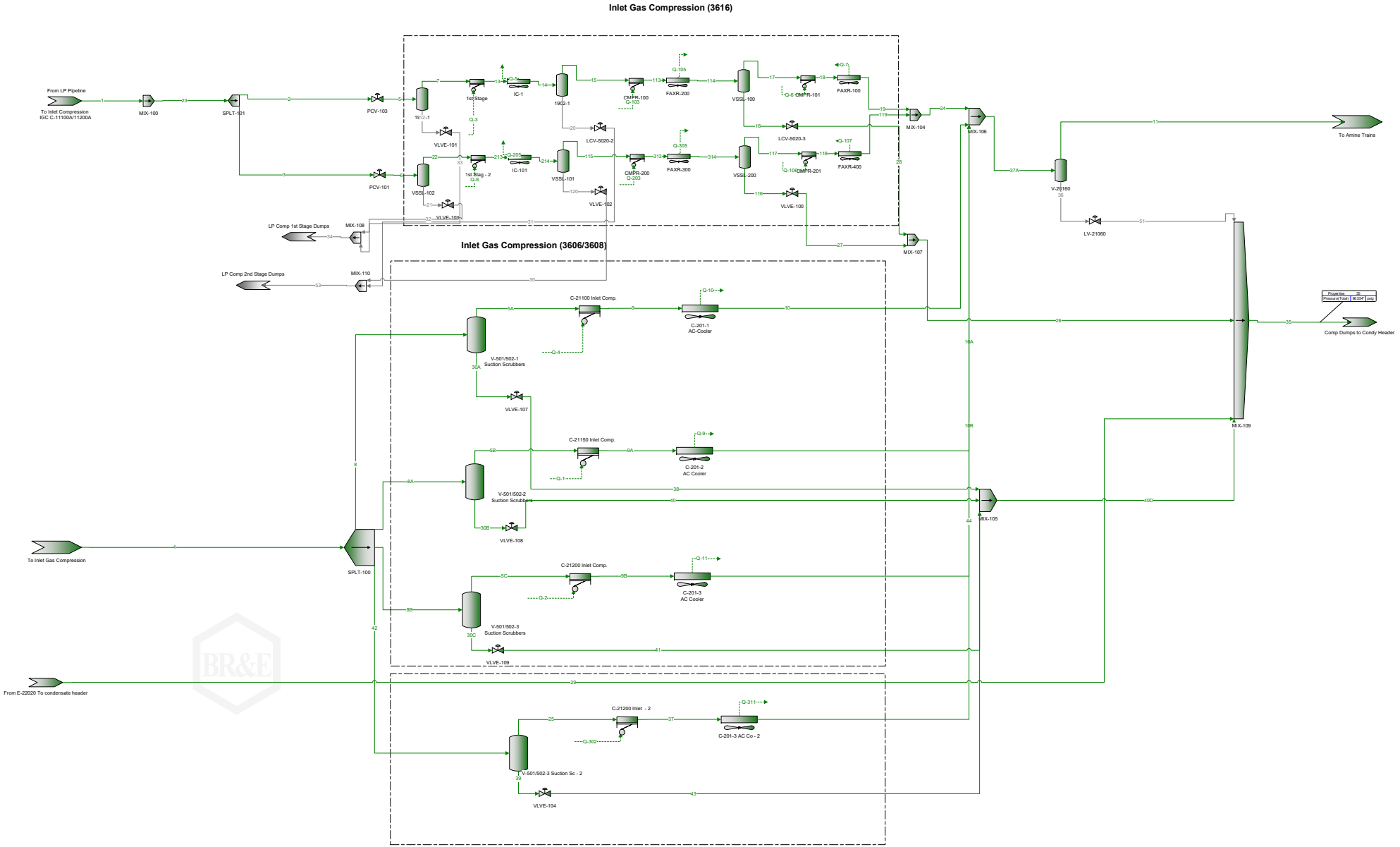
Information Used to Determine Emissions shall include the following:

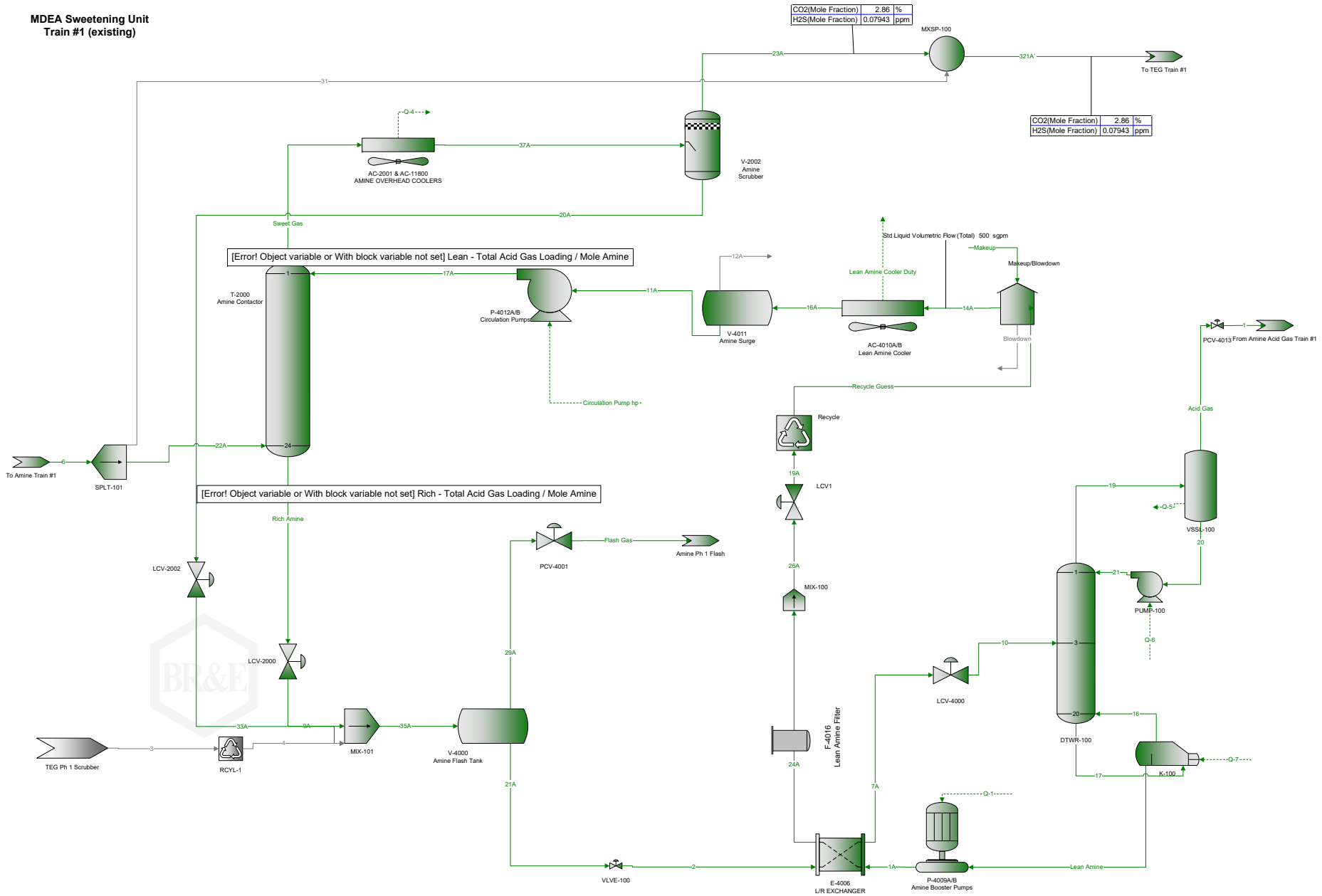
- ☒ If manufacturer data are used, include specifications for emissions units and control equipment, including control efficiencies specifications and sufficient engineering data for verification of control equipment operation, including design drawings, test reports, and design parameters that affect 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.

- BR&E ProMax Report
- Representative Inlet Gas Analysis – Upstream well stream gas composition that flows into site
- Engine and heater manufacturer specification sheets
- Flare manufacturer specification sheet
- Current version of AP-42 located online at: EPA AP-42 Compilation Air Emissions Factors
- TNRCC RG-109 Emission Factors
- 40 CFR 98 Subpart C Tables C-1 & C-2 and Subpart W §98.233 (n)

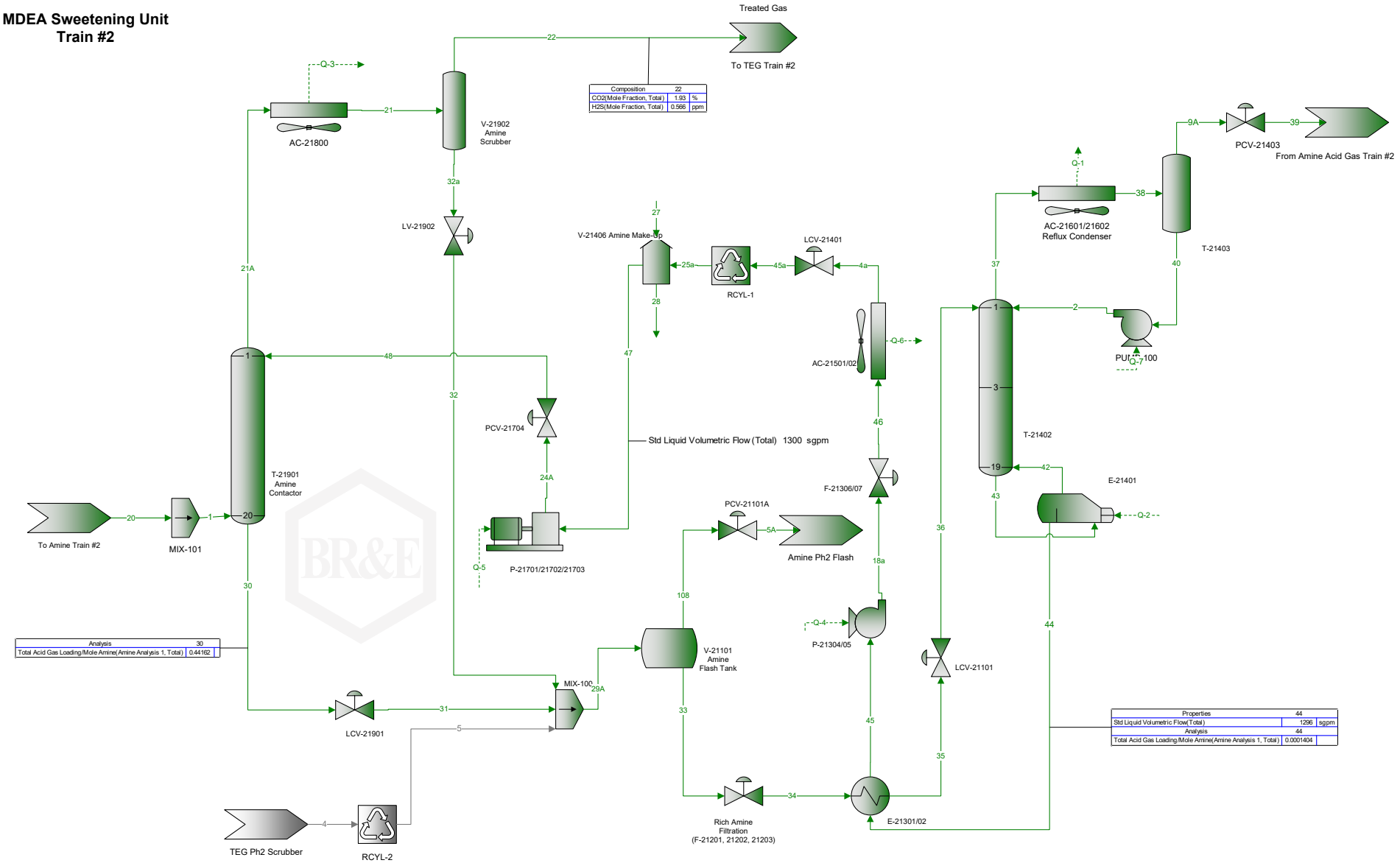
Promax Report


Properties 14
Std Vapor Volumetric Flow(Total) 218.25 MMSCFD
Composition 14
CO2(Mole Fraction, Total) 9.4973 %
H2S(Mole Fraction, Total) 2.0519 %
Properties 17A
Std Vapor Volumetric Flow(Total) 50* MMSCFD
To Amine Trains
26A
VRU - 1200psig
18
MIX-102
14
SPLT-100
17A
To Amine Train #1
20
SPLT-101
11
To Amine Train #2
18a
F-21225
Excess Split
To Amine Train #3
15a
LV-1225/1226
23A
VRU - 500psig
22
RCYL-2
24
MIX-104
Slug Catcher
To Inlet Gas Compression
Properties 2
Pressure(Total) 503.55 psig
30
V-21050
Inlet Gas
Scrubber
Properties Inlet Gas - HP
Temperature(Total) 60 °F
Pressure(Total) 513.55 psig
Std Vapor Volumetric Flow(Total) 177.16 MMSCFD
Specific Gravity(Total)
2
7A
V-21000
Slug Catcher
Q-2
SAT-1
21
XCHG-100
23
DVDR-1
Inlet Gas - HP
PV-21000
1A
LV-21050
13a
MIX-100
16A
From E-22020 To condensate header
Representative Sample
Normalized to 9% CO2 and
2%H2S
19
26
25
Properties 5
Std Liquid Volumetric Flow(Total) 9372.5 bbl/d
5
6
F-22000/22001
5B
5A
LV-22020
MTDR Uncle Richard
SPLT-102
E-22020
Pipeline Liquids
Heater
Q-1
Properties 5A
Std Liquid Volumetric Flow(Total) 9372.5 bbl/d
27
SAT-2
121
XCHG-22100
119
Properties Inlet Gas - LP
Temperature(Total) 60* °F
Pressure(Total) 46.564* psig
Std Vapor Volumetric Flow(Total) 46 MMSCFD
Inlet Gas - LP
PCV-001
8
T-100
9
MIX-103
29
MBF-200
12
To Inlet Compression
IGC C-11100A/11200A
15
LCV-200A
16
13
LCV-200B
3
MIX-101
28
LP Inlet Drains to CD
10
7
LCV-100
38
LP Comp 2nd Stage Dumps
31
TEG Ph1 Flash
32
Stab Offgas
33
Ph3 Amine Flash
1
TEG Ph2 Flash
17
35
Amine Ph2 Flash
34
Ph3 TEG Flash
Amine Ph 1 Flash
36
VRU Offgas
39
MIX-105
37
RCYL-1

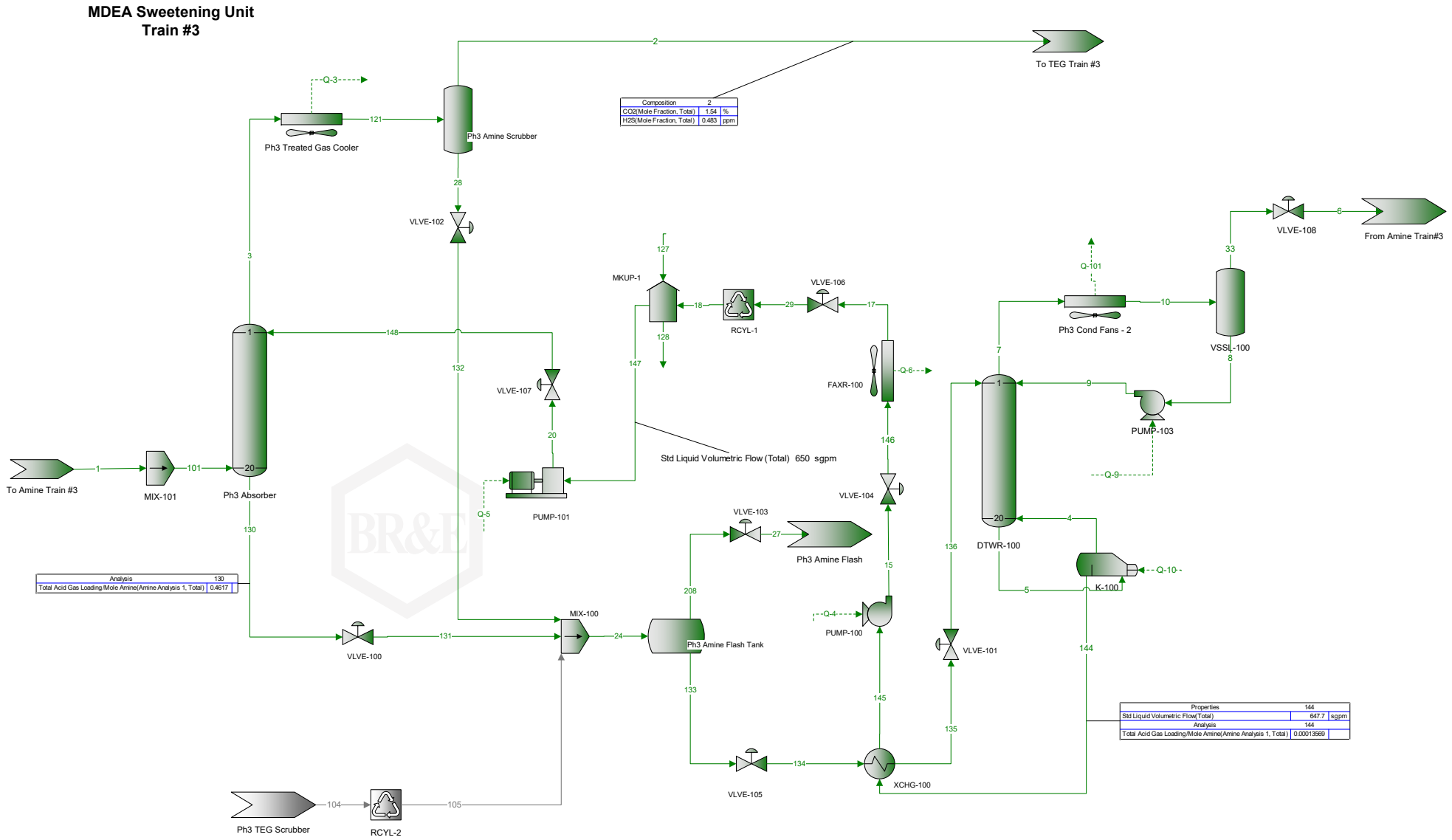

Inlet Gas Compression (3616)
Inlet Gas Compression (3606/3608)
From LP Pipeline
To Inlet Compression IGC C-11100A/11200A
MIX-100
SPLT-101
PCV-103
PCV-101
1912-1
1st Stage
IC-1
1902-1
CMPR-100
FAXR-200
VSSL-100
CMPR-101
FAXR-100
VLVE-101
VSSL-102
1st Stag - 2
IC-101
VSSL-101
LCV-5020-2
CMPR-200
FAXR-300
VSSL-200
LCV-5020-3
CMPR-201
FAXR-400
VLVE-102
VLVE-100
VLVE-103
MIX-104
MIX-106
V-20160
To Amine Trains
LV-21060
LP Comp 1st Stage Dumps
MIX-108
LP Comp 2nd Stage Dumps
MIX-110
MIX-107
C-21100 Inlet Comp.
C-201-1 AC-Cooler
V-501/502-1 Suction Scrubbers
VLVE-107
C-21150 Inlet Comp.
C-201-2 AC Cooler
V-501/502-2 Suction Scrubbers
VLVE-108
MIX-105
MIX-109
Comp Dumps to Condy Header
To Inlet Gas Compression
SPLT-100
C-21200 Inlet Comp.
C-201-3 AC Cooler
V-501/502-3 Suction Scrubbers
VLVE-109
From E-22020 To condensate header
C-21200 Inlet - 2
C-201-3 AC Co - 2
V-501/502-3 Suction Sc - 2
VLVE-104

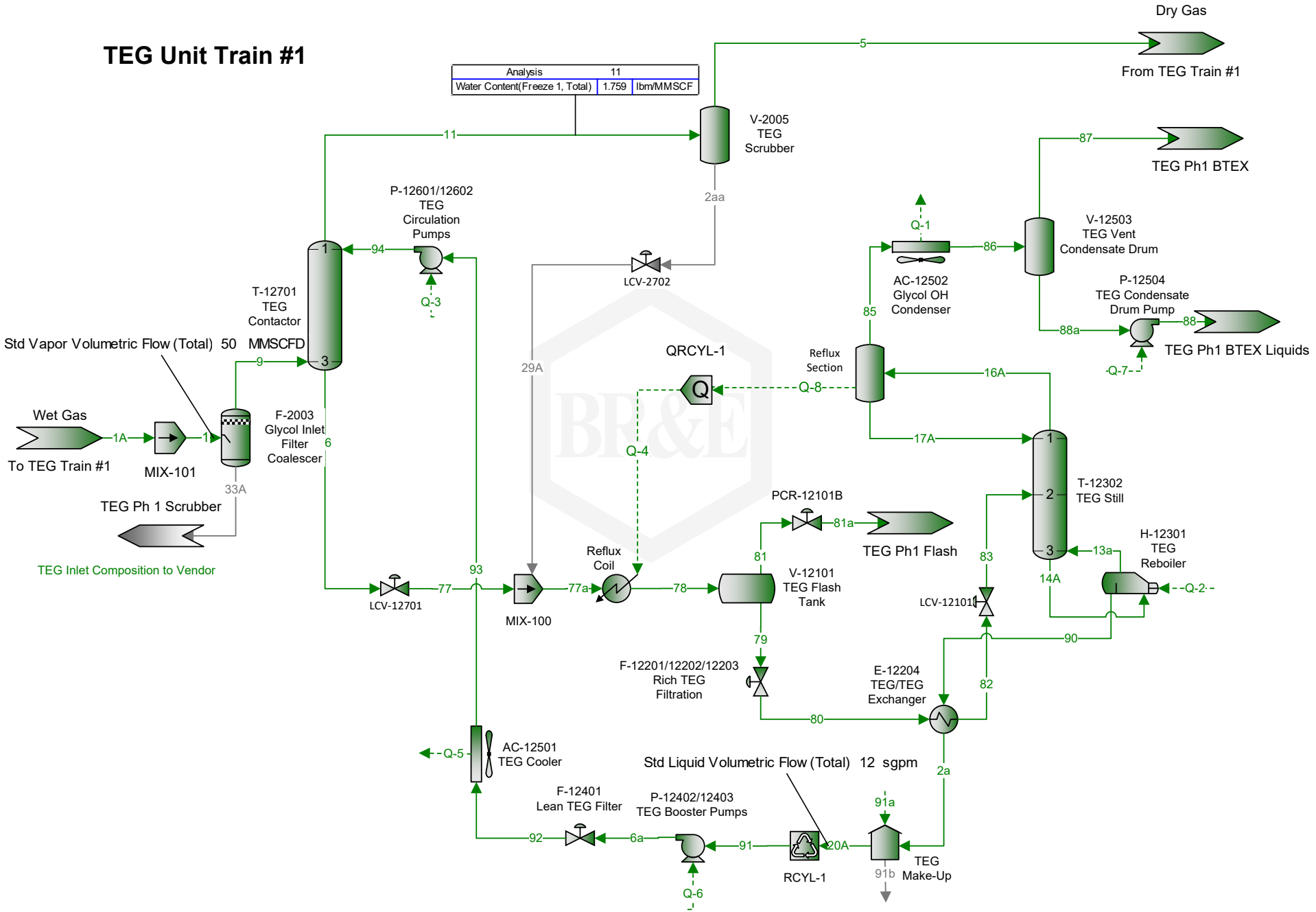

MDEA Sweetening Unit
Train #1 (existing)
CO2(Mole Fraction) 2.86 %
H2S(Mole Fraction) 0.07943 ppm
MXSP-100
23A
321A
To TEG Train #1
31
CO2(Mole Fraction) 2.86 %
H2S(Mole Fraction) 0.07943 ppm
Q-4
37A
AC-2001 & AC-11800
AMINE OVERHEAD COOLERS
V-2002
Amine
Scrubber
Sweet Gas
20A
[Error! Object variable or With block variable not set] Lean - Total Acid Gas Loading / Mole Amine
T-2000
Amine Contactor
17A
P-4012A/B
Circulation Pumps
11A
12A
V-4011
Amine Surge
16A
Lean Amine Cooler Duty
AC-4010A/B
Lean Amine Cooler
14A
Std Liquid Volumetric Flow (Total) 500 sgpm
Makeup
Makeup/Blowdown
Blowdown
Circulation Pump hp
Recycle Guess
Recycle
PCV-4013
From Amine Acid Gas Train #1
Acid Gas
To Amine Train #1
6
SPLT-101
22A
24
19A
LCV1
[Error! Object variable or With block variable not set] Rich - Total Acid Gas Loading / Mole Amine
Rich Amine
Flash Gas
Amine Ph 1 Flash
PCV-4001
LCV-2002
26A
MIX-100
VSSL-100
Q-5
19
20
21
PUMP-100
Q-6
LCV-2000
29A
LCV-4000
10
DTWR-100
16
17
K-100
Q-7
TEG Ph 1 Scrubber
3
RCYL-1
4
33A
9A
MIX-101
35A
V-4000
Amine Flash Tank
F-4016
Lean Amine Filter
24A
7A
21A
Q-1
VLVE-100
2
E-4006
L/R EXCHANGER
1A
P-4009A/B
Amine Booster Pumps
Lean Amine

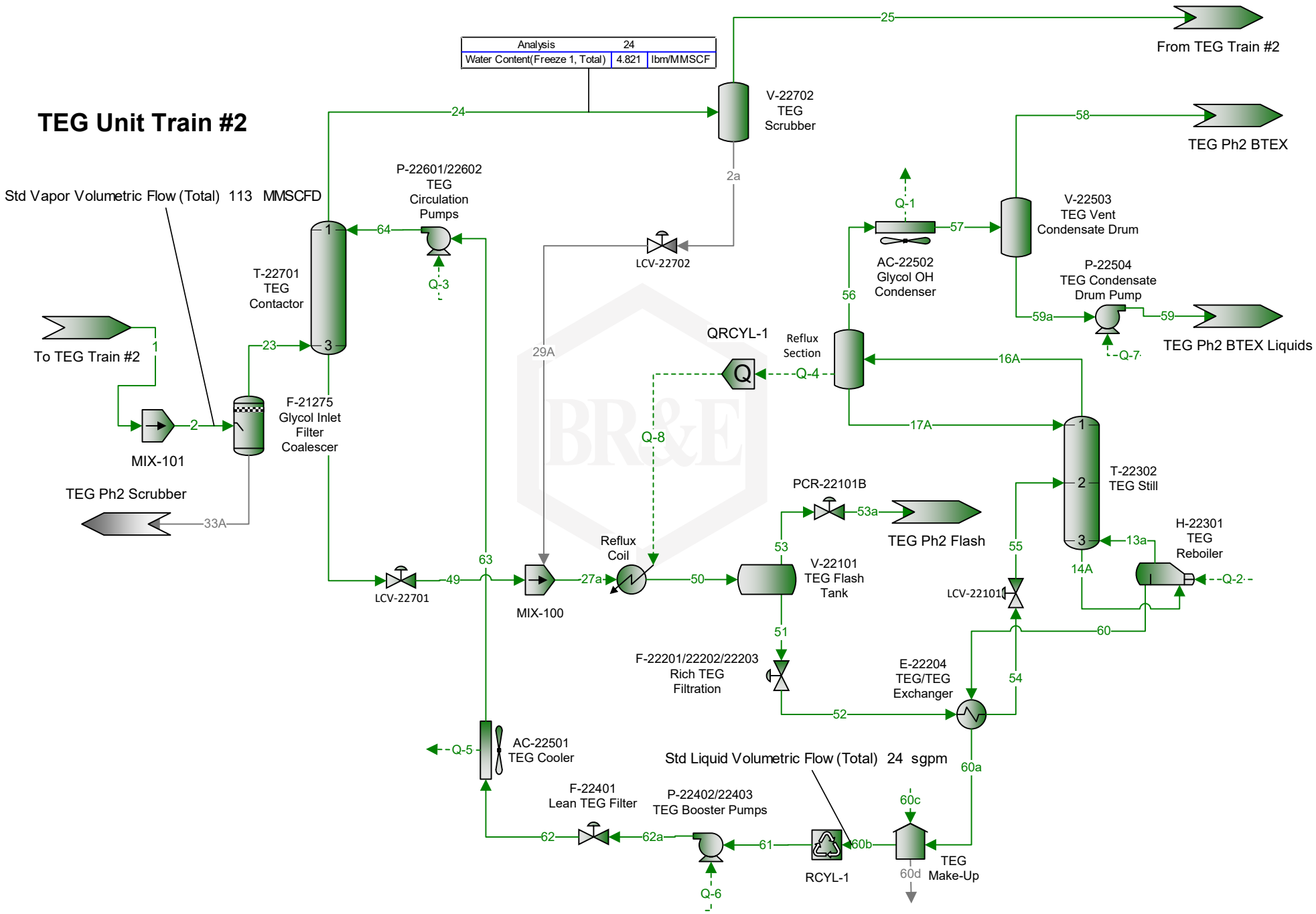
MDEA Sweetening Unit
Train #2

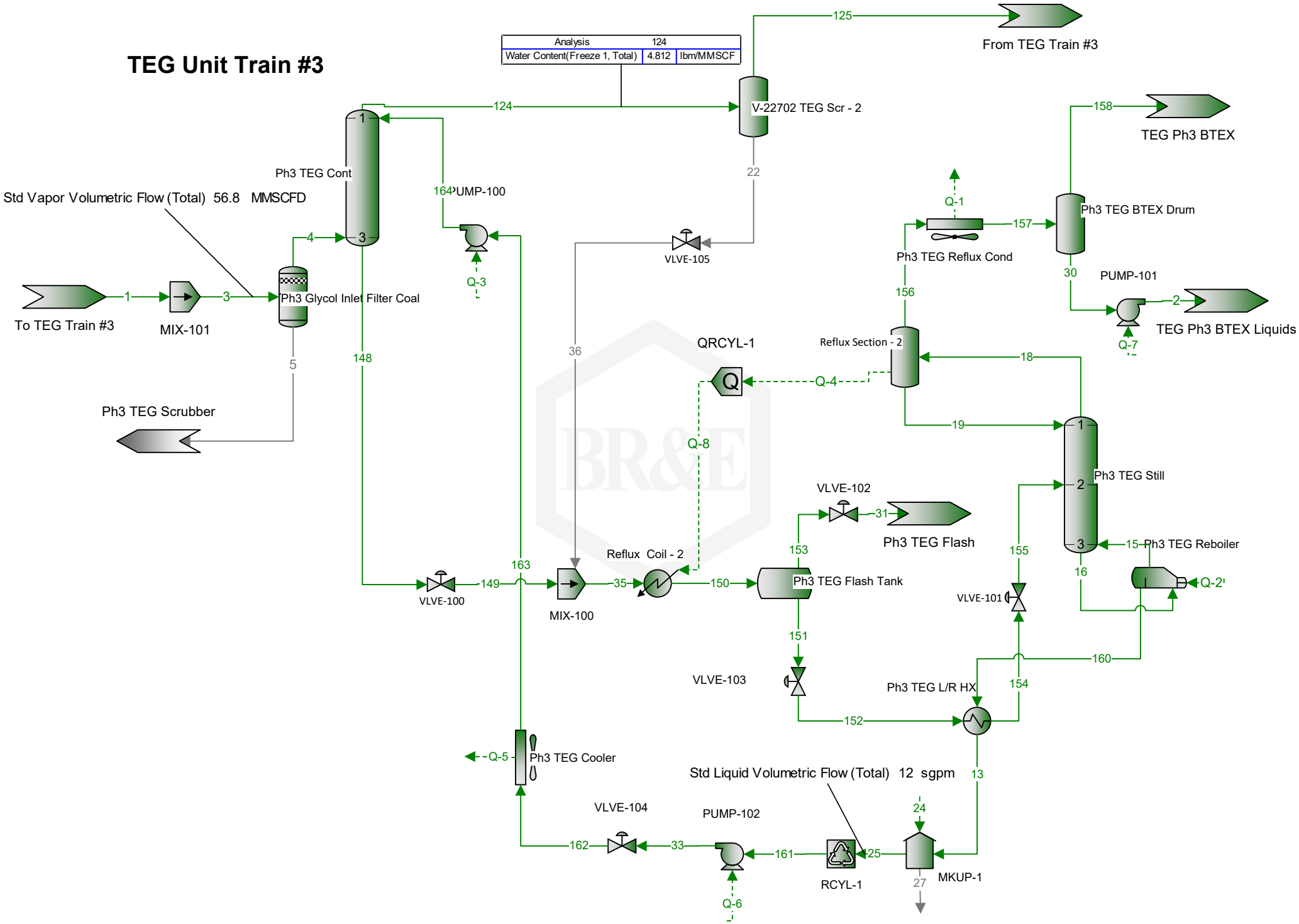


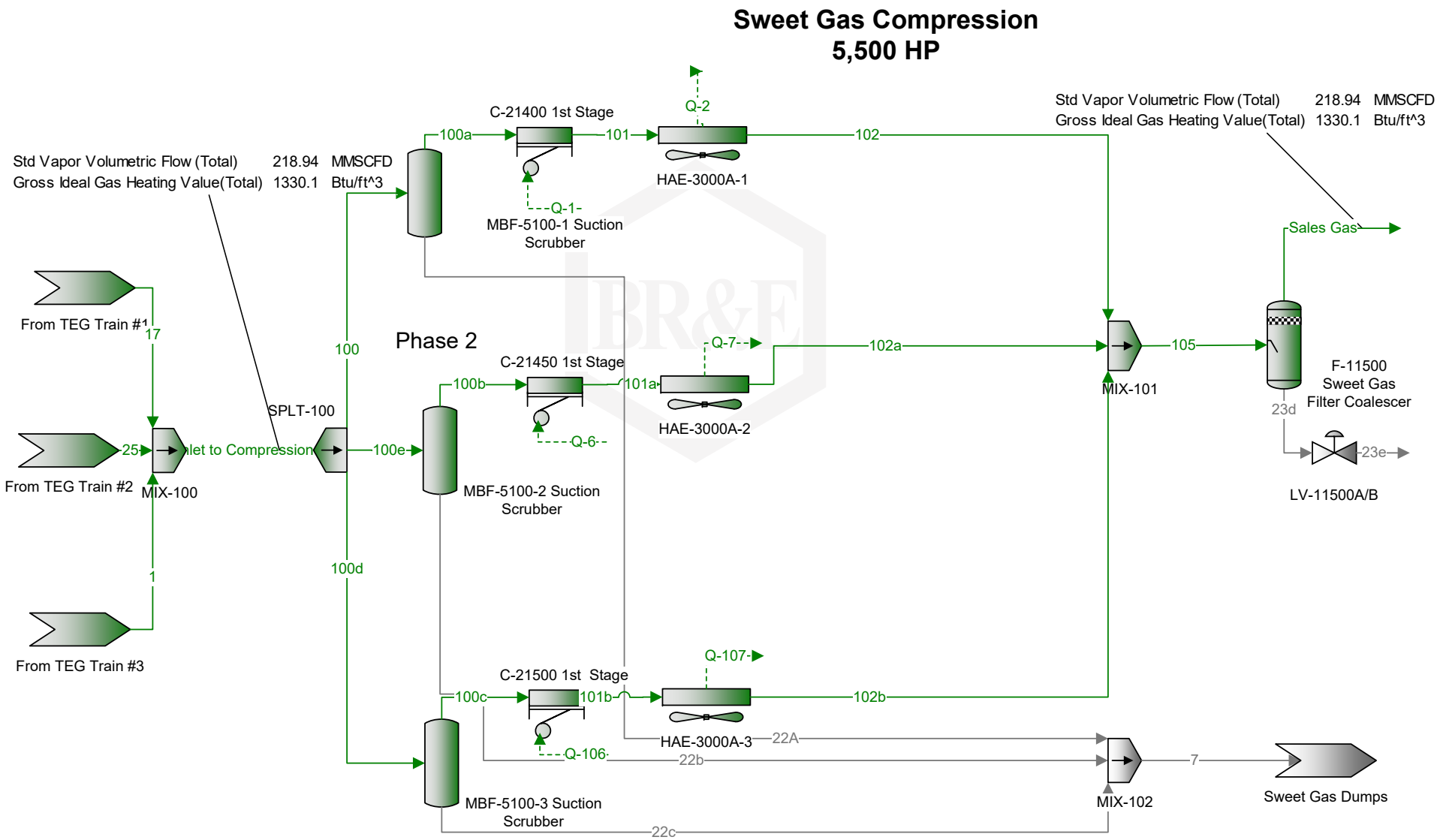
MDEA Sweetening Unit
Train #3

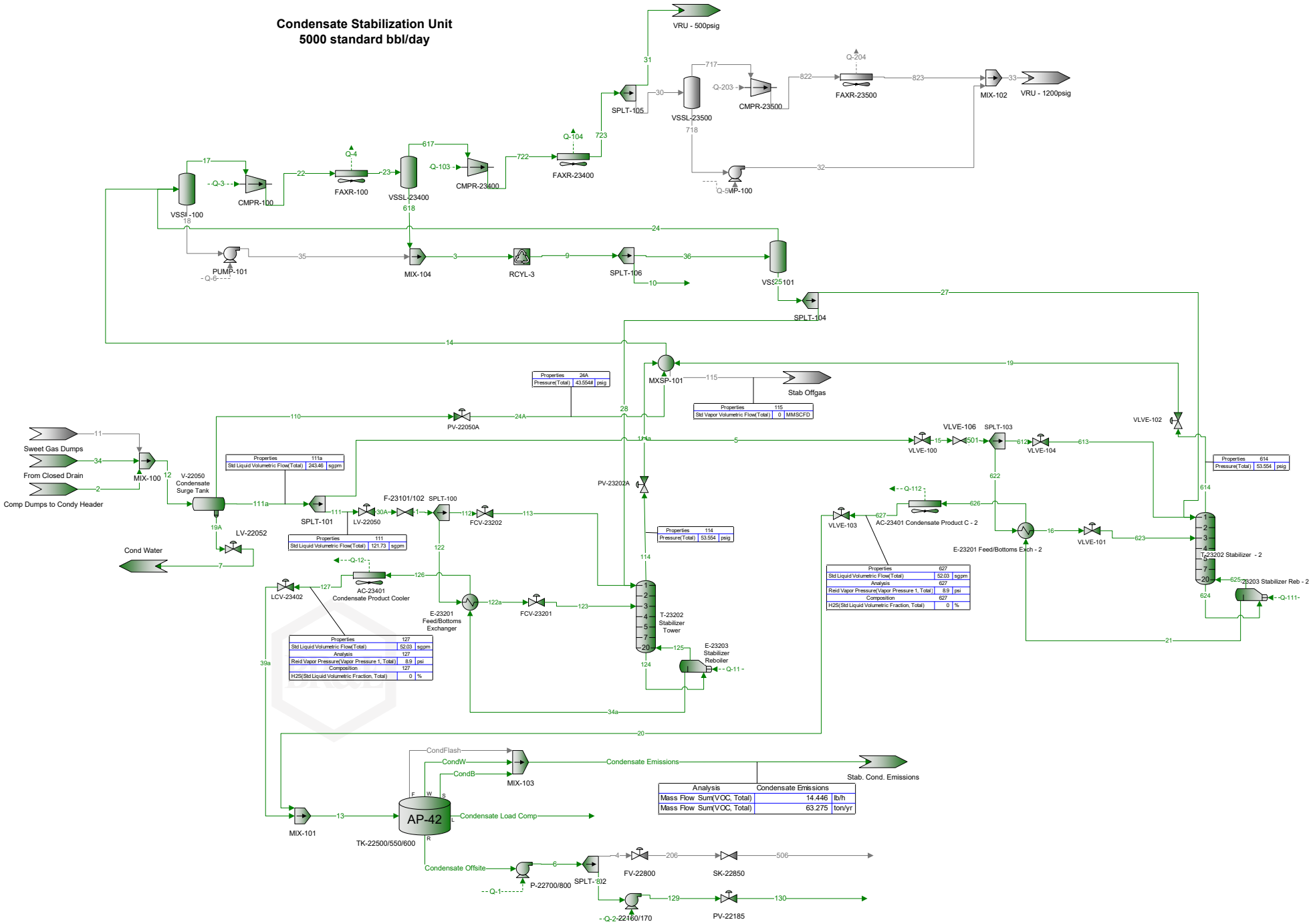



TEG Unit Train #1
Analysis 11
Water Content(Freeze 1, Total) 1.759 lbm/MMSCF
Dry Gas
5
From TEG Train #1
V-2005
TEG
Scrubber
11
2aa
87
TEG Ph1 BTEX
P-12601/12602
TEG
Circulation
Pumps
94
Q-3
LCV-2702
Q-1
86
V-12503
TEG Vent
Condensate Drum
AC-12502
Glycol OH
Condenser
85
P-12504
TEG Condensate
Drum Pump
88a
88
TEG Ph1 BTEX Liquids
Q-7
T-12701
TEG
Contactor
Std Vapor Volumetric Flow (Total) 50 MMSCFD
9
29A
QRCYL-1
Q
Q-8
Reflux
Section
16A
17A
Wet Gas
1A
To TEG Train #1
MIX-101
F-2003
Glycol Inlet
Filter
Coalescer
6
33A
TEG Ph 1 Scrubber
Q-4
T-12302
TEG Still
PCR-12101B
81a
TEG Ph1 Flash
H-12301
TEG
Reboiler
13a
14A
Q-2
TEG Inlet Composition to Vendor
93
Reflux
Coil
81
V-12101
TEG Flash
Tank
83
LCV-12101
LCV-12701
77
MIX-100
77a
78
90
79
F-12201/12202/12203
Rich TEG
Filtration
E-12204
TEG/TEG
Exchanger
82
80
AC-12501
TEG Cooler
Q-5
Std Liquid Volumetric Flow (Total) 12 sgpm
2a
F-12401
Lean TEG Filter
P-12402/12403
TEG Booster Pumps
91a
92
6a
91
20A
RCYL-1
TEG
Make-Up
91b
Q-6

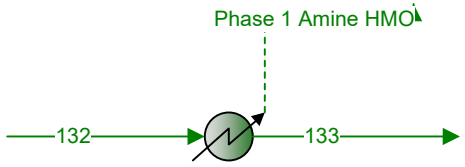

TEG Unit Train #2
Analysis 24
Water Content(Freeze 1, Total) 4.821 lbm/MMSCF
Std Vapor Volumetric Flow (Total) 113 MMSCFD
Std Liquid Volumetric Flow (Total) 24 sgpm
From TEG Train #2
TEG Ph2 BTEX
TEG Ph2 BTEX Liquids
TEG Ph2 Flash
TEG Ph2 Scrubber
To TEG Train #2
MIX-101
MIX-100
MIX-102
V-22702 TEG Scrubber
V-22503 TEG Vent Condensate Drum
P-22504 TEG Condensate Drum Pump
AC-22502 Glycol OH Condenser
P-22601/22602 TEG Circulation Pumps
T-22701 TEG Contactor
F-21275 Glycol Inlet Filter Coalescer
LCV-22702
LCV-22701
LCV-22101
PCR-22101B
QRCYL-1
Reflux Section
Reflux Coil
V-22101 TEG Flash Tank
T-22302 TEG Still
H-22301 TEG Reboiler
F-22201/22202/22203 Rich TEG Filtration
E-22204 TEG/TEG Exchanger
AC-22501 TEG Cooler
F-22401 Lean TEG Filter
P-22402/22403 TEG Booster Pumps
RCYL-1
TEG Make-Up
Q-1
Q-2
Q-3
Q-4
Q-5
Q-6
Q-7
Q-8
1
2
3
23
24
25
2a
29A
33A
49
50
51
52
53
53a
54
55
56
57
58
59
59a
60
60a
60b
60c
60d
61
62
62a
63
64
13a
14A
16A
17A
27a


TEG Unit Train #3
Analysis 124
Water Content(Freeze 1, Total) 4.812 lbm/MMSCF
125
From TEG Train #3
V-22702 TEG Scr - 2
124
158
TEG Ph3 BTEX
Ph3 TEG Cont
22
Std Vapor Volumetric Flow (Total) 56.8 MMSCFD
164
PUMP-100
Q-1
157
Ph3 TEG BTEX Drum
4
3
1
VLVE-105
Ph3 TEG Reflux Cond
30
PUMP-101
156
1
3
Q-3
Ph3 Glycol Inlet Filter Coal
2
TEG Ph3 BTEX Liquids
To TEG Train #3
MIX-101
Q-7
5
148
36
QRCYL-1
Reflux Section - 2
18
Q-4
Ph3 TEG Scrubber
19
Q-8
1
Ph3 TEG Still
VLVE-102
31
Ph3 TEG Flash
153
155
15
Ph3 TEG Reboiler
Reflux Coil - 2
163
2
16
Q-2
VLVE-100
149
35
150
Ph3 TEG Flash Tank
VLVE-101
MIX-100
151
160
VLVE-103
Ph3 TEG L/R HX
154
152
Q-5
Ph3 TEG Cooler
Std Liquid Volumetric Flow (Total) 12 sgpm
13
VLVE-104
PUMP-102
24
162
33
161
25
27
MKUP-1
RCYL-1
Q-6

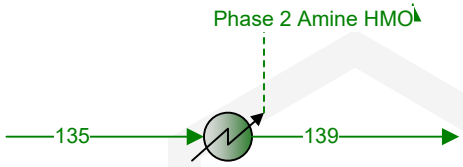

Sweet Gas Compression
5,500 HP
Std Vapor Volumetric Flow (Total) 218.94 MMSCFD
Gross Ideal Gas Heating Value(Total) 1330.1 Btu/ft^3
C-21400 1st Stage
100a
101
102
Q-2
HAE-3000A-1
Q-1
MBF-5100-1 Suction Scrubber
Std Vapor Volumetric Flow (Total) 218.94 MMSCFD
Gross Ideal Gas Heating Value(Total) 1330.1 Btu/ft^3
Sales Gas
From TEG Train #1
17
Phase 2
100
C-21450 1st Stage
100b
101a
Q-7
102a
HAE-3000A-2
Q-6
MIX-101
105
F-11500
Sweet Gas
Filter Coalescer
23d
23e
LV-11500A/B
SPLT-100
25
Inlet to Compression
100e
From TEG Train #2
MIX-100
MBF-5100-2 Suction Scrubber
100d
1
From TEG Train #3
Q-107
C-21500 1st Stage
100c
101b
102b
HAE-3000A-3
22A
Q-106
22b
7
MIX-102
Sweet Gas Dumps
MBF-5100-3 Suction Scrubber
22c


Condensate Stabilization Unit
5000 standard bbl/day
VRU - 500psig
VRU - 1200psig
SPLT-105
VSSL-23500
CMPR-23500
FAXR-23500
MIX-102
VSSL-100
CMPR-100
FAXR-100
VSSL-23400
CMPR-23400
FAXR-23400
PUMP-101
MIX-104
RCYL-3
SPLT-106
VSSL-25101
SPLT-104
MXSP-101
Stab Offgas
PV-22050A
PV-23202A
Sweet Gas Dumps
From Closed Drain
Comp Dumps to Condy Header
MIX-100
V-22050
Condensate
Surge Tank
LV-22052
Cond Water
SPLT-101
LV-22050
F-23101/102
SPLT-100
FCV-23202
AC-23401
Condensate Product Cooler
LCV-23402
E-23201
Feed/Bottoms
Exchanger
FCV-23201
T-23202
Stabilizer
Tower
E-23203
Stabilizer
Reboiler
VLVE-100
VLVE-106
SPLT-103
VLVE-104
VLVE-102
VLVE-103
AC-23401 Condensate Product C - 2
E-23201 Feed/Bottoms Exch - 2
VLVE-101
T-23202 Stabilizer - 2
E-23203 Stabilizer Reb - 2
MIX-103
CondFlash
CondW
CondB
Condensate Emissions
Stab. Cond. Emissions
MIX-101
AP-42
TK-22500/550/600
Condensate Load Comp
Condensate Offsite
P-22700/800
SPLT-102
FV-22800
SK-22850
PV-22185
Properties 24A
Pressure(Total) 43.554# psig
Properties 115
Std Vapor Volumetric Flow(Total) 0 MMSCFD
Properties 111a
Std Liquid Volumetric Flow(Total) 243.46 sgpm
Properties 111
Std Liquid Volumetric Flow(Total) 121.73 sgpm
Properties 114
Pressure(Total) 53.554 psig
Properties 614
Pressure(Total) 53.554 psig
Properties 627
Std Liquid Volumetric Flow(Total) 52.03 sgpm
Analysis 627
Reid Vapor Pressure(Vapor Pressure 1, Total) 8.9 psi
Composition 627
H2S(Std Liquid Volumetric Fraction, Total) 0 %
Properties 127
Std Liquid Volumetric Flow(Total) 52.03 sgpm
Analysis 127
Reid Vapor Pressure(Vapor Pressure 1, Total) 8.9 psi
Composition 127
H2S(Std Liquid Volumetric Fraction, Total) 0 %
Analysis Condensate Emissions
Mass Flow Sum(VOC, Total) 14.446 lb/h
Mass Flow Sum(VOC, Total) 63.275 ton/yr

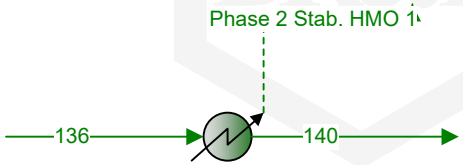
Names	Units	Phase 1 Amine HMO	Phase 2 Amine HMO	Phase 2 Stab. HMO 1	Phase 2 Stab. HMO 2
Energy Rate	Btu/h	3.4134e+07*	7e+07*	5e+06*	1.5e+06*



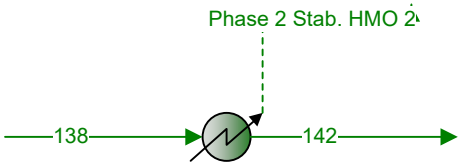
Phase 1 Amine Reboiler



Phase 2 Amine Reboiler

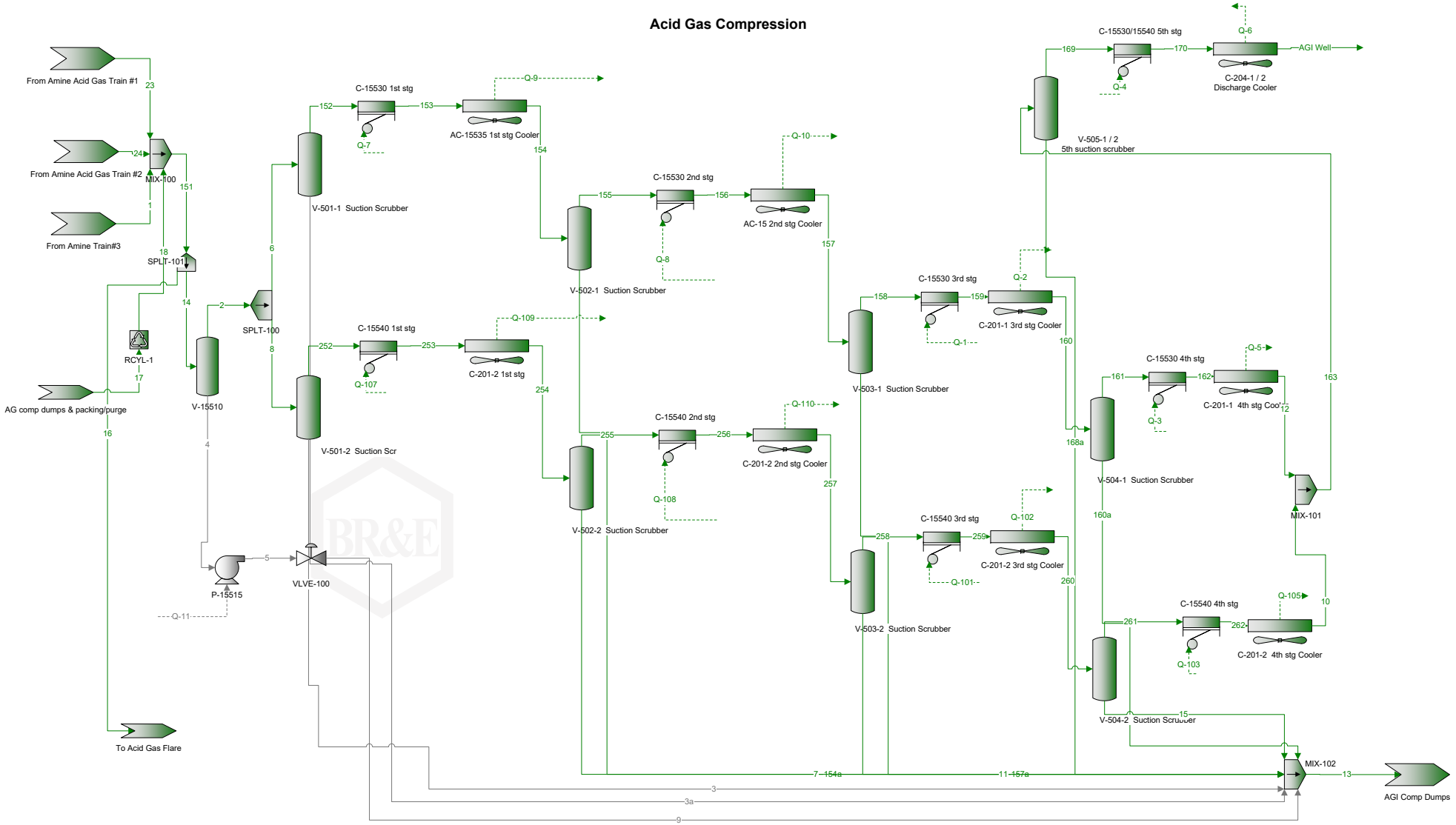


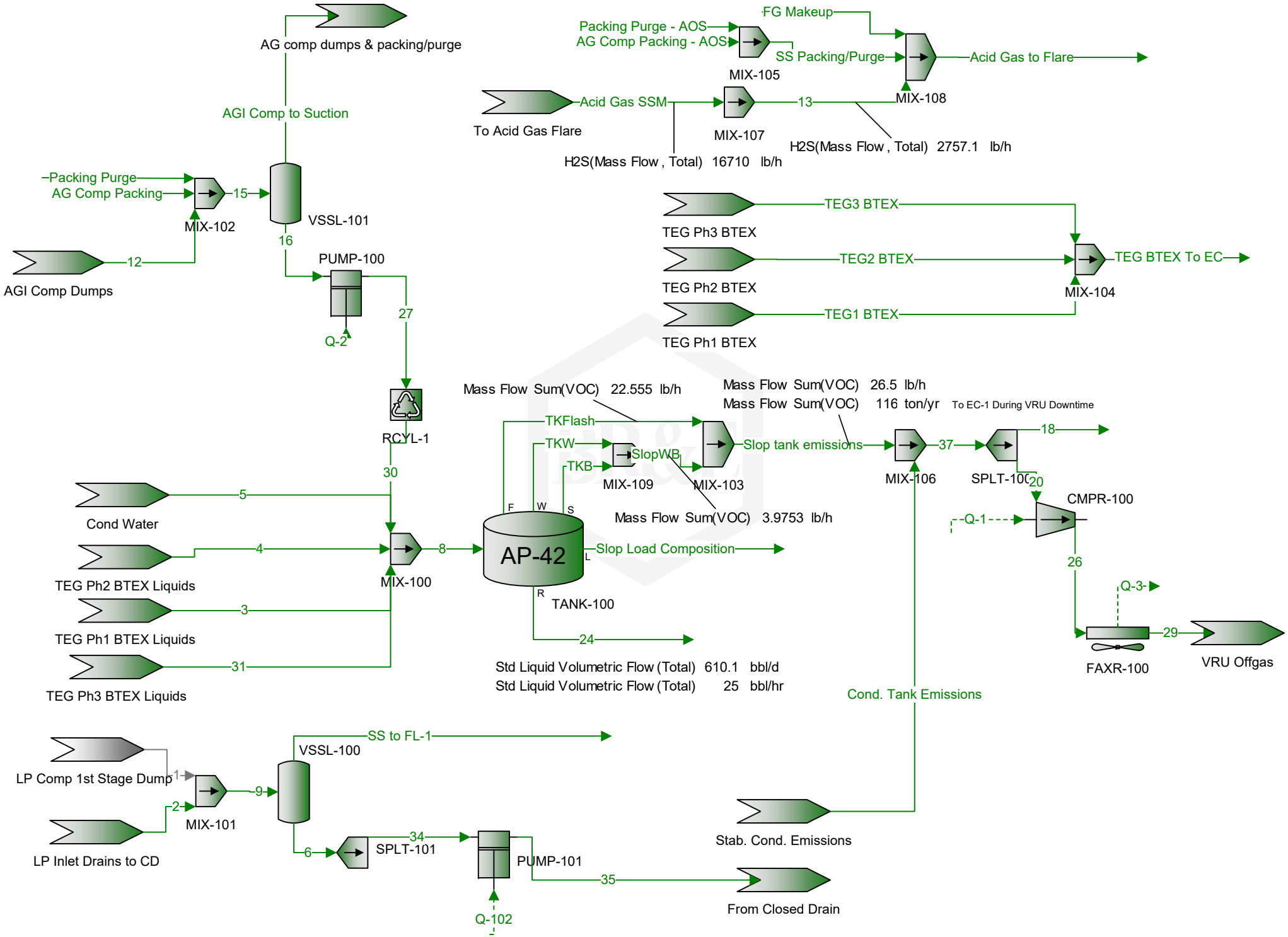
Phase 2 Stabilizer Reboiler



Phase 2 Inlet Liquids Heater

Acid Gas Compression




AG comp dumps & packing/purge
AGI Comp to Suction
Packing Purge
AG Comp Packing
15
MIX-102
VSSL-101
16
12
AGI Comp Dumps
PUMP-100
Q-2
27
RCYL-1
30
Packing Purge - AOS
AG Comp Packing - AOS
MIX-105
FG Makeup
SS Packing/Purge
MIX-108
Acid Gas to Flare
To Acid Gas Flare
Acid Gas SSM
MIX-107
13
H2S(Mass Flow , Total) 16710 lb/h
H2S(Mass Flow , Total) 2757.1 lb/h
TEG Ph3 BTEX
TEG3 BTEX
TEG Ph2 BTEX
TEG2 BTEX
TEG Ph1 BTEX
TEG1 BTEX
MIX-104
TEG BTEX To EC
Mass Flow Sum(VOC) 22.555 lb/h
TKFlash
TKW
TKB
SlopWB
MIX-109
MIX-103
Slop tank emissions
Mass Flow Sum(VOC) 26.5 lb/h
Mass Flow Sum(VOC) 116 ton/yr
To EC-1 During VRU Downtime
MIX-106
37
SPLT-100
18
20
CMPR-100
Q-1
Mass Flow Sum(VOC) 3.9753 lb/h
Cond Water
5
TEG Ph2 BTEX Liquids
4
TEG Ph1 BTEX Liquids
3
TEG Ph3 BTEX Liquids
31
MIX-100
8
AP-42
F
W
S
L
R
TANK-100
Slop Load Composition
24
Std Liquid Volumetric Flow (Total) 610.1 bbl/d
Std Liquid Volumetric Flow (Total) 25 bbl/hr
26
Q-3
FAXR-100
29
VRU Offgas
Cond. Tank Emissions
LP Comp 1st Stage Dump
1
LP Inlet Drains to CD
2
MIX-101
9
VSSL-100
SS to FL-1
6
34
SPLT-101
PUMP-101
Q-102
35
Stab. Cond. Emissions
From Closed Drain

Blocks
TK-22500/550/600
Tank Losses

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1	Modified: 2:01 PM, 5/20/2024	
Flowsheet:	Stabilizer PH2-3	Status: Solved 2:25 PM, 5/20/2024	

Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
13	Inlet	MIX-101	CondFlash	Flashing Losses Stream	MIX-103
CondW	Working Losses Stream	MIX-103	CondB	Standing Losses Stream	MIX-103
Condensate Load Comp	Loading Losses Stream		Condensate Offsite	Residual Liquid Stream	P-22700/800

Working and Standing Properties

	Tank Geometry	Vertical Cylinder		Roof Type	Cone
*	Shell Length	30 ft		Slope of Coned Roof	0.0625
*	Shell Diameter	15.5 ft		Breather Vent Pressure	0.03 psi
*	Number of Storage Tanks	4		Breather Vacuum Pressure	-0.03 psi
	Maximum Fraction Fill of Tank	90 %	*	Location	Midland, TX
	Average Fraction Fill of Tank	50 %		Time Frame	Year
	Minimum Fraction Fill of Tank	10 %		Known Liquid Bulk Temperature?	False
*	Material Category	Light Organics		Liquid Bulk Temperature	66.5461 °F
	Insulation	Uninsulated	*	Use AP 42 Raoult's Vapor Pressure?	False
	Bolted or Riveted Construction?	False		Flashing Temperature	77.2004 °F
	Vapor Balanced Tank?	False		Average Daily Maximum Ambient Temperature	76.7 °F
	Known Sum of Increases in Liquid Level?	False		Average Daily Minimum Ambient Temperature	51.4 °F
	Sum of Increases in Liquid Level	9692.41 ft/yr		Atmospheric Pressure at Tank Location	13.26 psia
*	Shell Color	Tan		Daily Solar Insolation	1698 Btu/(day*ft^2)
*	Shell Paint Condition	Average		Average Wind Speed	11 mph
*	Roof Color	Tan		Include Short Term Emissions	False
*	Roof Paint Condition	Average			

Composition Subset Properties

Component Subset	VOCs	Species in Results	Selected Species
Atomic Basis	False	Fraction Denominator	Selected Species

Tabulated Composition Subset Properties

Index	Selected Components			
H2S	False			
H2O	False			
TEG	True			
N2	False			
CO2	False			
Methane	False			
Ethane	False			
Propane	True			
Isobutane	True			
n-Butane	True			
Isopentane	True			
n-Pentane	True			
i-Hexane	True			
Heptane	True			
Octane	True			
Nonane	True			
Decane	True			
n-Hexane	True			
Benzene	True			

Blocks
TK-22500/550/600
Tank Losses

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1	Modified: 2:01 PM, 5/20/2024	
Flowsheet:	Stabilizer PH2-3	Status: Solved 2:25 PM, 5/20/2024	

Tabulated Composition Subset Properties

Index	Selected Components			
Toluene	True			
Ethylbenzene	True			
o-Xylene	True			
MDEA	True			
Phosphoric Acid	False			

Details Properties

Vapor Space Volume	2860.84	ft^3	Roof Outage	0.161458	ft
Vapor Density	0.0634427	lb/ft^3	Tank Roof Height	0.484375	ft
Vapor Space Expansion Factor	0.268342	1/day	Tank Shell Radius	7.75	ft
Vented Vapor Saturation Factor	0.207017		Vapor Molecular Weight	75.7373	lb/lbmol
Vapor Space Outage	15.1615	ft	Average Vapor Temperature	530.281	°R
Average Daily Vapor Temperature Range	34.487	°R	Average Daily Ambient Temperature	523.72	°R
Average Daily Vapor Pressure Range	1.78457	psi	Net Working Loss Throughput	1.82888E+06	ft^3/yr
Breather Vent Pressure Setting Range	0.06	psi	Working Loss Turnover (Saturation) Factor	0.240952	
Vapor Pressure at Average Daily Liquid Surface Temperature	4.76696	psia	Number of Turnovers per Year	403.851	
Average Daily Liquid Surface Temperature	528.249	°R	Annual Net Throughput	1.30309E+06	bbl/yr
Average Daily Ambient Temperature Range	25.3	°R	Maximum Liquid Height	27	ft
Tank Roof Surface Solar Absorptance	0.49		Minimum Liquid Height	3	ft
Tank Shell Surface Solar Absorptance	0.49		Working Loss Product Factor	1	
Vapor Pressure at Maximum Liquid Surface Temperature	5.72588	psia	Vent Setting Correction Factor	1	
Vapor Pressure at Minimum Liquid Surface Temperature	3.94132	psia	Saturation Factor	0.6	
Maximum Liquid Surface Temperature	536.87	°R	Vapor Pressure of Liquid Loaded	4.55927	psia
Minimum Liquid Surface Temperature	519.627	°R	Collection Efficiency	70	%
Liquid Height	15	ft	Annual Net Throughput Per Tank	325771	bbl/yr

Loading Properties

Cargo Carrier	Tank Truck or Rail Tank Car		Truck Annual Leak Test Passed	None	
* Land Based Mode of Operation	Submerged Loading: Dedicated Normal Service		Overall Reduction Efficiency	0	%
* Control Efficiency	0	%			

Results Properties

Flashing Losses	0	ton/yr	Standing Losses per Tank	1.84007	ton/yr
Working Losses	55.9148	ton/yr	Flashing Losses per Tank	0	ton/yr
Standing Losses	7.36026	ton/yr	Working and Standing Losses	63.2751	ton/yr
Loading Losses	134.2	ton/yr	Working and Standing Losses per Tank	15.8188	ton/yr
Working Losses per Tank	13.9787	ton/yr	Loading Losses per Tank	33.55	ton/yr

Blocks
TK-22500/550/600
Tank Losses

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1	Modified: 2:01 PM, 5/20/2024	
Flowsheet:	Stabilizer PH2-3	Status: Solved 2:25 PM, 5/20/2024	

Tabulated Results Properties

Index	Flashing Losses Mass Flows ton/yr	Working Losses Mass Flows ton/yr	Standing Losses Mass Flows ton/yr	Loading Losses Mass Flows ton/yr
TEG	0	4.79825E-12	6.3161E-13	1.1002E-11
Propane	0	2.04442E-09	2.69114E-10	4.94236E-09
Isobutane	0	0.000220185	2.89837E-05	0.000532776
n-Butane	0	0.0561975	0.00739747	0.135834
Isopentane	0	21.0581	2.77194	50.7031
n-Pentane	0	19.1825	2.52506	46.0914
i-Hexane	0	8.95354	1.17859	21.4252
Heptane	0	1.43916	0.189442	3.40432
Octane	0	0.313991	0.0413317	0.737092
Nonane	0	0.0209483	0.00275749	0.0487895
Decane	0	0.00216613	0.000285135	0.0050091
n-Hexane	0	2.62953	0.346134	6.26953
Benzene	0	1.75329	0.230792	4.18464
Toluene	0	0.453588	0.0597073	1.07347
Ethylbenzene	0	0.0218505	0.00287625	0.0513116
o-Xylene	0	0.0297131	0.00391124	0.0697238
MDEA	0	1.86148E-05	2.45033E-06	4.4399E-05

Index	Working and Standing Losses Mass Flows ton/yr			
TEG	5.42986E-12			
Propane	2.31354E-09			
Isobutane	0.000249169			
n-Butane	0.063595			
Isopentane	23.83			
n-Pentane	21.7076			
i-Hexane	10.1321			
Heptane	1.6286			
Octane	0.355323			
Nonane	0.0237058			
Decane	0.00245127			
n-Hexane	2.97567			
Benzene	1.98409			
Toluene	0.513295			
Ethylbenzene	0.0247267			
o-Xylene	0.0336244			
MDEA	2.10652E-05			

Remarks

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Connections

	Acid Gas SSM	Acid Gas to Flare	AG Comp Packing	AG Comp Packing - AOS	AGI Comp to Suction
From Block	To Acid Gas Flare	MIX-108	--	--	VSSL-101
To Block	MIX-107	--	MIX-102	MIX-105	AG comp dumps & packing/purge

Stream Composition

Mole Fraction	Acid Gas SSM %	Acid Gas to Flare %	AG Comp Packing %	AG Comp Packing - AOS %	AGI Comp to Suction %
H2S	19.7535	4.45753	19.7534	19.7534	35.5643
H2O	8.93368	2.01596	8.9344	8.9344	11.9287
TEG	0	0	0	0	0
N2	0.000212031	2.12128	0.000212033	0.000212033	0.0440577
CO2	71.1572	16.1104	71.1566	71.1566	50.8103
Methane	0.0766081	73.3746	0.0766091	0.0766091	1.55762
Ethane	0.029547	1.86431	0.0295475	0.0295475	0.0242006
Propane	0.00975031	0.0461828	0.00975048	0.00975048	0.000814132
Isobutane	0.000685673	0.000541898	0.000685684	0.000685684	3.18551E-05
n-Butane	0.00308507	0.00116077	0.00308512	0.00308512	0.00018183
Isopentane	8.0761E-05	1.82244E-05	8.07629E-05	8.07629E-05	3.65583E-06
n-Pentane	0.000116464	2.6281E-05	0.000116466	0.000116466	4.25802E-06
i-Hexane	2.39558E-05	5.40583E-06	2.39553E-05	2.39553E-05	7.2624E-07
Heptane	9.15039E-07	2.06486E-07	9.15054E-07	9.15054E-07	2.73125E-08
Octane	1.99178E-07	4.49461E-08	1.99179E-07	1.99179E-07	5.54534E-09
Nonane	0	3.78378E-19	3.25766E-14	3.25766E-14	8.47121E-16
Decane	0	0	0	0	0
n-Hexane	7.00421E-06	1.58056E-06	7.00506E-06	7.00506E-06	2.26168E-07
Benzene	0.0291158	0.00657022	0.0291157	0.0291157	0.0596062
Toluene	0.00600735	0.00135561	0.00600733	0.00600733	0.00968905
Ethylbenzene	0.000136253	3.07466E-05	0.000136252	0.000136252	0.000173999
o-Xylene	0.000214767	4.84638E-05	0.000214765	0.000214765	0.000373367
MDEA	2.78167E-08	6.27706E-09	2.78205E-08	2.78205E-08	1.48142E-07
Phosphoric Acid	0	0	0	0	0

Mass Fraction	Acid Gas SSM %	Acid Gas to Flare %	AG Comp Packing %	AG Comp Packing - AOS %	AGI Comp to Suction %
H2S	16.9516	6.92854	16.9516	16.9516	32.7966
H2O	4.05254	1.65637	4.05288	4.05288	5.81482
TEG	0	0	0	0	0
N2	0.000149562	2.71019	0.000149564	0.000149564	0.0333957
CO2	78.8535	32.3362	78.8532	78.8532	60.5064
Methane	0.0309458	53.685	0.0309463	0.0309463	0.676136
Ethane	0.0223712	2.55667	0.0223717	0.0223717	0.0196901
Propane	0.010826	0.0928779	0.0108263	0.0108263	0.00097139
Isobutane	0.00100349	0.00143647	0.00100351	0.00100351	5.00984E-05
n-Butane	0.00451505	0.00307699	0.00451515	0.00451515	0.000285964
Isopentane	0.000146719	5.99677E-05	0.000146723	0.000146723	7.13703E-06
n-Pentane	0.000211581	8.64784E-05	0.000211586	0.000211586	8.31266E-06
i-Hexane	5.19817E-05	2.12462E-05	5.19807E-05	5.19807E-05	1.69343E-06
Heptane	2.30872E-06	9.43632E-07	2.30877E-06	2.30877E-06	7.40527E-08
Octane	5.72891E-07	2.34155E-07	5.72896E-07	5.72896E-07	1.71398E-08
Nonane	0	2.21328E-18	1.05205E-13	1.05205E-13	2.93984E-15
Decane	0	0	0	0	0
n-Hexane	1.51984E-05	6.21197E-06	1.52003E-05	1.52003E-05	5.27372E-07
Benzene	0.0572666	0.0234063	0.0572667	0.0572667	0.125983

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Mass Fraction	Acid Gas SSM %	Acid Gas to Flare %	AG Comp Packing %	AG Comp Packing - AOS %	AGI Comp to Suction %
Toluene	0.0139373	0.00569653	0.0139373	0.0139373	0.024156
Ethylbenzene	0.000364236	0.000148873	0.000364236	0.000364236	0.00049984
o-Xylene	0.000574121	0.000234658	0.00057412	0.00057412	0.00107256
MDEA	8.34641E-08	3.41139E-08	8.34759E-08	8.34759E-08	4.77662E-07
Phosphoric Acid	0	0	0	0	0

Mass Flow	Acid Gas SSM lb/h	Acid Gas to Flare lb/h	AG Comp Packing lb/h	AG Comp Packing - AOS lb/h	AGI Comp to Suction lb/h
H2S	16710	2757.28	0.141922	0.141922	9.82455
H2O	3994.77	659.171	0.0339315	0.0339315	1.74189
TEG	0	0	0	0	0
N2	0.14743	1078.55	1.25217E-06	1.25217E-06	0.010004
CO2	77729.5	12868.5	0.660173	0.660173	18.1253
Methane	30.5047	21364.5	0.000259088	0.000259088	0.202544
Ethane	22.0523	1017.45	0.0001873	0.0001873	0.00589838
Propane	10.6717	36.9617	9.06396E-05	9.06396E-05	0.00029099
Isobutane	0.98919	0.571658	8.40161E-06	8.40161E-06	1.50075E-05
n-Butane	4.45069	1.22452	3.78017E-05	3.78017E-05	8.56634E-05
Isopentane	0.144628	0.0238648	1.22839E-06	1.22839E-06	2.13797E-06
n-Pentane	0.208565	0.034415	1.77143E-06	1.77143E-06	2.49014E-06
i-Hexane	0.0512407	0.00845515	4.35192E-07	4.35192E-07	5.07284E-07
Heptane	0.00227581	0.000375528	1.93294E-08	1.93294E-08	2.21833E-08
Octane	0.000564725	9.31844E-05	4.79639E-09	4.79639E-09	5.13441E-09
Nonane	0	8.808E-16	8.808E-16	8.808E-16	8.80659E-16
Decane	0	0	0	0	0
n-Hexane	0.0149818	0.00247212	1.2726E-07	1.2726E-07	1.5798E-07
Benzene	56.4503	9.31479	0.000479447	0.000479447	0.0377395
Toluene	13.7387	2.267	0.000116686	0.000116686	0.00723619
Ethylbenzene	0.359045	0.0592454	3.04945E-06	3.04945E-06	0.000149732
o-Xylene	0.565938	0.0933846	4.80664E-06	4.80664E-06	0.000321295
MDEA	8.22744E-05	1.3576E-05	6.98876E-10	6.98876E-10	1.43089E-07
Phosphoric Acid	0	0	0	0	0

Stream Properties

Property	Units	Acid Gas SSM	Acid Gas to Flare	AG Comp Packing	AG Comp Packing - AOS	AGI Comp to Suction
Temperature	°F	122.214	63.8284	122.217	122.217	117.257
Pressure	psig	-1.44595	-1.44595	-1.44595 *	-1.44595 *	-1.44595
Molecular Weight	lb/lbmol	39.7141	21.9262	39.7139	39.7139	36.957
Mass Flow	lb/h	98574.6	39796.1	0.837219	0.837219	29.9561
Std Vapor Volumetric Flow	MMSCFD	22.6061	16.5303	0.000192 *	0.000192 *	0.00738231
Std Liquid Volumetric Flow	sgpm	240.505	190.688	0.00204267	0.00204267	0.0739207
Net Ideal Gas Heating Value	Btu/ft^3	118.754	725.028	118.754	118.754	225.852
Gross Ideal Gas Heating Value	Btu/ft^3	133.395	805.019	133.395	133.395	251.462

Remarks

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Connections

	Cond. Tank Emissions	FG Makeup	Packing Purge	Packing Purge - AOS	Slop Load Composition
From Block	Stab. Cond. Emissions	--	--	--	TANK-100
To Block	MIX-106	MIX-108	MIX-102	MIX-105	--

Stream Composition

Mole Fraction	Cond. Tank Emissions %	FG Makeup %	Packing Purge %	Packing Purge - AOS %	Slop Load Composition %
H2S	0	0 *	0 *	0 *	47.7229
H2O	0	0 *	0 *	0 *	19.1965
TEG	4.32787E-12	0 *	0 *	0 *	6.8703E-12
N2	0	2.7394 *	2.716 *	2.7394 *	1.90627E-19
CO2	0	0.0686999 *	0.0059 *	0.0686999 *	0
Methane	0	94.735 *	95.9208 *	94.735 *	1.96967E-17
Ethane	0	2.399 *	1.3453 *	2.399 *	1.21096E-17
Propane	6.27998E-09	0.0567999 *	0.012 *	0.0567999 *	0
Isobutane	0.000513132	0.0005 *	0 *	0.0005 *	0
n-Butane	0.130966	0.000599999 *	0 *	0.000599999 *	3.36945E-18
Isopentane	39.5341	0 *	0 *	0 *	2.01449E-18
n-Pentane	36.0131	0 *	0 *	0 *	0
i-Hexane	14.0733	0 *	0 *	0 *	0
Heptane	1.94543	0 *	0 *	0 *	11.9991
Octane	0.372328	0 *	0 *	0 *	3.3781
Nonane	0.0221236	0 *	0 *	0 *	0.233263
Decane	0.00206214	0 *	0 *	0 *	0.0204902
n-Hexane	4.13312	0 *	0 *	0 *	5.25407
Benzene	3.04033	0 *	0 *	0 *	7.10499
Toluene	0.666812	0 *	0 *	0 *	4.32215
Ethylbenzene	0.0278781	0 *	0 *	0 *	0.310876
o-Xylene	0.0379097	0 *	0 *	0 *	0.378955
MDEA	2.11594E-05	0 *	0 *	0 *	0.078573
Phosphoric Acid	8.11739E-17	0 *	0 *	0 *	1.15438E-23

Mass Fraction	Cond. Tank Emissions %	FG Makeup %	Packing Purge %	Packing Purge - AOS %	Slop Load Composition %
H2S	0	0 *	0 *	0 *	32.0045
H2O	0	0 *	0 *	0 *	6.80515
TEG	8.58135E-12	0 *	0 *	0 *	2.03021E-11
N2	0	4.58353 *	4.59411 *	4.58353 *	1.05081E-19
CO2	0	0.180585 *	0.0156785 *	0.180585 *	0
Methane	0	90.7739 *	92.9157 *	90.7739 *	6.21781E-18
Ethane	0	4.30853 *	2.44255 *	4.30853 *	7.16512E-18
Propane	3.65632E-09	0.149597 *	0.0319508 *	0.149597 *	0
Isobutane	0.000393787	0.00173577 *	0 *	0.00173577 *	0
n-Butane	0.100506	0.00208292 *	0 *	0.00208292 *	3.85368E-18
Isopentane	37.661	0 *	0 *	0 *	2.86001E-18
n-Pentane	34.3067	0 *	0 *	0 *	0
i-Hexane	16.0128	0 *	0 *	0 *	0
Heptane	2.57384	0 *	0 *	0 *	23.6591
Octane	0.561553	0 *	0 *	0 *	7.59312
Nonane	0.0374646	0 *	0 *	0 *	0.588701
Decane	0.00387398	0 *	0 *	0 *	0.057368
n-Hexane	4.70275	0 *	0 *	0 *	8.90949
Benzene	3.13565	0 *	0 *	0 *	10.9208
Toluene	0.811212	0 *	0 *	0 *	7.83636
Ethylbenzene	0.0390782	0 *	0 *	0 *	0.649444
o-Xylene	0.05314	0 *	0 *	0 *	0.791667
MDEA	3.32914E-05	0 *	0 *	0 *	0.184241

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Mass Fraction	Cond. Tank Emissions %	FG Makeup %	Packing Purge %	Packing Purge - AOS %	Slop Load Composition %
Phosphoric Acid	1.05029E-16	0 *	0 *	0 *	2.22601E-23

Mass Flow	Cond. Tank Emissions lb/h	FG Makeup lb/h	Packing Purge lb/h	Packing Purge - AOS lb/h	Slop Load Composition lb/h
H2S	0	0 *	0 *	0 *	0.415853
H2O	0	0 *	0 *	0 *	0.0884231
TEG	1.23969E-12	0 *	0 *	0 *	2.63797E-13
N2	0	1078.51 *	0.0100247 *	0.0101111 *	1.36538E-21
CO2	0	42.4921 *	3.42117E-05 *	0.000398363 *	0
Methane	0	21359.3 *	0.20275 *	0.200243 *	8.07915E-20
Ethane	0	1013.81 *	0.00532985 *	0.00950442 *	9.31004E-20
Propane	5.28205E-10	35.2005 *	6.97193E-05 *	0.000330004 *	0
Isobutane	5.68878E-05	0.408429 *	0 *	3.82902E-06 *	0
n-Butane	0.0145194	0.490115 *	0 *	4.59483E-06 *	5.0073E-20
Isopentane	5.44064	0 *	0 *	0 *	3.71616E-20
n-Pentane	4.95607	0 *	0 *	0 *	0
i-Hexane	2.31327	0 *	0 *	0 *	0
Heptane	0.371827	0 *	0 *	0 *	0.307416
Octane	0.0811239	0 *	0 *	0 *	0.0986617
Nonane	0.00541228	0 *	0 *	0 *	0.00764932
Decane	0.00055965	0 *	0 *	0 *	0.000745414
n-Hexane	0.679376	0 *	0 *	0 *	0.115766
Benzene	0.452988	0 *	0 *	0 *	0.1419
Toluene	0.117191	0 *	0 *	0 *	0.101822
Ethylbenzene	0.00564537	0 *	0 *	0 *	0.00843859
o-Xylene	0.0076768	0 *	0 *	0 *	0.0102866
MDEA	4.8094E-06	0 *	0 *	0 *	0.00239394
Phosphoric Acid	1.51729E-17	0 *	0 *	0 *	2.89238E-25

Stream Properties

Property	Units	Cond. Tank Emissions	FG Makeup	Packing Purge	Packing Purge - AOS	Slop Load Composition
Temperature	°F	77.2004	50 *	50 *	50 *	77.2706
Pressure	psig	-1.43595	48.5541 *	48.5541 *	48.5541 *	-1.43595
Molecular Weight	lb/lbmol	75.7373	16.7425	16.5613	16.7425	50.819
Mass Flow	lb/h	14.4464	23530.2	0.218208	0.220596	1.29936
Std Vapor Volumetric Flow	MMSCFD	0.00173721	12.8 *	0.00012 *	0.00012 *	0.000232866
Std Liquid Volumetric Flow	sgpm	0.0448797	151.001	0.00140677	0.00141564	0.00336257
Net Ideal Gas Heating Value	Btu/ft^3	3865.19	901.708	894.362	901.708	1812.67
Gross Ideal Gas Heating Value	Btu/ft^3	4173.4	1000.74	992.909	1000.74	1951.15

Remarks

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:
Location:	Titan Treater Plant 1	
Flowsheet:	Vents Drains	

Connections

	Slop tank emissions	SlopWB	SS Packing/Purge	SS to FL-1	TEG BTEX To EC
From Block	MIX-103	MIX-109	MIX-105	VSSL-100	MIX-104
To Block	MIX-106	MIX-103	MIX-108	--	--

Stream Composition

Mole Fraction	Slop tank emissions %	SlopWB %	SS Packing/Purge %	SS to FL-1 %	TEG BTEX To EC %
H2S	17.2429	32.7921	12.1559	3.39113	0.00190284
H2O	4.13081	6.93755	5.49809	0.855595	12.3066
TEG	2.64534E-12	3.00775E-12	0	5.06866E-13	4.39874E-10
N2	0.00904526	0.000428164	1.05374	0.335616	0.012779
CO2	14.8399	21.1197	43.8151	11.1054	12.2871
Methane	2.20851	0.21629	36.4837	38.1752	6.06922
Ethane	5.73261	0.919028	0.940874	19.9911	10.8528
Propane	13.8529	2.39528	0.0278464	14.3156	15.9023
Isobutane	4.33844	1.16618	0.000614267	1.96517	2.66552
n-Butane	14.3342	5.42979	0.00212931	5.08504	12.2844
Isopentane	6.04889	4.45038	4.97002E-05	1.41064	2.9742
n-Pentane	6.341	5.67082	7.16715E-05	1.3506	3.13453
i-Hexane	4.86347	8.30437	1.47417E-05	0.812159	1.44817
Heptane	1.52033	2.61798	5.6311E-07	0.360494	0.585483
Octane	0.373719	0.629625	1.22572E-07	0.129098	0.142611
Nonane	0.0250843	0.0413686	2.00472E-14	0.0105328	0.00694319
Decane	0.00236354	0.00381416	0	0.00105683	0.000427939
n-Hexane	1.81704	3.19948	4.31081E-06	0.31147	0.590211
Benzene	1.50596	2.68788	0.0179174	0.242674	13.2383
Toluene	0.706024	1.23382	0.00369682	0.128239	4.89575
Ethylbenzene	0.0416103	0.0702043	8.38476E-05	0.00959705	0.234569
o-Xylene	0.0516319	0.0872203	0.000132163	0.0136593	0.354093
MDEA	0.0135747	0.0267083	1.71203E-08	6.18313E-08	0.0119065
Phosphoric Acid	1.10399E-20	4.73928E-24	0	9.40189E-25	0

Mass Fraction	Slop tank emissions %	SlopWB %	SS Packing/Purge %	SS to FL-1 %	TEG BTEX To EC %
H2S	11.5639	21.9248	13.4165	3.53936	0.0012975
H2O	1.4644	2.4519	3.2077	0.47204	4.43582
TEG	7.81732E-12	8.86113E-12	0	2.33107E-12	1.32165E-09
N2	0.00498623	0.000235305	0.955964	0.287924	0.00716237
CO2	12.8518	18.2343	62.4469	14.9675	10.8191
Methane	0.697198	0.0680711	18.9544	18.7552	1.94804
Ethane	3.39201	0.54213	0.916203	18.4089	6.52914
Propane	12.0204	2.07208	0.0397654	19.3318	14.0298
Isobutane	4.96205	1.32972	0.00115622	3.49793	3.09969
n-Butane	16.3947	6.19128	0.00400793	9.0512	14.2854
Isopentane	8.58796	6.29915	0.000116126	3.11684	4.29333
n-Pentane	9.00268	8.02657	0.000167462	2.98417	4.52477
i-Hexane	8.24735	14.0393	4.11407E-05	2.14335	2.49688
Heptane	2.99777	5.14633	1.8273E-06	1.10623	1.17378
Octane	0.840051	1.41095	4.53424E-07	0.451611	0.325928
Nonane	0.0633085	0.104088	8.3266E-14	0.0413701	0.0178167
Decane	0.00661755	0.0106464	0	0.00460495	0.00121822
n-Hexane	3.08129	5.409	1.20305E-05	0.821995	1.01762
Benzene	2.31481	4.11891	0.0453243	0.580509	20.6892
Toluene	1.2801	2.23023	0.0110309	0.36185	9.02516
Ethylbenzene	0.0869296	0.146218	0.000288279	0.0312024	0.49825

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Mass Fraction	Slop tank emissions %	SlopWB %	SS Packing/Purge %	SS to FL-1 %	TEG BTEX To EC %
o-Xylene	0.107866	0.181658	0.000454394	0.0444099	0.752131
MDEA	0.0318312	0.0624368	6.60679E-08	2.2564E-07	0.0283869
Phosphoric Acid	2.1289E-20	9.11114E-24	0	2.82156E-24	0

Mass Flow	Slop tank emissions lb/h	SlopWB lb/h	SS Packing/Purge lb/h	SS to FL-1 lb/h	TEG BTEX To EC lb/h
H2S	4.38117	1.53506	0.141922	0.481967	0.00305574
H2O	0.554812	0.171669	0.0339315	0.0642793	10.4468
TEG	2.96171E-12	6.2041E-13	0	3.17429E-13	3.1126E-09
N2	0.00188911	1.64748E-05	0.0101123	0.0392077	0.0168681
CO2	4.86908	1.27667	0.660572	2.03818	25.4801
Methane	0.264144	0.00476598	0.200502	2.55396	4.58783
Ethane	1.28511	0.0379571	0.00969172	2.5068	15.3767
Propane	4.55413	0.145076	0.000420644	2.63249	33.0415
Isobutane	1.87995	0.0931002	1.22306E-05	0.476326	7.30007
n-Butane	6.21136	0.433481	4.23965E-05	1.23253	33.6435
Isopentane	3.25368	0.441033	1.22839E-06	0.424431	10.1112
n-Pentane	3.4108	0.561978	1.77143E-06	0.406365	10.6563
i-Hexane	3.12463	0.982956	4.35192E-07	0.291868	5.88039
Heptane	1.13575	0.360319	1.93294E-08	0.150639	2.76436
Octane	0.318266	0.0987874	4.79639E-09	0.0614974	0.767592
Nonane	0.0239854	0.0072877	8.808E-16	0.00563351	0.0419601
Decane	0.00250716	0.000745406	0	0.000627073	0.00286902
n-Hexane	1.16739	0.37871	1.2726E-07	0.111934	2.39659
Benzene	0.877002	0.288384	0.000479447	0.0790499	48.7252
Toluene	0.484987	0.156149	0.000116686	0.0492745	21.2551
Ethylbenzene	0.0329346	0.0102374	3.04945E-06	0.00424895	1.17343
o-Xylene	0.0408667	0.0127187	4.80664E-06	0.00604746	1.77134
MDEA	0.0120597	0.0043715	6.98876E-10	3.07262E-08	0.0668539
Phosphoric Acid	8.06567E-21	6.37914E-25	0	3.84222E-25	0

Stream Properties

Property	Units	Slop tank emissions	SlopWB	SS Packing/Purge	SS to FL-1	TEG BTEX To EC
Temperature	°F	76.3859	77.2706	93.5035	58.136	119.987
Pressure	psig	-1.43595	-1.43595	-1.44595	13.5541	-0.995949
Molecular Weight	lb/lbmol	50.8177	50.9735	30.8787	32.6535	49.981
Mass Flow	lb/h	37.8865	7.00147	1.05781	13.6174	235.51
Std Vapor Volumetric Flow	MMSCFD	0.00679008	0.00125098	0.000312	0.00379811	0.0429149
Std Liquid Volumetric Flow	sgpm	0.120625	0.0196756	0.00345831	0.058608	0.73862
Net Ideal Gas Heating Value	Btu/ft^3	2039.46	1674.9	419.89	1427.82	2117.59
Gross Ideal Gas Heating Value	Btu/ft^3	2208.74	1809.6	466.99	1560.08	2275.82

Remarks

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Connections

	TEG1 BTEX	TEG2 BTEX	TEG3 BTEX	TKB	TKFlash
From Block	TEG Ph1 BTEX	TEG Ph2 BTEX	TEG Ph3 BTEX	TANK-100	TANK-100
To Block	MIX-104	MIX-104	MIX-104	MIX-109	MIX-103

Stream Composition

Mole Fraction	TEG1 BTEX %	TEG2 BTEX %	TEG3 BTEX %	TKB %	TKFlash %
H2S	0.000375604	0.00264455	0.00232513	32.7921	13.7312
H2O	12.157	12.37	12.3669	6.93755	3.49692
TEG	6.44332E-10	3.50829E-10	3.62294E-10	3.00775E-12	2.56349E-12
N2	0.0084684	0.0143647	0.0150132	0.000428164	0.0109914
CO2	17.0525	10.9218	9.02118	21.1197	13.4216
Methane	4.79557	6.50964	6.78713	0.21629	2.65845
Ethane	9.75732	11.1822	11.5717	0.919028	6.81973
Propane	14.8142	16.1992	16.6788	2.39528	16.4405
Isobutane	2.46494	2.72553	2.79777	1.16618	5.05488
n-Butane	11.4892	12.5159	12.822	5.42979	16.3453
Isopentane	2.69851	3.06838	3.13197	4.45038	6.40991
n-Pentane	2.9199	3.20356	3.26616	5.67082	6.49236
i-Hexane	1.19764	1.54441	1.56965	8.30437	4.08636
Heptane	0.524539	0.610024	0.612716	2.61798	1.27243
Octane	0.124551	0.150925	0.148542	0.629625	0.315924
Nonane	0.00589541	0.00748632	0.00716254	0.0413686	0.0214066
Decane	0.00033113	0.000489432	0.000424986	0.00381416	0.00203593
n-Hexane	0.492416	0.628116	0.63694	3.19948	1.50482
Benzene	13.972	12.8507	13.0997	2.68788	1.23903
Toluene	4.98328	4.86123	4.85517	1.23382	0.586823
Ethylbenzene	0.215351	0.247793	0.231896	0.0702043	0.0351525
o-Xylene	0.31804	0.375405	0.356254	0.0872203	0.0435944
MDEA	0.00794151	0.0101484	0.0205658	0.0267083	0.0106085
Phosphoric Acid	0	0	0	4.73928E-24	1.35322E-20

Mass Fraction	TEG1 BTEX %	TEG2 BTEX %	TEG3 BTEX %	TKB %	TKFlash %
H2S	0.000254438	0.00180871	0.00158896	21.9248	9.21519
H2O	4.35322	4.47215	4.46743	2.4519	1.24055
TEG	1.92328E-09	1.05728E-09	1.09096E-09	8.86113E-12	7.58069E-12
N2	0.0047153	0.00807547	0.00843327	0.000235305	0.00606324
CO2	14.9168	9.64599	7.96096	18.2343	11.6316
Methane	1.52916	2.09572	2.1833	0.0680711	0.839818
Ethane	5.83166	6.74764	6.97705	0.54213	4.03806
Propane	12.9842	14.3348	14.7474	2.07208	14.2757
Isobutane	2.84768	3.17905	3.26069	1.32972	5.78547
n-Butane	13.2732	14.5985	14.9436	6.19128	18.7077
Isopentane	3.86986	4.44266	4.53109	6.29915	9.10682
n-Pentane	4.18735	4.63838	4.72523	8.02657	9.22396
i-Hexane	2.05141	2.67086	2.71232	14.0393	6.93434
Heptane	1.04471	1.22667	1.23109	5.14633	2.5107
Octane	0.28279	0.345972	0.340236	1.41095	0.71063
Nonane	0.015029	0.0192685	0.0184203	0.104088	0.054064
Decane	0.00093646	0.00139748	0.00121249	0.0106464	0.00570423
n-Hexane	0.843445	1.08624	1.10062	5.409	2.5536
Benzene	21.6929	20.1442	20.5179	4.11891	1.90583
Toluene	9.12637	8.98858	8.97017	2.23023	1.06472
Ethylbenzene	0.454434	0.527929	0.493662	0.146218	0.0734893
o-Xylene	0.671127	0.79981	0.758397	0.181658	0.0911378
MDEA	0.0188098	0.0242683	0.0491407	0.0624368	0.024893
Phosphoric Acid	0	0	0	9.11114E-24	2.61131E-20

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:
Location:	Titan Treater Plant 1	
Flowsheet:	Vents Drains	

Mass Flow	TEG1 BTEX lb/h	TEG2 BTEX lb/h	TEG3 BTEX lb/h	TKB lb/h	TKFlash lb/h
H2S	0.00017755	0.00201518	0.000863005	0.130077	2.84612
H2O	3.03773	4.98268	2.42637	0.0145468	0.383143
TEG	1.34209E-09	1.17798E-09	5.92528E-10	5.25719E-14	2.3413E-12
N2	0.00329039	0.00899734	0.00458032	1.39603E-06	0.00187263
CO2	10.4091	10.7472	4.3238	0.108182	3.59241
Methane	1.06707	2.33496	1.1858	0.000403857	0.259378
Ethane	4.0694	7.51793	3.78941	0.00321638	1.24716
Propane	9.06053	15.9713	8.00971	0.0122934	4.40905
Isobutane	1.98715	3.54196	1.77096	0.00788906	1.78685
n-Butane	9.26219	16.2651	8.11623	0.036732	5.77788
Isopentane	2.70044	4.94982	2.46095	0.037372	2.81265
n-Pentane	2.92198	5.16789	2.56639	0.0476205	2.84882
i-Hexane	1.4315	2.97576	1.47313	0.0832931	2.14167
Heptane	0.729012	1.3667	0.668638	0.0305325	0.775431
Octane	0.197334	0.385467	0.184791	0.00837098	0.219478
Nonane	0.0104874	0.0214681	0.0100045	0.00061754	0.0166977
Decane	0.000653474	0.00155701	0.000658536	6.31637E-05	0.00176175
n-Hexane	0.588566	1.21025	0.597775	0.0320909	0.788682
Benzene	15.1376	22.4438	11.1438	0.0244369	0.588617
Toluene	6.36849	10.0147	4.87192	0.0132316	0.328838
Ethylbenzene	0.31711	0.588196	0.26812	0.00086749	0.0226972
o-Xylene	0.468321	0.891114	0.411904	0.00107775	0.0281479
MDEA	0.0131257	0.0270387	0.0266895	0.000370429	0.00768823
Phosphoric Acid	0	0	0	5.40551E-26	8.06503E-21

Stream Properties

Property	Units	TEG1 BTEX	TEG2 BTEX	TEG3 BTEX	TKB	TKFlash
Temperature	°F	120	120	120	77.2706	77.2706
Pressure	psig	-0.745949	-0.995949	-0.995949	-1.43595	-1.43595
Molecular Weight	lb/lbmol	50.3104	49.8305	49.8706	50.9735	50.7825
Mass Flow	lb/h	69.7813	111.416	54.3125	0.593286	30.885
Std Vapor Volumetric Flow	MMSCFD	0.0126324	0.0203637	0.00991883	0.000106005	0.0055391
Std Liquid Volumetric Flow	sgpm	0.213309	0.35234	0.172971	0.00166726	0.100949
Net Ideal Gas Heating Value	Btu/ft^3	2022.61	2142.54	2187.32	1674.9	2121.8
Gross Ideal Gas Heating Value	Btu/ft^3	2171.23	2303.61	2351.97	1809.6	2298.88

Remarks

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Connections

	TKW	1	2	3	4
From Block	TANK-100	LP Comp 1st Stage Dumps	LP Inlet Drains to CD	TEG Ph1 BTEX Liquids	TEG Ph2 BTEX Liquids
To Block	MIX-109	MIX-101	MIX-101	MIX-100	MIX-100

Stream Composition

Mole Fraction	TKW %	1 %	2 %	3 %	4 %
H2S	32.7921		0.104768	3.7298E-07	2.43987E-06
H2O	6.93755		77.0683	99.7913	99.9514
TEG	3.00775E-12		2.32896E-05	9.52147E-05	5.09987E-05
N2	0.000428164		0.00195553	8.67949E-08	1.29341E-07
CO2	21.1197		0.145356	0.00546016	0.00328556
Methane	0.21629		0.288934	0.00011003	0.00011862
Ethane	0.919028		0.421515	0.000465263	0.000255628
Propane	2.39528		0.903163	0.00128201	0.000257412
Isobutane	1.16618		0.329749	0.000403099	2.43005E-05
n-Butane	5.42979		1.26872	0.00285243	0.000186594
Isopentane	4.45038		0.918593	0.00152254	2.75845E-05
n-Pentane	5.67082		1.18997	0.00204822	1.67968E-05
i-Hexane	8.30437		1.76917	0.00173589	3.52905E-06
Heptane	2.61798		4.06929	0.0030999	1.3067E-06
Octane	0.629625		5.06998	0.00194886	1.6629E-07
Nonane	0.0413686		1.38376	0.000176365	5.09206E-09
Decane	0.00381416		0.466932	2.84291E-05	1.26732E-10
n-Hexane	3.19948		1.01878	0.000992998	2.06978E-06
Benzene	2.68788		0.834916	0.0868937	0.0179555
Toluene	1.23382		1.60125	0.0739441	0.00535075
Ethylbenzene	0.0702043		0.415376	0.00984869	0.000217438
o-Xylene	0.0872203		0.729495	0.0122958	0.000500626
MDEA	0.0267083		1.62821E-06	0.00345959	0.0203203
Phosphoric Acid	4.73928E-24		2.14268E-20	0	0

Mass Fraction	TKW %	1 %	2 %	3 %	4 %
H2S	21.9248		0.101843	7.00086E-07	4.6062E-06
H2O	2.4519		39.6014	99.0124	99.7462
TEG	8.86113E-12		9.97578E-05	0.000787501	0.000424245
N2	0.000235305		0.00156251	1.33911E-07	2.0071E-07
CO2	18.2343		0.182462	0.0132345	0.00800981
Methane	0.0680711		0.13221	9.72159E-05	0.000105413
Ethane	0.54213		0.361515	0.000770502	0.000425788
Propane	2.07208		1.13594	0.00311346	0.000628768
Isobutane	1.32972		0.546662	0.00129036	7.8239E-05
n-Butane	6.19128		2.1033	0.00913087	0.000600767
Isopentane	6.29915		1.89037	0.00604996	0.000110245
n-Pentane	8.02657		2.44883	0.00813881	6.71309E-05
i-Hexane	14.0393		4.34857	0.00823875	1.68464E-05
Heptane	5.14633		11.6302	0.0171072	7.25302E-06
Octane	1.41095		16.5187	0.0122606	1.05222E-06
Nonane	0.104088		5.06209	0.00124578	3.61771E-08
Decane	0.0106464		1.89494	0.000222776	9.9885E-10
n-Hexane	5.409		2.50413	0.00471289	9.88036E-06
Benzene	4.11891		1.86017	0.373818	0.0776926
Toluene	2.23023		4.20818	0.375232	0.02731
Ethylbenzene	0.146218		1.25781	0.0575858	0.00127874
o-Xylene	0.181658		2.20901	0.071894	0.00294416
MDEA	0.0624368		5.53405E-06	0.0227049	0.134133
Phosphoric Acid	9.11114E-24		5.98901E-20	0	0

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:
Location:	Titan Treater Plant 1	
Flowsheet:	Vents Drains	

Mass Flow	TKW lb/h	1 lb/h	2 lb/h	3 lb/h	4 lb/h
H2S	1.40498	0	2.82336	5.2733E-07	1.83877E-05
H2O	0.157122	0	1097.86	74.5796	398.181
TEG	5.67838E-13	0	0.00276555	0.000593174	0.00169356
N2	1.50788E-05	0	0.043317	1.00866E-07	8.01222E-07
CO2	1.16849	0	5.05834	0.00996869	0.0319747
Methane	0.00436212	0	3.6652	7.32264E-05	0.000420803
Ethane	0.0347407	0	10.0222	0.000580369	0.00169972
Propane	0.132783	0	31.4913	0.00234517	0.00251
Isobutane	0.0852111	0	15.1549	0.000971941	0.000312326
n-Butane	0.396749	0	58.3092	0.00687769	0.00239823
Isopentane	0.403661	0	52.406	0.00455704	0.000440093
n-Pentane	0.514357	0	67.8881	0.00613044	0.000267983
i-Hexane	0.899663	0	120.554	0.00620572	6.72499E-05
Heptane	0.329786	0	322.421	0.0128857	2.89536E-05
Octane	0.0904164	0	457.941	0.00923508	4.2004E-06
Nonane	0.00667016	0	140.335	0.000938366	1.44417E-07
Decane	0.000682242	0	52.5329	0.000167803	3.98735E-09
n-Hexane	0.346619	0	69.4213	0.00354991	3.94418E-05
Benzene	0.263947	0	51.569	0.281573	0.310144
Toluene	0.142917	0	116.662	0.282638	0.10902
Ethylbenzene	0.00936991	0	34.8699	0.0433756	0.00510466
o-Xylene	0.011641	0	61.2397	0.0541531	0.0117529
MDEA	0.00400107	0	0.000153419	0.0171021	0.535449
Phosphoric Acid	5.83858E-25	0	1.66031E-18	0	0

Stream Properties

Property	Units	TKW	1	2	3	4
Temperature	°F	77.2706		58.4335	120.097	120.096
Pressure	psig	-1.43595	13.5541	18.5541	49.2541	49.0041
Molecular Weight	lb/lbmol	50.9735		35.0595	18.157	18.0524
Mass Flow	lb/h	6.40818	0	2772.27	75.3235	399.194
Std Vapor Volumetric Flow	MMSCFD	0.00114497	0	0.720168	0.0377825	0.201398
Std Liquid Volumetric Flow	sgpm	0.0180083	0	6.99642	0.150825	0.798123
Net Ideal Gas Heating Value	Btu/ft^3	1674.9		1059.81	8.17961	1.65777
Gross Ideal Gas Heating Value	Btu/ft^3	1809.6		1177.85	58.7864	52.0513

Remarks

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Connections

	5	6	8	9	12
From Block	Cond Water	VSSL-100	MIX-100	MIX-101	AGI Comp Dumps
To Block	MIX-100	SPLT-101	TANK-100	VSSL-100	MIX-102

Stream Composition

Mole Fraction	5 %	6 %	8 %	9 %	12 %
H2S	0.0615415	0.0873437	0.0351979	0.104768	0.162706
H2O	99.4327	77.4724	99.8306	77.0683	99.6394
TEG	2.43118E-05	2.3413E-05	1.19814E-05	2.32896E-05	0
N2	5.82475E-05	0.000186499	1.36411E-05	0.00195553	2.00956E-08
CO2	0.0530588	0.0872471	0.0223799	0.145356	0.197527
Methane	0.0143657	0.0880656	0.00333064	0.288934	1.40066E-05
Ethane	0.0374985	0.317759	0.00864529	0.421515	6.37303E-06
Propane	0.0907559	0.832052	0.0208914	0.903163	1.37596E-06
Isobutane	0.0284458	0.321078	0.00654276	0.329749	5.2584E-08
n-Butane	0.0938079	1.24849	0.0216174	1.26872	3.81597E-07
Isopentane	0.0395776	0.915985	0.00912228	0.918593	5.83397E-09
n-Pentane	0.041456	1.18912	0.0095628	1.18997	4.60524E-09
i-Hexane	0.0317768	1.77424	0.00733455	1.76917	3.86513E-10
Heptane	0.0215213	4.08895	0.00500487	4.06929	1.3161E-11
Octane	0.0135513	5.09618	0.0031514	5.06998	1.36724E-12
Nonane	0.00258461	1.39104	0.000597133	1.38376	0
Decane	0.00075358	0.469402	0.00017364	0.466932	0
n-Hexane	0.0133632	1.02253	0.00308997	1.01878	1.64751E-10
Benzene	0.012132	0.838056	0.00620165	0.834916	0.000301706
Toluene	0.00815501	1.60906	0.00382586	1.60125	4.59229E-05
Ethylbenzene	0.00107412	0.417527	0.000465971	0.415376	7.8146E-07
o-Xylene	0.00174791	0.73329	0.000704068	0.729495	1.84716E-06
MDEA	8.83149E-07	1.63652E-06	0.00155231	1.62821E-06	1.82552E-08
Phosphoric Acid	3.47814E-16	4.84874E-21	7.98711E-17	2.14268E-20	0

Mass Fraction	5 %	6 %	8 %	9 %	12 %
H2S	0.114983	0.0848746	0.0663522	0.101843	0.306481
H2O	98.2028	39.7946	99.4793	39.6014	99.2115
TEG	0.000200153	0.00010025	9.95239E-05	9.97578E-05	0
N2	8.94534E-05	0.000148963	2.1137E-05	0.00156251	3.11141E-08
CO2	0.128014	0.10948	0.0544795	0.182462	0.480466
Methane	0.0126343	0.0402822	0.00295547	0.13221	1.24192E-05
Ethane	0.0618141	0.272429	0.014379	0.361515	1.05914E-05
Propane	0.219394	1.04612	0.0509555	1.13594	3.35343E-06
Isobutane	0.0906388	0.532094	0.0210345	0.546662	1.68922E-07
n-Butane	0.298906	2.06901	0.0694981	2.1033	1.22585E-06
Isopentane	0.156543	1.88431	0.036405	1.89037	2.32639E-08
n-Pentane	0.163972	2.44619	0.038163	2.44883	1.83642E-08
i-Hexane	0.150123	4.35945	0.0349611	4.34857	1.84093E-09
Heptane	0.118222	11.6822	0.0277394	11.6302	7.28878E-11
Octane	0.0848614	16.598	0.0199116	16.5187	8.63194E-12
Nonane	0.0181729	5.08687	0.00423618	5.06209	0
Decane	0.00587803	1.90428	0.00136656	1.89494	0
n-Hexane	0.0631317	2.51244	0.0147287	2.50413	7.84695E-10
Benzene	0.0519521	1.86649	0.0267949	1.86017	0.00130254
Toluene	0.0411926	4.22717	0.0194984	4.20818	0.000233862
Ethylbenzene	0.00625152	1.26387	0.00273633	1.25781	4.58541E-06
o-Xylene	0.0101731	2.21969	0.00413451	2.20901	1.08387E-05
MDEA	5.76934E-06	5.56025E-06	0.0102317	5.53405E-06	1.20231E-07
Phosphoric Acid	1.86856E-15	1.35478E-20	4.32935E-16	5.98901E-20	0

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Mass Flow	5 lb/h	6 lb/h	8 lb/h	9 lb/h	12 lb/h
H2S	1.58735	2.34139	5.9302	2.82336	12.0487
H2O	1355.7	1097.79	8890.92	1097.86	3900.31
TEG	0.00276313	0.00276555	0.00889491	0.00276555	0
N2	0.00123491	0.00410938	0.00188911	0.043317	1.22319E-06
CO2	1.76725	3.02016	4.86908	5.05834	18.8886
Methane	0.174417	1.11125	0.264144	3.6652	0.000488235
Ethane	0.853349	7.51536	1.28511	10.0222	0.000416382
Propane	3.02875	28.8588	4.55413	31.4913	0.000131834
Isobutane	1.25128	14.6786	1.87995	15.1549	6.64083E-06
n-Butane	4.12643	57.0767	6.21136	58.3092	4.81918E-05
Isopentane	2.16109	51.9816	3.25368	52.406	9.14576E-07
n-Pentane	2.26365	67.4818	3.4108	67.8881	7.21951E-07
i-Hexane	2.07246	120.262	3.12463	120.554	7.23726E-08
Heptane	1.63207	322.271	2.4792	322.421	2.86544E-09
Octane	1.17152	457.88	1.77959	457.941	3.39348E-10
Nonane	0.250878	140.329	0.378607	140.335	0
Decane	0.0811468	52.5323	0.122135	52.5329	0
n-Hexane	0.871539	69.3094	1.31637	69.4213	3.08488E-08
Benzene	0.717203	51.4899	2.39479	51.569	0.0512069
Toluene	0.568667	116.613	1.74266	116.662	0.00919384
Ethylbenzene	0.0863029	34.8657	0.244558	34.8699	0.000180266
o-Xylene	0.140441	61.2336	0.36952	61.2397	0.000426101
MDEA	7.96463E-05	0.000153388	0.91445	0.000153419	4.72664E-06
Phosphoric Acid	2.57956E-14	3.73737E-19	3.86934E-14	1.66031E-18	0

Stream Properties

Property	Units	5	6	8	9	12
Temperature	°F	54.6104	58.136	102.719	58.136	117.275
Pressure	psig	13.5541	13.5541	-0.945949 *	13.5541 *	-1.44595
Molecular Weight	lb/lbmol	18.2409	35.0723	18.0789	35.0595	18.093
Mass Flow	lb/h	1380.51	2758.65	8937.46	2772.27	3931.31
Std Vapor Volumetric Flow	MMSCFD	0.689283	0.71637	4.50243	0.720168	1.97893
Std Liquid Volumetric Flow	sgpm	2.79032	6.93781	17.9161	6.99642	7.8735
Net Ideal Gas Heating Value	Btu/ft^3	14.8938	1057.86	3.8474	1059.81	0.967946
Gross Ideal Gas Heating Value	Btu/ft^3	66.1209	1175.82	54.3757	1177.85	51.1789

Remarks

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Connections

	13	15	16	18	20
From Block	MIX-107	MIX-102	VSSL-101	SPLT-100	SPLT-100
To Block	MIX-108	VSSL-101	PUMP-100	--	CMPR-100

Stream Composition

Mole Fraction	13 %	15 %	16 %	18 %	20 %
H2S	19.7535	0.164597	0.0320663	13.7301	13.7301
H2O	8.93368	99.6246	99.9529	3.28926	3.28926
TEG	0	0	0	2.98811E-12	2.98811E-12
N2	0.000212031	0.000164709	3.81861E-07	0.00720253	0.00720253
CO2	71.1572	0.204399	0.0149395	11.8166	11.8166
Methane	0.0766081	0.00583703	2.74457E-05	1.75859	1.75859
Ethane	0.029547	9.08027E-05	5.39982E-07	4.56474	4.56474
Propane	0.00975031	3.04915E-06	1.25968E-08	11.0307	11.0307
Isobutane	0.000685673	1.19092E-07	2.77598E-10	3.4547	3.4547
n-Butane	0.00308507	6.80814E-07	2.62281E-09	11.4407	11.4407
Isopentane	8.0761E-05	1.36676E-08	3.19782E-11	12.8706	12.8706
n-Pentane	0.000116464	1.59025E-08	2.07532E-11	12.3859	12.3859
i-Hexane	2.39558E-05	2.71027E-09	1.50352E-12	6.73972	6.73972
Heptane	9.15039E-07	1.01925E-10	5.34914E-14	1.60693	1.60693
Octane	1.99178E-07	2.06887E-11	5.37598E-15	0.373436	0.373436
Nonane	0	3.16015E-18	5.09243E-22	0.0244812	0.0244812
Decane	0	0	0	0.00230214	0.00230214
n-Hexane	7.00421E-06	8.44262E-10	6.9082E-13	2.28888	2.28888
Benzene	0.0291158	0.000304483	8.24679E-05	1.81855	1.81855
Toluene	0.00600735	4.64984E-05	1.03984E-05	0.698036	0.698036
Ethylbenzene	0.000136253	7.94554E-07	1.46108E-07	0.0388127	0.0388127
o-Xylene	0.000214767	1.8677E-06	4.76874E-07	0.0488363	0.0488363
MDEA	2.78167E-08	1.8255E-08	1.77688E-08	0.0108135	0.0108135
Phosphoric Acid	0	0	0	1.65459E-17	1.65459E-17

Mass Fraction	13 %	15 %	16 %	18 %	20 %
H2S	16.9516	0.310008	0.0606316	8.37174	8.37174
H2O	4.05254	99.1857	99.9025	1.06016	1.06016
TEG	0	0	0	8.02823E-12	8.02823E-12
N2	0.000149562	0.000254992	5.93487E-07	0.00360979	0.00360979
CO2	78.8535	0.497127	0.0364774	9.30406	9.30406
Methane	0.0309458	0.00517493	2.44278E-05	0.504738	0.504738
Ethane	0.0223712	0.00015089	9.00821E-07	2.45565	2.45565
Propane	0.010826	7.43046E-06	3.08173E-08	8.70223	8.70223
Isobutane	0.00100349	3.82529E-07	8.95155E-10	3.59239	3.59239
n-Butane	0.00451505	2.18682E-06	8.45762E-09	11.8967	11.8967
Isopentane	0.000146719	5.44957E-08	1.28004E-10	16.6135	16.6135
n-Pentane	0.000211581	6.34068E-08	8.30717E-11	15.9878	15.9878
i-Hexane	5.19817E-05	1.29074E-08	7.1884E-12	10.391	10.391
Heptane	2.30872E-06	5.64416E-10	2.97372E-13	2.88074	2.88074
Octane	5.72891E-07	1.30602E-10	3.407E-14	0.763172	0.763172
Nonane	0	2.23988E-17	3.62359E-21	0.0561744	0.0561744
Decane	0	0	0	0.0058602	0.0058602
n-Hexane	1.51984E-05	4.0207E-09	3.30284E-12	3.52889	3.52889
Benzene	0.0572666	0.00131438	0.000357389	2.5414	2.5414
Toluene	0.0139373	0.000236767	5.31553E-05	1.15067	1.15067
Ethylbenzene	0.000364236	4.66173E-06	8.60588E-07	0.0737203	0.0737203
o-Xylene	0.000574121	1.0958E-05	2.80883E-06	0.092759	0.092759
MDEA	8.34641E-08	1.20216E-07	1.17472E-07	0.0230534	0.0230534
Phosphoric Acid	0	0	0	2.90085E-17	2.90085E-17

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:
Location:	Titan Treater Plant 1	
Flowsheet:	Vents Drains	

Mass Flow	13 lb/h	15 lb/h	16 lb/h	18 lb/h	20 lb/h
H2S	2757.14	12.1906	2.36609	0.219059	4.16212
H2O	659.138	3900.34	3898.6	0.0277406	0.527071
TEG	0	0	0	2.1007E-13	3.99133E-12
N2	0.024326	0.0100272	2.31603E-05	9.44554E-05	0.00179465
CO2	12825.4	19.5488	1.4235	0.243454	4.62563
Methane	5.03327	0.203497	0.000953273	0.0132072	0.250937
Ethane	3.63863	0.00593353	3.51537E-05	0.0642557	1.22086
Propane	1.76083	0.000292193	1.20262E-06	0.227706	4.32642
Isobutane	0.163216	1.50424E-05	3.49326E-08	0.0940002	1.786
n-Butane	0.734364	8.59935E-05	3.30051E-07	0.311294	5.91459
Isopentane	0.0238636	2.14297E-06	4.99522E-09	0.434716	8.2596
n-Pentane	0.0344132	2.49339E-06	3.2418E-09	0.418344	7.94853
i-Hexane	0.00845472	5.07565E-07	2.8052E-10	0.271895	5.16601
Heptane	0.000375509	2.21949E-08	1.16047E-11	0.0753788	1.4322
Octane	9.31796E-05	5.13574E-09	1.32955E-12	0.0199695	0.37942
Nonane	0	8.808E-16	1.41407E-19	0.00146988	0.0279278
Decane	0	0	0	0.00015334	0.00291347
n-Hexane	0.00247199	1.58109E-07	1.2889E-10	0.0923384	1.75443
Benzene	9.31431	0.0516863	0.0139468	0.0664995	1.26349
Toluene	2.26688	0.00931052	0.00207434	0.0301089	0.572069
Ethylbenzene	0.0592424	0.000183316	3.35836E-05	0.001929	0.036651
o-Xylene	0.0933798	0.000430907	0.000109612	0.00242717	0.0461163
MDEA	1.35753E-05	4.72734E-06	4.58425E-06	0.000603227	0.0114613
Phosphoric Acid	0	0	0	7.5905E-19	1.44219E-17

Stream Properties

Property	Units	13	15	16	18	20
Temperature	°F	122.214	117.257	117.257	58.3299	58.3299
Pressure	psig	-1.44595	-1.44595	-1.44595	-1.43595	-1.43595
Molecular Weight	lb/lbmol	39.7141	18.095	18.0244	55.8944	55.8944
Mass Flow	lb/h	16264.8	3932.36	3902.41	2.61664	49.7162
Std Vapor Volumetric Flow	MMSCFD	3.73	1.97925	1.97186	0.000426364	0.00810092
Std Liquid Volumetric Flow	sgpm	39.6833	7.87695	7.80303	0.00827521	0.157229
Net Ideal Gas Heating Value	Btu/ft^3	118.754	1.03354	0.191858	2411.41	2411.41
Gross Ideal Gas Heating Value	Btu/ft^3	133.395	51.244	50.4944	2608.99	2608.99

Remarks

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Connections

	24	26	27	29	30
From Block	TANK-100	CMPR-100	PUMP-100	FAXR-100	RCYL-1
To Block	--	FAXR-100	RCYL-1	VRU Offgas	MIX-100

Stream Composition

Mole Fraction	24 %	26 %	27 %	29 %	30 %
H2S	0.00920792	13.7301	0.0320663	13.7301	0.0320663
H2O	99.9751	3.28926	99.9529	3.28926	99.9529
TEG	1.19995E-05	2.98811E-12	0	2.98811E-12	0
N2	2.37386E-23	0.00720253	3.81861E-07	0.00720253	3.81861E-07
CO2	0	11.8166	0.0149395	11.8166	0.0149395
Methane	1.06118E-20	1.75859	2.74457E-05	1.75859	2.74457E-05
Ethane	4.5293E-20	4.56474	5.39982E-07	4.56474	5.39982E-07
Propane	0	11.0307	1.25968E-08	11.0307	1.25968E-08
Isobutane	0	3.4547	2.77598E-10	3.4547	2.77598E-10
n-Butane	1.87455E-19	11.4407	2.62281E-09	11.4407	2.62281E-09
Isopentane	3.02024E-19	12.8706	3.19782E-11	12.8706	3.19782E-11
n-Pentane	0	12.3859	2.07532E-11	12.3859	2.07532E-11
i-Hexane	0	6.73972	1.50352E-12	6.73972	1.50352E-12
Heptane	0.00271618	1.60693	5.34914E-14	1.60693	5.34914E-14
Octane	0.00259171	0.373436	5.37598E-15	0.373436	0
Nonane	0.000560148	0.0244812	5.09243E-22	0.0244812	0
Decane	0.000170333	0.00230214	0	0.00230214	0
n-Hexane	0.000350237	2.28888	6.9082E-13	2.28888	6.9082E-13
Benzene	0.00393646	1.81855	8.24679E-05	1.81855	8.24679E-05
Toluene	0.00276528	0.698036	1.03984E-05	0.698036	1.03984E-05
Ethylbenzene	0.000403828	0.0388127	1.46108E-07	0.0388127	1.46108E-07
o-Xylene	0.000627148	0.0488363	4.76874E-07	0.0488363	4.76874E-07
MDEA	0.00153415	0.0108135	1.77688E-08	0.0108135	1.77688E-08
Phosphoric Acid	1.52204E-20	1.65459E-17	0	1.65459E-17	0

Mass Fraction	24 %	26 %	27 %	29 %	30 %
H2S	0.0174056	8.37174	0.0606316	8.37174	0.0606316
H2O	99.8966	1.06016	99.9025	1.06016	99.9025
TEG	9.99475E-05	8.02823E-12	0	8.02823E-12	0
N2	3.6884E-23	0.00360979	5.93487E-07	0.00360979	5.93487E-07
CO2	0	9.30406	0.0364774	9.30406	0.0364774
Methane	9.4423E-21	0.504738	2.44278E-05	0.504738	2.44278E-05
Ethane	7.55384E-20	2.45565	9.00821E-07	2.45565	9.00821E-07
Propane	0	8.70223	3.08173E-08	8.70223	3.08173E-08
Isobutane	0	3.59239	8.95155E-10	3.59239	8.95155E-10
n-Butane	6.04307E-19	11.8967	8.45762E-09	11.8967	8.45762E-09
Isopentane	1.20861E-18	16.6135	1.28004E-10	16.6135	1.28004E-10
n-Pentane	0	15.9878	8.30717E-11	15.9878	8.30717E-11
i-Hexane	0	10.391	7.1884E-12	10.391	7.1884E-12
Heptane	0.0150956	2.88074	2.97372E-13	2.88074	2.97372E-13
Octane	0.0164202	0.763172	3.407E-14	0.763172	0
Nonane	0.0039847	0.0561744	3.62359E-21	0.0561744	0
Decane	0.0013442	0.0058602	0	0.0058602	0
n-Hexane	0.00167403	3.52889	3.30284E-12	3.52889	3.30284E-12
Benzene	0.0170546	2.5414	0.000357389	2.5414	0.000357389
Toluene	0.0141318	1.15067	5.31553E-05	1.15067	5.31553E-05
Ethylbenzene	0.00237791	0.0737203	8.60588E-07	0.0737203	8.60588E-07
o-Xylene	0.00369291	0.092759	2.80883E-06	0.092759	2.80883E-06
MDEA	0.0101397	0.0230534	1.17472E-07	0.0230534	1.17472E-07
Phosphoric Acid	8.27272E-20	2.90085E-17	0	2.90085E-17	0

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Mass Flow	24 lb/h	26 lb/h	27 lb/h	29 lb/h	30 lb/h
H2S	1.54903	4.16212	2.36609	4.16212	2.36609
H2O	8890.37	0.527071	3898.6	0.527071	3898.6
TEG	0.00889491	3.99133E-12	0	3.99133E-12	0
N2	3.28252E-21	0.00179465	2.31603E-05	0.00179465	2.31603E-05
CO2	0	4.62563	1.4235	4.62563	1.4235
Methane	8.40325E-19	0.250937	0.000953273	0.250937	0.000953273
Ethane	6.7226E-18	1.22086	3.51537E-05	1.22086	3.51537E-05
Propane	0	4.32642	1.20262E-06	4.32642	1.20262E-06
Isobutane	0	1.786	3.49326E-08	1.786	3.49326E-08
n-Butane	5.37808E-17	5.91459	3.30051E-07	5.91459	3.30051E-07
Isopentane	1.07562E-16	8.2596	4.99522E-09	8.2596	4.99522E-09
n-Pentane	0	7.94853	3.2418E-09	7.94853	3.2418E-09
i-Hexane	0	5.16601	2.8052E-10	5.16601	2.8052E-10
Heptane	1.34345	1.4322	1.16047E-11	1.4322	1.16047E-11
Octane	1.46133	0.37942	1.32955E-12	0.37942	0
Nonane	0.354621	0.0279278	1.41407E-19	0.0279278	0
Decane	0.119628	0.00291347	0	0.00291347	0
n-Hexane	0.148982	1.75443	1.2889E-10	1.75443	1.2889E-10
Benzene	1.51778	1.26349	0.0139468	1.26349	0.0139468
Toluene	1.25767	0.572069	0.00207434	0.572069	0.00207434
Ethylbenzene	0.211624	0.036651	3.35836E-05	0.036651	3.35836E-05
o-Xylene	0.328653	0.0461163	0.000109612	0.0461163	0.000109612
MDEA	0.90239	0.0114613	4.58425E-06	0.0114613	4.58425E-06
Phosphoric Acid	7.36236E-18	1.44219E-17	0	1.44219E-17	0

Stream Properties

Property	Units	24	26	27	29	30
Temperature	°F	77.2706	177.256	117.315	130 *	117.315
Pressure	psig	-1.43595	98.5541 *	23.5541 *	93.5541	23.5541
Molecular Weight	lb/lbmol	18.0294	55.8944	18.0244	55.8944	18.0244
Mass Flow	lb/h	8899.57	49.7162	3902.41	49.7162	3902.41
Std Vapor Volumetric Flow	MMSCFD	4.49564	0.00810092	1.97186	0.00810092	1.97186
Std Liquid Volumetric Flow	sgpm	17.7954	0.157229	7.80303	0.157229	7.80303
Net Ideal Gas Heating Value	Btu/ft^3	0.772863	2411.41	0.191858	2411.41	0.191858
Gross Ideal Gas Heating Value	Btu/ft^3	51.1218	2608.99	50.4944	2608.99	50.4944

Remarks

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Connections

	31	34	35	37	
From Block	TEG Ph3 BTEX Liquids	SPLT-101	PUMP-101	MIX-106	
To Block	MIX-100	PUMP-101	From Closed Drain	SPLT-100	

Stream Composition

Mole Fraction	31 %	34 %	35 %	37 %	
H2S	2.16272E-06	0.0873437	0.0873437	13.7301	
H2O	99.9316	77.4724	77.4724	3.28926	
TEG	5.26933E-05	2.3413E-05	2.3413E-05	2.98811E-12	
N2	1.38335E-07	0.000186499	0.000186499	0.00720253	
CO2	0.00273133	0.0872471	0.0872471	11.8166	
Methane	0.000129705	0.0880656	0.0880656	1.75859	
Ethane	0.000322291	0.317759	0.317759	4.56474	
Propane	0.000505547	0.832052	0.832052	11.0307	
Isobutane	0.000113798	0.321078	0.321078	3.4547	
n-Butane	0.000804917	1.24849	1.24849	11.4407	
Isopentane	0.000378407	0.915985	0.915985	12.8706	
n-Pentane	0.000475682	1.18912	1.18912	12.3859	
i-Hexane	0.000454237	1.77424	1.77424	6.73972	
Heptane	0.000701217	4.08895	4.08895	1.60693	
Octane	0.00044367	5.09618	5.09618	0.373436	
Nonane	4.11869E-05	1.39104	1.39104	0.0244812	
Decane	6.88743E-06	0.469402	0.469402	0.00230214	
n-Hexane	0.000256019	1.02253	1.02253	2.28888	
Benzene	0.0315005	0.838056	0.838056	1.81855	
Toluene	0.019456	1.60906	1.60906	0.698036	
Ethylbenzene	0.00239021	0.417527	0.417527	0.0388127	
o-Xylene	0.00337841	0.73329	0.73329	0.0488363	
MDEA	0.00430076	1.63652E-06	1.63652E-06	0.0108135	
Phosphoric Acid	0	4.84874E-21	4.84874E-21	1.65459E-17	

Mass Fraction	31 %	34 %	35 %	37 %	
H2S	4.08093E-06	0.0848746	0.0848746	8.37174	
H2O	99.6764	39.7946	39.7946	1.06016	
TEG	0.000438123	0.00010025	0.00010025	8.02823E-12	
N2	2.14559E-07	0.000148963	0.000148963	0.00360979	
CO2	0.00665532	0.10948	0.10948	9.30406	
Methane	0.000115206	0.0402822	0.0402822	0.504738	
Ethane	0.000536558	0.272429	0.272429	2.45565	
Propane	0.00123426	1.04612	1.04612	8.70223	
Isobutane	0.000366206	0.532094	0.532094	3.59239	
n-Butane	0.00259025	2.06901	2.06901	11.8967	
Isopentane	0.0015116	1.88431	1.88431	16.6135	
n-Pentane	0.00190018	2.44619	2.44619	15.9878	
i-Hexane	0.00216728	4.35945	4.35945	10.391	
Heptane	0.00389025	11.6822	11.6822	2.88074	
Octane	0.00280597	16.598	16.598	0.763172	
Nonane	0.000292471	5.08687	5.08687	0.0561744	
Decane	5.42569E-05	1.90428	1.90428	0.0058602	
n-Hexane	0.00122153	2.51244	2.51244	3.52889	
Benzene	0.136233	1.86649	1.86649	2.5414	
Toluene	0.0992528	4.22717	4.22717	1.15067	
Ethylbenzene	0.0140497	1.26387	1.26387	0.0737203	
o-Xylene	0.0198583	2.21969	2.21969	0.092759	
MDEA	0.0283748	5.56025E-06	5.56025E-06	0.0230534	
Phosphoric Acid	0	1.35478E-20	1.35478E-20	2.90085E-17	

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1		
Flowsheet:	Vents Drains		

Mass Flow	31 lb/h	34 lb/h	35 lb/h	37 lb/h
H2S	8.1975E-06	2.34139	2.34139	4.38117
H2O	200.223	1097.79	1097.79	0.554812
TEG	0.000880072	0.00276555	0.00276555	4.2014E-12
N2	4.30993E-07	0.00410938	0.00410938	0.00188911
CO2	0.0133688	3.02016	3.02016	4.86908
Methane	0.000231419	1.11125	1.11125	0.264144
Ethane	0.0010778	7.51536	7.51536	1.28511
Propane	0.00247929	28.8588	28.8588	4.55413
Isobutane	0.00073561	14.6786	14.6786	1.88
n-Butane	0.00520312	57.0767	57.0767	6.22588
Isopentane	0.0030364	51.9816	51.9816	8.69432
n-Pentane	0.00381696	67.4818	67.4818	8.36688
i-Hexane	0.00435348	120.262	120.262	5.4379
Heptane	0.00781447	322.271	322.271	1.50758
Octane	0.00563645	457.88	457.88	0.39939
Nonane	0.000587496	140.329	140.329	0.0293977
Decane	0.000108988	52.5323	52.5323	0.00306681
n-Hexane	0.00245373	69.3094	69.3094	1.84677
Benzene	0.273656	51.4899	51.4899	1.32999
Toluene	0.199372	116.613	116.613	0.602178
Ethylbenzene	0.028222	34.8657	34.8657	0.03858
o-Xylene	0.03989	61.2336	61.2336	0.0485435
MDEA	0.0569974	0.000153388	0.000153388	0.0120645
Phosphoric Acid	0	3.73737E-19	3.73737E-19	1.5181E-17

Stream Properties

Property	Units	31	34	35	37
Temperature	°F	120.097	58.136	58.7679	58.3299
Pressure	psig	49.0041	13.5541	148.554 *	-1.43595
Molecular Weight	lb/lbmol	18.0614	35.0723	35.0723	55.8944
Mass Flow	lb/h	200.873	2758.65	2758.65	52.3329
Std Vapor Volumetric Flow	MMSCFD	0.101292	0.71637	0.71637	0.00852729
Std Liquid Volumetric Flow	sgpm	0.401756	6.93781	6.93781	0.165504
Net Ideal Gas Heating Value	Btu/ft^3	2.57806	1057.86	1057.86	2411.41
Gross Ideal Gas Heating Value	Btu/ft^3	52.9832	1175.82	1175.82	2608.99

Remarks

Blocks
TANK-100
Tank Losses

Client Name:	Northwind	Job:	
Location:	Titan Treater Plant 1	Modified: 8:00 AM, 4/11/2024	
Flowsheet:	Vents Drains	Status: Solved 2:25 PM, 5/20/2024	

Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
8	Inlet	MIX-100	TKFlash	Flashing Losses Stream	MIX-103
TKW	Working Losses Stream	MIX-109	TKB	Standing Losses Stream	MIX-109
Slop Load Composition	Loading Losses Stream		24	Residual Liquid Stream	

Working and Standing Properties

	Tank Geometry	Vertical Cylinder		Roof Type	Cone
*	Shell Length	20 ft		Slope of Coned Roof	0.0625
*	Shell Diameter	12 ft		Breather Vent Pressure	0.03 psi
*	Number of Storage Tanks	2		Breather Vacuum Pressure	-0.03 psi
	Maximum Fraction Fill of Tank	90 %	*	Location	Midland, TX
	Average Fraction Fill of Tank	50 %		Time Frame	Year
	Minimum Fraction Fill of Tank	10 %		Known Liquid Bulk Temperature?	False
*	Material Category	Light Organics		Liquid Bulk Temperature	66.5461 °F
	Insulation	Uninsulated		Use AP 42 Raoult's Vapor Pressure?	False
	Bolted or Riveted Construction?	False		Flashing Temperature	77.2706 °F
	Vapor Balanced Tank?	False		Average Daily Maximum Ambient Temperature	76.7 °F
	Known Sum of Increases in Liquid Level?	False		Average Daily Minimum Ambient Temperature	51.4 °F
	Sum of Increases in Liquid Level	5538.6 ft/yr		Atmospheric Pressure at Tank Location	13.26 psia
*	Shell Color	Tan		Daily Solar Insolation	1698 Btu/(day*ft^2)
	Shell Paint Condition	Average		Average Wind Speed	11 mph
*	Roof Color	Tan		Include Short Term Emissions	False
	Roof Paint Condition	Average			

Composition Subset Properties

Component Subset	VOCs	Species in Results	Selected Species
Atomic Basis	False	Fraction Denominator	Selected Species

Tabulated Composition Subset Properties

Index	Selected Components			
H2S	False			
H2O	False			
TEG	True			
N2	False			
CO2	False			
Methane	False			
Ethane	False			
Propane	True			
Isobutane	True			
n-Butane	True			
Isopentane	True			
n-Pentane	True			
i-Hexane	True			
Heptane	True			
Octane	True			
Nonane	True			
Decane	True			
n-Hexane	True			
Benzene	True			
Toluene	True			

Blocks
TANK-100
Tank Losses

Client Name:	Northwind	Job:
Location:	Titan Treater Plant 1	

Tabulated Composition Subset Properties

Index	Selected Components			
Ethylbenzene	True			
o-Xylene	True			
MDEA	True			
Phosphoric Acid	False			

Details Properties

Vapor Space Volume	1145.11	ft^3	Roof Outage	0.125	ft
Vapor Density	0.102117	lb/ft^3	Tank Roof Height	0.375	ft
Vapor Space Expansion Factor	1	1/day	Tank Shell Radius	6	ft
Vented Vapor Saturation Factor	0.138753		Vapor Molecular Weight	50.2567	lb/lbmol
Vapor Space Outage	10.125	ft	Average Vapor Temperature	530.456	°R
Average Daily Vapor Temperature Range	34.4184	°R	Average Daily Ambient Temperature	523.72	°R
Average Daily Vapor Pressure Range	3.221	psi	Net Working Loss Throughput	626401	ft^3/yr
Breather Vent Pressure Setting Range	0.06	psi	Working Loss Turnover (Saturation) Factor	1	
Vapor Pressure at Average Daily Liquid Surface Temperature	11.5669	psia	Number of Turnovers per Year	346.163	
Average Daily Liquid Surface Temperature	528.336	°R	Annual Net Throughput	223157	bbl/yr
Average Daily Ambient Temperature Range	25.3	°R	Maximum Liquid Height	18	ft
Tank Roof Surface Solar Absorptance	0.49		Minimum Liquid Height	2	ft
Tank Shell Surface Solar Absorptance	0.49		Working Loss Product Factor	1	
Vapor Pressure at Maximum Liquid Surface Temperature	13.26	psia	Vent Setting Correction Factor	1	
Vapor Pressure at Minimum Liquid Surface Temperature	10.039	psia	Saturation Factor	0.6	
Maximum Liquid Surface Temperature	536.941	°R	Vapor Pressure of Liquid Loaded	1.68206	psia
Minimum Liquid Surface Temperature	519.731	°R	Collection Efficiency	70	%
Liquid Height	10	ft	Annual Net Throughput Per Tank	111578	bbl/yr

Loading Properties

Cargo Carrier	Tank Truck or Rail Tank Car		Truck Annual Leak Test Passed	None	
* Land Based Mode of Operation	Submerged Loading: Dedicated Normal Service		Overall Reduction Efficiency	0	%
* Control Efficiency	0	%			

Results Properties

Flashing Losses	98.7907	ton/yr	Standing Losses per Tank	0.737722	ton/yr
Working Losses	15.9365	ton/yr	Flashing Losses per Tank	49.3954	ton/yr
Standing Losses	1.47544	ton/yr	Working and Standing Losses	17.412	ton/yr
Loading Losses	3.48245	ton/yr	Working and Standing Losses per Tank	8.70598	ton/yr
Working Losses per Tank	7.96826	ton/yr	Loading Losses per Tank	1.74123	ton/yr

Blocks
TANK-100
Tank Losses

Client Name:	Northwind	Job:
Location:	Titan Treater Plant 1	

Tabulated Results Properties

Index	Flashing Losses Mass Flows ton/yr	Working Losses Mass Flows ton/yr	Standing Losses Mass Flows ton/yr	Loading Losses Mass Flows ton/yr
TEG	1.02549E-11	2.48713E-12	2.30265E-13	1.15543E-12
Propane	19.3116	0.581589	0.053845	0
Isobutane	7.82639	0.373225	0.0345541	0
n-Butane	25.3071	1.73776	0.160886	2.1932E-19
Isopentane	12.3194	1.76804	0.163689	1.62768E-19
n-Pentane	12.4779	2.25289	0.208578	0
i-Hexane	9.38054	3.94053	0.364824	0
Heptane	3.39639	1.44446	0.133732	1.34648
Octane	0.961316	0.396024	0.0366649	0.432138
Nonane	0.0731358	0.0292153	0.00270483	0.033504
Decane	0.00771648	0.00298822	0.000276657	0.00326491
n-Hexane	3.45443	1.51819	0.140558	0.507055
Benzene	2.57814	1.15609	0.107034	0.621521
Toluene	1.44031	0.625977	0.0579546	0.445981
Ethylbenzene	0.0994137	0.0410402	0.00379961	0.036961
o-Xylene	0.123288	0.0509875	0.00472055	0.0450552
MDEA	0.0336744	0.0175247	0.00162248	0.0104855

Index	Working and Standing Losses Mass Flows ton/yr			
TEG	2.71739E-12			
Propane	0.635434			
Isobutane	0.407779			
n-Butane	1.89865			
Isopentane	1.93172			
n-Pentane	2.46146			
i-Hexane	4.30535			
Heptane	1.5782			
Octane	0.432689			
Nonane	0.0319201			
Decane	0.00326488			
n-Hexane	1.65875			
Benzene	1.26312			
Toluene	0.683932			
Ethylbenzene	0.0448398			
o-Xylene	0.055708			
MDEA	0.0191472			

Warnings

ProMax:ProMax!Project!Flowsheets!Vents Drains!Blocks!TANK-100
Warning: Vapor adjusted to ensure mass balance.

Remarks

Inlet Gas Analysis

Midland Laboratory
2200 East I-20
Midland, TX 79706
Phone 432-689-7252

Certificate of Analysis

Number: 5030-23070671-001A

Aug. 16, 2023

Station Name: MTDR UNCLE RICHARD
Sample Point: SEP
Cylinder No: 5030-00259
Analyzed: 08/02/2023 10:23:42 by CDW

Sampled By: JOSUE J
Sample Of: Gas Spot
Sample Date: 07/25/2023 09:50
Sample Conditions: 95 psig, @ 112 °F
Method: GPA 2286

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.73 psia		
Hydrogen Sulfide	0.000	0.000		GPM TOTAL C2+	8.639
Nitrogen	1.843	2.078		GPM TOTAL C3+	4.792
Methane	66.415	42.874		GPM TOTAL iC5+	1.153
Carbon Dioxide	1.858	3.291			
Ethane	14.316	17.322	3.847		
Propane	8.508	15.097	2.355		
Iso-butane	1.121	2.622	0.369		
n-Butane	2.888	6.755	0.915		
Iso-pentane	0.810	2.352	0.298		
n-Pentane	0.781	2.268	0.285		
Hexanes Plus	1.460	5.341	0.570		
	100.000	100.000	8.639		

Calculated Physical Properties	**Total**	**C6+**
Relative Density Real Gas	0.8618	3.1263
Calculated Molecular Weight	24.85	90.54
Compressibility Factor	0.9950	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.73 psia & 60°F		
Real Gas Dry BTU	1413	4821
Water Sat. Gas Base BTU	1389	4737

Comments: H2S Field Content 0.8 ppm

Data reviewed by: Raymond Bradford, Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

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Analytical Data

Components	Mol. %	Wt. %	GPM at 14.73 psia		
Hydrogen Sulfide	0.000	0.000		GPM TOTAL C2+	8.6390
Nitrogen	1.843	2.078		GPM TOTAL C3+	4.7920
Methane	66.415	42.874		GPM TOTAL iC5+	1.1530
Carbon Dioxide	1.858	3.291			
Ethane	14.316	17.322	3.847		
Propane	8.508	15.097	2.355		
Iso-Butane	1.121	2.622	0.369		
n-Butane	2.888	6.755	0.915		
Iso-Pentane	0.810	2.352	0.298		
n-Pentane	0.781	2.268	0.285		
Hexanes	0.543	1.838	0.217		
Heptanes Plus	0.917	3.503	0.353		
	100.000	100.000	8.639		

Calculated Physical Properties	Total	C7+
Relative Density Real Gas	0.8618	3.2365
Calculated Molecular Weight	24.85	93.74
Compressibility Factor	0.9950	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.73 psia & 60°F		
Real Gas Dry BTU	1413.1	4895.0
Water Sat. Gas Base BTU	1388.5	4821.0

Comments: H2S Field Content 0.8 ppm

Data reviewed by: Raymond Bradford, Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

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Analytical Data

Components	Mol. %	Wt. %	GPM at 14.73 psia
Hydrogen Sulfide	0.000	0.000	
Nitrogen	1.843	2.078	
Methane	66.415	42.874	
Carbon Dioxide	1.858	3.291	
Ethane	14.316	17.322	3.847
Propane	8.508	15.097	2.355
Iso-Butane	1.121	2.622	0.369
n-Butane	2.888	6.755	0.915
Iso-Pentane	0.810	2.352	0.298
n-Pentane	0.781	2.268	0.285
i-Hexanes	0.348	1.167	0.138
n-Hexane	0.195	0.671	0.079
Benzene	0.152	0.477	0.042
Cyclohexane	0.143	0.479	0.048
i-Heptanes	0.224	0.838	0.090
n-Heptane	0.056	0.227	0.026
Toluene	0.102	0.375	0.034
i-Octanes	0.147	0.625	0.066
n-Octane	0.019	0.088	0.010
Ethylbenzene	0.013	0.056	0.005
Xylenes	0.021	0.086	0.008
i-Nonanes	0.026	0.147	0.015
n-Nonane	0.005	0.027	0.003
Decane Plus	0.009	0.078	0.006
	100.000	100.000	8.639

GPM TOTAL C2+ 8.639

Calculated Physical Properties	Total	C10+
Relative Density Real Gas	0.8618	4.3506
Calculated Molecular Weight	24.85	126.01
Compressibility Factor	0.9950	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.73 psia & 60°F		
Real Gas Dry BTU	1413.1	6597.0
Water Sat. Gas Base BTU	1388.5	6449.9

Comments: H2S Field Content 0.8 ppm

Data reviewed by: Raymond Bradford, Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Engine and Catalyst Specifications

G3616
NON-CURRENT

GAS ENGINE SITE SPECIFIC TECHNICAL DATA
G3616

CATERPILLAR®

GAS COMPRESSION APPLICATION	
ENGINE SPEED (rpm):	1000
COMPRESSION RATIO:	7.6
AFTERCOOLER TYPE:	SCAC
AFTERCOOLER - STAGE 2 INLET (°F):	130
AFTERCOOLER - STAGE 1 INLET (°F):	174
JACKET WATER OUTLET (°F):	190
ASPIRATION:	TA
COOLING SYSTEM:	JW+1AC, OC+2AC
CONTROL SYSTEM:	ADEM4
EXHAUST MANIFOLD:	DRY
COMBUSTION:	LOW EMISSION
NOx EMISSION LEVEL (g/bhp-hr NOx):	0.5
SET POINT TIMING:	17

RATING STRATEGY:	STANDARD
RATING LEVEL:	CONTINUOUS
FUEL SYSTEM:	GAV WITH AIR FUEL RATIO CONTROL
SITE CONDITIONS:	
FUEL:	Gas Analysis
FUEL PRESSURE RANGE(psig): (See note 1)	58.0-70.3
FUEL METHANE NUMBER:	59.7
FUEL LHV (Btu/scf):	1051
ALTITUDE(ft):	3200
INLET AIR TEMPERATURE(°F):	80
STANDARD RATED POWER:	5000 bhp@1000rpm

				MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE		
RATING		**NOTES**	**LOAD**	**100%**	**100%**	**75%**	**50%**
ENGINE POWER	(WITHOUT FAN)	(2)	bhp	5000	5000	3750	2500
INLET AIR TEMPERATURE			°F	80	80	80	80
ENGINE DATA							
FUEL CONSUMPTION (LHV)		(3)	Btu/bhp-hr	6703	6703	6891	7362
FUEL CONSUMPTION (HHV)		(3)	Btu/bhp-hr	7405	7405	7613	8133
AIR FLOW (@inlet air temp, 14.7 psia)	(WET)	(4)(5)	ft3/min	12037	12037	9076	6210
AIR FLOW	(WET)	(4)(5)	lb/hr	53077	53077	40019	27381
FUEL FLOW (60°F, 14.7 psia)			scfm	531	531	410	292
INLET MANIFOLD PRESSURE		(6)	psi(abs)	49.6	49.6	37.2	26.2
EXHAUST TEMPERATURE - ENGINE OUTLET		(7)	°F	838	838	897	965
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(WET)	(5)(8)	ft3/min	30833	30833	24341	17518
EXHAUST GAS MASS FLOW	(WET)	(5)(8)	lb/hr	54770	54770	41324	28311
EMISSIONS DATA - ENGINE OUT							
NOx (as NO2)		(9)(10)	g/bhp-hr	0.50	0.50	0.50	0.50
CO		(9)(10)	g/bhp-hr	2.45	2.45	2.45	2.45
THC (mol. wt. of 15.84)		(9)(10)	g/bhp-hr	3.57	3.57	3.88	4.06
NMHC (mol. wt. of 15.84)		(9)(10)	g/bhp-hr	1.14	1.14	1.23	1.29
NMNEHC (VOCs) (mol. wt. of 15.84)		(9)(10)(11)	g/bhp-hr	0.56	0.56	0.61	0.64
HCHO (Formaldehyde)		(9)(10)	g/bhp-hr	0.21	0.21	0.22	0.24
CO2		(9)(10)	g/bhp-hr	442	442	455	484
EXHAUST OXYGEN		(9)(12)	% DRY	10.8	10.8	10.5	10.1
HEAT REJECTION							
HEAT REJ. TO JACKET WATER (JW)		(13)	Btu/min	53379	53379	43082	36283
HEAT REJ. TO ATMOSPHERE		(13)	Btu/min	18161	18161	16489	14905
HEAT REJ. TO LUBE OIL (OC)		(13)	Btu/min	30684	30684	27098	23590
HEAT REJ. TO A/C - STAGE 1 (1AC)		(13)(14)	Btu/min	47760	47760	23745	5526
HEAT REJ. TO A/C - STAGE 2 (2AC)		(13)(14)	Btu/min	11367	11367	7793	4751
COOLING SYSTEM SIZING CRITERIA							
TOTAL JACKET WATER CIRCUIT (JW+1AC)		(14)(15)	Btu/min	108865			
TOTAL STAGE 2 AFTERCOOLER CIRCUIT (OC+2AC)		(14)(15)	Btu/min	48756			
A cooling system safety factor of 0% has been added to the cooling system sizing criteria.							

CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature. 100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature. Maximum rating is the maximum capability at the specified aftercooler inlet temperature for the specified fuel at site altitude and reduced inlet air temperature. Refer to product O&M manual for details on additional lower load capability. No overload permitted at rating shown.

For notes information consult page three.

Catalyst Element (Table 1A)		
Application	Gas Compression	
Engine Model	CAT G3616A4	
Engine Mechanical Power	5000 hp	
Fuel	NG (High BTU)	
Exhaust Flowrate	54770 lb/hr	
Exhaust Temperature	838 deg. F	
Silencer Model	Miratech SP-RCSIGA-72-TBD-HSG	
Catalyst Model	DC3624	
Catalyst Part Number	B3063-01-040A-04D3-01	
Number of Elements	6	
Catalyst Code	0A / 300 cpsi	
Pre-Catalyst Emissions g/bhp-h	NOx	0.50
	CO	2.45
	NMNEHC	0.56
	CH2O	0.21
Post-Catalyst g/bhp-h	NOx	0.50
	CO	0.50
	NMNEHC (VOC)	0.20
	CH2O	0.03
Limited Warranty	(doc. X0000-0000-K1) 1 year or 8000 hours operation, whichever first	

G3516B

GAS ENGINE SITE SPECIFIC TECHNICAL DATA
{Scratch Project}

CATERPILLAR®

GAS COMPRESSION APPLICATION	
ENGINE SPEED (rpm):	1400
COMPRESSION RATIO:	8
AFTERCOOLER TYPE:	SCAC
AFTERCOOLER - STAGE 2 INLET (°F):	130
AFTERCOOLER - STAGE 1 INLET (°F):	201
JACKET WATER OUTLET (°F):	210
ASPIRATION:	TA
COOLING SYSTEM:	JW+OC+1AC, 2AC
CONTROL SYSTEM:	ADEM3
EXHAUST MANIFOLD:	DRY
COMBUSTION:	LOW EMISSION
NOx EMISSION LEVEL (g/bhp-hr NOx):	0.5
SET POINT TIMING:	30

RATING STRATEGY:	STANDARD
RATING LEVEL:	CONTINUOUS
FUEL SYSTEM:	CAT WIDE RANGE WITH AIR FUEL RATIO CONTROL

SITE CONDITIONS:

FUEL:	Gas Analysis
FUEL PRESSURE RANGE(psig): (See note 1)	7.0-40.0
FUEL METHANE NUMBER:	92.8
FUEL LHV (Btu/scf):	904
ALTITUDE(ft):	3375
INLET AIR TEMPERATURE(°F):	110
STANDARD RATED POWER:	1380 bhp@1400rpm

				MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE		
RATING		**NOTES**	**LOAD**	**100%**	**100%**	**75%**	**50%**
ENGINE POWER	(WITHOUT FAN)	(2)	bhp	1380	1380	1035	690
INLET AIR TEMPERATURE			°F	110	110	110	110
ENGINE DATA							
FUEL CONSUMPTION (LHV)		(3)	Btu/bhp-hr	7159	7159	7490	8069
FUEL CONSUMPTION (HHV)		(3)	Btu/bhp-hr	7943	7943	8310	8953
AIR FLOW (@inlet air temp, 14.7 psia)	(WET)	(4)(5)	ft3/min	3220	3220	2449	1680
AIR FLOW	(WET)	(4)(5)	lb/hr	13451	13451	10230	7018
FUEL FLOW (60°F, 14.7 psia)			scfm	182	182	143	103
INLET MANIFOLD PRESSURE		(6)	psi(abs)	43.7	43.7	35.2	24.6
EXHAUST TEMPERATURE - ENGINE OUTLET		(7)	°F	971	971	954	963
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(WET)	(5)(8)	ft3/min	8720	8720	6565	4545
EXHAUST GAS MASS FLOW	(WET)	(5)(8)	lb/hr	13929	13929	10605	7287
EMISSIONS DATA - ENGINE OUT							
NOx (as NO2)		(9)(10)	g/bhp-hr	0.50	0.50	0.50	0.50
CO		(9)(10)	g/bhp-hr	2.02	2.02	2.03	1.96
THC (mol. wt. of 15.84)		(9)(10)	g/bhp-hr	4.27	4.27	4.17	3.94
NMHC (mol. wt. of 15.84)		(9)(10)	g/bhp-hr	0.64	0.64	0.63	0.59
NMNEHC (VOCs) (mol. wt. of 15.84)		(9)(10)(11)	g/bhp-hr	0.43	0.43	0.42	0.39
HCHO (Formaldehyde)		(9)(10)	g/bhp-hr	0.42	0.42	0.40	0.39
CO2		(9)(10)	g/bhp-hr	456	456	477	515
EXHAUST OXYGEN		(9)(12)	% DRY	9.0	9.0	8.6	8.0
HEAT REJECTION							
HEAT REJ. TO JACKET WATER (JW)		(13)	Btu/min	22720	22720	21796	20766
HEAT REJ. TO ATMOSPHERE		(13)	Btu/min	6110	6110	5092	4074
HEAT REJ. TO LUBE OIL (OC)		(13)	Btu/min	4475	4475	3978	3363
HEAT REJ. TO A/C - STAGE 1 (1AC)		(13)(14)	Btu/min	12620	12620	8894	2936
HEAT REJ. TO A/C - STAGE 2 (2AC)		(13)(14)	Btu/min	5481	5481	4432	2693
COOLING SYSTEM SIZING CRITERIA							
TOTAL JACKET WATER CIRCUIT (JW+OC+1AC)		(14)(15)	Btu/min	43612			
TOTAL AFTERCOOLER CIRCUIT (2AC)		(14)(15)	Btu/min	5755			

A cooling system safety factor of 0% has been added to the cooling system sizing criteria.

CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature. 100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature. Maximum rating is the maximum capability at the specified aftercooler inlet temperature for the specified fuel at site altitude and reduced inlet air temperature. Refer to product O&M manual for details on additional lower load capability. No overload permitted at rating shown.

For notes information consult page three.

USA COMPRESSION

USA Compression Unit 10035 Caterpillar G3516B Emissions

Date of Manufacture	January 31, 2006	Engine Serial Number	4EK04915-REF-JEF	Date Modified/Reconstructed	ULB conversion. 12/16/10
Driver Rated HP	1380	Rated Speed in RPM	1400	Combustion Type & Setting	4-stroke lean burn
Number of Cylinders	16	Compression Ratio	8:1	Combustion Air Treatment	
Total Displacement, in^3	4211	Fuel Delivery Method	IMPCO		

Compressor Manufacturer	Ariel	Compressor Model	JGT4	Compressor Serial Number	F14200-ELP

Fuel Consumption 7159 *LHV BTU/bhp-hr or* 7943 *HHV BTU/bhp-hr*
Altitude 2800 *ft*
Maximum Air Inlet Temp 110 *F*

	g/bhp-hr [1]	lb/MMBTU [2]	lb/hr	TPY
Nitrogen Oxides (NOx)	0.5		1.52	6.66
Carbon Monoxide (CO)	2.02		6.15	26.92
Volatile Organic Compounds (VOC or NMNEHC excluding CH2O)	0.43		1.31	5.73
Formaldehyde (CH2O)	0.42		1.28	5.60
Particulate Matter (PM) Filterable+Condensable		0.0099871	1.09E-01	4.79E-01
Sulfur Dioxide (SO2)		0.0005880	6.45E-03	2.82E-02

	g/bhp-hr 1	lb/hr	Metric Tonne/yr
Carbon Dioxide (CO2)	456	1387	5511
Methane (CH4)		0.00	0.00

[1] g/bhp-hr are based on manufacturers performance specifications.
Note that g/bhp-hr values are based on 100% Load Operation. For air permitting, it is recommended to use a 20% safety margin for CO, VOC and other organic compounds to allow for variation in operating parameters and fuel gas quality.
[2] Emission Factor obtained from EPA's AP-42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combution Sources (Section 3.2 Natural Gas-Fired Reciprocating Engines, Table 3.2-2).

Catalytic Converter Emissions

Catalytic Converter Make amd Model: ELX-4200Z-1616F-40CEE-246
Element Type: *Oxidation*
Number of Elements in Housing: *3** **4 elements will be required to achieve the below limits*
Air/Fuel Ratio Control *yes*
Other Emissions Controls: *na*

	% Reduction	g/bhp-hr	**lb/hr**	**TPY**
Nitrogen Oxides (NOx)	0	0.50	**1.52**	**6.66**
Carbon Monoxide (CO)	75	0.50	**1.52**	**6.65**
Volatile Organic Compounds (VOC or NMNEHC excluding CH2O)	41	0.25	**0.77**	**3.38**
Formaldehyde (CH2O)	87	0.05	**0.17**	**0.73**
Particulate Matter (PM)	0	0.00	**1.09E-01**	**4.79E-01**
Sulfur Dioxide (SO2)	0	0.00	**6.45E-03**	**2.82E-02**

	% Reduction	**lb/hr**	**Metric Tonne/yr**
Carbon Dioxide (CO2)	0	**1387**	**5511**
Methane (CH4)	0	**0.00**	**0.00**

G3516J

GAS ENGINE SITE SPECIFIC TECHNICAL DATA
{Scratch Project}

CATERPILLAR®

GAS COMPRESSION APPLICATION	
ENGINE SPEED (rpm):	1400
COMPRESSION RATIO:	8
AFTERCOOLER TYPE:	SCAC
AFTERCOOLER - STAGE 2 INLET (°F):	130
AFTERCOOLER - STAGE 1 INLET (°F):	201
JACKET WATER OUTLET (°F):	210
ASPIRATION:	TA
COOLING SYSTEM:	JW+OC+1AC, 2AC
CONTROL SYSTEM:	ADEM3
EXHAUST MANIFOLD:	ASWC
COMBUSTION:	LOW EMISSION
NOx EMISSION LEVEL (g/bhp-hr NOx):	0.5
SET POINT TIMING:	30

RATING STRATEGY:	STANDARD
RATING LEVEL:	CONTINUOUS
FUEL SYSTEM:	CAT WIDE RANGE WITH AIR FUEL RATIO CONTROL

SITE CONDITIONS:

FUEL:	Gas Analysis
FUEL PRESSURE RANGE(psig): (See note 1)	7.0-40.0
FUEL METHANE NUMBER:	92.8
FUEL LHV (Btu/scf):	904
ALTITUDE(ft):	3375
INLET AIR TEMPERATURE(°F):	110
STANDARD RATED POWER:	1380 bhp@1400rpm

				MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE		
RATING		**NOTES**	**LOAD**	**100%**	**100%**	**75%**	**50%**
ENGINE POWER	(WITHOUT FAN)	(2)	bhp	1380	1380	1035	690
INLET AIR TEMPERATURE			°F	110	110	110	110
ENGINE DATA							
FUEL CONSUMPTION (LHV)		(3)	Btu/bhp-hr	7374	7374	7741	8320
FUEL CONSUMPTION (HHV)		(3)	Btu/bhp-hr	8182	8182	8588	9231
AIR FLOW (@inlet air temp, 14.7 psia)	(WET)	(4)(5)	ft3/min	3301	3301	2522	1732
AIR FLOW	(WET)	(4)(5)	lb/hr	13789	13789	10537	7235
FUEL FLOW (60°F, 14.7 psia)			scfm	188	188	148	106
INLET MANIFOLD PRESSURE		(6)	psi(abs)	44.0	44.0	35.1	24.1
EXHAUST TEMPERATURE - ENGINE OUTLET		(7)	°F	813	813	811	867
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(WET)	(5)(8)	ft3/min	7953	7953	6080	4370
EXHAUST GAS MASS FLOW	(WET)	(5)(8)	lb/hr	14283	14283	10925	7514
EMISSIONS DATA - ENGINE OUT							
NOx (as NO2)		(9)(10)	g/bhp-hr	0.50	0.50	0.50	0.50
CO		(9)(10)	g/bhp-hr	2.02	2.02	2.03	1.96
THC (mol. wt. of 15.84)		(9)(10)	g/bhp-hr	4.27	4.27	4.17	3.93
NMHC (mol. wt. of 15.84)		(9)(10)	g/bhp-hr	0.64	0.64	0.63	0.59
NMNEHC (VOCs) (mol. wt. of 15.84)		(9)(10)(11)	g/bhp-hr	0.43	0.43	0.42	0.39
HCHO (Formaldehyde)		(9)(10)	g/bhp-hr	0.42	0.42	0.40	0.39
CO2		(9)(10)	g/bhp-hr	456	456	476	515
EXHAUST OXYGEN		(9)(12)	% DRY	9.0	9.0	8.7	8.3
HEAT REJECTION							
HEAT REJ. TO JACKET WATER (JW)		(13)	Btu/min	37570	37570	32175	26761
HEAT REJ. TO ATMOSPHERE		(13)	Btu/min	5313	5313	4428	3543
HEAT REJ. TO LUBE OIL (OC)		(13)	Btu/min	4542	4542	3889	3235
HEAT REJ. TO A/C - STAGE 1 (1AC)		(13)(14)	Btu/min	12428	12428	9506	2742
HEAT REJ. TO A/C - STAGE 2 (2AC)		(13)(14)	Btu/min	5545	5545	4782	2920
COOLING SYSTEM SIZING CRITERIA							
TOTAL JACKET WATER CIRCUIT (JW+OC+1AC)		(14)(15)	Btu/min	59826			
TOTAL AFTERCOOLER CIRCUIT (2AC)		(14)(15)	Btu/min	5822			
A cooling system safety factor of 0% has been added to the cooling system sizing criteria.							

CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature. 100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature. Maximum rating is the maximum capability at the specified aftercooler inlet temperature for the specified fuel at site altitude and reduced inlet air temperature. Refer to product O&M manual for details on additional lower load capability. No overload permitted at rating shown.

For notes information consult page three.

USA COMPRESSION

USA Compression Unit 3155 Caterpillar G3516J Emissions

Date of Manufacture	August 15, 2004	Engine Serial Number	4EK04145-J	Date Modified/Reconstructed	**J conversion. Date of Mod 4/1/2014**
Driver Rated HP	1380	Rated Speed in RPM	1400	Combustion Type & Setting	4-stroke lean burn
Number of Cylinders	16	Compression Ratio	8:1	Combustion Air Treatment	
Total Displacement, in^3	4211	Fuel Delivery Method	IMPCO		

Compressor Manufacturer	Ariel	Compressor Model	JGT4	Compressor Serial Number	F24840

Fuel Consumption 7374 *LHV BTU/bhp-hr or* 8182 *HHV BTU/bhp-hr*
Altitude 2800 *ft*
Maximum Air Inlet Temp 110 *F*

	g/bhp-hr [1]	lb/MMBTU [2]	lb/hr	TPY
Nitrogen Oxides (NOx)	0.5		1.52	6.66
Carbon Monoxide (CO)	2.02		6.15	26.92
Volatile Organic Compounds (VOC or NMNEHC excluding CH2O)	0.43		1.31	5.73
Formaldehyde (CH2O)	0.42		1.28	5.60
Particulate Matter (PM) Filterable+Condensable		0.0099871	1.13E-01	4.94E-01
Sulfur Dioxide (SO2)		0.0005880	6.64E-03	2.91E-02

	g/bhp-hr 1	lb/hr	Metric Tonne/yr
Carbon Dioxide (CO2)	456	1387	5511
Methane (CH4)		0.00	0.00

[1] g/bhp-hr are based on manufacturers performance specifications.
Note that g/bhp-hr values are based on 100% Load Operation. For air permitting, it is recommended to use a 20% safety margin for CO, VOC and other organic compounds to allow for variation in operating parameters and fuel gas quality.
[2] Emission Factor obtained from EPA's AP-42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combution Sources (Section 3.2 Natural Gas-Fired Reciprocating Engines, Table 3.2-2).

Catalytic Converter Emissions

Catalytic Converter Make amd Model: 3ARC3W-16-HGS
Element Type: *Oxidation*
Number of Elements in Housing: *TBD** *4 elements will be required to achieve the below limits*
Air/Fuel Ratio Control *no*
Other Emissions Controls: *na*

	% Reduction	g/bhp-hr	**lb/hr**	**TPY**
Nitrogen Oxides (NOx)	0	0.50	**1.52**	**6.66**
Carbon Monoxide (CO)	75	0.50	**1.52**	**6.65**
Volatile Organic Compounds (VOC or NMNEHC excluding CH2O)	41	0.25	**0.77**	**3.38**
Formaldehyde (CH2O)	88	0.05	**0.15**	**0.67**
Particulate Matter (PM)	0	0.00	**1.13E-01**	**4.94E-01**
Sulfur Dioxide (SO2)	0	0.00	**6.64E-03**	**2.91E-02**

	% Reduction	**lb/hr**	**Metric Tonne/yr**
Carbon Dioxide (CO2)	0	**1387**	**5511**
Methane (CH4)	0	**0.00**	**0.00**

G3606

GAS ENGINE SITE SPECIFIC TECHNICAL DATA
West Texas 3606 Compression

CATERPILLAR®

GAS COMPRESSION APPLICATION	
ENGINE SPEED (rpm):	1000
COMPRESSION RATIO:	7.6
AFTERCOOLER TYPE:	SCAC
AFTERCOOLER - STAGE 2 INLET (°F):	130
AFTERCOOLER - STAGE 1 INLET (°F):	174
JACKET WATER OUTLET (°F):	190
ASPIRATION:	TA
COOLING SYSTEM:	JW+1AC, OC+2AC
CONTROL SYSTEM:	ADEM4
EXHAUST MANIFOLD:	DRY
COMBUSTION:	LOW EMISSION
NOx EMISSION LEVEL (g/bhp-hr NOx):	0.3
SET POINT TIMING:	18

RATING STRATEGY:	STANDARD
FUEL SYSTEM:	GAV WITH AIR FUEL RATIO CONTROL

SITE CONDITIONS:

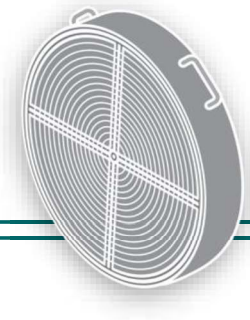
FUEL:	Nat Gas
FUEL PRESSURE RANGE(psig): (See note 1)	58.0-70.3
FUEL METHANE NUMBER:	89.4
FUEL LHV (Btu/scf):	922
ALTITUDE(ft):	3500
INLET AIR TEMPERATURE(°F):	105
STANDARD RATED POWER:	1875 bhp@1000rpm

				MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE		
RATING		**NOTES**	**LOAD**	**100%**	**100%**	**75%**	**50%**
ENGINE POWER	(WITHOUT FAN)	(2)	bhp	1875	1875	1406	938
INLET AIR TEMPERATURE			°F	105	105	105	105
ENGINE DATA							
FUEL CONSUMPTION (LHV)		(3)	Btu/bhp-hr	6916	6916	7195	7772
FUEL CONSUMPTION (HHV)		(3)	Btu/bhp-hr	7673	7673	7983	8623
AIR FLOW (@inlet air temp, 14.7 psia)	(WET)	(4)(5)	ft3/min	4944	4944	3756	2579
AIR FLOW	(WET)	(4)(5)	lb/hr	20835	20835	15829	10867
FUEL FLOW (60ºF, 14.7 psia)			scfm	234	234	183	132
INLET MANIFOLD PRESSURE		(6)	in Hg(abs)	102.1	102.1	78.7	56.0
EXHAUST TEMPERATURE - ENGINE OUTLET		(7)	°F	823	823	894	972
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(WET)	(8)(5)	ft3/min	11985	11985	9620	7002
EXHAUST GAS MASS FLOW	(WET)	(8)(5)	lb/hr	21461	21461	16317	11219
EMISSIONS DATA - ENGINE OUT							
NOx (as NO2)		(9)(10)	g/bhp-hr	0.30	0.30	0.30	0.30
CO		(9)(10)	g/bhp-hr	2.50	2.50	2.50	2.49
THC (mol. wt. of 15.84)		(9)(10)	g/bhp-hr	5.22	5.22	5.39	5.72
NMHC (mol. wt. of 15.84)		(9)(10)	g/bhp-hr	0.48	0.48	0.50	0.53
NMNEHC (VOCs) (mol. wt. of 15.84)		(9)(10)(11)	g/bhp-hr	0.32	0.32	0.34	0.36
HCHO (Formaldehyde)		(9)(10)	g/bhp-hr	0.19	0.19	0.20	0.22
CO2		(9)(10)	g/bhp-hr	438	438	454	492
EXHAUST OXYGEN		(9)(12)	% DRY	11.0	11.0	10.9	10.5
HEAT REJECTION							
HEAT REJ. TO JACKET WATER (JW)		(13)	Btu/min	22840	22840	18365	15216
HEAT REJ. TO ATMOSPHERE		(13)	Btu/min	5931	5931	5692	5463
HEAT REJ. TO LUBE OIL (OC)		(13)	Btu/min	11672	11672	10794	9353
HEAT REJ. TO A/C - STAGE 1 (1AC)		(13)(14)	Btu/min	18919	18919	9787	3058
HEAT REJ. TO A/C - STAGE 2 (2AC)		(13)(14)	Btu/min	8166	8166	5007	2442
COOLING SYSTEM SIZING CRITERIA							
TOTAL JACKET WATER CIRCUIT (JW+1AC)		(14)(15)	Btu/min	44989			
TOTAL STAGE 2 AFTERCOOLER CIRCUIT (OC+2AC)		(14)(15)	Btu/min	22580			
A cooling system safety factor of 0% has been added to the cooling system sizing criteria.							

CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature. 100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature. Maximum rating is the maximum capability at the specified aftercooler inlet temperature for the specified fuel at site altitude and reduced inlet air temperature. Refer to product O&M manual for details on additional lower load capability. No overload permitted at rating shown.

For notes information consult page three.



Catalyst Element (Table 1A)		
Application	Gas Compression	
Engine Model	CAT G3606A4	
Engine Mechanical Power	1875 hp	
Fuel	Natural Gas (PQNG)	
Exhaust Flowrate	21461 lb/hr	
Exhaust Temperature	823 deg. F	
Silencer Model	Miratech SP-ZCS-42-21040010	
Catalyst Model	DCX7	
Catalyst Part Number	A70BB-01-040F-0X73-01	
Number of Elements	4	
Catalyst Code	0F / 300 cpsi	
Pre-Catalyst Emissions g/bhp-h	NOx	0.30
	CO	2.50
	NMNEHC	0.32
	CH2O	0.19
Post-Catalyst g/bhp-h	NOx	0.30
	CO	0.50
	NMNEHC (VOC)	0.20
	CH2O	0.03
Limited Warranty	(doc. X0000-0000-K1) 1 year or 8000 hours operation, whichever first	

G3608

GAS ENGINE SITE SPECIFIC TECHNICAL DATA
Ben Ahiabor - Northwind New 3608 Compression

CATERPILLAR®

GAS COMPRESSION APPLICATION	
ENGINE SPEED (rpm):	1000
COMPRESSION RATIO:	7.6
AFTERCOOLER TYPE:	SCAC
AFTERCOOLER - STAGE 2 INLET (°F):	130
AFTERCOOLER - STAGE 1 INLET (°F):	174
JACKET WATER OUTLET (°F):	190
ASPIRATION:	TA
COOLING SYSTEM:	JW+1AC, OC+2AC
CONTROL SYSTEM:	ADEM4
EXHAUST MANIFOLD:	DRY
COMBUSTION:	LOW EMISSION
NOx EMISSION LEVEL (g/bhp-hr NOx):	0.3
SET POINT TIMING:	18

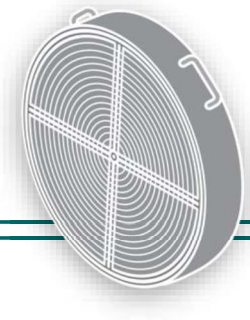
RATING STRATEGY:	STANDARD
RATING LEVEL:	CONTINUOUS
FUEL SYSTEM:	GAV WITH AIR FUEL RATIO CONTROL
SITE CONDITIONS:	
FUEL:	Gas Analysis
FUEL PRESSURE RANGE(psia): (See note 1)	84.8-94.6
FUEL METHANE NUMBER:	89.4
FUEL LHV (Btu/scf):	922
ALTITUDE(ft):	3375
INLET AIR TEMPERATURE(°F):	110
STANDARD RATED POWER:	2750 bhp@1000rpm

				MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE		
RATING		**NOTES**	**LOAD**	**100%**	**100%**	**75%**	**50%**
ENGINE POWER	(WITHOUT FAN)	(2)	bhp	2750	2750	2063	1375
INLET AIR TEMPERATURE			°F	110	110	110	110
ENGINE DATA							
FUEL CONSUMPTION (LHV)		(3)	Btu/bhp-hr	6770	6770	7009	7476
FUEL CONSUMPTION (HHV)		(3)	Btu/bhp-hr	7511	7511	7777	8295
AIR FLOW (@inlet air temp, 14.7 psia)	(WET)	(4)(5)	ft3/min	7428	7428	5623	3817
AIR FLOW	(WET)	(4)(5)	lb/hr	31028	31028	23490	15945
FUEL FLOW (60°F, 14.7 psia)			scfm	337	337	261	186
INLET MANIFOLD PRESSURE		(6)	in Hg(abs)	119.5	119.5	89.8	61.6
EXHAUST TEMPERATURE - ENGINE OUTLET		(7)	°F	789	789	839	896
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(WET)	(5)(8)	ft3/min	17346	17346	13673	9713
EXHAUST GAS MASS FLOW	(WET)	(5)(8)	lb/hr	31925	31925	24187	16440
EMISSIONS DATA - ENGINE OUT							
NOx (as NO2)		(9)(10)	g/bhp-hr	0.30	0.30	0.30	0.30
CO		(9)(10)	g/bhp-hr	2.15	2.15	2.14	2.14
THC (mol. wt. of 15.84)		(9)(10)	g/bhp-hr	2.68	2.68	2.86	2.94
NMHC (mol. wt. of 15.84)		(9)(10)	g/bhp-hr	0.25	0.25	0.26	0.27
NMNEHC (VOCs) (mol. wt. of 15.84)		(9)(10)(11)	g/bhp-hr	0.17	0.17	0.18	0.18
HCHO (Formaldehyde)		(9)(10)	g/bhp-hr	0.12	0.12	0.12	0.14
CO2		(9)(10)	g/bhp-hr	426	426	443	470
EXHAUST OXYGEN		(9)(12)	% DRY	11.4	11.4	11.2	10.7
HEAT REJECTION							
HEAT REJ. TO JACKET WATER (JW)		(13)	Btu/min	30061	30061	26133	21557
HEAT REJ. TO ATMOSPHERE		(13)	Btu/min	11523	11523	11494	11451
HEAT REJ. TO LUBE OIL (OC)		(13)	Btu/min	12411	12411	12288	11308
HEAT REJ. TO A/C - STAGE 1 (1AC)		(13)(14)	Btu/min	35308	35308	18218	5876
HEAT REJ. TO A/C - STAGE 2 (2AC)		(13)(14)	Btu/min	12548	12548	7574	3594
COOLING SYSTEM SIZING CRITERIA							
TOTAL JACKET WATER CIRCUIT (JW+1AC)		(14)(15)	Btu/min	70140			
TOTAL STAGE 2 AFTERCOOLER CIRCUIT (OC+2AC)		(14)(15)	Btu/min	28069			
A cooling system safety factor of 0% has been added to the cooling system sizing criteria.							

CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature. 100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature. Maximum rating is the maximum capability at the specified aftercooler inlet temperature for the specified fuel at site altitude and reduced inlet air temperature. Refer to product O&M manual for details on additional lower load capability. No overload permitted at rating shown.

For notes information consult page three.



Catalyst Element (Table 1B)		
Application	Gas Compression	
Engine Model	CAT G3608A4	
Engine Mechanical Power	2750 hp	
Fuel	Natural Gas (PQNG)	
Exhaust Flowrate	31925 lb/hr	
Exhaust Temperature	789 deg. F	
Silencer Model	Miratech SP-RCSIGA-54-24040012	
Catalyst Model	DC2424	
Catalyst Part Number	B3058-01-040A-02H3-01	
Number of Elements	4	
Catalyst Code	0A / 300 cpsi	
Pre-Catalyst Emissions g/bhp-h	NOx	0.30
	CO	2.15
	NMNEHC	0.17
	CH2O	0.12
Post-Catalyst g/bhp-h	NOx	0.30
	CO	0.50
	NMNEHC (VOC)	0.20
	CH2O	0.03
Limited Warranty	(doc. X0000-0000-K1) 1 year or 8000 hours operation, whichever first	

Owner:	Northwind Midstream		Owner Ref.:	H-101			Ftnt
Purchaser:	Saulsbury		Purchaser Ref.:	10991			&
Manufacturer:	Tulsa Heaters Midstream, LLC		THM Ref.:	P22-0812	/		Rev
Service:	Hot Oil Heater		Project:	Titan Treater			
Quantity:	1		Location:	Jal, NM			
SHO Duty:	35.00	MMBTU/ hr	SHO Model:	SHO3500			
BMS Release:	44.91	MMBTU/ hr	BMS Model:	BMS5500			
SHOS Flow:	1,600	USgpm @ 189 ft TDH	SHOS.Model:	N/A			

APPROVED 09/01/2023
Without Comments 1:10:56 PM
Dale Weaver, PMP

PROCESS DESIGN CONDITIONS

		Radiant / Convection	Radiant / Convection	Radiant / Convection	Radiant / Convection
Heater Section	- - -				
Operating Case	- - -	Design			
Service	- - -	Hot Oil Heater			
Heat Absorption (R/C)	MMBTU/ hr	23.43 / 11.57			
Process Fluid	- - -	Therminol 55			
Process Mass Flow Rate, Total	Lb/ hr	595,000			
Process Bulk Velocity (calc. R/C)	ft/ s	9 / 8			
Process Mass Velocity (calc. R/C)	Lb/ s ft2	412 / 412			
Coking Allowance (dP calcs)	in				
Pressure Drop, Clean (allow. / calc.)	psi	25 / 19			
Pressure Drop, Fouled (allow. / calc.)	psi				
Average Heat Flux (allowable)	BTU/ hr ft2	13,000			
Average Heat Flux (calculated)	BTU/ hr ft2	12,080			
Maximum Heat Flux (allowable)	BTU/ hr ft2				
Maximum Heat Flux (calc. R/C)	BTU/ hr ft2	21,900 / 26,580			
Fouling Factor, Internal	hr ft2 °F/ BTU	0.002			
Corrosion or Erosion Characteristics	- - -				
Max. Film Temperature (allow. / calc.)	°F	635 / 503			
Inlet Conditions:					
Temperature	°F	300			
Pressure	psig	75			
Mass Flow Rate, Liquid	Lb/ hr	595,000			
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	0.5699 / 0.000			
Thermal Conductivity, Liq./Vap.	BTU/hr ft °F	0.0701 / 0.000			
Outlet Conditions:					
Temperature	°F	400			
Pressure	psig	56			
Mass Flow Rate, Liquid	Lb/ hr	595,000			
Mass Flow Rate, Vapor	Lb/ hr	0			
Weight Percent, Liquid / Vapor	wt%	100% / 0%			
Density, Liquid / Vapor	Lb/ ft3	46.50 / 0.00			
Molecular Weight, Liquid / Vapor	Lb/ Lbmole	- - - / 0.0			
Viscosity, Liquid / Vapor	cp	0.718 / 0.000			
Specific Heat, Liquid / Vapor	BTU/ Lb °F	0.612 / 0.000			
Thermal Conductivity, Liq./Vap.	BTU/hr ft °F	0.062 / 0.000			

revision	date	description	by	chk'd	appv'd
A		Issued with Proposal			

Owner Ref.: H-101 THM Ref.: P22-0812

Ftnt & Rev

COMBUSTION DESIGN CONDITIONS

Overall Performance:

Operating Case	---	Design
Service	---	Hot Oil Heater
Excess Air	mol%	15.0%
Calculated Heat Release (LHV)	MMBTU/ hr	40.83
Guaranteed Efficiency	HR%	83.7%
Calculated Efficiency	HR%	85.7%
Radiation Loss	HR%	2.00%
Flow Rate, Combustion Gen./ Imp.	Lb/ hr	39,838
Flue Gas Temp. Leaving (R/C)	°F	1,503 / 531
Flue Gas Mass Velocity	Lb/ sec ft2	0.496

Fuel(s) Data:

		Gas 1 Mol.Wt.	Gas 2 Mol.Wt.	Gas 3 Mol.Wt.	Design Fuel Oil
LHV	BTU/ scf	902			---
LHV	BTU/ Lb	20,707			
P @ Burner	psig	150			
T @ Burner	°F	120			
MW	Lb/ Lbmole	16.53			---
Flow @ design	lb/hr	1,972			
Flow @ design	scfh	45,283			
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%	0.1%			---
CO	mol%	0.0%			---
CO2	mol%	1.3%			---
CH4	mol%	98.0%			---
C2H6	mol%	0.6%			---
C2H4	mol%	0.0%			---
C3H8	mol%	0.0%			---
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	9,300
Rated Power	HP	30
Fan Speed	RPM	1,800
Sound Pressure	dBA	< 85
Area Classification	NEC	Class I, Div. II, Groups C&D

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	8.98
Design Heat Release	MMBTU/ hr	40.83
Maximum Heat Release	MMBTU/ hr	44.91
Burner Turndown	Max:Min	5.00
Volumetric Ht. Release	BTU/ hr ft3	8,308
Pressure @ Arch	inH2O	0.90
Pressure @ Burner	inH2O	7.28
Combustion Air T @ Burner	°F	60
Flue Gas T @ Burner	°F	1,310

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	0.019	15 ppm
UHC Emissions	Lb/MMBTU	0.007	15 ppm
SPM10 Emissions	Lb/MMBTU	0.013	15 ppm
Noise Emissions	dBA @ 3ft	85	

Net Flame Clearances:

Est. Flame Size	approx. 25 ft L x 5 ft Diameter
Hor Clearance	3 ft NET Tube Clearance
Vert. Clearance	3 ft NET Tube Clearance
Axial Clearance	8.17 ft NET Refractory Clearance (to Target hot face)

Nominal Flame Clearances:

from burner CL ...		Vertical	Horizontal
to Tube CL, API	ft	19.09	12.73
to Tube CL, calc.	ft	5.50	5.50
to Refrac., calc.	ft	n / a	33.17

Owner:	Northwind Midstream		Owner Ref.:	H-101 29500A	**Approved** 01/26/2024 8:06:24 AM
Purchaser:	Saulsbury		Purchaser Ref.:	10991	
Manufacturer:	Tulsa Heaters Midstream, LLC		THM Ref.:	MJ23-616 /	
Service:	Hot Oil Heater		Project:	Titan Treater	
Quantity:	1		Location:	Jal, NM	
SHO Duty:	45.00	MMBTU/ hr	SHO Model:	SHO4500	
BMS Release:	56.74	MMBTU/ hr	BMS Model:	BMS8500	
SHOS Flow:	3,930	USgpm @ 197 ft TDH	SHOS.Model:	SHOSCUSTOM	

PROCESS DESIGN CONDITIONS

Heater Section	- - -	Radiant / Convection	Radiant / Convection	Radiant / Convection	Radiant / Convection	
Operating Case	- - -	Design				
Service	- - -	Hot Oil Heater				
Heat Absorption (R/C)	MMBTU/ hr	29.56 / 15.44				
Process Fluid	- - -	Chemtherm 550				
Process Mass Flow Rate, Total	Lb/ hr	765,000				
Process Bulk Velocity (calc. R/C)	ft/ s	7 / 10				
Process Mass Velocity (calc. R/C)	Lb/ s ft2	306 / 530				
Coking Allowance (dP calcs)	in					
Pressure Drop, Clean (allow. / calc.)	psi	30 / 22				
Pressure Drop, Fouled (allow. / calc.)	psi					
Average Heat Flux (allowable)	BTU/ hr ft2	13,000				
Average Heat Flux (calculated)	BTU/ hr ft2	12,120				
Maximum Heat Flux (allowable)	BTU/ hr ft2					
Maximum Heat Flux (calc. R/C)	BTU/ hr ft2	21,600 / 29,600				
Fouling Factor, Internal	hr ft2 °F/ BTU	0.002				
Corrosion or Erosion Characteristics	- - -					
Max. Film Temperature (allow. / calc.)	°F	635 / 535				
Inlet Conditions:						
Temperature	°F	300				
Pressure	psig	80				
Mass Flow Rate, Liquid	Lb/ hr	765,000				
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	0.5699 / 0.000				
Thermal Conductivity, Liq./Vap.	BTU/hr ft °F	0.0701 / 0.000				
Outlet Conditions:						
Temperature	°F	400				
Pressure	psig	58				
Mass Flow Rate, Liquid	Lb/ hr	765,000				
Mass Flow Rate, Vapor	Lb/ hr	0				
Weight Percent, Liquid / Vapor	wt%	100% / 0%				
Density, Liquid / Vapor	Lb/ ft3	46.50 / 0.00				
Molecular Weight, Liquid / Vapor	Lb/ Lbmole	- - - / 0.0				
Viscosity, Liquid / Vapor	cp	0.718 / 0.000				
Specific Heat, Liquid / Vapor	BTU/ Lb °F	0.612 / 0.000				
Thermal Conductivity, Liq./Vap.	BTU/hr ft °F	0.062 / 0.000				

revision	date	description	by	chk'd	appv'd
0	1-Dec-23	Initial Issue	JF		

Owner Ref.: H-101 29500A THM Ref.: MJ23-616

COMBUSTION DESIGN CONDITIONS

Overall Performance:		
Operating Case	- - -	Design
Service	- - -	Hot Oil Heater
Excess Air	mol%	15.0%
Calculated Heat Release (LHV)	MMBTU/ hr	51.58
Guaranteed Efficiency	HR%	85.2%
Calculated Efficiency	HR%	87.2%
Radiation Loss	HR%	2.00%
Flow Rate, Combustion Gen./ Imp.	Lb/ hr	50,328
Flue Gas Temp. Leaving (R/C)	°F	1,512 / 477
Flue Gas Mass Velocity	Lb/ sec ft2	0.540

Fuel(s) Data:		Gas 1 Mol.Wt.	Gas 2 Mol.Wt.	Gas 3 Mol.Wt.	Design Fuel Oil
LHV	BTU/ scf	902			- - -
LHV	BTU/ Lb	20,707			
P @ Burner	psig	100			
T @ Burner	°F	80			
MW	Lb/ Lbmole	16.53			- - -
Flow @ design	lb/hr	2,491			
Flow @ design	scfh	57,207			
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%	0.1%			- - -
CO	mol%	0.0%			- - -
CO2	mol%	1.3%			- - -
CH4	mol%	98.0%			- - -
C2H6	mol%	0.6%			- - -
C2H4	mol%	0.0%			- - -
C3H8	mol%	0.0%			- - -
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	11,700
Rated Power	HP	30
Fan Speed	RPM	1,800
Sound Pressure	dBA	< 85
Area Classification	NEC	Class I, Div. II, Groups C&D

Burner Design:			
OEM	- - -	Callidus Technologies, LLC	
Type	- - -	Enhanced IFGR	
Quantities	- - -	1	ULTRA Low NOx
Model No.	- - -	CUBL-16W-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	11.35
Design Heat Release	MMBTU/ hr	51.58
Maximum Heat Release	MMBTU/ hr	56.74
Burner Turndown	Max:Min	5.00
Volumetric Ht. Release	BTU/ hr ft3	6,993
Pressure @ Arch	inH2O	1.20
Pressure @ Burner	inH2O	6.11
Combustion Air T @ Burner	°F	60
Flue Gas T @ Burner	°F	1,320

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	0.019	15 ppm
UHC Emissions	Lb/MMBTU	0.007	15 ppm
SPM10 Emissions	Lb/MMBTU	0.013	15 ppm
Noise Emissions	dBA @ 3ft	85	

Net Flame Clearances:	
Est. Flame Size	approx. 32 ft L x 5.5 ft Diameter
Hor Clearance	3.75 ft NET Tube Clearance
Vert. Clearance	3.75 ft NET Tube Clearance
Axial Clearance	5.17 ft NET Refractory Clearance (to Target hot face)

Nominal Flame Clearances: from burner CL ...		Vertical	Horizontal
to Tube CL, API	ft	23.53	15.69
to Tube CL, calc.	ft	6.50	6.50
to Refrac., calc.	ft	n / a	37.17

Flare and Combustor Specifications

AIR-ASSISTED FLARE
AF Series

Air-Assisted AF Flare

AF series description.

Zeeco's AF flare series uses advanced technology proven to achieve smokeless flaring when neither steam nor assist gas is available or economical.

Our AF flares utilize a low-pressure blower to inject assist air via Zeeco's proprietary design, which splits the waste gas stream into several smaller streams at the exit of the flare tip. This increases the contact surface area between the waste gas and the assist air, maximizing mixing and turbulence while minimizing the amount of blower horsepower required to achieve smokeless flaring.

Better design means safer operation.

The waste gases from the flare header as well as the assist air from the blower are isolated from the base of the flare stack to the top of the flare tip. As a result, the two streams never come in contact with each other prior to exiting the flare tip. This ensures the safe operation of your flare system. Zeeco's AF flare systems can operate without the blower, providing safe disposal of the waste gas in the event of a power outage.

Our proprietary design and the blower's velocity virtually eliminate "flame lick" on the exterior of the flare tip and "burnback" inside the flare tip. The forced air from the blower also shortens the flame length and reduces the radiation at grade due to the highly aerated mixture of waste gases.

Why choose Zeeco?

For over 40 years, Zeeco has engineered air-assisted flare systems for some of the most complex projects in the world. Providing our customers with superior quality, on-time shipments, and competitive pricing is the cornerstone of our success. Let us put our experience to work for you. Call or email us today for more information on Zeeco's full line of flare products and replacement components for your new or existing flare system(s).

Applications

- ZEECO® AF series flares are ideal for refining, LNG, production, steel industries, petrochemical, offshore platforms, pulp and paper plants, pharmaceuticals, and food processing plants.
- Our AF series flares are the preferred choice for industries that require smokeless flaring when neither steam nor assist gas is desired, available, or cost-effective.
- AF series flares are the best option for harsh conditions, such as arctic environments where steam could freeze or desert environments where water is scarce.
- ZEECO AF series flare tips make sense as a replacement for other manufacturers' flare tips.

Air-Assisted AF Flare Blowers

Advantages

- Very low operating cost for smokeless operation
- High stability, low fuel consumption pilots are standard with AF flare tips
- 98.5% or higher hydrocarbon destruction efficiency
- Superior materials and construction
- Lower blower horsepower requirements compared to competing designs

Features

- Sizes ranging from 2 inch (50 mm) to 120 inch (3050 mm)
- Longer flare tip life due to continual cooling by forced air flow
- Lower radiation level at grade due to a highly aerated flame
- Lower noise than similar size steam-assisted flares
- High stability pilots (tested to 170 mph [274 km/h] wind speed)
- Critical parts supplied as investment castings
- 310 stainless steel in high heat areas

Air-Assisted AF Flare

Air-Assisted AF Flare

The Zeeco Difference

Our only business is the combustion business. By concentrating on what we do best, Zeeco has grown into a worldwide leader in combustion solutions. We are a privately held company whose ownership stays highly involved in daily operations, with upper management comprised of the world's leading combustion experts.

When you call Zeeco, we answer. When you make a request, you get a quick, efficient response. We are lean and efficient, able to make decisions quickly, without bureaucracy and red tape. Our sales, engineering, and purchasing groups work hand-in-hand to deliver highly competitive quotes and heroic turnaround times. We stand ready and willing to travel anywhere in the world to discuss upcoming projects firsthand, and to ensure that every existing project runs seamlessly.

Zeeco Headquarters
22151 East 91st Street
Broken Arrow, OK 74014

Learn more at zeeco.com

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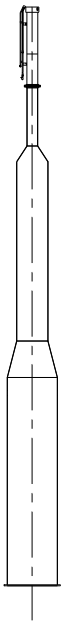
Acid Gas Flare

Self-supported Flare Stack Specification Sheet

Client:	Saulsbury Industries	Zeeco Ref.:	67702	Date:	6-Jun-24
Location:	Jal, NM (Titan Treater)	Client Ref.:	10991-01-190565	Rev.:	0

General Information:		
Flare System:	UFGAW-24/36-150	
Tag No.:	FL-15100	
Overall Height:	150'-0"	
Gas Riser:	24" Inlet	
Design Criteria:		
Wind Design Code:	ASCE 7-16	
Seismic Design Code:	ASCE 7-16	
Importance Factor:	1.25	
Structural Design Code:	AISC	
Wind Speed (Structural):	120	mph
Seismic Zone:		
Max. Design Temperature:	150	Deg. F
Min. Design Temperature:	-20	Deg. F
Stack Design Pressure:	75	psig
Riser Corrosion Allow.:	0.063	in.
Gas Riser Operating Pressure:	5	psig
Gas Riser Operating Temp:	123	Deg. F



(Typical and Not Actual Flare System)

Construction:			
Riser Material:	Carbon Steel	Ladders & Step-offs:	None
Upper Diameter (approx.):	2' - 0"	Platform at Tip:	None
Middle Diameter (approx.):	3' - 6"	Additional Platforms:	None
Base Diameter (approx.):	5' - 6"	ACWL:	None
Surface Finish (Carbon Steel Surfaces):			
Surface Preparation:	SSPC-SP-6	Primer:	Inorganic Zinc
Int. Coat:	None	Finish Paint:	High Temp Aluminum

Other Notes and Equipment:

1. Pilot Gas 1/2" SCH80 3000# FNPT A-105
2. Assist Gas 1" SCH40 3000# FNPT A-105
3. Retractable Thermocouple Tubing 1/2" OD
4. Retractable HEI Probe Piping 3/4" OD SCH40
5. (4) HSLF-Z-RJHEI-RJT/C Pilots
6. Pilot Fuel Train C/W Needle Valve, Strainer, Pressure Gauge, Pressure Switch
7. Assist Gas Train C/W Ball Valve, Strainer, Pressure Gauge
8. HEIC-4-TS-120-PS Control Rack w/ Z-Purge, NEMA 7 Junction Boxes, Interconnect Wire
9. Retractable T/C 1800" and Retractable HEI Probes 160" Per Pilot
10. NACE MR0175 Required for Gas Riser
11. Pilot Fuel Consumption *65 SCFH @ 15 psig Per Pilot (Natural Gas) *29 SCFH @ 7 psig Per Pilot (Propane)
12. Continuous Purge: 435 SCFH
13. Estimated Assist Gas Consumption: 8416 SCFH @ 15 psig (Natural Gas)

Acid Gas Flare

Flare Tip Specification Sheet

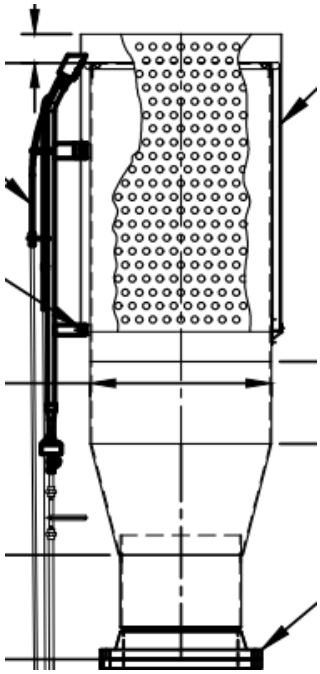
Client:	Saulsbury	Zeeco Ref.:	67702	Date:	6-Jun-24
Location:	Jal, NM (Titan Treater)	Client Ref.:	10991-01-037	Rev.	0

General Information:

Tag No.:	F-1		
Model:	UFGAW-24/36	Type:	Utility
Length:	10'- 0 "		
Weight:	1502 lbs		
No. of Pilots:	4		

Design Case:

Governing Case:	Case #1	
Molecular Weight:	40.0	
L. H. V. :	113	BTU/SCF
Enrichment Required	84	MMBtu/hr
Temperature:	123	Deg. F
Available Static Pressure:	5	psig
Design Flow Rate:	79,412	lbs/hr
Approximate Exit Velocity:	964	ft/s
Mach No.:	1.00	
Approx. Tip Press. Drop:	13.42	psig
DRE%	98	%



(Typical drawing only)

Construction:

Upper Section:	310 SS	Windshield:	YES
Lower Section:	Carbon Steel	Flame Retention Ring:	n/a
Refractory:	None	Lifting Lugs:	NO
Refractory Thk:	N/A		

Surface Finish (Carbon Steel Surfaces):

Surface Preparation:	SSPC-SP6	Primer:	Inorganic Zinc
Paint (c. s. surfaces):	High Heat Aluminum		

Connections:

	Qty.	Size	Type	Material
N1 - Flare Gas Inlet:	1	24"	Fab. Plate Flange	Carbon Steel
C1- Pilot Gas Line	1	1/2"	FNPT	Carbon Steel
C4 - Ignition Line:	1	1 "	FNPT	Carbon Steel

Miscellaneous Notes:

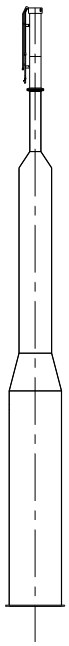
1. Includes Integral Purge Reducing Velocity Seal.
2. Required Fuel Gas Purge Rate = 435 SCFH.
3. Enrichment fuel required to enrich waste gas to 200 Btu/scf (1000 Btu/scf enrichment fuel)

Self-supported Flare Stack Specification Sheet

Client:	Saulsbury	Zeeco Ref.:	2024-04113FL-01 Rev.1	Date:	13-May-24
Location:	Tiitan Treating Gas Facility	Client Ref.:	11154	Rev.:	2

General Information:

Tag No.:	STK-1
Overall Height:	150'- 0 "



(Typical drawing only)

Design Criteria:

Wind Design Code:	ASCE 7-16	
Seismic Design Code:	ASCE 7-16	
Importance Factor:	1.00	
Structural Design Code:	ASME STS-1 / AISC	
Wind Speed (Structural):	120	mph
Seismic Zone:	1	
Max. Design Temperature:	350	Deg. F
Min. Design Temperature:	0	Deg. F
Design Pressure:	50	psig
Riser Corrosion Allow.:	0.063	in.

Construction:

Riser Material:	Carbon Steel	Ladders & Step-offs:	None
Upper Diameter (approx.):	See Quote GA	Platform at Tip:	None
Middle Diameter (approx.):	See Quote GA	Additional Platforms:	None
Base Diameter (approx.):	See Quote GA	ACWL:	None

Surface Finish (Carbon Steel Surfaces):

Surface Preparation:	SSPC-SP-6	Primer:	Inorganic Zinc
Int. Coat:	None	Finish Paint:	None

Utility Piping:

Per Attached Utility Piping Scope of Supply

Miscellaneous Notes:

Process Flare

Air Assisted Flare Tip Specification Sheet

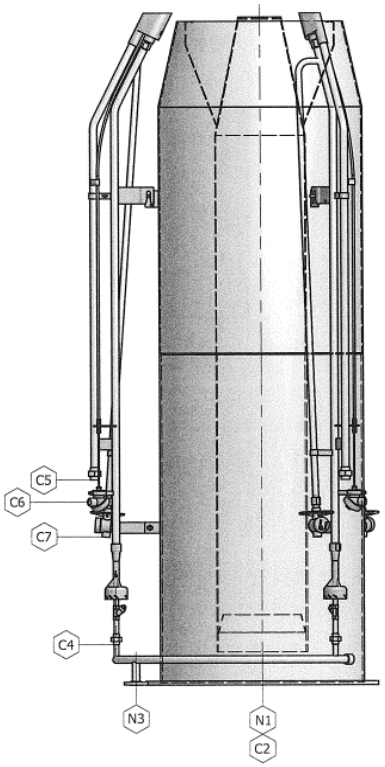
Client:	Saulsbury	Zeeco Ref.:	2024-04113FL-01 Rev.1	Date:	13-May-24
Location:	Tiitan Treating Gas Facility	Client Ref.:	11154	Rev.	2

General Information:

Tag No.:	F-1		
Model:	AFTA-24/68"	Type:	Air Flare
Length:	10'- 0 "		
No. of Pilots:	2		

Design Case:

Governing Case:	Case DEmergency	
Molecular weight:	24.0	
L. H. V. :	1,073	BTU/SCF
Temperature:	70	Deg. F
Available Static Pressure:	8.0	psig
Design Flow Rate:	550,000	lbs/hr
Governing Smokeless Case:	Case D	
Design Smokeless Rate:	110,000	lbs/hr
Approximate Exit Velocity:	997	ft/s
Mach No.:	0.85	
Approx. Tip Press. Drop:	6.01	psig



(Typical drawing only)

Construction:

Upper Section:	310 SS	Windshield:	NO
Lower Section:	Carbon Steel	Flame Retention Hub:	310 SS
Refractory:	None	Lifting Lugs:	NO
Refractory Thk:	N/A		

Surface Finish (Carbon Steel Surfaces):

Surface Preparation:	SSPC-SP6	Primer:	Sherwin Williams, Zinc Clad II
Paint (c. s. surfaces):	Sherwin Williams, Heat Flex 1200 Plus		

Connections:

	Qty.	Size	Type	Material
N1 - Flare Gas Inlet:	1	24 "	Beveled ; Weld	Carbon Steel
N2 - Combustion Air Inlet:	1	68"	Fab. Plate Flange	Carbon Steel
N3 - Pilot Gas:	1	1/2"	FNPT	CF8M
N4 - Ignition Line:	2	1 "	FNPT	Carbon Steel

Miscellaneous Notes:

1. Includes Integral Purge Reducing Velocity Seal.
2. Required Fuel Gas Purge Rate = 870 SCFH.

Contact Information:

Customer:	Guadalupe Ortega	432.438.6405;2205	gortega@saulsbury.com
Zeeco Local Contact:	Cody Faulkenberry	713.859.6047	cody_faulkenberry@zeeco.com
Zeeco Applications Engineer:	Brady Parmenter	918.893.8656	brady_parmenter@zeeco.com

Design Information (Estimated): Truck Loading Combustor

Source	Case 1	Case 2	Case 1 + Case 2	Case 3
Gas MW	76.8	17.8	24.2	46.9
Gas LHV (Btu/Scf)	3908	977	1292	2185
Max Flow Rate (lb/hr)	109	210	319	135
Available Pressure (psig)	0.3	0.3	0.3	1
Temperature (°F)	120	70	75.4	100
Heat Release (MMBtu/hr)	2.1	4.4	6.5	2.4

Scope of Supply:

Qty	Equipment
1	4’ Dia. x 30’ Tall Self-Supported Enclosure – 7.6 MMBtu/hr capacity
1	Air Assisted, Anti-Flashback Tip (AFFA)
1	HSLF Pilot w/ Flame Scanner
1	Automatic Ignition/Monitoring Panel – C1/D2 electrical class
1	Shutdown Monitoring & Controls (VCU-AD)
1	4” Group D Deflagration Arrester
1	4” Shutdown Valve (Pneumatic)

OOOOb/c compliant flare design

Required Utilities:

Consumer	Utility Type	Consumption	Supply
EGF Pilot Gas	Fuel Gas	90 Scfh	10 psig
Blower	Electricity	5 hp (7.6 A)	480 VAC / 3 Ph / 60 Hz
Control Panel (VCU)	Electricity	20 A	120 VAC / 1 Ph / 60 Hz

Customer Connections (Estimated, TBC by customer):

Service	Size	Type	Rating
Waste Gas	4"	RF	150#
Pilot Gas	1/2"	NPT	3000#

AP-42 Emission Factors

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-Methylchloranthrene[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
205-82-3	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

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
74-98-6	Propane	1.6E+00	E
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 1.4-4. EMISSION FACTORS FOR METALS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
7440-38-2	Arsenic[b]	2.0E-04	E
7440-39-3	Barium	4.4E-03	D
7440-41-7	Beryllium[b]	<1.2E-05	E
7440-43-9	Cadmium[b]	1.1E-03	D
7440-47-3	Chromium[b]	1.4E-03	D
7440-48-4	Cobalt[b]	8.4E-05	D
7440-50-8	Copper	8.5E-04	C
7439-96-5	Manganese[b]	3.8E-04	D
7439-97-6	Mercury[b]	2.6E-04	D
7439-98-7	Molybdenum	1.1E-03	D
7440-02-0	Nickel[b]	2.1E-03	C
7782-49-2	Selenium[b]	<2.4E-05	E
7440-62-2	Vanadium	2.3E-03	D
7440-66-6	Zinc	2.9E-02	E

[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. Emission factors preceeded by a less-than symbol are based on method detection limits. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by l6. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020.

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

TCEQ Emission Factors

For flares subject to Chapter 115, Subchapter H, relating to highly reactive volatile organic compounds, flow rate and composition data required by 30 TAC 115.725–26 should be used to determine emissions for any portions of 2009 that HRVOC monitors were installed and operational.

In the absence of monitoring data, selection of the most accurate method may sometimes require exercising scientific judgment. For example, when using the results of a one-time performance test, the test conditions should be compared to the flare's actual operating conditions during the inventory year to determine whether the test accurately represents the flare's performance. If test conditions do not accurately model flare operation, then engineering determinations based on detailed process evaluation may provide the best data.

NO_x and CO Emissions

To calculate NO_x and CO emissions, the net heating value of the flared gas must be known. Using the actual short-term flared gas composition and flow rate data for the inventory year, calculate the net heating value of the flared gas and the total heat release for each short time period. Use these total heat release data, in conjunction with the appropriate emission factors from TCEQ Air Permits guidance, to determine NO_x and CO emissions for each time segment. Since the calculated net heating value of the gas and the assist gas type will determine the appropriate emission factors, carefully select the correct factors for each flare from Table A-6.

Calculate emissions using the most accurate data for the gas flow rate and composition available. (See "Flared Gas Flow Rate and Composition" earlier in this supplement for more information on preferred data.)

Table A-6. TCEQ Air Permits Flare Emission Factors

Contaminant	Assist Type	Waste Gas Stream Net Heating Value[a,b]	Emission Factor
NO_x	Steam	High Btu	0.0485 lb/MMBtu
		Low Btu	0.068 lb/MMBtu
	Air or Unassisted	High Btu	0.138 lb/MMBtu
		Low Btu	0.0641 lb/MMBtu
CO	Steam	High Btu	0.3503 lb/MMBtu
		Low Btu	0.3465 lb/MMBtu
	Air or Unassisted	High Btu	0.2755 lb/MMBtu
		Low Btu	0.5496 lb/MMBtu

[a] High Btu: > 1000 Btu/scf

[b] Low Btu: 192–1000 Btu/scf

Table II: Facility/Compound Specific Fugitive Emission Factors

Equipment/Service	Compound Specific See Section I for more information			Facility Specific[1]					
	Ethylene Oxide[2] w/LDAR	Phosgene[3] w/LDAR	Butadiene w/LDAR[4]	Petroleum Marketing Terminal[5, 6] w/28PET	Oil and Gas ProductionOperation[6]				Refinery[6]
					Gas	Heavy Oil < 20 API	Light Oil	Water/ Light Oil	
Valves					0.00992	0.0000185	0.0055	0.000216	
Gas/Vapor	0.000444	0.00000216	0.001105	0.0000287					0.059
Light Liquid	0.00055	0.00000199	0.00314	0.0000948					0.024
Heavy Liquid				0.0000948					0.00051
Pumps	0.042651	0.0000201	0.05634		0.00529	0.00113[7]	0.02866	0.000052	
Light Liquid				0.00119					0.251
Heavy Liquid				0.00119					0.046
Flanges/Connectors[11]	0.000555	0.00000011	0.000307		0.00086	0.00000086	0.000243	0.000006	0.00055
					0.00044	0.0000165	0.000463	0.000243	
Gas/Vapor				0.000092604					
Light Liquid				0.00001762					
Heavy Liquid				0.0000176					
Compressors	0.000767		0.000004		0.0194	0.0000683	0.0165	0.0309	1.399
Relief Valve	0.000165	0.0000162	0.02996		0.0194	0.0000683	0.0165	0.0309	0.35
Open-ended Lines[8]	0.001078	0.00000007	0.00012		0.00441	0.000309	0.00309	0.00055	0.0051
Sampling[9]	0.000088		0.00012						0.033
Other[10]					0.0194	0.0000683	0.0165	0.0309	
Gas/Vapor				0.000265					
Light/Heavy Liquid				0.000287					
Process Drains					0.0194	0.0000683	0.0165	0.0309	0.07

Endnotes Table II

1. **Factors give the total organic compound emission rate. Multiply by the weight percent of non-methane, non-ethane organics to get the VOC emission rate.**
2. **These emission factors require the use of the 28MID fugitive program. Monitoring must occur at a leak definition of 500 ppmv. No additional control credit can be applied to these factors except 28CNTQ and 28CNTA. Emission factors are from EOIC Fugitive Emission Study, summer 1988.**
3. **These emission factors require the use of the 28MID fugitive program. Monitoring must occur at a leak definition of 50 ppmv. No additional control credit can be applied to these factors. Emission factors are from Phosgene Panel Study, summer 1988.**
4. **These emission factors require the use of the 28MID fugitive program. Monitoring must occur at a leak definition of 100 ppmv. No additional control credit can be applied to these factors. Emission factors are from Randall, J. L., et al., Radian Corporation. Fugitive Emissions from the 1,3-butadiene Production Industry: A Field Study. Final Report. Prepared for the 1,3-Butadiene Panel for the Chemical Manufacturers Association. April 1989.**
5. **Control credit is included in the factor; no additional control credit can be applied to these factors. Monthly 28 PET inspection is required.**
6. **Factors are taken from EPA Document EPA-453/R-95-017, November 1995, pages 2-13, 2-14, and 2-15.**
7. **Heavy liquid oil – Pump factor was not derived during the API study. The factor is the SOCMI without C_2 Heavy Liquid – Pump factor with a 93% reduction credit for the physical inspection.**

Table III: Leak Detection and Repair (LDAR) Program Instrument Monitoring Options

LDAR Program	28M	28RCT	28VHP	28MID	28LAER	28CNTQ	28CNTA
Leak Definition for Pumps and Compressors	10,000 ppmv	10,000 ppmv	2,000 ppmv	500 ppmv	500 ppmv	N/A	N/A
Leak Definition for All Other Components	10,000 ppmv	500 ppmv	500 ppmv	500 ppmv	500 ppmv	500 ppmv	500 ppmv
Applicable Vapor Pressure	>0.5 psia at 100°F	>0.044 psia at 68°F	>0.044 psia at 68°F	>0.044 psia at 68°F	>0.044 psia at 68°F	>0.044 psia at 68°F	>0.044 psia at 68°F
Monitoring Frequency	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Annually
Directed/Nondirected Maintenance	Nondirected	Nondirected	Nondirected	Directed	Directed	Nondirected	Nondirected
Most Common State/Federal Programs with Similar Requirements	40 CFR Part 60 Subpart VV 40 CFR Part 61 30 TAC §115.322	30 TAC §115.352[1]	40 CFR Part 60 Subpart VVa 40 CFR Part 63 Subparts H, CC	N/A	Nonattainment NSR	N/A	40 CFR Part 60Subpart VVa, 40 CFR Part 63 Subparts H, CC

Endnotes Table III

[1] **Except in Gregg, Nueces, and Victoria Counties where 28M applies.**

Table V: Control Efficiencies for LDAR

Equipment/Service	28M	28RCT	28VHP	28MID	28LAER	28CNTQ	28CNTA	28PI	28AVO[9]
Valves[1]									97%
Gas/Vapor	75%	97%	97%	97%	97%			30%	
Light Liquid	75%	97%	97%	97%	97%			30%	
Heavy Liquid[5]	0%[6]	0%[6]	0%[6]	0%[6]	30%[6, 8]			30%[8]	
Pumps[1]									93%
Light Liquid	75%	75%	85%	93%	93%			30%	
Heavy Liquid[5]	0%	0%[7]	0%[7]	0%[8, 10]	30%[8]			30%[8]	
Flanges/Connectors[1]	30%	30%	30%	30%				30%	97%
Gas/Vapor					97%	97%	75%		
Light Liquid					97%	97%	75%		
Heavy Liquid[8]					30%	30%	30%		
Compressors[1]	75%	75%	85%	95%	95%			30%	95%
Relief Valves[1, 2] (Gas/Vapor)	75%	97%	97%	97%	97%			30%	97%
Sampling Connection[3] (pounds per hour per sample taken)	0%	0%	0%	0%	0%			0%	0%
Open Ended Lines[1, 4]									

It should be noted in the application and added to the permit conditions if any of the footnotes are applicable. For example, if components in heavy liquid service are monitored, then the application should include the monitored concentration and the concentration of saturation, in ppmv and such monitoring will be added as a separate condition.

Endnotes Table V

1 **Control efficiencies apply only to components that are actually monitored. Control efficiencies do not apply to components that are difficult or unsafe-to-monitor on the standard schedule. However, difficult-to-monitor gas or light liquid valves under the 28RCT, 28VHP, 28MID, or 28LAER programs that are monitored once per year may apply a 75% reduction credit.**

2 **100% control may be taken if a relief valve vents to an operating control device or if it is equipped with a rupture disc and a pressure-sensing device between the valve and disc to monitor for disc integrity. For new facilities, BACT guidelines generally require that all relief valves vent to a control device. When there are safety reasons that the relief valve cannot achieve 100% control, the relief valve can be monitored under the LDAR programs for the credit listed. This monitoring must be performed regardless of whether the relief valve is considered accessible, difficult-to-monitor or unsafe-to-monitor. Relief valves that do not achieve 100% control should not be built in locations that are unsafe-to-monitor.**

3 **Sampling connection control efficiencies are covered under other equipment and services. Sampling emissions are based on the number of samples taken per year as opposed to the number of connections. Fugitives for a closed loop sampling system are based on the component count.**

4 **Good design criteria for special chemicals handling and most LDAR programs require open-ended lines to be equipped with an appropriately sized cap, blind flange, plug, or a second valve. If so equipped, open-ended lines may be given a 100% control credit. Regardless of the lines given 100% credit, these lines should be mentioned in permit applications. Exceptions to the LDAR program criteria may be made for safety reasons with the approval of TCEQ management.**

40 CFR 98 Emissions

Displaying title 40, up to date as of 8/24/2023. Title 40 was last amended 8/24/2023.

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

Table C–1 to Subpart C of Part 98—Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel

Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel

Fuel type	Default high heat value	Default CO_2 emission factor
Coal and coke	mmBtu/short ton	kg CO_2/mmBtu
Anthracite	25.09	103.69
Bituminous	24.93	93.28
Subbituminous	17.25	97.17
Lignite	14.21	97.72
Coal Coke	24.80	113.67
Mixed (Commercial sector)	21.39	94.27
Mixed (Industrial coking)	26.28	93.90
Mixed (Industrial sector)	22.35	94.67
Mixed (Electric Power sector)	19.73	95.52
Natural gas	mmBtu/scf	kg CO_2/mmBtu
(Weighted U.S. Average)	1.026×10^{-3}	53.06
Petroleum products—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

Fuel type	Default high heat value	Default CO_2 emission factor
Kerosene	0.135	75.20
Liquefied petroleum gases (LPG)[1]	0.092	61.71
Propane[1]	0.091	62.87
Propylene[2]	0.091	67.77
Ethane[1]	0.068	59.60
Ethanol	0.084	68.44
Ethylene[2]	0.058	65.96
Isobutane[1]	0.099	64.94
Isobutylene[1]	0.103	68.86
Butane[1]	0.103	64.77
Butylene[1]	0.105	68.72
Naphtha (<401 deg F)	0.125	68.02
Natural Gasoline	0.110	66.88
Other Oil (>401 deg F)	0.139	76.22
Pentanes Plus	0.110	70.02
Petrochemical Feedstocks	0.125	71.02
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.

Fuel type	Default high heat value	Default CO_2 emission factor
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
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]

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

Table C–2 to Subpart C of Part 98—Default CH_4 and N_2O Emission Factors for Various Types of Fuel

Fuel type	Default CH_4 emission factor (kg CH_4/mmBtu)	Default N_2O emission factor (kg N_2O/mmBtu)
Coal and Coke (All fuel types in Table C–1)	1.1×10^{-02}	1.6×10^{-03}
Natural Gas	1.0×10^{-03}	1.0×10^{-04}
Petroleum 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 Table C–1)	3.2×10^{-03}	6.3×10^{-04}
Biomass Fuels—Liquid (All fuel types in Table C–1)	1.1×10^{-03}	1.1×10^{-04}

Note: Those employing this table are assumed to fall under the IPCC definitions of the “Energy Industry” or “Manufacturing Industries and Construction”. In all fuels except for coal the values for these two categories are identical. For coal combustion, those who fall within the IPCC “Energy Industry” category may employ a value of 1g of CH_4/mmBtu.

[78 FR 71952, Nov. 29, 2013, as amended at 81 FR 89252, Dec. 9, 2016]

40 CFR § 98.233 - Calculating GHG emissions.

CFR

§ 98.233 Calculating GHG emissions.

You must calculate and report the annual GHG emissions as prescribed in this section. For calculations that specify measurements in actual conditions, reporters may use a flow or volume measurement system that corrects to standard conditions and determine the flow or volume at standard conditions; otherwise, reporters must use average atmospheric conditions or typical operating conditions as applicable to the respective monitoring methods in this section.

(a) ***Natural gas pneumatic device venting.*** Calculate CH^4 and CO^2 volumetric emissions from continuous high bleed, continuous low bleed, and intermittent bleed natural gas pneumatic devices using Equation W–1 of this section.

$$E_{s,i} = \sum_{i=1}^{3} \text{Count}_i * \text{EF}_i * \text{GHG}_i * T_i \quad \text{(Eq. W-1)}$$

Where:

(4) Calculate both CH^4 and CO^2 volumetric and mass emissions from volumetric natural gas emissions using calculations in paragraphs (u) and (v) of this section.

(5) Calculate emissions from associated natural gas if emissions are routed to a flare as specified in paragraphs (m)(5)(i) and (ii) of this section.

(i) Use the associated natural gas volume and gas composition as determined in paragraph (m)(1) through (4) of this section.

(ii) Use the calculation method of flare stacks in paragraph (n) of this section to determine associated gas emissions from the flare.

(n) ***Flare stack emissions.*** Calculate CO^2, CH^4, and N^2O emissions from a flare stack as specified in paragraphs (n)(1) through (9) of this section.

(1) If you have a continuous flow measurement device on the flare, you must use the measured flow volumes to calculate the flare gas emissions. If all of the flare gas is not measured by the existing flow measurement device, then the flow not measured can be estimated using engineering calculations based on best available data or company records. If you do not have a continuous flow measurement device on the flare, you can use engineering calculations based on process knowledge, company records, and best available data.

(2) If you have a continuous gas composition analyzer on gas to the flare, you must use these compositions in calculating emissions. If you do not have a continuous gas composition analyzer on gas to the flare, you must use the appropriate gas compositions for each stream of hydrocarbons going to the flare as specified in paragraphs (n)(2)(i) through (iii) of this section.

(i) For onshore natural gas production and onshore petroleum and natural gas gathering and boosting, determine the GHG mole fraction using paragraph (u)(2)(i) of this section.

(ii) For onshore natural gas processing, when the stream going to flare is natural gas, use the GHG mole fraction in feed natural gas for all streams upstream of the de-methanizer or dew point control, and GHG mole fraction in facility specific residue gas to transmission pipeline systems for all emissions sources downstream of the de-methanizer overhead or dew point control for onshore natural gas processing facilities. For onshore natural gas processing plants that solely fractionate a liquid stream, use the GHG mole fraction in feed natural gas liquid for all streams.

(iii) For any industry segment required to report to flare stack emissions under § 98.232, when the stream going to the flare is a hydrocarbon product stream, such as methane, ethane, propane, butane, pentane-plus and mixed light

hydrocarbons, then you may use a representative composition from the source for the stream determined by engineering calculation based on process knowledge and best available data.

(3) Determine flare combustion efficiency from manufacturer. If not available, assume that flare combustion efficiency is 98 percent.

(4) Convert GHG volumetric emissions to standard conditions using calculations in paragraph (t) of this section.

(5) Calculate GHG volumetric emissions from flaring at standard conditions using Equations W–19 and W–20 of this section.

$$E_{s,\,CH4} = V_s * X_{CH4} * [(1-\eta) * Z_L + Z_U] \quad \text{(Eq. W-19)}$$

$$E_{s,\,CO2} = V_s * X_{CO2} + \sum_{j=1}^{5} (\eta \times V_s \times Y_j \times R_j \times Z_L) \quad \text{(Eq. W-20)}$$

Where:
$E^{s,CH4}$ = Annual CH^4 emissions from flare stack in cubic feet, at standard conditions.
$E^{s,CO2}$ = Annual CO^2 emissions from flare stack in cubic feet, at standard conditions.
V^s = Volume of gas sent to flare in standard cubic feet, during the year as determined in paragraph (n)(1) of this section.
η = Flare combustion efficiency, expressed as fraction of gas combusted by a burning flare (default is 0.98).
X^{CH4} = Mole fraction of CH^4 in the feed gas to the flare as determined in paragraph (n)(2) of this section.
X^{CO2} = Mole fraction of CO^2 in the feed gas to the flare as determined in paragraph (n)(2) of this section.
Z^U = Fraction of the feed gas sent to an un-lit flare determined by engineering estimate and process knowledge based on best available data and operating records.
Z^L = Fraction of the feed gas sent to a burning flare (equal to $1 - Z^U$).
Y^j = Mole fraction of hydrocarbon constituents j (such as methane, ethane, propane, butane, and pentanes-plus) in the feed gas to the flare as determined in paragraph (n)(1) of this section.
R^j = Number of carbon atoms in the hydrocarbon constituent j in the feed gas to the flare: 1 for methane, 2 for ethane, 3 for propane, 4 for butane, and 5 for pentanes-plus).

(6) Calculate both CH^4 and CO^2 mass emissions from volumetric emissions using calculation in paragraph (v) of this section.

(7) Calculate N^2O emissions from flare stacks using Equation W–40 in paragraph (z) of this section.

(8) If you operate and maintain a CEMS that has both a CO^2 concentration monitor and volumetric flow rate monitor for the combustion gases from the flare, you must calculate only CO^2 emissions for the flare. You must follow the Tier 4 Calculation Method and all associated calculation, quality assurance, reporting, and recordkeeping requirements for Tier 4 in subpart C of this part (General Stationary Fuel Combustion Sources). If a CEMS is used to calculate flare stack emissions, the requirements specified in paragraphs (n)(1) through (7) of this section are not required.

(9) The flare emissions determined under this paragraph (n) must be corrected for flare emissions calculated and reported under other paragraphs of this section to avoid double counting of these emissions.

(o) ***Centrifugal compressor venting.*** If you are required to report emissions from centrifugal compressor venting as specified in § 98.232(d)(2), (e)(2), (f)(2), (g)(2), and (h)(2), you must conduct volumetric emission measurements specified in paragraph (o)(1) of this section using methods specified in paragraphs (o)(2) through (5) of this section; perform calculations specified in paragraphs (o)(6) through (9) of this section; and calculate CH^4 and CO^2 mass emissions as specified in paragraph (o)(11) of this section. If emissions from a compressor source are routed to a flare, paragraphs (o)(1) through (11) do not apply and instead you must calculate CH^4, CO^2, and N^2O emissions as specified in paragraph (o)(12) of this section. If emissions from a compressor source are captured for fuel use or are routed to a thermal oxidizer, paragraphs (o)(1) through (12) do not apply and instead you must calculate and report emissions as specified in subpart C of this part. If emissions from a compressor source are routed to vapor recovery, paragraphs (o)(1) through (12) do not apply. If you are required to report emissions from centrifugal compressor venting at an onshore petroleum and natural gas production facility as specified in § 98.232(c)(19) or an onshore petroleum and natural gas gathering and boosting facility as specified in § 98.232(j)(8), you must calculate volumetric emissions as specified in paragraph (o)(10); and calculate CH^4 and CO^2 mass emissions as specified in paragraph (o)(11).

(1) ***General requirements for conducting volumetric emission measurements.*** You must conduct volumetric emission measurements on each centrifugal compressor as specified in this paragraph. Compressor sources (as defined in § 98.238) without manifolded vents must use a measurement method specified in paragraph (o)(1)(i) or (ii) of this section. Manifolded compressor sources (as defined in § 98.238) must use a measurement method specified in paragraph (o)(1)(i), (ii), (iii), or (iv) of this section.

(i) Centrifugal compressor source as found measurements. Measure venting from each compressor according to either paragraph (o)(1)(i)(A) or (B) of this section at least once annually, based on the compressor mode (as defined in § 98.238) in

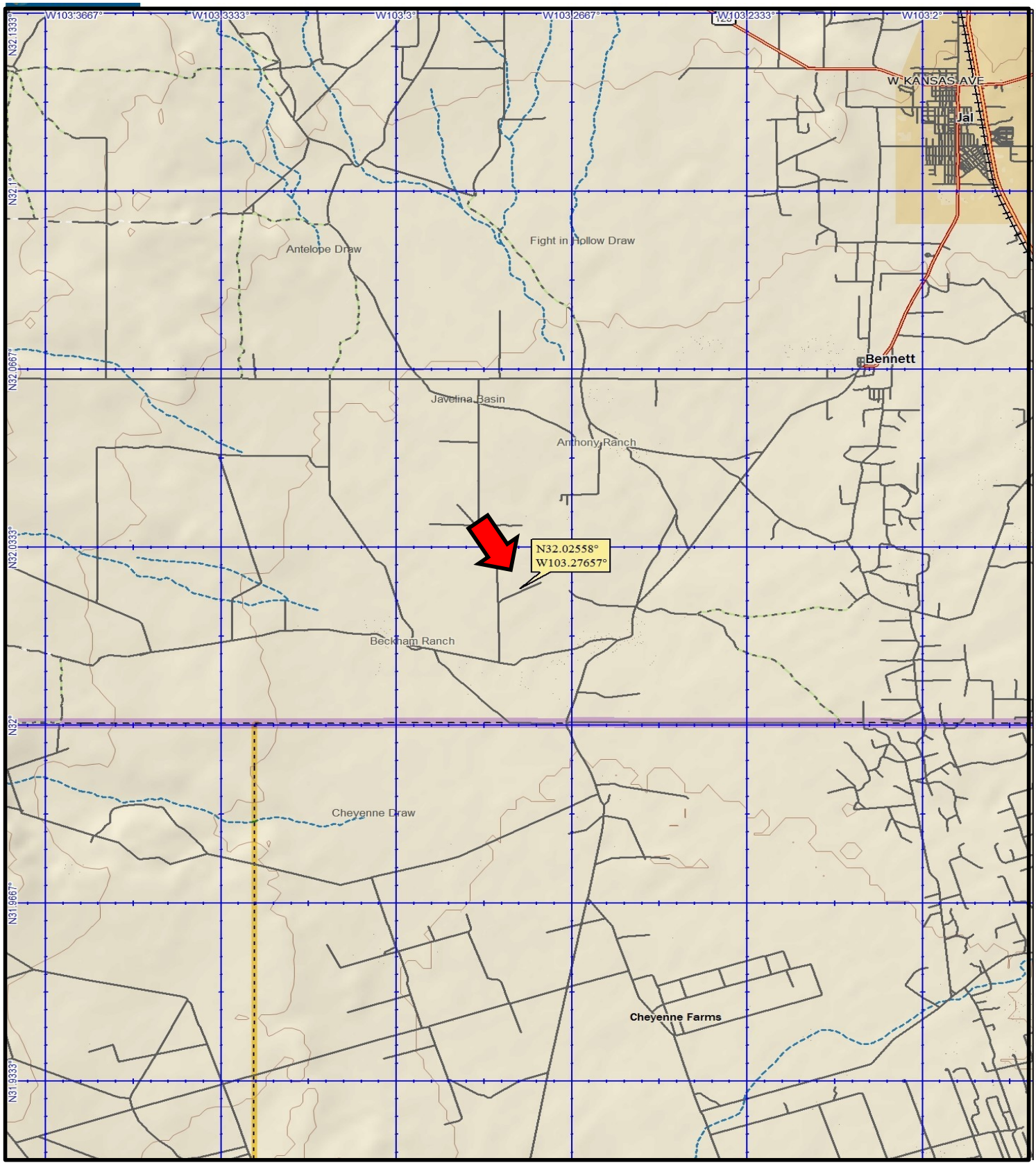
Section 8

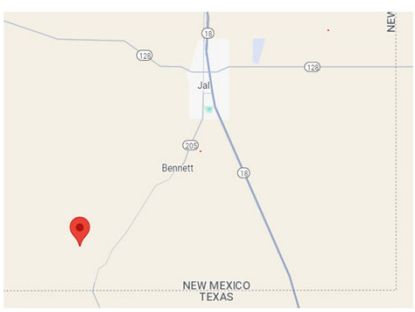
Map(s)

A map such as a 7.5 minute topographic quadrangle showing the exact location of the source. The map shall also include the following:

The UTM or Longitudinal coordinate system on both axes	An indicator showing which direction is north
A minimum radius around the plant of 0.8km (0.5 miles)	Access and haul roads
Topographic features of the area	Facility property boundaries
The name of the map	The area which will be restricted to public access
A graphical scale	

A map of the facility has been attached on the following page.





PROJECT	19901-01		
PREPARED FOR	Northwind Midstream Partners LLC		
LOCATION	Lea County, New Mexico		
SHEET *1 of 1*	***DRAWN BY*** *TH*	***REVIEWED BY*** *ET*	***DATE*** *06/09/2024*

PEI

AREA MAP
Titan Treater Plant #1

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.

Category	Notified Party
Citizens	NGL South Ranch Inc.
Other Landowners	State of NM
Counties	Lea
Municipalities	Jal
Indian Tribes	None

Location of Postings
Plant Entrance
US Post Office; Jal
Coles Diner; Jal
Lowe's Grocery Store; Jal

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

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

Lovington, NM 88260

OFFICIAL USE

Certified Mail Fee	$4.40
Extra Services & Fees (check box, add fee as appropriate)	$0.00
☐ 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	$0.68
Total Postage and Fees	$5.08

0425 90

Postmark Here

JUN - 7 2024

USPS EDWARDSVILLE 62025

06/07/2024

Sent To: Lea County Manager

Street and Apt. No., or PO Box No.: 100 N. Main, Suite 4

City, State, ZIP+4®: Lovington NM 88260

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 2280 0001 5258 3326

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

Rockwall, TX 75087

OFFICIAL USE

Certified Mail Fee	$4.40
Extra Services & Fees (check box, add fee as appropriate)	$0.00
☐ 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	$0.68
Total Postage and Fees	$5.08

0425 90

Postmark Here

JUN 2024

USPS EDWARDSVILLE 62025

06/07/2024

Sent To: NGL South Ranch

Street and Apt. No., or PO Box No.: 2424 Ridge Rd

City, State, ZIP+4®: Rockwall, TX 75087

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7017 3040 0000 9587 9961

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

Jal, NM 88252

OFFICIAL USE

Certified Mail Fee	$4.40
Extra Services & Fees (check box, add fee as appropriate)	$0.00
☐ 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	$0.68
Total Postage and Fees	$5.08

0425 90

Postmark Here

JUN 2024

USPS EDWARDSVILLE 62025

06/07/2024

Sent To: Jal City Manager

Street and Apt. No., or PO Box No.: 710 Wyoming Ave.

City, State, ZIP+4®: Jal, NM 88252

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

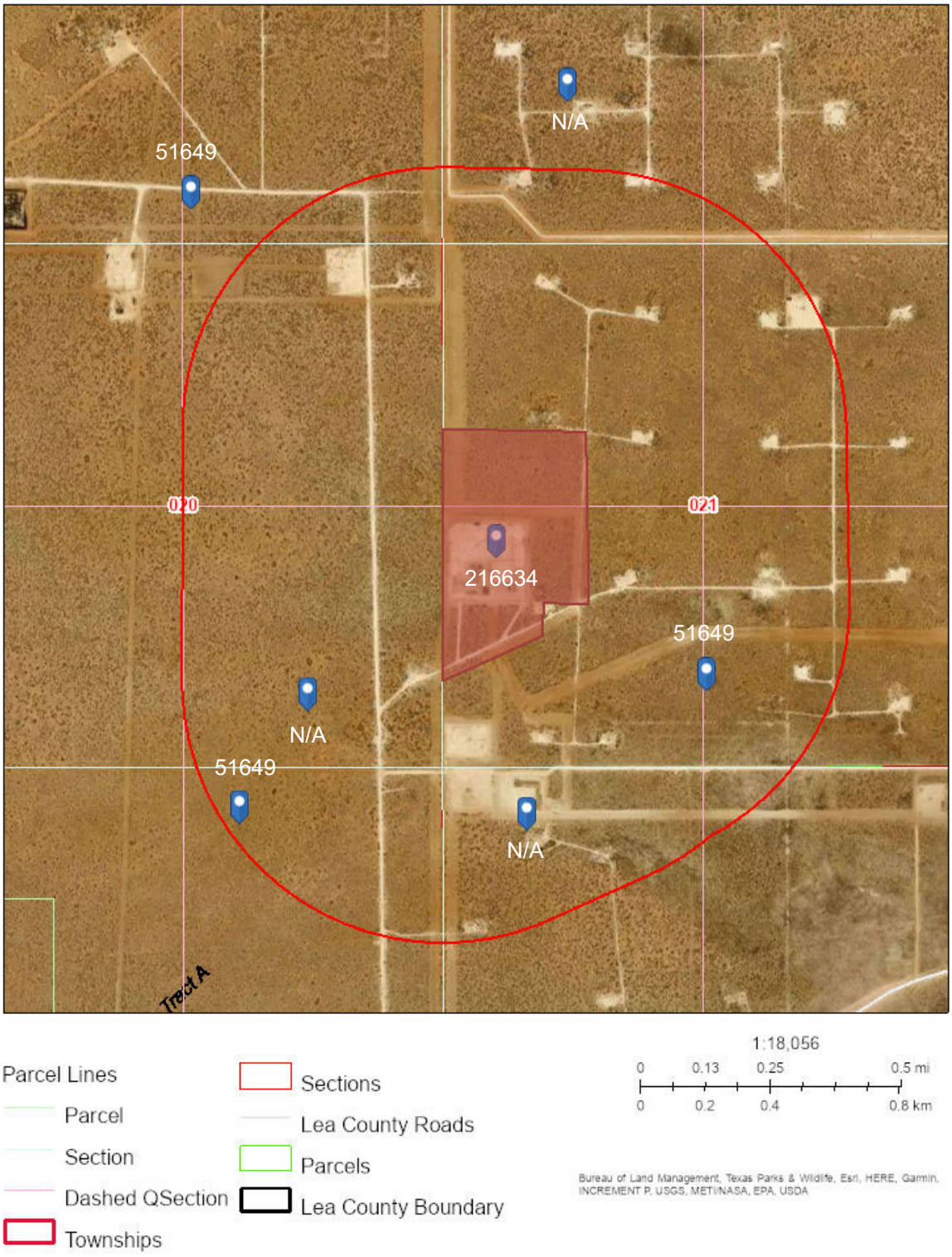
7019 2280 0001 5258 3

Landowners within 0.5 miles of Facility

Area of Interest (AOI) Information

Area : 1.6 mi²

Nov 27 2023 15:22:52 Mountain Standard Time



Parcels

#	Owner #	Parcel Code	Name	In Care of Name	Mailing Address 1
1	51649	4000516490011	NGL SOUTH RANCH INC	KE ANDREWS %	2424 RIDGE RD
2		*N/A*	*N/A*	*N/A*	*N/A*
3	216634	4000516490005	NORTHWIND MIDSTREAM PARTNERS LLC	*N/A*	825 TOWN AND COUNTRY LN
4	51649	4000516490012	NGL SOUTH RANCH INC	KE ANDREWS %	2424 RIDGE RD
5		*N/A*	*N/A*	*N/A*	*N/A*
6		*N/A*	*N/A*	*N/A*	*N/A*
7	51649	4930721083029	NGL SOUTH RANCH INC	KE ANDREWS %	2424 RIDGE RD

#	Mailing Address 2	Mailing City	Mailing State	Country Name	Mailing Zipcode	Mailing Zipcode Extension	Area(mi²)
1	*N/A*	ROCKWELL	TX	*N/A*	75087	5116	0.04
2	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	0.07
3	STE 700	HOUSTON	TX	*N/A*	77024	2326	0.11
4	*N/A*	ROCKWELL	TX	*N/A*	75087	5116	0.12
5	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	0.14
6	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	0.48
7	*N/A*	ROCKWELL	TX	*N/A*	75087	5116	0.64

Click to Print

Owner Information

Owner #:216634 **District:**190
Name: NORTHWIND MIDSTREAM PARTNERS LLC
Co Name:
Address1: 825 TOWN AND COUNTRY LN
Address2: STE 700
City: HOUSTON **State:** TX **Zip Code:** 77024

Estimated Taxes for Owner

Estimated Tax	Estimated Year used
$5428.44	2023

Calculate Estimated Tax

Recap Value Information

Central Full Value	0	**Full Value**	705756
Land Full Value	705756	**Taxable Value**	235252
Improvements Full value	0	**Exempt Value**	0
Personal Property Full Value	0	**Net Value**	235252
Manufactured Home Full Value	0		
Livestock Full Value	0		

Property Information

Property Code:4000516490005

Book:2211
Page:830
Reception#:37448

Physical Address:

Bldg:
Apt:

Section:21
Township:26S
Range:36E
68.52 AC LOC W2 OF THE W2
TRACT 1
BEG AT THE WEST LINE OF SAID
SECTION 21, FOR THE SW CORNER OF
SAID SECTION 21 BEARS,S00D37'39"E
857.28'; TH N00D37'39"W ALONG THE
WEST LINE OF SAID SECTION 21,
1766.62' FOR THE W4 CORNER OF SAID
SECTION 21; TH N00D33'57"W
CONTINUING ALONG THE WEST LINE OF
SAID SECTION 21, 775.87' FOUND FOR
THE NW CORNER OF SAID SECTION 21
BEARS, N00D33'57"W 1864.28' SET FOR
THE NW CORNER OF THIS HEREIN
DESCRIBED TRACT;TH OVER AND ACROSS
SAID NGL SOUTH RANCH INC TRACT
FOLLOWING COURSES AND DISTANCES:
S89D24'32"E 1451.40';
S01D34'37"W 1741.39';
N88D25'23"W 461.10';
S01D34'37"W 336.63';
S62D56'44"W 1017.55' TO THE POB
30'ACCESS EASE CROSSING SEC 20,29
7/23/21-AFFI/NAME CHNG BK 2183/517
6/22/23-NGL-TITAN PLAT BK 2/872,
CAB H, SLIDE 201
6/30/23-NGL SOUTH RANCH INC

Property Value Information

150 Non-Residential Land 68.52 0.00 705756

June 7, 2024 Certified Mail No. 7019 2280 0001 5258 3333

Jal City Manager
710 Wyoming Ave.
Jal, New Mexico 88252

Re: Public Notice for NSR Permit Application
Titan Treater Plant #1

Dear City Manager:

In accordance with the application requirements of 20.2.72 NMAC, Northwind Midstream Partners, LLC is providing notification of the planned modification of Titan Treater Plant #1 in Lea County, NM. The site is located within 10 miles of Jal. A public notice will be published in the Hobbs News Sun newspaper, then placed at the proposed site location and three other locations in the surrounding area. A copy of the notice is attached. Should you have any questions, please contact me at (865) 850-2007 or by email at etullos@pei-tx.com.

Sincerely,

Evan Tullos
Vice President

Attachment: Public Notice

June 7, 2024 Certified Mail No. 7019 2280 0001 5258 3326

Mike Gallagher
Lea County Manager
100 N. Main Avenue
Suite 4
Lovington, New Mexico 88260

Re: Public Notice for NSR Permit Application
Titan Treater Plant #1

Dear Commissioner:

In accordance with the application requirements of 20.2.72 NMAC, Northwind Midstream Partners, LLC is providing notification of the planned modification of Titan Treater Plant #1 in Lea County, NM. The site is located on private property. A public notice will be published in the Hobbs News Sun newspaper, then placed at the proposed site location and three other locations in the surrounding area. A copy of the notice is attached. Should you have any questions, please contact me at (865) 850-2007 or by email at etullos@pei-tx.com.

Sincerely,

Evan Tullos
Vice President

Attachment: Public Notice

June 7, 2024 Certified Mail No. 7017 3040 0000 9587 9961

NGL South Ranch Inc.
2424 Ridge Road
Rockwell, TX 75087

Re: Public Notice for NSR Permit Application
Titan Treater Plant #1

To Whom It May Concern:

In accordance with the application requirements of 20.2.72 NMAC, Northwind Midstream Partners, LLC is providing notification of the planned modification of Titan Treater Plant #1 in Lea County, NM. The site is located within one-half mile of your property. A public notice will be published in the Hobbs News Sun newspaper, then placed at the proposed site location and three other locations in the surrounding area. A copy of the notice is attached. Should you have any questions, please contact me at (865) 850-2007 or by email at etullos@pei-tx.com.

Sincerely,

Evan Tullos
Vice President

Attachment: Public Notice

NOTICE

Northwind Midstream Partners, LLC announces its application to the New Mexico Environment Department for an air quality permit for the modification of its natural gas production facility. The expected date of application submittal to the Air Quality Bureau is June 8, 2024. The exact location for the facility known as Titan Treater Plant #1 is at latitude 32.02558 dec deg North and longitude -103.27657 dec deg West. The approximate location of this facility is 7.8 miles SW of Jal in Lea County.

The proposed modification consists of replacement of certain equipment in Phase 1 and construction of all equipment for Phase 2 and Phase 3 of the facility. The total inlet capacity of the facility will be approximately 220 million standard cubic feet per day.

The estimated maximum quantities of any regulated air contaminants will be as follows in 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)	10	21
PM_{10}	10	21
$PM_{2.5}$	10	20
Sulfur Dioxide (SO_2)	3600	249
Nitrogen Oxides (NO_x)	120	155
Carbon Monoxide (CO)	375	208
Volatile Organic Compounds (VOC)	1450	225
Total sum of all Hazardous Air Pollutants (HAPs)	95	24.9
Green House Gas Emissions as Total CO_2e	n/a	120,000

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

The owner and/or operator of the Facility is: **Northwind Midstream Partners, LLC; 811 Louisiana St., Suite 2500; Houston, TX 77002**

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 have not yet 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.

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Affidavit of Publicatior

STATE OF NEW MEXICO
COUNTY OF LEA

I, Daniel Russell, Publisher of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was publishe in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

Beginning with the issue dated
June 12, 2024
and ending with the issue dated
June 12, 2024.

Publisher

Sworn and subscribed to before me this 12th day of June 2024.

Business Manager

My commission expires
January 29, 2027
(Seal)

STATE OF NEW MEXICO
NOTARY PUBLIC
GUSSIE RUTH BLACK
COMMISSION # 1087526
COMMISSION EXPIRES 01/29/2027

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937 and payment of fees for said publication has been made.

LEGAL NOTICE
June 12, 2024

NOTICE OF AIR QUALITY PERMIT APPLICATION

Northwind Midstream Partners, LLC announces its application to the New Mexico Environment Department for an air quality permit for the modification of its natural gas production facility. The expected date of application submittal to the Air Quality Bureau is June 13, 2024. The exact location for the facility known as Titan Treater Plant #1 is at latitude 32.02558 dec deg North and longitude -103.27657 dec deg West. The approximate location of this facility is 7.8 miles SW of Jal in Lea County.

The proposed modification consists of replacement of certain equipment in Phase 1 and construction of all equipment for Phase 2 and Phase 3 of the facility. The total inlet capacity of the facility will be approximately 220 million standard cubic feet per day.

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Carbon Monoxide (CO)	375	208
Volatile Organic Compounds (VOC)	1450	225
Total sum of all Hazardous Air Pollutants (HAPs)	95	24.58
Green House Gas Emissions as Total CO_2e	n/a	120,000

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

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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.

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EVAN TULLOS
PEI
5 CARDINAL COURT
EDWARDSVILLE, IL 62025

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67110905 00291224

EVAN TULLOS
PEI
5 CARDINAL COURT
EDWARDSVILLE, IL 62025

General Posting of Notices – Certification

I, Josh Barker, the undersigned, certify that on 6-11-24, posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in the Jal of Lea County, State of New Mexico on the following dates:

1. Titan Plant Sign
2. US Post Office; Jal, NM
3. Coles Diner; Jal, NM
4. Lowe's Grocery Store; Jal, NM

Signed this 11 day of June, 2024.

Signature

6-11-24
Date

Josh Barker
Printed Name

HSE Field Supervisor
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

Submittal of Public Service Announcement – Certification

I, Evan Tullos, the undersigned, certify that on June 12, 202, submitted a public service announcement to KZOR that serves the city of Hobbs in Lea County, New Mexico, in which the source is located and that the Station did respond and ran the PSA.

Signed this 18th day of June, 2024,

Signature

June 18, 2024
Date

Evan Tullos
Printed Name

VP – Consultant for Northwind Midstream Partners, LLC
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

Evan Tullos

From: Aaron Forrister <aaron@noalmark.com>
Sent: Wednesday, June 12, 2024 8:18 AM
To: Evan Tullos
Subject: Re: Public Service Announcement - Northwind Midstream Partners, LLC - Titan Treater Plant #1

Evan,

The commercial will run tomorrow on KZOR.

Maria Stevens will run your credit card today and send you a receipt. Thanks.

Aaron Forrister, CRMC
New Mexico Market Manager
KZOR-KIXN-KPZA-KEJL-KLEA-KBIM FM-KBIM
575-318-7217 mobile
575-397-4969 office
575-393-4310 fax
619 North Turner
Hobbs, NM 88240

From: Evan Tullos <etullos@pei-tx.com>
Sent: Wednesday, June 12, 2024 6:32 AM
To: Aaron Forrister <aaron@noalmark.com>; Dawn Morgan <dawn@noalmark.com>
Cc: Jillian Yamartino <jyamartino@nwmidstream.com>
Subject: RE: Public Service Announcement - Northwind Midstream Partners, LLC - Titan Treater Plant #1

Please respond at your earliest convenience with a receipt and a notice of when it will run.

Thanks,
Evan

From: Aaron Forrister <aaron@noalmark.com>
Sent: Tuesday, June 11, 2024 7:38 AM
To: Evan Tullos <etullos@pei-tx.com>; Dawn Morgan <dawn@noalmark.com>
Cc: Jillian Yamartino <jyamartino@nwmidstream.com>
Subject: Re: Public Service Announcement - Northwind Midstream Partners, LLC - Titan Treater Plant #1

Hi Evan,

We can certainly help. There is a charge to announce these messages.

The charge is $75 per announcement. How many times would you like to announce it?

Aaron Forrister, CRMC
New Mexico Market Manager
KZOR-KIXN-KPZA-KEJL-KLEA-KBIM FM-KBIM
575-318-7217 mobile
575-397-4969 office
575-393-4310 fax
619 North Turner
Hobbs, NM 88240

From: Evan Tullos <etullos@pei-tx.com>
Sent: Tuesday, June 11, 2024 6:31 AM
To: Dawn Morgan <dawn@noalmark.com>; Aaron Forrister <aaron@noalmark.com>
Cc: Jillian Yamartino <jyamartino@nwmidstream.com>
Subject: Public Service Announcement - Northwind Midstream Partners, LLC - Titan Treater Plant #1

Dawn,

In accordance with New Mexico Administrative Code 20.2.72.203.B, we request the following public service announcement (PSA) be aired for the Titan Treater Plant #1.

Northwind Midstream Partners, LLC announces its application to modify Titan Treater Plant #1, a natural gas production facility located at latitude 32.02558 and longitude -103.27657 near Jal, New Mexico The proposed modification consists of replacement of certain equipment in Phase 1 and construction of all equipment for Phase

2 and Phase 3 of the facility. The expected date of application submittal to the Air Quality Bureau is June 13, 2024. Notices have been posted in the Hobbs News Sun, at the Titan Treater Plant#1 entrance, at the US Postal Service office in Jal, at Coles Diner in Jal, and at Lowe's Grocery Store in Jal.

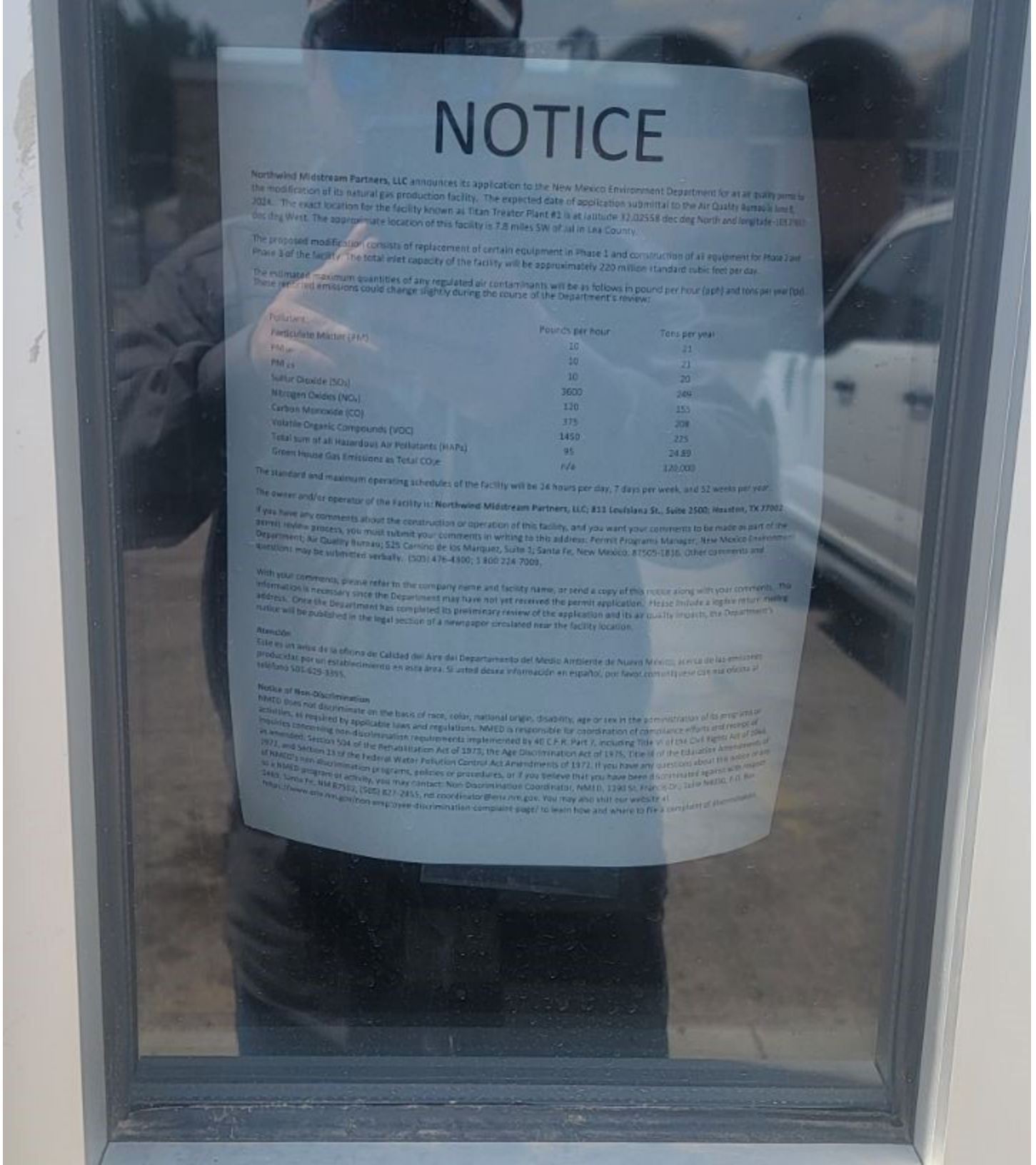
If you have any comments about the construction or operation of the above facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to the address below:

Permit Programs Manager
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505-1816
(505) 476-4300

EVAN TULLOS

PEI

m: (865) 850-2007
e: etullos@pei-tx.com
w: www.pei-tx.com



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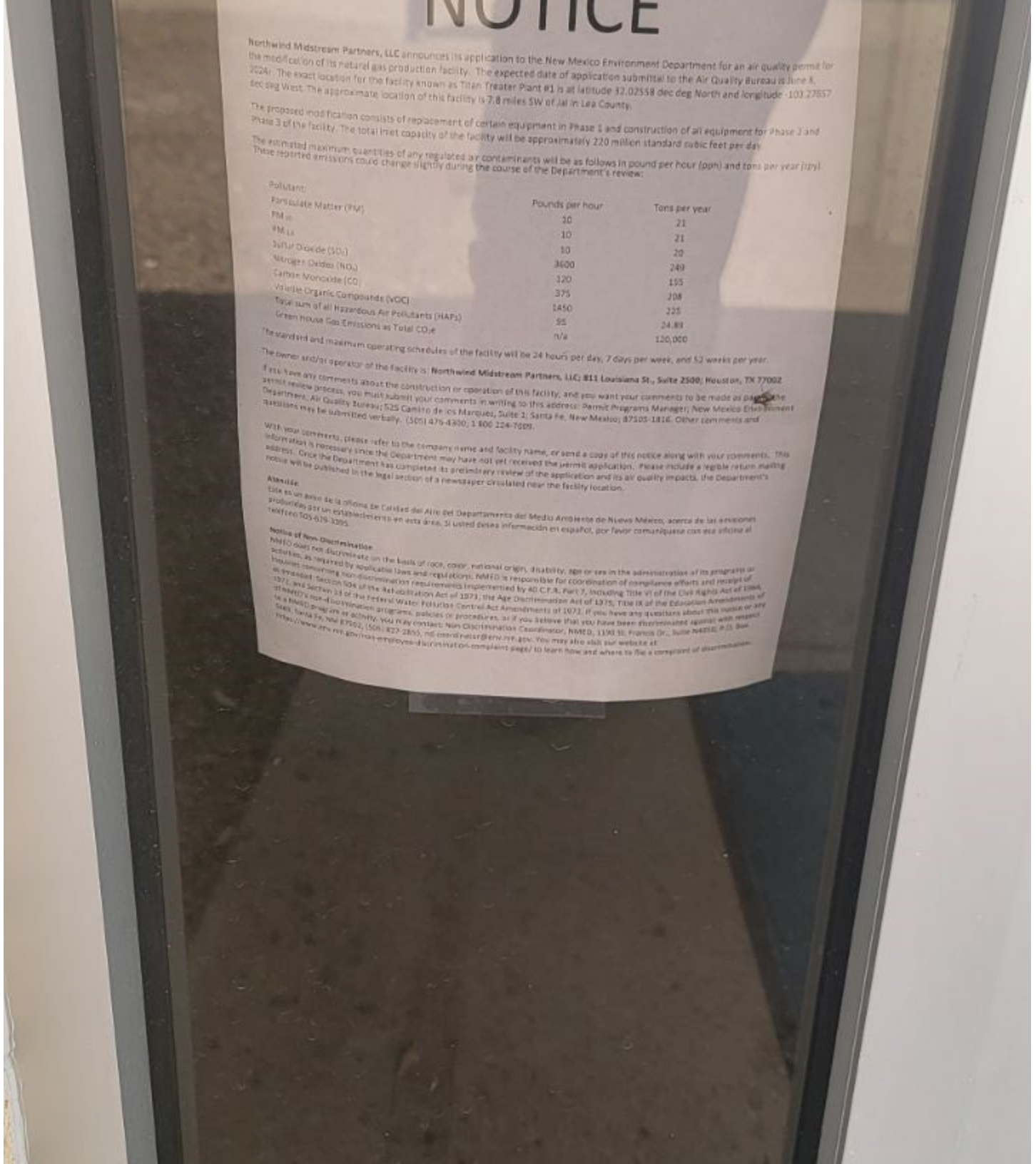

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The standard and maximum operating schedules of the facility will be 24 hours per day, 7 days per week, and 52 weeks per year.

The owner and/or operator of the facility is **Northwind Midstream Partners, LLC; 811 Louisiana St., Suite 2500; Houston, TX 77002**

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 have not yet 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 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 505-629-3395.

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.


PRIMARY
MUSTER
AREA

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.

Routine Operations:
Titan Treater Plant #1 is a 220 million standard cubic feet per day (MMscfd) sour gas treating facility designed to handle both high-pressure and low-pressure field gas. The facility compresses low-pressure inlet gas using gas engines (CE-1 and CE-2) and high-pressure inlet gas using gas engines (CE-7 through CE-10). Post-compression, the inlet gas undergoes amine treatment, which uses methyl diethanolamine (MDEA), to remove acid gases such as CO2 and H2S. This process uses hot oil heaters (HOH-1, HOH-2, HOH-3, and HOH-4) to provide heat to regenerate the amine solution.

The resulting acid gas stream is directed to four electric-driven compressors (AGI-COMP1 through AGI-COMP4), which inject the acid gas underground via acid gas injection (AGI) wells. During AGI compressor shutdown, startup, or maintenance (SSM), acid gas is sent to the acid gas flare (AGFL). Subsequently, the sweet gas is dehydrated using triethylene glycol units (DHY-1, DHY-2, and DHY-3) to remove water content. The dehydrated gas is then further pressurized using four sweet gas compressors (CE-3 through CE-6) before being sent for sales. Gas from the dehydrator flash separators is routed back to the inlet, while still vent gas is routed to a condenser, then to an enclosed combustor (EC-1).

Condensate separated in the inlet slug catcher undergoes further processing in the stabilization train. Stabilizer overhead gas is recycled into the plant inlet via two electric-driven compressors (SOH-COMP1 and SOH-COMP2), while the stabilized condensate is stored in four (4) 1000-barrel tanks (TK-3, TK-4, TK-5, and TK-6) before being pumped offsite. In case of pipeline unavailability, condensate is loaded out via truck (LOAD-2). Additionally, liquids collected via the closed drain system are directed to two 400-barrel slop water tanks (TK-1 and TK-2) and hauled offsite via truck (LOAD-1). Emissions from LOAD-1 and LOAD-2 are routed to the tank header via a vapor return line.

A Vapor Recovery Unit (VRU) controls emissions from the condensate and slop water tanks and truck loading, routing vapors back to the inlet. In case of VRU downtime, vapors are diverted to an enclosed combustor (EC-1). An intermediate flash vessel, upstream of the slop tanks, reduces potential flashing emissions from the closed drain system prior to the tanks. Gas from the intermediate flash vessel is routed to the main process flare (FL-1), which also controls SSM gas streams from process equipment. Sweep gas is introduced to the flare header for FL-1 and AGFL to prevent oxygen ingress into the system.

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)**:**

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 application is for a significant modification to the current NSR permit.

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/

To save paper and to standardize the application format, delete this sentence, and begin your submittal for this attachment on this page.

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	General Provisions apply to Notice of Intent, Construction, and Title V permit applications.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	20.2.3 NMAC is a State Implementation Plan (SIP) approved regulation that limits the maximum allowable concentration of, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide
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 because this application is not for a Notice of Intent.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	N/A	This facility does not operate gas burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit
20.2.34 NMAC	Oil Burning Equipment: NO_2	No	N/A	This facility does not have oil burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No	N/A	The facility does not meet the definition of gas processing plant.
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	No	N/A	This facility is not a “Petroleum Refinery” as defined in this subpart.
20.2.38 NMAC	Hydrocarbon Storage Facility	No	TK-3 to TK-6	The facility will operate storage tanks greater than 20,000 gallons that process more than 30,000 gallons per week. A VRU and backup combustor are used to control emissions.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	This facility is not a sulfur recovery plant; therefore, this this regulation does not apply.
20.2.50 NMAC	Oil and Gas Sector – Ozone Precursor Pollutants	Yes		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: ☒113 – Engines and Turbines ☒114 – Compressor Seals ☐115 – Control Devices and Closed Vent Systems ☒116 – Equipment Leaks and Fugitive Emissions ☐ 117 – Natural Gas Well Liquid Unloading ☒ 118 – Glycol Dehydrators ☒ 119 – Heaters ☒ 120 – Hydrocarbon Liquid Transfers ☒121 – Pig Launching and Receiving ☐122 – Pneumatic Controllers and Pumps ☐ 123 – Storage Vessels ☐124 – Well Workovers ☐ 125 – Small Business Facilities ☐126 – Produced Water Management Unit ☐127 – Flowback Vessels and Preproduction Operations

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.)
				113 – CE-1, CE-2, and CE-7 to CE-10 are spark ignition engines and will be subject to this subpart. 114 - Northwind Midstream Partners, LLC will comply with the applicable requirements of this subpart. 115 - The control devices and closed vent systems at this facility are not used to comply with this rule; therefore, they are not subject to the requirements of this rule. 116 - Northwind Midstream Partners, LLC will comply with the applicable requirements of this subpart. 118 - DHY-1, DHY-2, and DHY-3 each have a PTE > 2 tpy of VOC; therefore, these units will be subject to this subpart. 119 – HOH-1 to HOH-4 have heat inputs greater than 20 MMBtu/hr and are therefore subject to this subpart. 120 – Liquids will be loaded primarily by pipeline; however, truck loading would occur in the event of downtime. Truck vapor is routed back to the tank for control. 121 – Pig Launching and receiver emissions have a PTE <1 TPY, therefore, this subpart does not apply. 122 – Pneumatic controllers and pumps are non-emitting and operated via instrument air, therefore, this subpart does not apply. 123 - The storage vessels have a PTE less than 2 tpy; therefore, this subpart does not apply. 117 and 124-127 - Are not applicable to the operations at this facility.
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	CE-1 to CE-10, HOH-1 to HOH-4, DHR-1 to DHR-3, EC-1, AGFL, FL-1	Stationary Combustion Equipment, such as engines, boilers, heaters, and flares are subject to this regulation.
20.2.70 NMAC	Operating Permits	Yes	Facility	The facility will be subject to 20.2.70 NMAC.
20.2.71 NMAC	Operating Permit Fees	No	Facility	The facility will be subject to 20.2.70 NMAC.
20.2.72 NMAC	Construction Permits	Yes	Facility	This facility is subject to 20.2.72 NMAC.
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	The facility is subject to 20.2.73 NMAC.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	Facility	This is not a PSD source; therefore, this regulation does not apply.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This facility is subject to 20.2.72 NMAC; therefore, this regulation applies.

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.)
20.2.77 NMAC	New Source Performance	Yes	CE-1 to CE-10, FUG-1, HOH-1 to HOH-4, AGI-COMP1 to AGI-COMP4, SOH-COMP1 and SOH-COMP2	See applicable NSPS discussions below.
20.2.78 NMAC	Emission Standards for HAPS	No	N/A	This facility emits hazardous air pollutants which are subject to the requirements of 40 CFR Part 61; however, there are no units subject to 40 CFR Part 61.
20.2.79 NMAC	Permits – Nonattainment Areas	No	Facility	This facility is not located in a nonattainment area; therefore, this regulation does not apply.
20.2.80 NMAC	Stack Heights	No	Facility	This regulation establishes requirements for the evaluation of stack heights and other dispersion techniques. This regulation does not apply as a modeling waiver form was submitted.
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	CE-1 to CE-10, DHY-1 to DHY-3	See applicable NESHAP discussions below.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 50	NAAQS	Yes	Facility	If subject, this would normally apply to the entire facility. This applies if you are subject to 20.2.70, 20.2.72, 20.2.74, and/or 20.2.79 NMAC.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	CE-1 to CE-10, FUG-1, HOH-1 to HOH-4, AGI-COMP1 to AGI-COMP4, SOH-COMP1 and SOH-COMP2	Applies if any other Subpart in 40 CFR 60 applies.
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for Electric Utility Steam Generating Units	No	N/A	Not applicable as there are no electric utility steam generating units at this facility.
NSPS 40 CFR60.40b Subpart Db	Electric Utility Steam Generating Units	No	N/A	Not applicable as there are no electric utility steam generating units at this facility.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 60.40c, Subpart Dc	Small Industrial-Commercial-Institutional Steam Generating Units	Yes	HOH-1 through HOH-4	HOH-1 through HOH-4 meet the definition of steam generating units as each device combusts fuel and heats heat transfer medium.
NSPS 40 CFR 60, Subpart Ka	**Storage Vessels for Petroleum Liquids** After May 18, 1978, and **Prior** to July 23, 1984	No	N/A	Not applicable as tanks at this facility are below the applicable capacity thresholds.
NSPS 40 CFR 60, Subpart Kb	Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) After July 23, 1984	No	N/A	Not applicable as the tanks at this facility are below the applicable capacity thresholds.
NSPS 40 CFR 60.330 Subpart GG	Stationary Gas Turbines	No	N/A	Not applicable as there are no turbines at this facility.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from Onshore Gas Plants	No	N/A	The facility was constructed after the applicability date of Subpart KKK.
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for Onshore Natural Gas Processing: SO_2 Emissions	No	N/A	The facility was constructed after the applicability date of Subpart LLL.
NSPS 40 CFR Part 60 Subpart OOOO	O&G after August 23, 2011 and before September 18, 2015	No	N/A	This regulation is applicable to affected facilities after August 23, 2011 and on or before September 18, 2015. The facility is not subject to this regulation.
NSPS 40 CFR Part 60 Subpart OOOOa	O&G After September 18, 2015	Yes	CE-1 to CE-3	The reciprocating compressors associated with CE-1 to CE-3 are subject pursuant to 60.5365a(c). AM-1 is exempt since the facility does not meet the definition of a natural gas processing plant.
NSPS 40 CFR Part 60 Subpart OOOOb	O&G After December 6, 2022	Yes	CE-4 to CE-10, FUG-1, AGI-COMP1 to AGI-COMP4, SOH-COMP1 and SOH-COMP2	The reciprocating compressors associated with are likely subject pursuant to 60.5365b(c). A formal determination of applicability will be made upon delivery of compressors. FUG-1 is subject per 60.5365a(i). AM-2 and AM-3 are exempt per §60.5365b(g)(4). TK-1 through TK-6 are not affected facilities since post-VRU emissions less than applicable thresholds in 60.5365b(e)(1)(i) and (ii). The tanks will comply with the closed vent system requirements. AM-2 and AM-3 are exempt since the facility does not meet the definition of a natural gas processing plant.
NSPS 40 CFR Part 60 Subpart OOOOc	Emissions Guidelines for Greenhouse Gas Emissions from Existing Crude Oil and Natural Gas Facilities	No	N/A	All equipment is subject to NSPS OOOOa or OOOOb.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition ICE	No	N/A	The engines located at this facility are SI engines; therefore, this subpart does not apply.
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	Yes	CE-1 to CE-10	According to the 40 CFR §60.4230 (a)(4), spark ignition reciprocating internal combustion engines commencing construction, modification, or reconstruction after June 12, 2006 and engines with a maximum engine power greater than or equal to 500 hp manufactured after July 1, 2007 are subject to these standards.
NSPS 40 CFR 60 Subpart TTTT	Greenhouse Gas Emissions for Electric Generating Units	No	N/A	This facility does not have any electric generating units; therefore, the facility is not subject to this regulation.
NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No	N/A	The facility does not operate any sources that are applicable to this subpart.
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 and is therefore not subject to this subpart.
NESHAP 40 CFR 61 Subpart A	General Provisions	No	N/A	The facility is not subject to any subparts of 40 CFR 61.
NESHAP 40 CFR 61 Subpart E	National Emission Standards for Mercury	No	N/A	The provisions of this subpart are applicable to those stationary sources which process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry wastewater treatment plant sludge. Therefore, this subpart does not apply.
NESHAP 40 CFR 61 Subpart V	National Emission Standards for Equipment Leaks (Fugitive Emission Sources)	No	N/A	Not applicable as the facility equipment does not operate in VHAP service. VHAP service is a piece of equipment, which contains or encounters a fluid that is at least 10% weight of VHAP. VHAP is a substance regulated under this subpart for which a standard for equipment leaks of VHAPs has been promulgated.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	DHY-1 to DHY-3	Applies if any other Subpart in 40 CFR 63 applies.
MACT 40 CFR 63.760 Subpart HH	Oil and Natural Gas Production Facilities	Yes	DHY-1 to DHY-3	The facility is an area source of HAPs and this regulation applies to TEG units at area sources pursuant to 40 CFR 63.760(b)(2). The units will meet the requirements of this subpart as applicable. Since actual annual benzene emissions are less than 1 tpy, the facility is subject to only recordkeeping requirements.
MACT 40 CFR 63 Subpart HHH		No	N/A	This facility is not a natural gas transmission facility; therefore, this facility is not subject to this regulation.
MACT 40 CFR 63 Subpart DDDDD	NESHAP for Major Boilers & Process Heaters	No	N/A	This facility is not a major source of 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 facility does not contain a coal or oil fire electric utility steam generating units; therefore, this regulation does not apply.
MACT 40 CFR 63 Subpart ZZZZ	RICE MACT	Yes	CE-1 to CE-10	The engines at this facility are subject to MACT ZZZZ and will comply with this regulation by meeting the requirements of NSPS JJJJ.
40 CFR 64	Compliance Assurance Monitoring	No	N/A	Not applicable as facility has no units meeting the criteria of this part; therefore, this regulation does not apply.
40 CFR 68	Chemical Accident Prevention	No	N/A	This facility does not have any sources listed in this subpart.
Title IV – Acid Rain 40 CFR 72	Acid Rain	No	N/A	Not applicable as this facility is not an acid rain source.
Title IV – Acid Rain 40 CFR 73	Sulfur Dioxide Allowance Emissions	No	N/A	Not applicable as this facility is not an acid rain source.
Title IV-Acid Rain 40 CFR 75	Continuous Emissions Monitoring	No	N/A	This facility does not generate commercial electric power or electric power for sale and is therefore not subject to this regulation.

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.

Startup and shutdown procedures are based on manufacturer's recommendations Northwind's experience with specific equipment. These procedures are designed to proactively address the potential for malfunction to the greatest extent possible. These procedures dictate a sequence of operations that are designed to minimize emissions from the facility during events that result in shutdown and subsequent startup.

Equipment located at this facility is equipped with various safety devices and features that aid in the prevention of excess emissions in the event of an operational emergency. If an operational emergency does occur and excess emissions occur, Northwind will submit the required Excess Emissions Report as per 20.2.7 NMAC. Corrective action to eliminate the excess emissions and prevent recurrence in the future will be undertaken as quickly as safety allows.

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 alternate operating scenarios. All operations are covered under routine operations or SSM.

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:	Titan Treater Plant #1
2	Name of company:	Northwind Midstream Partners, LLC
3	Current Permit number:	7747
4	Name of applicant's modeler:	Bruce Ferguson
5	Phone number of modeler:	601-824-1860
6	E-mail of modeler:	bferguson@fce-engineering.com

16-B: Brief

1	Was a modeling protocol submitted and approved?	Yes☐	No☒
2	Why is the modeling being done?	Adding New Equipment	
3	Describe the permit changes relevant to the modeling.		
	Adding process equipment.		
4	What geodetic datum was used in the modeling?	NAD83	
5	How long will the facility be at this location?	indefinite	
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	Choose an item.	
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).		
	104.5 east of Carlsbad Caverns National Park		
10	Is the facility located in a non-attainment area? If so describe below	Yes☐	No☒
11	Describe any special modeling requirements, such as streamline permit requirements.		
	None		

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).

1	Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
	CO	7747-M4	3/22/20	
	NO_2	7747-M4	3/22/20	
	SO_2	7747-M4	3/22/20	
	H_2S	7747-M4	3/22/20	
	PM2.5	7747-M4	3/22/20	
	PM10	7747-M4	3/22/20	
	Lead			
	Ozone (PSD only)			
	NM Toxic Air Pollutants (20.2.72.402 NMAC)			

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.

1	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)	☐	☐	☐	☐	☒

***Ozone and Volatile Organic Compound (VOC) emissions do not currently require a modeling analysis for a PSD minor source.**

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. None

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

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	

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
39604R3	Removed, AQB-GCP Oil and Gas (Inactive)
38183E5	PM modeling, source changed to a point source with the stack parameters listed in the application. Moved to pad location.
38183A1	Haul road emissions removed from the model as the source is an insignificant activity not required to be modeled.
38125R2	Removed truck loading emissions as the source is an insignificant activity not required to be modeled.
686650	TCEQ site, effective diameter based on NMED guidance Table 38

16-G: Surrounding source modeling

38125E14	Changed the diameter of 0.61 m to the Table 38: Missing Stack Parameter Substitutions for Flares value of 2.79 m for SO2 of 90 lb/hr. Inventory diameter did not appear to account for assist gas required for elevated H2S.
38125E11	SO2 emissions changed to normal operations listed in the application of 0.0036 lb/hr..
28937@1	Exhaust changed to point source. Stack estimated at 25 ft with effective diameter of 5 feet. Velocity estimated based on baghouse flow listed in application of 47,000 acfm. Exhaust temp of 200 F assumed.
38439E3	Removed from H2S model. Emissions from the Oil Tanks, Produced Water Tanks, Gunbarrel Separators and oil truck loading are controlled by the ECDs.
38439E7	Removed from H2S model. Emissions from the Oil Tanks, Produced Water Tanks, Gunbarrel Separators and oil truck loading are controlled by the ECDs.
38439E8	
38439E9	
38439E10	
38439E11	
38439E14	
38439E15	
38439E16	
38439E23	
38439E41	
38439E6	
39955	Moved source locations to correspond to aerial photography.
39955R4	Changed to area source encompassing the pipe racks. Fugitive emissions reduced to 0.1 lb/hr as the application indicates the facility is below the fugitive H2S screening threshold in Condition A212.
39955@1	Tank loading removed as insignificant activity not required to be modeled.
39955E12 39955E11	H2S emissions removed. Application states “100% Vapor Recovery Unit (VRU) control controlling tank VOC and H2S vapors to TK-1-TK-2. VRUs are redundant. When one is down for maintenance the other will be in service.”
39955E10	SO2 emissions remove, flare listed as emergency flare.
39871E12	Source parameters changed to that listed in the Jan 2021 application online.
39823E13	Source changed from volume source to stack with parameters listed in application.
39823E15	
39823E42	
39823E43	
39823E44	
39823E44	
39823E14	
40095E8	Removed emergency flare
38125R1	SSM sources were removed from the model.
38342R7	SSM sources were removed from the model.
38439E36	
38439E38	
38439E43	
38439E44	
38441E29	
38441E31	
38438E47	
38438E48	

16-G: Surrounding source modeling

38438E49
38838E39
38838E40
38838E42
7689E36
39823E23
30535R2
39591E20
31865E12
9292E10
9292E11
9292E12
34629E16
5515E4
5515E18
40747E13
33319E19
38863E33
34418E19
38313E8
40853E14
39565E16
8695E11
7803E12
7803E13
569R30
569E72
39871E36
39004E17
39992E2
40258E8
11000E20
664R3
40265E18
32333E14
7643E3
39782E3
40142E10
38292E21
37766E28
40221E25
40221E26
40211E20
40211E21
40159E13
569R30

16-G: Surrounding source modeling

569E72	
664R3	
38183R3	
39955R6	
40095R3	
38838R3	
40735R2	
7689R3	
40057E25	
5515E18	
40853E14	
39955R3	

664500.00, 3543800.00 664400.00, 3543800.00 664300.00, 3543800.00 664200.00, 3543900.00 664300.00, 3543900.00 664400.00, 3543900.00 664500.00, 3543900.00 664200.00, 3544000.00 664300.00, 3544000.00 664400.00, 3544000.00 664500.00, 3544000.00 664200.00, 3544100.00 664300.00, 3544100.00 664400.00, 3544100.00 664500.00, 3544100.00 664500.00, 3544300.00 664600.00, 3544300.00 664500.00, 3544400.00 664600.00, 3544400.00 662600.00, 3544000.00 662700.00, 3544000.00 662800.00, 3544000.00	Receptors within fenced area of surrounding sources were removed.

16-H: Building and structure downwash

1	How many buildings are present at the facility?	2	
2	How many above ground storage tanks are present at the facility?	13	
3	Was building downwash modeled for all buildings and tanks? If not explain why below.	Yes☒	No☐

4	Building comments	

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.		
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
Cartesian	Circle	100 m	0	3 km	
Cartesian	Circle	250 m	3 km	6 km	
Cartesian	Circle	500 m	6 km	12 km	
Cartesian	Circle	1000 m	12 km	50 km	Receptors from 25 km to 50 km were reduced to 2 km spacing in the cumulative analysis for areas where SIA impacts are below 50% of the standard in the SO_2 analysis.

5	Describe receptor spacing along the fence line. 50 meter spacing was used along the fence line.
6	Describe the PSD Class I area receptors. No Class I receptors were used.

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). 1. Normal operations with FL1 SSM at future location of FL1 2. Normal operations with FL1 SSM at current location of FL1

	3. Normal operations with EC and FL1 SSM, location of FL1 at future location 4. Normal operations with EC and FL1 SSM, location of FL1 at current location 5. Normal operation AGFL SSM FL1 normal operation at future location 6. Normal operation, no SSM, FL1 at current location. 7. Normal operation, no SSM, FL1 at future location. Significance analysis is summarized on the following page.
2	Which scenario produces the highest concentrations? Why? Impacts of NOx, CO, $PM/PM_{2.5}$, and H_2S are virtually the same for all scenarios. Scenario 5 is the highest for SO2 impacts due to the H2S flaring included in the scenario.

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☒

Significance Analysis

Scenario	CO		NO_x		SO_2				PM_{10}		$PM_{2.5}$		H_2S[b]	EC		HOH1-4	DHR1-3	CE1-10	AGFL		FL1		
	1-hr	8-hr	1-hr	Annual	1-hr	3-hr	24-hr	Annual	24-hr	Annual	24-hr	Annual	1/2-hr	Normal	SSM	Normal	Normal	Normal	Normal	SSM	Normal	SSM	Location
1	95.42668	64.4894	80.2492	a	78.02152	101.15734	29.9	a	51.5784	a	6.34306	a	108.896	X		X	X	X	X			X	Future
2	95.45039	64.49781	80.24935	a	99.70835	89.6781	39.1	a	51.5787	a	6.34365	a	108.896	X		X	X	X	X			X	Current
3	95.42668	64.4894	80.2492	a	128.51337	105.22458	54.7	a	51.5784	a	6.34306	a	108.896	X	X	X	X	X	X			X	Future
4	95.45039	64.49781	80.24935	a	128.51345	119.45732	54.8	a	51.5787	a	6.34365	a	108.896	X	X	X	X	X	X			X	Current
5	95.46647	64.47502	80.24886	a	204.81238	248.70682	69.5	a	51.5783	a	6.34767	a	108.900	X		X	X	X		X	X		Future
NORM118	95.77912	64.50876	80.25361	6.2424	19.45233	17.23865	8.37	1.2042	51.5762	6.3994	6.34325	0.85216	108.896	X		X	X	X	X		X		Current
NORM150	95.46653	64.4895	80.24922	6.2364	19.22685	15.74491	8.36	1.133	51.576	6.39918	6.34306	0.85158	108.896	X		X	X	X	X		X		Future

a - Because of the short nature of SSM emissions, modeling does not have to demonstrate compliance with the annual standards or annual increment consumption.

SO2 1-hr NAAQS is surrogate for 24-hr and annual NMAAQS and the 3-hr NAAQS.

b - No H2S emissions from HOH, DHR, and CE sources. Includes fugitives sources as volume source. 1-hr impact used for 1/2-hr estimate.

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.	
	100% conversion was assumed in the NOx. Monitored background was added to the impacts from the significance analysis.	
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 first high Annual Other (Describe): : Highest annual average of the 5-years modeled.	

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/m³, which is below the significance level of 1.96 µg/m³. 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.	

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 $PM_{2.5}$?	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		$[PM2.5]_{24\text{-hour}}$
$MERP_{annual}$	26780	14978		0.171
$MERP_{24\text{-hour}}$	7331	1981		$[PM2.5]_{annual}$
Emission rate (ton/yr)	149.08	241.82		0.004

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.
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.

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? All emission units were constructed after the minor source baseline for each pollutant.				
	Unit ID	NO_2	SO_2	PM10	PM2.5
	All Facility Units	X	X	X	X

5	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date).	

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)
	AGFL (normal)	16.87	98,562.10	0.28
	AGFL (SSM)	20.38952222	40,904,545.88	5.67
	FL1 (normal)	25.18493536	271,072.23	0.45
	FL1 (SSM)	25.15013836	18,943,989.88	3.79

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☐
	Facility haul road was modeled using parameters specified in the NMED guidance for haul roads. The fugitive H2S emissions were modeled with two volume sources encompassing the facility pipe racks.		
2	Describe the determination of sigma-Y and sigma-Z for fugitive sources.		
	Roads Sigma-Y was based on a truck width of 3 meters plus 6 meters, divided by 2.15. Sigma Z was based on a truck height of 4 meters times 1.7 and divided by 2.15. Fugitive H2S Sigma-y determined by dividing the volume side by 4.3 Sigma-z determined by dividing the volume height, assumed two meters, by 2.15		

3	Describe how the volume sources are related to unit numbers. Or say they are the same.
4	Describe any open pits.
	None
5	Describe emission units included in each open pit. None

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: Choose an item.		
	NO_2: Hobbs-Jefferson (350250008)		
	PM2.5: Hobbs-Jefferson (350450019)		
	PM10: Hobbs-Jefferson (350250008)		
	SO_2: Choose an item.		
	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. 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.		

16-T: Terrain

1	Was complex terrain used in the modeling? If not, describe why below.	Yes☒	No☐
	What was the source of the terrain data?		

2	1/3 arc sec NED downloaded from third party Lakes Environmental AERMOD-View

16-U: Modeling Files

Describe the modeling files:
Significant analysis was run and significant receptors carried forward to cumulative analysis. SO2 receptors were reduced if the SIA impacts were below 50% of the standard. . All receptors greater than 50% of the standards were retained for the cumulative analysis. Receptors with impacts less than 50% of the standards were retained on a 1-km spacing for receptors less than 25 km from the proposed source and on a 2-km spacing for receptors greater than 25-km from the proposed source.

The SO2 NAAQS analysis was run with receptors within Texas. There were Texas sources with impacts above the 1-hr NAAQS with impacts falling below the standard within Texas. One source in New Mexico, White Horse, had an emergency flare listed as process emissions. The emergency flare was removed and receptors within Texas were removed. The final run is included SO2_Refined.

1

File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
SIA\CO.zip	CO	SIA
SIA\NOx.zip	NO2	SIA and Cumulative
SIA\PM.zip	PM10	SIA
SIA\PM25.zip	PM2.5	SIA
SIA\SO2.zip	SO2	1-hr SIA
SIA\SO2_inc	SO2	PSD increment SIA
SIA\H2S	H2S	SIA
CIA\SO2	SO2	Cumulative Analysis PSD Increment
CIA\SO2_NAAQS	SO2	Cumulative NAAQS
CIA\SO2_Refined	SO2	Cumulative NAAQS.
CIA\PM25	PM2.5	Cumulative
CIA\PM10	PM10	Cumulative
CIA\H2S	H2S	Cumulative

16-V: PSD New or Major Modification Applications N/A

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.		
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC.		
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☒
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)
CO 1-hr SIL	95.77912	N/A	N/A	N/A	95.77912	2000	4.8%	662556.80	3544522.69	891.19
CO 8-hr SIL	64.50876	N/A	N/A	N/A	64.50876	500	12.9%	662713.23	3544498.14	891.06
NO2 1-hr NAAQS	80.25361	N/A	N/A	65.8	146.05	188.03	77.7%	662713.23	3544498.14	891.06
NO2 Annual NMAAQS	6.24239	N/A	N/A	9.3	15.54	99.66	15.6%	662558.19	3544818.88	892.36
NO2 Annual NMAAQS	6.24239	N/A	N/A	9.3	15.54	20	77.7%	662558.19	3544818.88	892.36
PM2.5 annual NAAQS	0.85216*	1.80467	0.004	7.1	8.90867	9	99.0%	662800.00	3544100.00	889.31
PM2.5 annual PSD	0.85216*	1.86687	0.004	N/A	1.87087	4	46.8%	662800.00	3544100.00	889.31
PM2.5 24-hour NAAQS	6.35869*	4.82053	0.17	16.5	21.49053	35	61.4%	662800.00	3544100.00	889.31
PM2.5 24-hour PSD	6.35869*	6.21664	0.17	N/A	6.38664	9	71.0%	662800.00	3544100.00	889.31
PM10 24-hour NAAQS	29.69383*	28.72282	N/A	37.3	66.02282	150	44.0%	662713.23	3544498.14	891.06
PM10 24-hour PSD	29.69383*	28.09477	N/A	N/A	28.09477	30	93.6	662713.23	3544498.14	891.06
PM10 annual PSD	6.3994*	7.0216	N/A	N/A	7.0216	17	41.3%	662713.23	3544498.14	891.06
SO2 annual PSD	12.47248	16.62823	N/A	N/A	16.62823	20	83.1%	662300.00	3545300.00	894.51
SO2 24-hour PSD	63.52642	75.70144	N/A	N/A	75.70144	91	83.2%	662558.65	3544917.61	893.58
SO2 3-hour PSD	229.90054	262.39851	N/A	N/A	262.39851	512	51.2%	662000.00	3524000.00	879.16
SO2 1-hour NAAQS	204.81238*	193.24651	N/A	N/A	193.24651	196.4	98.4%	658000.00	3553000.00	939.82
H2S ½ hour NMAAS	108.89997	133.48420	N/A	N/A	133.48420	139.3	95.8	661500.00	3545500.00	896.82

*** Highest impact from significance analysis. Does not account for form of the standard or location of cumulative high.**

16-X: Summary/conclusions

	A statement that modeling requirements have been satisfied and that the permit can be issued.
1	The maximum proposed hourly emission rates were modeled for the scenarios presented in Section 16 J. The analysis was performed using the Carlsbad 5-year meteorological dataset. CO emissions were found to be below the modeling 1-hr and 8-hr significance levels for all scenarios. A cumulative analysis was conducted for the remaining pollutants. The NO2 analysis assumed 100% conversion of NOx to NO2 and contribution from surrounding sources were accounted from by adding the Hobbs-Jefferson monitored background from Table 31 of NMED Modeling guideline to the maximum impacts from the significance analysis. The PM10/PM2.5 cumulative analysis consisted of modeling the proposes project with the surrounding sources within 25 km of the source and adding the Hobbs-Jefferson monitored background from Table 34 and Table 33 of the NMED modeling guideline, respectively. The SO2 cumulative analysis consisted of modeling the proposed source and the surrounding sources within 25 km of the source. Ambient impacts were found to be below the ambient air quality standards for all pollutants and the permit can be issued.

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.

Testing has not been required nor completed.

Section 18

Addendum for Streamline Applications

Do not print this section unless this is a streamline application.

Streamline Applications do not require a complete application. Submit Sections 1-A, 1-B, 1-D, 1-F, 1-G, 2-A, 2-C thru L, Sections 3 thru 8, Section 13, Section 18, Section 22, and Section 23 (Certification). Other sections may be required at the discretion of the Department. 20.2.72.202 NMAC Exemptions do not apply to Streamline sources. 20.2.72.219 NMAC revisions and modifications do not apply to Streamline sources, thus 20.2.72.219 type actions require a complete new application submittal. Please do not print sections of a streamline application that are not required.

This is not a Streamline Application.

Section 19

Requirements for Title V Program

Do not print this section unless this is a Title V application.

Who Must Use this Attachment:

* Any major source as defined in 20.2.70 NMAC.
* Any source, including an area source, subject to a standard or other requirement promulgated under Section 111 - Standards of Performance for New Stationary Sources, or Section 112 Hazardous Air Pollutants, of the 1990 federal Clean Air Act ("federal Act"). Non-major sources subject to Sections 111 or 112 of the federal Act are exempt from the obligation to obtain an 20.2.70 NMAC operating permit until such time that the EPA Administrator completes rulemakings that require such sources to obtain operating permits. In addition, sources that would be required to obtain an operating permit solely because they are subject to regulations or requirements under Section 112(r) of the federal Act are exempt from the requirement to obtain an Operating Permit.
* Any Acid Rain source as defined under title IV of the federal Act. The Acid Rain program has additional forms. See www.env.nm.gov/air-quality/air-quality-title-v-operating-permits-guidance-page/. Sources that are subject to both the Title V and Acid Rain regulations are encouraged to submit both applications simultaneously.
* Any source in a source category designated by the EPA Administrator ("Administrator"), in whole or in part, by regulation, after notice and comment.

This is not a Title V Application.

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.

No other relevant information is being submitted as part of this application.

Section 21

Addendum for Landfill Applications

Do not print this section unless this is a landfill application.

Landfill Applications are not required to complete Sections 1-C Input Capacity and Production Rate, 1-E Operating Schedule, 17 Compliance Test History, and 18 Streamline Applications. Section 12 – PSD Applicability is required only for Landfills with Gas Collection and Control Systems and/or landfills with other non-fugitive stationary sources of air emissions such as engines, turbines, boilers, heaters. All other Sections of the Universal Application Form are required.

EPA Background Information for MSW Landfill Air Quality Regulations: www.epa.gov/stationary-sources-air-pollution/clean-air-act-guidelines-and-standards-waste-management

NM Solid Waste Bureau Website: www.env.nm.gov/solid-waste/

This is not a landfill.

Section 22: Certification

Company Name: NORTHWIND MIDSTREAM LLC

I, JILLIAN YAMARTINO, 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 9th day of July, 2024, upon my oath or affirmation, before a notary of the State of COLORADO.

*Signature

7/9/2024
Date

JILLIAN YAMARTINO
Printed Name

ENVIRONMENTAL-AIR MANAGER
Title

Scribed and sworn before me on this 9 day of July, 2024.

My authorization as a notary of the State of colorado expires on the 3 day of November, 2027.

Notary's Signature

7/9/24
Date

Spencer Marie Rivera
Notary's Printed Name

SPENCER MARIE RIVERA
NOTARY PUBLIC - STATE OF COLORADO
NOTARY ID 20234041751
MY COMMISSION EXPIRES NOV 3, 2027

*For Title V applications, the signature must be of the Responsible Official as defined in 20.2.70.7.AE NMAC.