NMED AIR QUALITY
INITIAL MINOR NSR APPLICATION
Crestwood New Mexico Pipeline LLC
Willow Lake Gas Processing Plant

Prepared By:

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August 2020

Project 203201.0098

Trinity Consultants
9400 Holly Ave NE, Bldg 3, Ste 300, Albuquerque, NM 87122 / P 505.266.6611 / **trinityconsultants.com**

August 28, 2020

Mr. Ted Schooley
Permit Programs Manager
NMED Air Quality Bureau
525 Camino de los Marquez Suite 1
Santa Fe, NM 87505-1816

RE: Initial Minor NSR Application
Crestwood New Mexico Pipeline LLC. – Willow Lake Gas Processing Plant

Dear Mr. Schooley:

On behalf of Crestwood New Mexico Pipeline LLC (Crestwood) we are submitting an initial minor NSR application to authorize the existing Willow Lake Gas Processing Plant (Willow Lake). The facility is currently authorized under GCP-4-5142-M6 and is located at 393 Higby Hole Rd in Malaga, NM 88263. This application is being submitted pursuant to 20.2.72.200.A NMAC to transition the facility from a GCP-4 to a minor NSR while simultaneously adding equipment and making modifications. These details are included in Section 3 of the application.

The format and content of this application are consistent with the Bureau's current policy regarding New Source Review applications; it is a complete application package using the most current Universal Application forms. Enclosed are two (2) hard copies of the application (one original and one copy), including the original certification, one disk containing the electronic files (including air dispersion modeling), and an application check for $500. Please feel free to contact either myself at (505) 266-6611 or Moshe Wolfe, Senior Air Quality Engineer for Crestwood, at (713) 380-3257 if you have any questions regarding this application.

Sincerely,

Michael Celente

Michael Celente
Senior Consultant

Cc: Moshe Wolfe (Crestwood)
Trinity Project File 203201.0098

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

Universal Air Quality Permit Application

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

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

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

Acknowledgements:

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

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

☑ Check No.: **3000759** 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.

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

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

Citation: Please provide the **low level citation** under which this application is being submitted: **20.2.72.200.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 (see 1st 3 to 5 #s of permit IDEA ID No.): 32575	Updating Permit/NOI #: GCP-4-5142-M6
1	Facility Name: Willow Lake Gas Processing Plant	Plant primary SIC Code (4 digits): 1321	
		Plant NAIC code (6 digits): 211130	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): 393 Higby Hole Rd, Malaga, NM 88263		
2	Plant Operator Company Name: Crestwood New Mexico Pipeline LLC	Phone/Fax: 713-380-3257	
a	Plant Operator Address: 811 Main Street, Suite 3400 Houston, TX 77002		
b	Plant Operator's New Mexico Corporate ID or Tax ID: 4407086		

3	Plant Owner(s) name(s): Crestwood New Mexico Pipeline LLC	Phone/Fax: 713-380-3257
a	Plant Owner(s) Mailing Address(s): 811 Main Street, Suite 3400 Houston, TX 77002	
4	Bill To (Company): Crestwood New Mexico Pipeline LLC	Phone/Fax: 713-380-3257
a	Mailing Address: 811 Main Street, Suite 3400 Houston, TX 77002	E-mail: moshe.wolfe@crestwoodlp.com
5	☑Preparer: Michael Celente ☑ Consultant: Trinity Consultants Inc.	Phone/Fax: (505) 266-6611
a	Mailing Address: 9400 Holly Avenue NE, Building 3, Suite 300 Albuquerque, NM 87122	E-mail: mcelente@trinityconsultants.com
6	Plant Operator Contact: Will Jaquess	Phone/Fax: 432-255-8714
a	Address: 393 Higby Hole Rd, Malaga, NM 88263	E-mail: william.jaquess@crestwoodlp.com
7	Air Permit Contact: Moe Wolfe	Title: Senior Air Quality Engineer
a	E-mail: moshe.wolfe@crestwoodlp.com	Phone/Fax: 713-380-3257
b	Mailing Address: 811 Main Street, Suite 3400 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 ☑ N/A	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 ☑ N/A
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: N/A
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☑ Yes ☐ No	If yes, the register No. is: GCP-4-5142-M6

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: 2.30 MMscf/hour	Daily: 55 MMscf/day	Annually: 20,075 MMscf/year
b	Proposed	Hourly: 4.38 MMscf/hour	Daily: 105 MMscf/day	Annually: 38,325 MMscf/year
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: 2.30 MMscf/hour	Daily: 55 MMscf/day	Annually: 20,075 MMscf/year
b	Proposed	Hourly: 4.38 MMscf/hour	Daily: 105 MMscf/day	Annually: 38,325 MMscf/year

Section 1-D: Facility Location Information

1	Section: 20 & 29	Range: 28E	Township: 24S	County: Eddy County	Elevation (ft): 3,018
2	UTM Zone: ☐ 12 or ☑ 13			Datum: ☐ NAD 27 ☐ NAD 83 ☑ WGS 84	
a	UTM E (in meters, to nearest 10 meters): 584,520 m E			UTM N (in meters, to nearest 10 meters): 3,562,400 m N	
b	**AND** Latitude (deg., min., sec.): 32°11'41.94"N			Longitude (deg., min., sec.): 104°6'11.91"W	
3	Name and zip code of nearest New Mexico town: Malaga, NM 88263				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From Malaga, from the intersection of US 285 and Black River Village Rd., travel west for 1.7 miles. Turn left onto Higby Hole Rd. and continue for 0.7 miles. Turn right onto an access road, immediately turn left, and continue for 0.3 miles. Turn right and continue for 0.1 miles. Take a left at the fork and continue for 0.4 miles. Turn right and continue for 0.5 miles and arrive at the facility.				
5	The facility is 2.7 miles SW of Malaga, NM.				
6	Status of land at facility (check one): ☑ Private ☐ Indian/Pueblo ☐ Federal BLM ☐ Federal Forest Service ☐ Other (specify)				
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: Loving, NM; Indian Tribes: N/A; Counties: Eddy				
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/aqb/modeling/class1areas.html)? ☑ Yes ☐ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: 21.6 km from Texas border, 25.6 km from Carlsbad Caverns National Park				
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): 25.6 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: 1750 m from occupied structure to the north.				
12	Method(s) used to delineate the Restricted Area: Fencing "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.				
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ☑ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.				
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☒ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility? N/A				

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

1	Facility **maximum** operating ($\frac{\text{hours}}{\text{day}}$): 24	($\frac{\text{days}}{\text{week}}$): 7	($\frac{\text{weeks}}{\text{year}}$): 52	($\frac{\text{hours}}{\text{year}}$): 8,760		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start: N/A	☐AM ☐PM	End: N/A	☐AM ☐PM		
3	Month and year of anticipated start of construction: Upon receipt of permit.					
4	Month and year of anticipated construction completion: April 2021					
5	Month and year of anticipated startup of new or modified facility: TBD					
6	Will this facility operate at this site for more than one year? ☑Yes ☐ No					

Section 1-F: Other Facility Information

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

Section 1-G: Streamline Application

(This section applies to 20.2.72.300 NMAC Streamline applications only)

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

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

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

1	Responsible Official (R.O.) (20.2.70.300.D.2 NMAC): Ben Hansen		Phone: 832-519-2200
a	R.O. Title: Senior Vice President, Operations	R.O. e-mail: ben.hansen@crestwoodlp.com	
b	R. O. Address: 811 Main St., Ste 3400, Houston, TX 77002		
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC):Jonathan Smith		Phone: 432-255-8736
a	A. R.O. Title: Vice President, G&P Operations	A. R.O. e-mail: jonathan.smith@crestwoodlp.com	
b	A. R. O. Address: 393 Higby Hole Rd, Malaga, NM		
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.): Crestwood Midstream Partners, LP		
a	Address of Parent Company: 811 Main St, Suite 3400, Houston, TX 77002		
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.): N/A		
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: Jonathan Smith, 432-255-8736		
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: Texas – 21.7 km		

Section 1-I – Submittal Requirements

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

Hard Copy Submittal Requirements:

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

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

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

Electronic files sent by (check one):

☑ CD/DVD attached to paper application

☐ secure electronic transfer. Air Permit Contact Name_____

Email_____

Phone number _____

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

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

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

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

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

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

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

2) The documents should also be submitted in Microsoft Office compatible file format (Word, Excel, etc.) allowing us to access the text and formulas in the documents (copy & paste). Any documents that cannot be submitted in a Microsoft Office compatible

format shall be saved as a PDF file from within the electronic document that created the file. If you are unable to provide Microsoft office compatible electronic files or internally generated PDF files of files (items that were not created electronically: i.e. brochures, maps, graphics, etc,), submit these items in hard copy format. We must be able to review the formulas and inputs that calculated the emissions.

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

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

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Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	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.
C-1100	Engine	Caterpillar	G3608	BEN00538	2370 hp	2370 hp	12/16/2008 > 6/12/2006	C-1 C-1100	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
C-1200	Engine	Waukesha	P9390GSI	C-17865/2	1980 hp	1980 hp	3/1/2008 > 6/12/2006	C-2 C-1200	20200253	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	N/A
C-2300	Engine	Waukesha	VHP-L7044GSI	5283703535	1680 hp	1680 hp	3/1/2014 > 7/1/2010	C-3 C-2300	20200253	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	N/A
C-2400	Engine	Waukesha	VHP-L7044GSI	5283703452	1680 hp	1680 hp	2/1/2014 > 7/1/2010	C-4 C-2400	20200253	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	N/A
ENG-1	Engine	Caterpillar	G3606	TBD	1875 hp	1875 hp	>7/1/2010 >7/1/2010	C-5 ENG-1	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG-2	Engine	Caterpillar	G3606	TBD	1875 hp	1875 hp	>7/1/2010 >7/1/2010	C-6 ENG-2	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG-3	Engine	Caterpillar	G3606	TBD	1875 hp	1875 hp	>7/1/2010 >7/1/2010	C-7 ENG-3	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG-4	Engine	Caterpillar	G3606	TBD	1875 hp	1875 hp	>7/1/2010 >7/1/2010	C-8 ENG-4	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG-5	Engine	Caterpillar	G3606	TBD	1875 hp	1875 hp	>7/1/2010 >7/1/2010	C-9 ENG-5	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
WL2-FL & WL2-FL Blowdown	Process Flare and Blowdown Flaring	Zeeco	UFX-12-45	TBD	65 scf/hr Pilot	65 scf/hr Pilot	TBD >1/2016	N/A WL2-FL	31000205	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
WL1-FL & WL1-FL Blowdown	Process Flare and Blowdown Flaring	TBD	TBD	TBD	55 scf/hr Pilot	55 scf/hr Pilot	TBD >1/2014	N/A WL1-FL	31000205	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
DEHY-803	TEG Dehydrator	KWI	TBD	TBD	25 MMSCFD	25 MMSCFD	TBD >1/2014	HTR-803 HTR-803	31000227	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
DEHY-804	TEG Dehydrator	KWI	TBD	TBD	3.5 MMSCFD	3.5 MMSCFD	TBD >1/2014	HTR-804 HTR-804	31000227	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
DEHY-EG	EG Dehydrator	Valerus	TBD	TBD	35 MMSCFD	35 MMSCFD	TBD >1/2016	WL2-FL WL2-FL	31000227	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
DEHY-805	TEG Dehydrator	KWI	TBD	TBD	65 MMSCFD	65 MMSCFD	TBD >1/2014	HTR-805 HTR-805	31000227	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
HTR-803	DEHY 803 Reboiler	FLAMECO	SB18-12	1406-92M	0.5 MMBtu/hr	0.5 MMBtu/hr	N/A >1/2014	N/A HTR-803	31000228	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
HTR-804	DEHY 804 Reboiler	KWI	N/A	1580717-0	0.125 MMBtu/hr	0.125 MMBtu/hr	2015 2015	N/A HTR-804	31000228	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HTR-802	Regen Gas Heater	Heat Recovery Corp.	N/A	TBD	2.0 MMBtu/hr	2.0 MMBtu/hr	2013 N/A	N/A HTR-802	31000404	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HTR-805	DEHY 805 Reboiler	FLAMECO	SB36-18	1801-620	1.5 MMBtu/hr	1.5 MMBtu/hr	N/A >1/2014	N/A HTR-805	31000228	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
HTR-730	Hot Oil Heater	Heatec	HCI-5010-30	HI14-167	6.83 MMBtu/hr	6.83 MMBtu/hr	2/2015 >1/2016	N/A HTR-730	31000404	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
WL1-TK601	Condensate Tank	N/A	N/A	N/A	210 bbl	210 bbl	>8/23/2011 >8/23/2011	WL1-VRU N/A	40400311	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
WL1-TK602	Condensate Tank	N/A	N/A	N/A	210 bbl	210 bbl	>8/23/2011 >8/23/2011	WL1-VRU N/A	40400311	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
WL1-TK603	Condensate Tank	N/A	N/A	N/A	210 bbl	210 bbl	>8/23/2011 >8/23/2011	WL1-VRU N/A	40400311	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
WL2-TK8101	Condensate Tank	N/A	N/A	N/A	400 bbl	400 bbl	>9/18/2015 >9/18/2015	WL2-VRU N/A	40400311	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
WL2-TK8102	Condensate Tank	N/A	N/A	N/A	400 bbl	400 bbl	>9/18/2015 >9/18/2015	WL2-VRU N/A	40400311	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
WLCS-TK2301	Condensate Tank	N/A	N/A	N/A	400 bbl	400 bbl	>9/18/2015 >9/18/2015	WL1-VRU N/A	40400311	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
WLCS-TK2302	Condensate Tank	N/A	N/A	N/A	400 bbl	400 bbl	>9/18/2015 >9/18/2015	WL1-VRU N/A	40400311	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
WLCS-TK2303	Condensate Tank	N/A	N/A	N/A	400 bbl	400 bbl	>9/18/2015 >9/18/2015	WL1-VRU N/A	40400311	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ATM LOAD	Atmospheric Loading	N/A	N/A	N/A	115,000 bbl/yr	115,000 bbl/yr	N/A N/A	N/A N/A	40600197	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
NGL LOAD	NGL Loading	N/A	N/A	N/A	54,750,000 gal/yr	54,750,000 gal/yr	N/A N/A	N/A N/A	40600197	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FUG	Facility Fugitive Emissions	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000220	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
PIGGING	Pig Receiver and Launcher	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000211	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
SSM/M	Startup, Shutdown, Maintenance, and Malfunction	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	N/A	N/A

[1] □nit 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 re□uired 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/air-quality/air-quality-title-v-operating-permits-guidance-page/. 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
NGL-1	NGL Pressurized Bullet Tank	TBD	TBD TBD	90,000 gallons	20.2.72.202.B(5) NMAC N/A	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
NGL-2	NGL Pressurized Bullet Tank	TBD	TBD TBD	60,000 gallons	20.2.72.202.B(5) NMAC N/A	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
NGL-3	NGL Pressurized Bullet Tank	TBD	TBD TBD	60,000 gallons	20.2.72.202.B(5) NMAC N/A	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
NGL-4	NGL Pressurized Bullet Tank	TBD	TBD TBD	60,000 gallons	20.2.72.202.B(5) NMAC N/A	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
AST-4	Methanol	Unknown	N/A N/A	500 gallons	20.2.72.202.B(5) NMAC N/A	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
AST-5	Triethylene Glycol	Unknown	N/A N/A	520 gallons	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
AST-7	Lube Oil	Unknown	N/A N/A	500 gallons	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
AST-8	Antifreeze	Unknown	N/A N/A	500 gallons	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
AST-9	Lube Oil	Unknown	N/A N/A	500 gallons	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
AST-10	Antifreeze	Unknown	N/A N/A	500 gallons	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
AST-11	Used Oil	Unknown	N/A N/A	540 gallons	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
AST-12	Triethylene Glycol	Unknown	N/A N/A	500 gallons	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
AST-13	Emulsion Breaker	Unknown	N/A N/A	130 gallons	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

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
AST-14	Soap	Unknown	N/A N/A	300 gallons	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
AST-15	Degreaser	Unknown	N/A N/A	300 gallons	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
AST-16	Compressor Oil	Unknown	N/A N/A	500 gallons	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
AST-17	Compressor Oil	Unknown	N/A N/A	500 gallons	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
AST-2-2	Engine Oil	Unknown	N/A N/A	1000 gallons	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
AST-3-2	Antifreeze	Unknown	N/A N/A	1000 gallons	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
AST-4-2	Ethylene Glycol	Unknown	N/A N/A	500 gallons	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
AST-5-2	Methanol	Unknown	N/A N/A	60 bbl	20.2.72.202.B(5) NMAC N/A	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
AST-6-2	Waste Oil	Unknown	N/A N/A	500 gallons	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
AST-8-2	Compressor Oil	Unknown	N/A N/A	1000 gallons	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
HAUL	Unpaved Haul Road Emissions	Unknown	N/A N/A	N/A N/A	20.2.72.202.B(5) NMAC N/A	TBD TBD	☑ 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
C-1	Oxidation Catalyst	>6/12/2006	CO, VOC, HCHO	C-1100	64% CO, 75% VOC, 75% HCHO	Catalyst Data
C-2	Non-Selective Catalystic Reduction	>6/12/2006	NO_X, CO, VOC, HCHO	C-1200	85% NO_X, 85% CO, 60% VOC, 80% HCHO	Catalyst Data
C-3	Non-Selective Catalystic Reduction	>6/12/2006	NO_X, CO, VOC, HCHO	C-2300	92.5% NO_X, 91.3% CO, 71.4% VOC, 20% HCHO	Catalyst Data
C-4	Non-Selective Catalystic Reduction	>6/12/2006	NO_X, CO, VOC, HCHO	C-2400	92.5% NO_X, 91.3% CO, 71.4% VOC, 20% HCHO	Catalyst Data
C-5	Oxidation Catalyst	TBD	CO, VOC, HCHO	ENG-1	90% CO, 50% VOC, 70% HCHO	Catalyst Data
C-6	Oxidation Catalyst	TBD	CO, VOC, HCHO	ENG-2	90% CO, 50% VOC, 70% HCHO	Catalyst Data
C-7	Oxidation Catalyst	TBD	CO, VOC, HCHO	ENG-3	90% CO, 50% VOC, 70% HCHO	Catalyst Data
C-8	Oxidation Catalyst	TBD	CO, VOC, HCHO	ENG-4	90% CO, 50% VOC, 70% HCHO	Catalyst Data
C-9	Oxidation Catalyst	TBD	CO, VOC, HCHO	ENG-5	90% CO, 50% VOC, 70% HCHO	Catalyst Data
WL2-FL	Process Flare	2016	VOC, HAP, H_2S	DEHY-EG	98%	Manufacturer Data
WL1-FL	Process Flare	TBD	VOC, HAP, H_2S	WL1-TK601 - WL1-TK603; WLCS-TK2301 - WLCS-TK2303	98%	Manufacturer Data
WL2-VRU	Vapor Recovery Unit	TBD	VOC, HAP, H_2S	WL2-TK8101 & WL2-TK8102	95%	5% VRU Downtime
WL1-VRU	Vapor Recovery Unit	TBD	VOC, HAP, H_2S	WL1-TK601 - WL1-TK603; WLCS-TK2301 - WLCS-TK2303	95%	5% VRU Downtime

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

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

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

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

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
C-1100	2.61	11.44	14.37	62.93	4.12	18.05	0.23	1.01	0.16	0.69	0.16	0.69	0.16	0.69	1.10E-04	4.82E-04	-	-
C-1200	56.75	248.55	39.29	172.07	2.14	9.37	0.23	0.99	0.30	1.31	0.30	1.31	0.30	1.31	1.08E-04	4.73E-04	-	-
C-2300	49.26	215.76	42.59	186.56	0.78	3.41	0.19	0.85	0.26	1.13	0.26	1.13	0.26	1.13	9.32E-05	4.08E-04	-	-
C-2400	49.26	215.76	42.59	186.56	0.78	3.41	0.19	0.85	0.26	1.13	0.26	1.13	0.26	1.13	9.32E-05	4.08E-04	-	-
ENG-1	2.07	9.05	9.09	39.83	2.03	8.87	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	-	-
ENG-2	2.07	9.05	9.09	39.83	2.03	8.87	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	-	-
ENG-3	2.07	9.05	9.09	39.83	2.03	8.87	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	-	-
ENG-4	2.07	9.05	9.09	39.83	2.03	8.87	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	-	-
ENG-5	2.07	9.05	9.09	39.83	2.03	8.87	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	-	-
WL2-FL	0.0091	0.040	0.018	0.080	-	-	9.29E-04	4.07E-03	-	-	-	-	-	-	2.32E-05	1.02E-04	-	-
WL2-FL Blowdown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WL1-FL	0.0077	0.034	0.015	0.068	-	-	0.00079	0.0034	-	-	-	-	-	-	1.96E-05	8.60E-05	-	-
WL1-FL Blowdown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEHY-803	-	-	-	-	82.14	359.76	-	-	-	-	-	-	-	-	0.0096	0.042	-	-
DEHY-804	-	-	-	-	7.91	34.63	-	-	-	-	-	-	-	-	9.00E-04	0.0039	-	-
DEHY-EG	-	-	-	-	1.82	7.97	-	-	-	-	-	-	-	-	0.0094	0.041	-	-
DEHY-805	-	-	-	-	176.64	773.68	-	-	-	-	-	-	-	-	0.021	0.090	-	-
HTR-803	0.049	0.21	0.041	0.18	0.0027	0.012	0.0073	0.032	0.0037	0.016	0.0037	0.016	0.0037	0.016	3.50E-06	1.53E-05	-	-
HTR-804	0.012	0.054	0.010	0.045	0.00067	0.0030	0.0018	0.0080	0.00093	0.0041	0.00093	0.0041	0.00093	0.0041	8.75E-07	3.83E-06	-	-
HTR-802	0.20	0.86	0.16	0.72	0.011	0.047	0.029	0.13	0.015	0.065	0.015	0.065	0.015	0.065	1.40E-05	6.13E-05	-	-
HTR-730	0.67	2.93	0.56	2.46	0.037	0.16	0.10	0.44	0.051	0.22	0.051	0.22	0.051	0.22	4.78E-05	2.10E-04	-	-
HTR-805	0.15	0.64	0.12	0.54	0.0081	0.035	0.022	0.096	0.011	0.049	0.011	0.049	0.011	0.049	1.05E-05	4.60E-05	-	-
WL1-TK601	-	-	-	-	62.87	24.68	-	-	-	-	-	-	-	-	0.0015	4.54E-04	-	-
WL1-TK602	-	-	-	-	62.87	24.68	-	-	-	-	-	-	-	-	0.0015	4.54E-04	-	-
WL1-TK603	-	-	-	-	62.87	24.68	-	-	-	-	-	-	-	-	0.0015	4.54E-04	-	-
WL2-TK8101	-	-	-	-	94.33	46.96	-	-	-	-	-	-	-	-	0.0023	9.01E-04	-	-
WL2-TK8102	-	-	-	-	94.33	46.96	-	-	-	-	-	-	-	-	0.0023	9.01E-04	-	-
WLCS-TK2301	-	-	-	-	364.51	80.89	-	-	-	-	-	-	-	-	0.0088	0.0015	-	-
WLCS-TK2302	-	-	-	-	364.51	80.89	-	-	-	-	-	-	-	-	0.0088	0.0015	-	-
WLCS-TK2303	-	-	-	-	364.51	80.89	-	-	-	-	-	-	-	-	0.0088	0.0015	-	-
ATM LOAD	-	-	-	-	31.44	11.91	-	-	-	-	-	-	-	-	4.79E-04	1.74E-04	-	-
NGL LOAD	-	-	-	-	0.0031	0.013	-	-	-	-	-	-	-	-	-	-	-	-
FUG	-	-	-	-	12.49	54.72	-	-	-	-	-	-	-	-	1.03E-04	4.51E-04	-	-
PIGGING	-	-	-	-	0.30	1.31	-	-	-	-	-	-	-	-	4.99E-06	2.19E-05	-	-
SSM/M	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	1.00	-	-
Totals	**169.30**	**741.56**	**185.25**	**811.39**	**1801.54**	**1743.50**	**2.05**	**8.96**	**1.76**	**7.72**	**1.76**	**7.72**	**1.76**	**7.72**	**0.078**	**1.19**	**-**	**-**

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

Table 2-E: Requested Allowable Emissions

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

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
C-1100	2.61	11.44	5.22	22.89	1.03	4.51	0.23	1.01	0.16	0.69	0.16	0.69	0.16	0.69	1.10E-04	4.82E-04		
C-1200	8.51	37.28	5.89	25.81	0.69	3.02	0.23	0.99	0.30	1.31	0.30	1.31	0.30	1.31	1.08E-04	4.73E-04		
C-2300	3.70	16.22	3.70	16.22	0.37	1.62	0.19	0.85	0.26	1.13	0.26	1.13	0.26	1.13	9.32E-05	4.08E-04		
C-2400	3.70	16.22	3.70	16.22	0.37	1.62	0.19	0.85	0.26	1.13	0.26	1.13	0.26	1.13	9.32E-05	4.08E-04		
ENG-1	2.07	9.05	0.91	3.98	0.85	3.71	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04		
ENG-2	2.07	9.05	0.91	3.98	0.85	3.71	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04		
ENG-3	2.07	9.05	0.91	3.98	0.85	3.71	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04		
ENG-4	2.07	9.05	0.91	3.98	0.85	3.71	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04		
ENG-5	2.07	9.05	0.91	3.98	0.85	3.71	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04		
WL2-FL	0.28	1.23	0.56	2.45	0.036	0.16	0.018	0.080	-	-	-	-	-	-	2.11E-04	9.25E-04		
WL1-FL	5.88	1.32	11.73	2.634	25.643	0.317	0.05818	0.0040	-	-	-	-	-	-	6.42E-04	9.19E-05		
DEHY-803	-	-	-	-	1.37	6.01	-	-	-	-	-	-	-	-	2.26E-04	9.88E-04		
DEHY-804	-	-	-	-	0.13	0.58	-	-	-	-	-	-	-	-	2.16E-05	9.46E-05		
DEHY-EG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
DEHY-805	-	-	-	-	2.94	12.90	-	-	-	-	-	-	-	-	4.80E-04	0.0021		
HTR-803	0.049	0.21	0.041	0.18	0.0027	0.012	0.0073	0.032	0.0037	0.016	0.0037	0.016	0.0037	0.016	3.50E-06	1.53E-05		
HTR-804	0.012	0.054	0.010	0.045	0.00067	0.0030	0.0018	0.0080	0.00093	0.0041	0.00093	0.0041	0.00093	0.0041	8.75E-07	3.83E-06		
HTR-802	0.20	0.86	0.16	0.72	0.011	0.047	0.029	0.13	0.015	0.065	0.015	0.065	0.015	0.065	1.40E-05	6.13E-05		
HTR-730	0.67	2.93	0.56	2.46	0.037	0.16	0.10	0.44	0.051	0.22	0.051	0.22	0.051	0.22	4.78E-05	2.10E-04		
HTR-805	0.15	0.64	0.12	0.54	0.0081	0.035	0.022	0.096	0.011	0.049	0.011	0.049	0.011	0.049	1.05E-05	4.60E-05		
WL1-TK601	-	-	-	-	62.87	1.23	-	-	-	-	-	-	-	-	0.0015	2.27E-05		
WL1-TK602	-	-	-	-	62.87	1.23	-	-	-	-	-	-	-	-	0.0015	2.27E-05		
WL1-TK603	-	-	-	-	62.87	1.23	-	-	-	-	-	-	-	-	0.0015	2.27E-05		
WL2-TK8101	-	-	-	-	94.33	2.35	-	-	-	-	-	-	-	-	0.0023	4.51E-05		
WL2-TK8102	-	-	-	-	94.33	2.35	-	-	-	-	-	-	-	-	0.0023	4.51E-05		
WLCS-TK2301	-	-	-	-	364.51	0.08	-	-	-	-	-	-	-	-	0.0088	1.50E-06		
WLCS-TK2302	-	-	-	-	364.51	0.08	-	-	-	-	-	-	-	-	0.0088	1.50E-06		
WLCS-TK2303	-	-	-	-	364.51	0.08	-	-	-	-	-	-	-	-	0.0088	1.50E-06		
ATM LOAD	-	-	-	-	31.44	11.91	-	-	-	-	-	-	-	-	4.79E-04	1.74E-04		
NGL LOAD	-	-	-	-	0.0031	0.013	-	-	-	-	-	-	-	-	-	-		
FUG	-	-	-	-	12.49	54.72	-	-	-	-	-	-	-	-	1.03E-04	4.51E-04		
Totals	**36.10**	**133.69**	**36.27**	**110.10**	**1551.62**	**124.85**	**2.12**	**9.04**	**1.76**	**7.72**	**1.76**	**7.72**	**1.76**	**7.72**	**0.039**	**0.01**		

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

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

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

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

Unit No.	NOx		CO		VOC		SOx		PM[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
WL2-FL Blowdown	110.23	2.87	220.06	5.72	159.39	4.14	0.41	0.011	-	-	-	-	-	-	4.49E-03	1.17E-04	-	-
WL1-FL Blowdown	5.73	0.15	11.44	0.30	8.29	0.22	0.022	0.00056	-	-	-	-	-	-	2.33E-04	6.07E-06	-	-
PIGGING	-	-	-	-	0.30	1.31	-	-	-	-	-	-	-	-	4.99E-06	2.19E-05	-	-
SSM/M	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	1.00	-	-
Totals	115.96	3.01	231.50	6.02	167.98	15.67	0.44	0.011	-	-	-	-	-	-	4.73E-03	1.00	-	-

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

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

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

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

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

Stack No.	Serving Unit Number(s) from Table 2-A	NOx		CO		VOC		SOx		PM		PM10		PM2.5		□ H_2S or □ Lead	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
N/A - The facility does not have any special stacks.																	
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)			
C-1100	C-1100	Vertical	No	40	857	16144.0	N/A	N/A	123.33	1.67
C-1200	C-1200	Vertical	No	20	1250	9774.0	N/A	N/A	74.67	1.67
C-2300	C-2300	Vertical	No	23	1152	7524.0	N/A	N/A	117.30	1.17
C-2400	C-2400	Vertical	No	23	1152	7524.0	N/A	N/A	117.30	1.17
ENG-1	ENG-1	Vertical	No	29	822	11802.0	N/A	N/A	90.16	1.67
ENG-2	ENG-2	Vertical	No	29	822	11802.0	N/A	N/A	90.16	1.67
ENG-3	ENG-3	Vertical	No	29	822	11802.0	N/A	N/A	90.16	1.67
ENG-4	ENG-4	Vertical	No	29	822	11802.0	N/A	N/A	90.16	1.67
ENG-5	ENG-5	Vertical	No	29	822	11802.0	N/A	N/A	90.16	1.67
WL2-FL*	WL2-FL	Vertical	No	45	1832	N/A	N/A	N/A	65.60	21.68
WL1-FL*	WL1-FL	Vertical	No	60	1832	N/A	N/A	N/A	65.60	6.86
HTR-803	HTR-803	Vertical	No	14	600	207	N/A	N/A	4.39	1.00
HTR-804	HTR-804	Vertical	No	11	600	52	N/A	N/A	4.41	0.50
HTR-802	HTR-802	Vertical	Yes	19	600	828	N/A	N/A	25.51	0.83
HTR-805	HTR-805	Vertical	Yes	23	600	621	N/A	N/A	9.68	1.17
HTR-730	HTR-730	Vertical	Yes	16	600	2829	N/A	N/A	15.01	2.00

* Flare diameters are effective diameters used in the air dispersion modeling. Supporting calculations are included in the Excel workbook submitted in conjunction with this application.

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

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

Stack No.	Unit No.(s)	Total HAPs		Formaldehyde ☑ HAP or ☐ TAP		Acetaldehyde ☑ HAP or ☐ TAP		Acrolein ☑ HAP or ☐ TAP		Methanol ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		Pollutant Name ☑ HAP or ☐ TAP		Pollutant Name ☑ HAP or ☐ TAP		Pollutant Name ☑ 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
C-1100	C-1100	0.50	2.20	0.21	0.91	0.13	0.58	0.081	0.35	0.039	0.17	0.017	0.076						
C-1200	C-1200	0.35	1.51	0.17	0.73	0.04	0.19	0.041	0.18	0.047	0.21	-	-						
C-2300	C-2300	0.30	1.33	0.15	0.65	0.04	0.16	0.035	0.15	0.041	0.18	-	-						
C-2400	C-2400	0.30	1.33	0.15	0.65	0.04	0.16	0.035	0.15	0.041	0.18	-	-						
ENG-1	ENG-1	0.51	2.25	0.25	1.09	0.12	0.52	0.073	0.32	0.035	0.16	0.016	0.069						
ENG-2	ENG-2	0.51	2.25	0.25	1.09	0.12	0.52	0.073	0.32	0.035	0.16	0.016	0.069						
ENG-3	ENG-3	0.51	2.25	0.25	1.09	0.12	0.52	0.073	0.32	0.035	0.16	0.016	0.069						
ENG-4	ENG-4	0.51	2.25	0.25	1.09	0.12	0.52	0.073	0.32	0.035	0.16	0.016	0.069						
ENG-5	ENG-5	0.51	2.25	0.25	1.09	0.12	0.52	0.073	0.32	0.035	0.16	0.016	0.069						
WL2-FL	WL2-FL	7.82E-04	0.0034	-	-	-	-	-	-	-	-	-	-						
WL2-FL	WL2-FL Blowdown	21.73	0.56	-	-	-	-	-	-	-	-	-	-						
WL1-FL	WL1-FL	0.50	0.0076	-	-	-	-	-	-	-	-	-	-						
WL1-FL	WL1-FL Blowdown	1.13	0.029	-	-	-	-	-	-	-	-	-	-						
DEHY-803	DEHY-803	0.092	0.40	-	-	-	-	-	-	-	-	0.052	0.23						
DEHY-804	DEHY-804	0.0089	0.039	-	-	-	-	-	-	-	-	0.0050	0.022						
DEHY-EG	DEHY-EG	-	-	-	-	-	-	-	-	-	-	-	-						
DEHY-805	DEHY-805	0.20	0.87	-	-	-	-	-	-	-	-	0.11	0.49						
HTR-803	HTR-803	9.22E-04	0.0040	3.68E-05	1.61E-04	-	-	-	-	-	-	8.82E-04	0.004						
HTR-804	HTR-804	2.30E-04	0.0010	9.19E-06	4.03E-05	-	-	-	-	-	-	2.21E-04	9.66E-04						
HTR-802	HTR-802	0.0037	0.016	1.47E-04	6.44E-04	-	-	-	-	-	-	0.0035	0.015						
HTR-730	HTR-730	0.013	0.055	5.02E-04	0.0022	-	-	-	-	-	-	0.012	0.053						
HTR-805	HTR-805	0.0028	0.012	1.10E-04	4.83E-04	-	-	-	-	-	-	0.0026	0.012						
WL1-FL	WL1-TK601	1.26	0.032	-	-	-	-	-	-	-	-	1.01	0.026						
WL1-FL	WL1-TK602	1.26	0.032	-	-	-	-	-	-	-	-	1.01	0.026						
WL1-FL	WL1-TK603	1.26	0.032	-	-	-	-	-	-	-	-	1.01	0.026						
WL2-TK8101	WL2-TK8101	1.88	0.059	-	-	-	-	-	-	-	-	1.51	0.047						
WL2-TK8102	WL2-TK8102	1.88	0.059	-	-	-	-	-	-	-	-	1.51	0.047						
WL1-FL	WLCS-TK2301	7.11	0.0019	-	-	-	-	-	-	-	-	5.68	0.0015						
WL1-FL	WLCS-TK2302	7.11	0.0019	-	-	-	-	-	-	-	-	5.68	0.0015						
WL1-FL	WLCS-TK2303	7.11	0.0019	-	-	-	-	-	-	-	-	5.68	0.0015						
N/A	ATM LOAD	0.96	0.37	-	-	-	-	-	-	-	-	0.76	0.290						
N/A	NGL LOAD	-	-	-	-	-	-	-	-	-	-	-	-						
N/A	FUG	0.63	2.74	-	-	-	-	-	-	-	-	-	-						
N/A	PIGGING	0.012	0.055	-	-	-	-	-	-	-	-	-	-						
N/A	SSM/M	-	1.00	-	-	-	-	-	-	-	-	-	-						
Totals:		**58.13**	**23.98**	**1.91**	**8.37**	**0.84**	**3.68**	**0.56**	**2.43**	**0.35**	**1.51**	**24.11**	**1.71**						

Table 2-J: Fuel

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

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage (MScf/hr)	Annual Usage (MMScf/yr)	% Sulfur (gr/100 scf)	% Ash
C-1100	Natural Gas	Pipeline Quality Natural Gas	1020	15.40	134.93	5	N/A
C-1200	Natural Gas	Pipeline Quality Natural Gas	1020	15.13	132.50	5	N/A
C-2300	Natural Gas	Pipeline Quality Natural Gas	1020	13.04	114.26	5	N/A
C-2400	Natural Gas	Pipeline Quality Natural Gas	1020	13.04	114.26	5	N/A
ENG-1	Natural Gas	Pipeline Quality Natural Gas	1020	13.90	121.74	5	N/A
ENG-2	Natural Gas	Pipeline Quality Natural Gas	1020	13.90	121.74	5	N/A
ENG-3	Natural Gas	Pipeline Quality Natural Gas	1020	13.90	121.74	5	N/A
ENG-4	Natural Gas	Pipeline Quality Natural Gas	1020	13.90	121.74	5	N/A
ENG-5	Natural Gas	Pipeline Quality Natural Gas	1020	13.90	121.74	5	N/A
WL2-FL	Natural Gas	Pipeline Quality Natural Gas, Process Gas	1020	1.93	16.88	5	N/A
WL1-FL	Natural Gas	Pipeline Quality Natural Gas, Process Gas	2669	15.94	139.61	5	N/A
HTR-803	Natural Gas	Pipeline Quality Natural Gas, Process Gas	1020	0.49	4.29	5	N/A
HTR-804	Natural Gas	Pipeline Quality Natural Gas, Process Gas	1020	0.12	1.07	5	N/A
HTR-802	Natural Gas	Pipeline Quality Natural Gas, Process Gas	1020	1.96	17.18	5	N/A
HTR-730	Natural Gas	Pipeline Quality Natural Gas, Process Gas	1020	6.70	58.66	5	N/A
HTR-805	Natural Gas	Pipeline Quality Natural Gas, Process Gas	1020	1.47	12.88	5	N/A

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

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

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
WL1-TK601	40400311	Condensate and Produced Water	Condensate and Produced Water	6.2	67.3	75.8	13.6	75.8	13.6
WL1-TK602	40400311	Condensate and Produced Water	Condensate and Produced Water	6.2	67.3	75.8	13.6	75.8	13.6
WL1-TK603	40400311	Condensate and Produced Water	Condensate and Produced Water	6.2	67.3	75.8	13.6	75.8	13.6
WL2-TK8101	40400311	Condensate and Produced Water	Condensate and Produced Water	7.2	27.8	75.8	10.2	75.8	10.2
WL2-TK8102	40400311	Condensate and Produced Water	Condensate and Produced Water	7.2	27.8	75.8	10.2	75.8	10.2
WLCS-TK2301	40400311	Condensate and Produced Water	Condensate and Produced Water	7.2	27.0	75.8	10.2	75.8	10.2
WLCS-TK2302	40400311	Condensate and Produced Water	Condensate and Produced Water	7.2	27.0	75.8	10.2	75.8	10.2
WLCS-TK2303	40400311	Condensate and Produced Water	Condensate and Produced Water	7.2	27.0	75.8	10.2	75.8	10.2

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			
WL1-TK601	>8/23/2011	Condensate and Produced Water	N/A	FX	210	33	3.0	2.3	Tan	Tan	New	245,000	27.78
WL1-TK602	>8/23/2011	Condensate and Produced Water	N/A	FX	210	33	3.0	2.3	Tan	Tan	New	245,000	27.78
WL1-TK603	>8/23/2011	Condensate and Produced Water	N/A	FX	210	33	3.0	2.3	Tan	Tan	New	245,000	27.78
WL2-TK8101	>9/15/2015	Condensate and Produced Water	N/A	FX	400	64	3.7	3.0	White	White	New	420,000	25.00
WL2-TK8102	>9/15/2015	Condensate and Produced Water	N/A	FX	400	64	3.7	3.0	White	White	New	420,000	25.00
WLCS-TK2301	>9/15/2015	Condensate and Produced Water	N/A	FX	400	64	3.7	3.0	Tan	Tan	New	1,092,000	65.00
WLCS-TK2302	>9/15/2015	Condensate and Produced Water	N/A	FX	400	64	3.7	3.0	Tan	Tan	New	1,092,000	65.00
WLCS-TK2303	>9/15/2015	Condensate and Produced Water	N/A	FX	400	64	3.7	3.0	Tan	Tan	New	1,092,000	65.00

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

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

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

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

Material Processed				Material Produced			
Description	**Chemical Composition**	**Phase (Gas, Liquid, or Solid)**	**Quantity (specify units)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (specify units)**
Inlet Gas	Natural Gas	Gas	65 MMSCFD	Residue Gas	Natural Gas	Gas	65 MMSCFD
				Condensate	Mixed Hydrocarbonds	Liquid	47500 bbl/yr
				Produced Water	Mixed Hydrocarbonds and Water	Liquid	59000 bbl/yr
				NGL	Natural Gas Liquids	Liquid	54750000 gal/yr

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 - No CEM equipment is located at the facility.									

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 - No parametric emissions measurement equipment is located at the facility.								

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**								
C-1100	**mass GHG**	10092.43	0.015	0.15									10092.59	
	CO_2e	10092.43	4.52	3.79										10100.74
C-1200	**mass GHG**	7904.77	0.015	0.15									7904.93	
	CO_2e	7904.77	4.44	3.72										7912.93
C-2300	**mass GHG**	6816.39	0.013	0.13									6816.54	
	CO_2e	6816.39	3.83	3.21										6823.43
C-2400	**mass GHG**	6816.39	0.013	0.13									6816.54	
	CO_2e	6816.39	3.83	3.21										6823.43
ENG-1	**mass GHG**	7268.18	0.014	0.14									7268.33	
	CO_2e	7268.18	4.08	3.42										7275.68
ENG-2	**mass GHG**	7268.18	0.014	0.14									7268.33	
	CO_2e	7268.18	4.08	3.42										7275.68
ENG-3	**mass GHG**	7268.18	0.014	0.14									7268.33	
	CO_2e	7268.18	4.08	3.42										7275.68
ENG-4	**mass GHG**	7268.18	0.014	0.14									7268.33	
	CO_2e	7268.18	4.08	3.42										7275.68
ENG-5	**mass GHG**	7268.18	0.014	0.14									7268.33	
	CO_2e	7268.18	4.08	3.42										7275.68
WL2-FL	**mass GHG**	1007.12	0.0019	0.019									1007.14	
	CO_2e	1007.12	0.57	0.47										1008.16
WL2-FL Blowdown	**mass GHG**	2431.15	0.0046	0.046									2431.20	
	CO_2e	2431.15	1.36	1.14										2433.66
WL1-FL	**mass GHG**	21793.84	0.041	0.41									21794.29	
	CO_2e	21793.84	12.24	10.27										21816.35
WL1-FL Blowdown	**mass GHG**	126.42	0.00024	0.0024									126.42	
	CO_2e	126.42	0.071	0.060										126.55
DEHY-803	**mass GHG**	7.34	-	10.30									17.64	
	CO_2e	7.34	-	257.46										264.80
DEHY-804	**mass GHG**	0.70	-	0.99									1.70	
	CO_2e	0.70	-	24.76										25.46
DEHY-EG	**mass GHG**	-	-	-									-	
	CO_2e	-	-	-										-
DEHY-805	**mass GHG**	15.76	-	22.12									37.87	
	CO_2e	15.76	-	552.91										568.67

HTR-803	**mass GHG**	256.18	0.00048	0.0048									256.19	
	CO_2e	256.18	0.14	0.12										256.44
HTR-804	**mass GHG**	64.04	0.00012	0.0012									64.05	
	CO_2e	64.04	0.036	0.030										64.11
HTR-802	**mass GHG**	1024.72	0.0019	0.019									1024.74	
	CO_2e	1024.72	0.58	0.48										1025.78
HTR-730	**mass GHG**	3499.75	0.0066	0.066									3499.82	
	CO_2e	3499.75	1.97	1.65										3503.36
HTR-805	**mass GHG**	768.54	0.0014	0.014									768.56	
	CO_2e	768.54	0.43	0.36										769.33
WL1-TK601	**mass GHG**	0.0021	-	0.13									0.13	
	CO_2e	0.0021	-	3.19										3.19
WL1-TK602	**mass GHG**	0.0021	-	0.13									0.13	
	CO_2e	0.0021	-	3.19										3.19
WL1-TK602	**mass GHG**	0.0021	-	0.13									0.13	
	CO_2e	0.0021	-	3.19										3.19
WL2-TK8101	**mass GHG**	0.0042	-	0.25									0.26	
	CO_2e	0.0042	-	6.36										6.36
WL2-TK8102	**mass GHG**	0.0042	-	0.25									0.26	
	CO_2e	0.0042	-	6.36										6.36
WLCS-TK2301	**mass GHG**	0.0053	-	0.19									0.19	
	CO_2e	0.0053	-	4.70										4.71
WLCS-TK2302	**mass GHG**	0.0053	-	0.19									0.19	
	CO_2e	0.0053	-	4.70										4.71
WLCS-TK2303	**mass GHG**	0.0053	-	0.19									0.19	
	CO_2e	0.0053	-	4.70										4.71
ATM LOAD	**mass GHG**	0.010	-	0.13									0.14	
	CO_2e	0.010	-	3.19										3.20
FUG	**mass GHG**	0.96	-	74.81									75.77	
	CO_2e	0.96	-	1870.26										1871.22
PIGGING	**mass GHG**	0.010	-	8.56									8.57	
	CO_2e	0.010	-	213.96										213.97
SSM/M	**mass GHG**	-	-	-									-	
	CO_2e	-	-	-										-
Total	**mass GHG**	98967.45	0.18	120.18									99087.81	
	CO_2e	98967.45	54.41	3004.56										102026.41

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

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

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

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

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

Section 3

Application Summary

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

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

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

Application Summary: Crestwood New Mexico Pipeline, LLC (Crestwood) owns and operates the Willow Lake Gas Processing Plant (Willow Lake), which is currently permitted under GCP-4-5142-M6. This application is being submitted to transition the facility to an initial minor NSR permit (pursuant to 20.2.72.200.A NMAC) while simultaneously making the following modifications:

- Add five (5) natural gas-fired Caterpillar G3606 4SLB compressor engines rated at 1875 hp and associated compressors (Units ENG-1 through ENG-5);
- Add three (3) 400 bbl produced water/condensate tanks at Willow Lake 1 associated with the new compressor station (Units WLCS-TK2301 through WLCS-TK2303);
- Revise existing reboiler representation from one (1) 0.75 MMBtu/hr unit to one (1) existing 0.5 MMBtu/hr reboiler (Unit HTR-803); and one (1) 0.125 MMBtu/hr reboiler (Unit HTR-804);
- Add One (1) process flare at Willow Lake 1 (Unit WL1-FL);
- Increase the capacity of one (1) triethylene glycol (TEG) dehydrator (Unit DEHY-805) to 65 MMscf/day;
- Update facility-wide fugitive emissions to take into account new equipment (Unit FUG);
- Addition of new miscellaneous equipment/emission sources including: Pig Receivers and Launchers (Unit PIGGING), Slug Catcher, Filters, Scrubbers and Compressor Blowdowns (Units WL1-FL Blowdown and WL2-FL Blowdown);
- A thorough review of emission calculations was completed for all existing units and pertinent updates were made as applicable. These include the following:
    - Updating HAP calculation methodology from GRI HAPCalc to AP-42 for all engines and heaters/reboilers (Units C-1100, C-1200, C-2300 and C-2400, ENG-1 through ENG-5, HTR-803, HTR-804, HTR-802, HTR-805, HTR-730)
    - Updating Willow Lake 2 flare destruction efficiency from 95% to 98% (Unit WL2-FL);
    - Updating tank calculation methodology form E&P Tanks to BR&E ProMax (Units WL1-TK601 through WL1-TK603, WL2-TK8101 and WL2-TK8102);
    - Updating condensate loading methodology to BR&E ProMax (Unit ATM LOAD);
    - Updating haul road inputs to NMED's most recent default values for silt content and wet days (Unit HAUL);
    - Updated liquids and gas analyses; and
    - Conservative addition of 4 ppm H_2S to existing fuel gas and facility gas and liquid analyses.

Process Summary: As permitted, The Willow Lake facility consists of two (2) process units to recover natural gas liquids (NGL): Willow Lake 1 consists of a turbo-expander cryogenic separation system that removes a significant fraction of the C2+ compounds from the cooled gas stream, and Willow Lake 2 consists of a refrigerated Joule-Thompson (RJT) plant that also removes C2+ compounds using a combination of mechanical refrigeration and a Joule-Thompson effect. The NGL streams from these units are routed to pressurized storage tanks prior to truck loading and transport. Willow Lake 1 has a maximum processing capacity of 20 MMSCFD of natural gas. Willow Lake 2 has a maximum processing capacity of 35 MMSCFD of natural gas. The two processing units have separate inlets but share two outlet residue lines.

Willow Lake 1 and Willow Lake 2 (in addition to operating as two processing units), may also operate as a standalone compressor station (i.e., without processing). The proposed project includes the addition of five (5) CAT G3606 compressor engines (units ENG-1 through ENG-5) which will operate as a compressor station within the existing Willow Lake 1 area. The capacity of the existing compressor station TEG dehydrator (Unit DEHY-805) will be increased to 65 MMSCFD by replacing one of the three (3) glycol pumps so that the maximum glycol recirculation rate will be 15 gallons per minute. The project will also include the installation of three (3) 400 barrel atmospheric storage tanks (Units WLCS-TK2301 through WLCS-TK2303) to store produced water and condensate. A new flare (Unit WL1-FL), will also control emissions from new equipment installed as part of this project including compressor blowdowns and upset events as well as VRU downtime. The project will also include the installation of two pig receivers and additional piping and fugitive components associated with the new compressor station.

Startup, Shutdown, and Maintenance (SSM) routine or predictable emissions: Pursuant to the NMED's "Implementation Guidance for Permitting SSM Emissions and Excess Emissions" (June 2012): There is no limit on the quantity of SSM emissions that can be permitted, provided they are routine, and predictable, and included in applicable air dispersion modeling that demonstrates compliance with state and federal ambient air quality standards. Routine SSM emission such as compressor blowdowns and pig receiving/launching emissions are quantified under separate emission units (Units PIGGING, WL1-FL Blowdown, and WL2-FL Blowdown). These sources of emissions are routine and are included in the required air dispersion modeling submitted with this application. Other SSM emissions are included under the SSM/M combined requested emission limit. Instead of permitting SSM and upset/malfunction emissions separately, Crestwood requests that emissions from both SSM and upset/malfunction be consolidated in the permit with a total limit of 10 tpy VOC, 1 tpy HAP and 1 tpy H_2S.

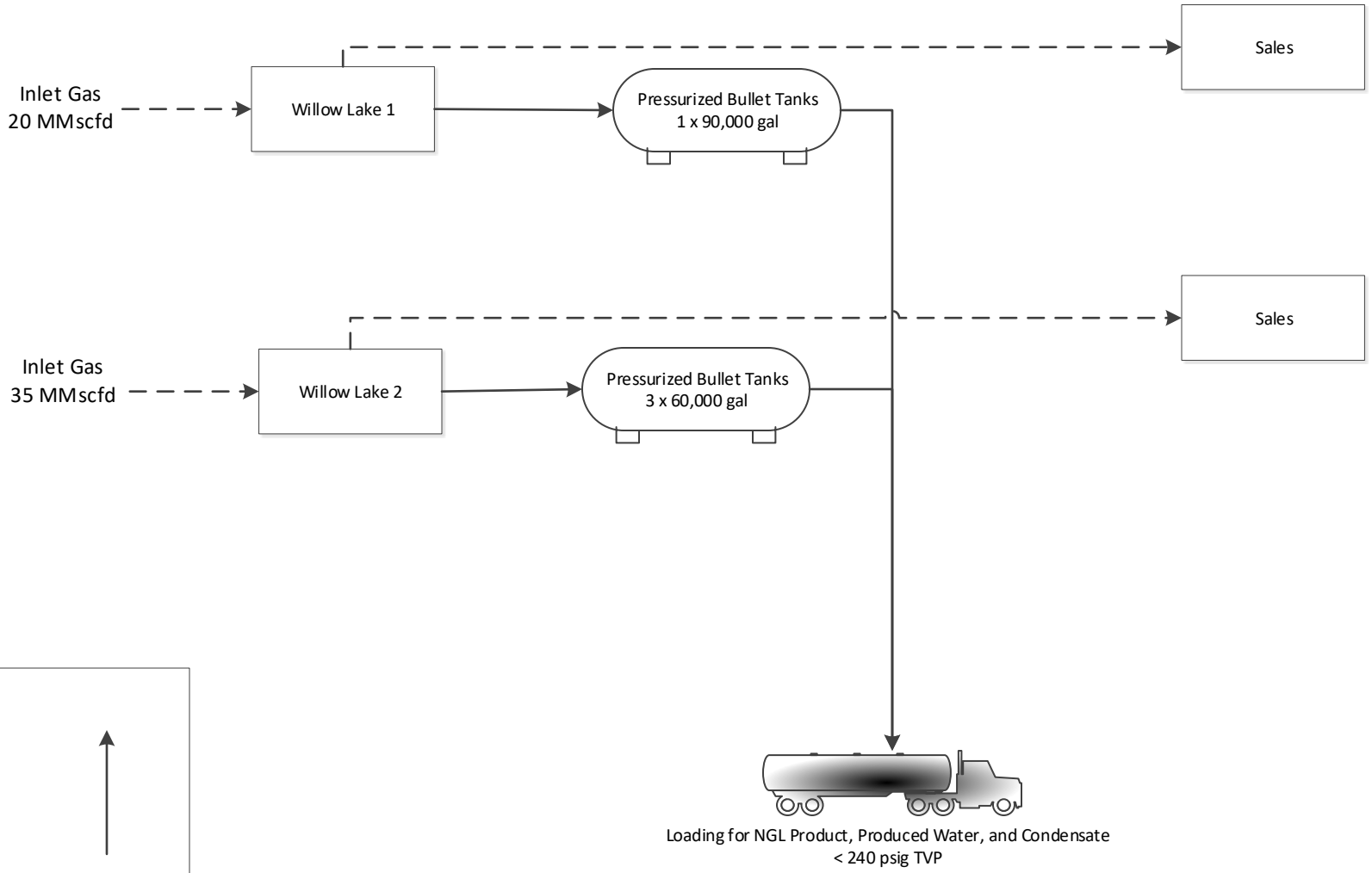
Section 4

Process Flow Sheet

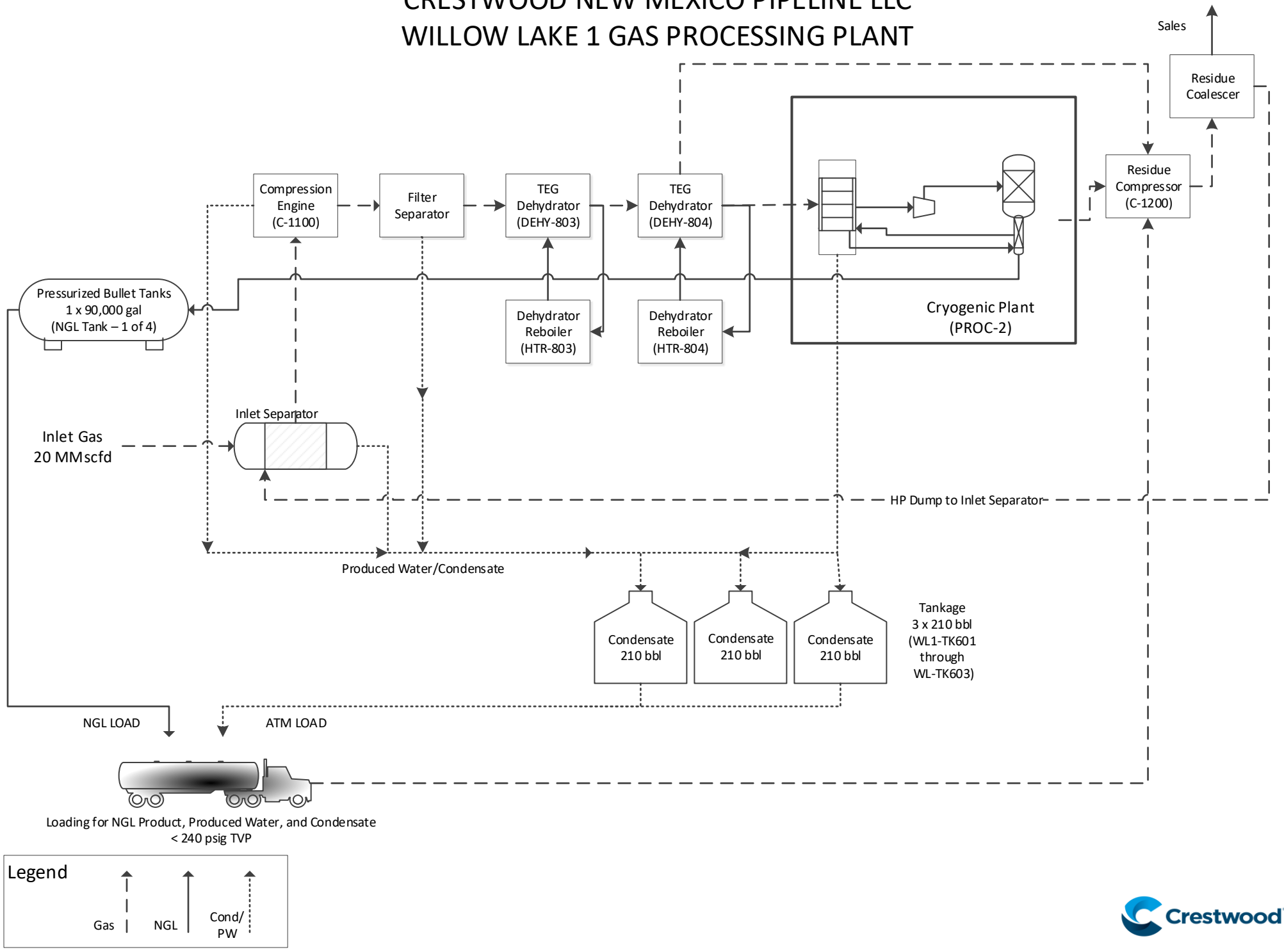
A **process flow sheet** and/or block diagram indicating the individual equipment, all emission points and types of control applied to those points. The unit numbering system should be consistent throughout this application.

A process flow diagram is attached.

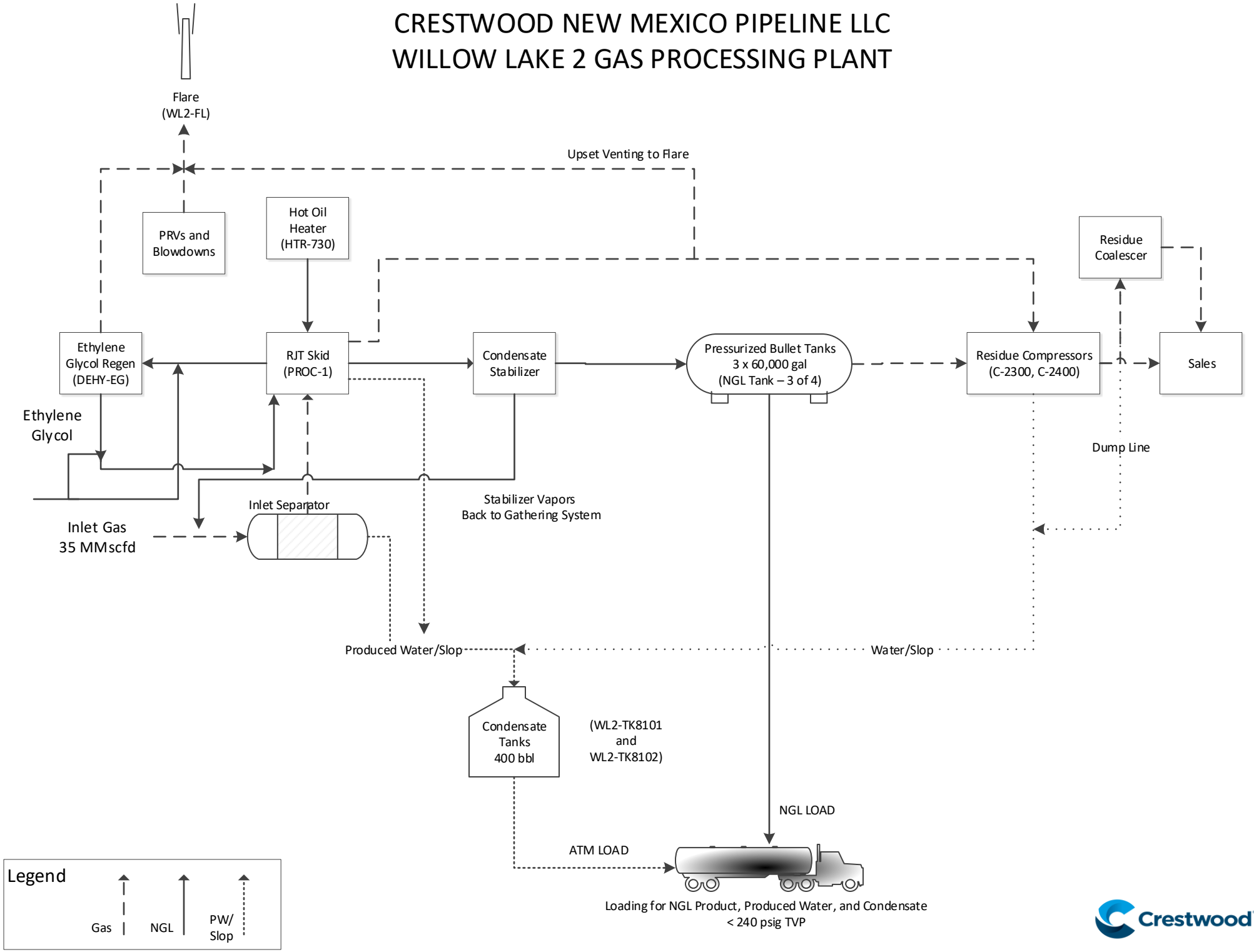
CRESTWOOD NEW MEXICO PIPELINE LLC
WILLOW LAKE GAS PROCESSING PLANT



CRESTWOOD NEW MEXICO PIPELINE LLC
WILLOW LAKE 1 GAS PROCESSING PLANT



CRESTWOOD NEW MEXICO PIPELINE LLC
WILLOW LAKE 2 GAS PROCESSING PLANT



PR-1010
INLET PIG RECEIVER

FROM EPNG

PR-1020
INLET PIG RECEIVER

FROM TOMAHAWK

FROM WL-1

BLOWDOWN

V-5110
HP FLARE DRUM

V-5120
LP FLARE DRUM

FL-5100
FLARE

LP DRAIN

RECYCLE

BLOWDOWN

F-1500
COALESCING VORTEX FILTER

TO WL-1

V-1000
SLUG CATCHER

C-1310

C-1320

C-1330

C-1340

C-1350
COMPRESSOR

FROM WL-1

V-3100
FUEL GAS SCRUBBER

HP DRAIN

C-2500
VRU COMPRESSOR

LP DRAIN

TK-2301
LIQUID STORAGE TANKS

TK-2302
LIQUID STORAGE TANKS

TK-2303
LIQUID STORAGE TANKS

TRUCK LOADING

NO.	REVISION	BY	CHK.	DATE
A	ISSUED FOR APPROVAL	SP	HS	07/29/20

Crestwood

WILLOW LAKE COMPRESSOR STATION
PROCESS FLOW DIAGRAM
OVERVIEW PFD
EDDY COUNTY, NEW MEXICO

DRAWN BY	S. PSHICHENKO	DATE	07/16/20
CHK. BY	H. SIEBERT	SCALE	NONE
DESIGNED BY		APPR. BY	E. AHRENS

A.F.E. NO.	200229	DWG. DESC:	
PRINT ISSUED	FOR APPROVAL	DWG. NO.	WLC-PFD-0100

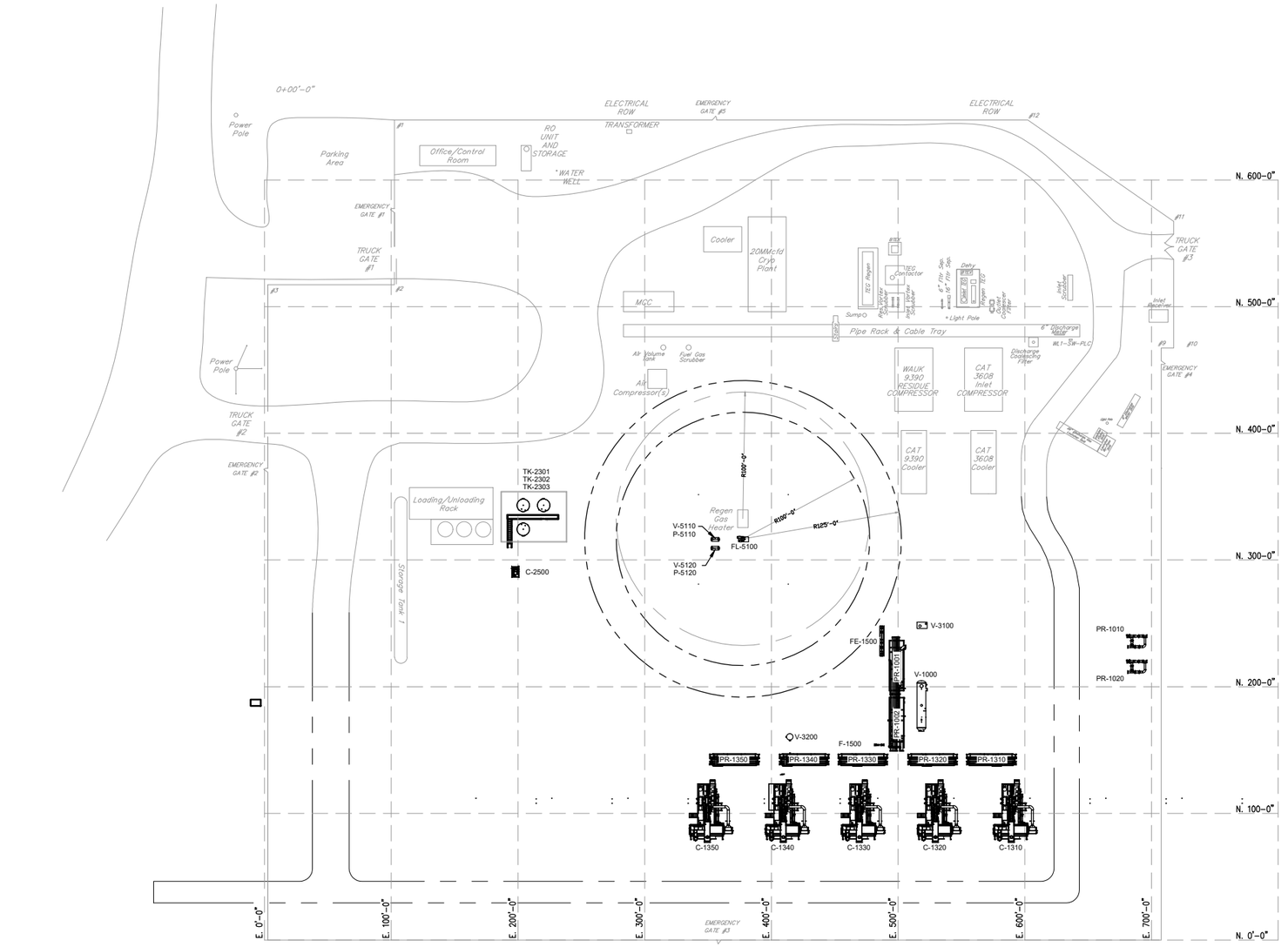
WLC-PFD-0100.dwg Plotted on: Aug 19, 2020 by AI.Santiago

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 facility plot plan is attached.



NOTES:

REFERENCE DRAWINGS	
DWG. NO.	TITLE

REVISIONS					
NO.	DESCRIPTION	BY DATE	CHK. DATE	APPR. DATE
B	ISSUED FOR PERMIT	JAL 08/25/20	EA 08/25/20	EA 08/25/20
A	ISSUED FOR REVIEW	JAL 08/11/20	EA 08/11/20	EA 08/11/20

Crestwood

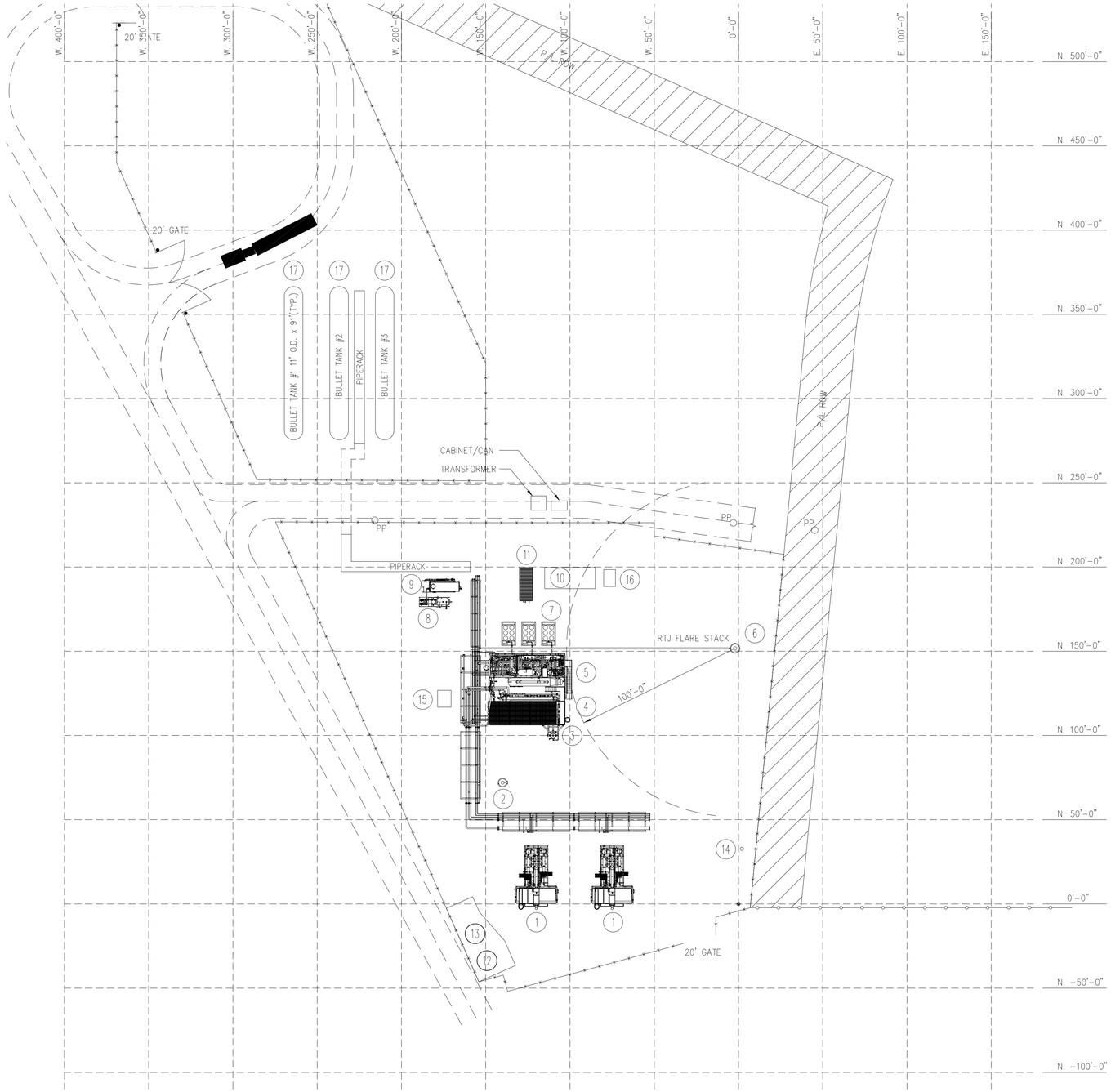
KAHUNA
11400 W□□□ □□r C□□S□□325
W□□□ □□□r□CO □0021
303□451□3□4

WILLOW LAKE 1
PLOT PLAN
MALAGA□NM

DRAWN BY: JAL	CHECKED: EA	APPROVED: EA
CREATION DATE: 07/29/20	CHECK DATE: 07/29/20	APPR. DATE: 07/29/20
Proj. No.: 4083.0723.00	DWG. No.: WLC-PP-1000	SHEET No. 1 OF 1
SCALE: 1"=50'		B

PLOT TIME/DATE: August 25, 2020
BY: John Luebbers
LAST SAVED: 08/25/20
FILE LOCATION: N:\PROJECTS\CRESTWOOD\4083.0723.00 - WILLOW LAKE COMPRESSOR STATION\2000-SITE PLAN - GA'S\WLC-PP-1000.DWG

PLANT NORTH



ITEM	EQUIPMENT DESCRIPTION
1	Compressor
2	Inlet Separator
3	Process Skid #1
4	Process Skid #2
5	Process Skid #3
6	Flare
7	Hycon Oil Coolers
8	Hot Oil Pump Skid
9	Hot Oil Heater
10	MCC Building
11	Instrument Air
12	Slop Tank #1
13	Slop Tank #2
14	Coalescing Filter
15	Building
16	Switchboard
17	Bullet Tank

NO.	REVISION	BY	CHK.	DATE
1	AS-BUILT, MOC 000001091	RB	CGT	08/22/18
0	RECORD DRAWING	EFA	GJS	02/22/17

Crestwood

WILLOW LAKE GAS PLANT 2
OVERALL SITE PLAN

MALAGA, NM

DRAWN BY REB	DATE 12/03/15	A.F.E. NO.	
CHK. BY	SCALE NTS		
DESIGNED BY	APPR. BY	PRINT ISSUED	DWG. NO. 0501

0501 OVERALL SITE PLAN_AS-BUILT.dwg Plotted on: Sep 11, 2018 by NYYANKOV

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.

Emission calculations are attached.

Compressor Engines (Units C-1100, C-1200, C-2300, C-2400, and ENG-1 through ENG-5)
Manufacturer and catalyst data is used to calculate engine NO_X, CO, VOC, and HCHO emissions. Emission factors from AP-42 Tables 3.2-1 and 2 are used to calculate PM and all other HAP emissions. A fuel gas sulfur content of 5 gr/100 scf is assumed to calculated SO_2 emissions and a fuel gas hydrogen sulfide content of 0.25 gr/100 scf is used to calculate H_2S emissions.

Glycol Dehydrators (Units DEHY-803, DEHY-804, DEHY-EG, DEHY-805)
GRI GlyCalc 4.0 is used to calculate emissions from TEG and EG Dehydrators. A recent representative gas analysis (dated 5/28/2020) is used along with design specifications from facility engineers. 40 CFR 98 Subpart A is used to calculate GHG emission.

Heaters and Reboilers (Units HTR-802, HTR-803, HTR-804, HTR-805, HTR-730)
Heater and reboiler emissions are calculated using emission factors from AP-42 Tables 1.4-1, 1.4-2, and 1.4-3. GHG emission are calculated using emission factors and GWPs in 40 CFR 98 Subparts A and C.

Fugitive Components (Unit FUG)
Fugitive component emissions are calculated using emission factors from Table 2-4 of EPA Protocol for Equipment Leak Emission Estimates (1995). A representative gas analysis (dated 5/28/2020) and liquid compositions calculated using BR&E ProMax are used in these calculations.

Storage Tanks (Units WL1-TK601 through WL1-TK603, WL2-TK8101 and WL2-TK8102, WLCS-TK2301 to WLCS-TK2303)
Tanks emission calculations are performed using BR&E ProMax using a condensate liquid analysis dated 5/28/2020.

Condensate Loading (Unit ATM LOAD)
Condensate loading emission calculations are performed using BR&E ProMax using a condensate liquid analysis dated 5/28/2020.

Natural Gas Liquid Loading (Unit NGL LOAD)
NGL loading emissions are calculated using loading hose dimensions, volumes, and throughputs. Physical properties of NGLs were estimated.

Unpaved Haul Road (Unit HAUL)
Haul road emissions are calculated in accordance with AP-42 Section 13.2.2.3, liquid density and production rates and an assumed truck volume capacity and weight. Haul roads are exempt pursuant to 20.2.72.202.B(5) NMAC.

Process Flares (Units WL1-FL and WL2-FL)
Process flare emissions are calculated with tank and dehydrator emissions and properties from BR&E ProMax and TNRCC RG-109 emission factors.

Miscellaneous Equipment (Units WL1-FL Blowdown, WL2-FL Blowdown, PIGGING)
Engineer estimates for blowdown volumes and frequency were used to calculated engine blowdown emissions. A gas analysis dated 05/28/2020 and a residue gas analysis were used to estimate blowdown gas composition. Flaring emissions are calculated using TNRCC RG-109 emission factors. Pig receiver and launcher emissions were calculated using estimated component volumes and a facility inlet gas analysis dated 5/28/2020.

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)

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Maximum Uncontrolled Emissions

Unit	NO_x		CO		VOCs		SO_2		TSP		PM_{10}		$PM_{2.5}$		H_2S		CO_2e
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	tpy
C-1100	2.61	11.44	14.37	62.93	4.12	18.05	0.23	1.01	0.16	0.69	0.16	0.69	0.16	0.69	1.10E-04	4.82E-04	10100.74
C-1200	56.75	248.55	39.29	172.07	2.14	9.37	0.23	0.99	0.30	1.31	0.30	1.31	0.30	1.31	1.08E-04	4.73E-04	7912.93
C-2300	49.26	215.76	42.59	186.56	0.78	3.41	0.19	0.85	0.26	1.13	0.26	1.13	0.26	1.13	9.32E-05	4.08E-04	6823.43
C-2400	49.26	215.76	42.59	186.56	0.78	3.41	0.19	0.85	0.26	1.13	0.26	1.13	0.26	1.13	9.32E-05	4.08E-04	6823.43
ENG-1	2.07	9.05	9.09	39.83	2.03	8.87	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	7275.68
ENG-2	2.07	9.05	9.09	39.83	2.03	8.87	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	7275.68
ENG-3	2.07	9.05	9.09	39.83	2.03	8.87	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	7275.68
ENG-4	2.07	9.05	9.09	39.83	2.03	8.87	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	7275.68
ENG-5	2.07	9.05	9.09	39.83	2.03	8.87	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	7275.68
WL2-FL	0.0091	0.040	0.018	0.080	-	-	9.29E-04	4.07E-03	-	-	-	-	-	-	2.32E-05	1.02E-04	-
WL2-FL Blowdown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WL1-FL	0.0077	0.034	0.015	0.068	-	-	0.00079	0.0034	-	-	-	-	-	-	1.96E-05	8.60E-05	-
WL1-FL Blowdown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEHY-803	-	-	-	-	82.14	359.76	-	-	-	-	-	-	-	-	9.60E-03	4.20E-02	10733.76
DEHY-804	-	-	-	-	7.91	34.63	-	-	-	-	-	-	-	-	9.00E-04	3.94E-03	1032.26
DEHY-EG	-	-	-	-	1.82	7.97	-	-	-	-	-	-	-	-	9.40E-03	4.12E-02	156.76
DEHY-805	-	-	-	-	176.64	773.68	-	-	-	-	-	-	-	-	2.05E-02	8.98E-02	302931.08
HTR-803	0.049	0.21	0.041	0.18	0.0027	0.012	0.0073	0.032	0.0037	0.016	0.0037	0.016	0.0037	0.016	3.50E-06	1.53E-05	256.44
HTR-804	0.012	0.054	0.010	0.045	0.00067	0.0030	0.0018	0.0080	0.00093	0.0041	0.00093	0.0041	0.00093	0.0041	8.75E-07	3.83E-06	64.11
HTR-802	0.20	0.86	0.16	0.72	0.011	0.047	0.029	0.13	0.015	0.065	0.015	0.065	0.015	0.065	1.40E-05	6.13E-05	1025.78
HTR-730	0.67	2.93	0.56	2.46	0.037	0.16	0.10	0.44	0.051	0.22	0.051	0.22	0.051	0.22	4.78E-05	2.10E-04	3503.36
HTR-805	0.15	0.64	0.12	0.54	0.0081	0.035	0.022	0.096	0.011	0.049	0.011	0.049	0.011	0.049	1.05E-05	4.60E-05	769.33
WL1-TK601	-	-	-	-	62.87	24.68	-	-	-	-	-	-	-	-	1.54E-03	4.54E-04	63.77
WL1-TK602	-	-	-	-	62.87	24.68	-	-	-	-	-	-	-	-	1.54E-03	4.54E-04	63.77
WL1-TK603	-	-	-	-	62.87	24.68	-	-	-	-	-	-	-	-	1.54E-03	4.54E-04	63.77
WL2-TK8101	-	-	-	-	94.33	46.96	-	-	-	-	-	-	-	-	2.32E-03	9.01E-04	127.22
WL2-TK8102	-	-	-	-	94.33	46.96	-	-	-	-	-	-	-	-	2.32E-03	9.01E-04	127.22
WLCS-TK2301	-	-	-	-	364.51	80.89			-	-	-	-			8.83E-03	1.50E-03	94.20
WLCS-TK2302	-	-	-	-	364.51	80.89			-	-	-	-			8.83E-03	1.50E-03	94.20
WLCS-TK2303	-	-	-	-	364.51	80.89			-	-	-	-			8.83E-03	1.50E-03	94.20
ATM LOAD	-	-	-	-	31.44	11.91	-	-	-	-	-	-	-	-	4.79E-04	1.74E-04	3.20
NGL LOAD	-	-	-	-	0.0031	0.013	-	-	-	-	-	-	-	-	-	-	-
FUG	-	-	-	-	12.49	54.72	-	-	-	-	-	-	-	-	1.03E-04	4.51E-04	1871.22
PIGGING	-	-	-	-	0.30	1.31	-	-	-	-	-	-	-	-	4.99E-06	2.19E-05	213.97
SSM/M	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	1.00	-
Totals	**169.30**	**741.56**	**185.25**	**811.39**	**1801.54**	**1743.50**	**2.05**	**8.96**	**1.76**	**7.72**	**1.76**	**7.72**	**1.76**	**7.72**	**0.078**	**1.19**	**391328.54**

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Maximum Controlled Emissions

Unit	NO_x		CO		VOCs		SO_2		TSP		PM_{10}		$PM_{2.5}$		H_2S		CO_2e
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	tpy
C-1100	2.61	11.44	5.22	22.89	1.03	4.51	0.23	1.01	0.16	0.69	0.16	0.69	0.16	0.69	1.10E-04	4.82E-04	10100.74
C-1200	8.51	37.28	5.89	25.81	0.69	3.02	0.23	0.99	0.30	1.31	0.30	1.31	0.30	1.31	1.08E-04	4.73E-04	7912.93
C-2300	3.70	16.22	3.70	16.22	0.37	1.62	0.19	0.85	0.26	1.13	0.26	1.13	0.26	1.13	9.32E-05	4.08E-04	6823.43
C-2400	3.70	16.22	3.70	16.22	0.37	1.62	0.19	0.85	0.26	1.13	0.26	1.13	0.26	1.13	9.32E-05	4.08E-04	6823.43
ENG-1	2.07	9.05	0.91	3.98	0.85	3.71	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	7275.68
ENG-2	2.07	9.05	0.91	3.98	0.85	3.71	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	7275.68
ENG-3	2.07	9.05	0.91	3.98	0.85	3.71	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	7275.68
ENG-4	2.07	9.05	0.91	3.98	0.85	3.71	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	7275.68
ENG-5	2.07	9.05	0.91	3.98	0.85	3.71	0.21	0.91	0.14	0.62	0.14	0.62	0.14	0.62	9.93E-05	4.35E-04	7275.68
WL2-FL	0.28	1.23	0.56	2.45	0.036	0.16	0.018	0.080	-	-	-	-	-	-	2.11E-04	9.25E-04	1008.16
WL2-FL Blowdown	110.23	2.87	220.06	5.72	159.39	4.14	0.41	0.011	-	-	-	-	-	-	4.49E-03	1.17E-04	2433.66
WL1-FL	5.88	1.32	11.73	2.63	25.64	0.32	0.058	0.004	-	-	-	-	-	-	6.42E-04	9.19E-05	21816.35
WL1-FL Blowdown	5.73	0.15	11.44	0.30	8.29	0.22	0.022	0.00056	-	-	-	-	-	-	2.33E-04	6.07E-06	126.55
DEHY-803	-	-	-	-	1.37	6.01	-	-	-	-	-	-	-	-	2.26E-04	9.88E-04	264.80
DEHY-804	-	-	-	-	0.13	0.58	-	-	-	-	-	-	-	-	2.16E-05	9.46E-05	25.464
DEHY-EG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEHY-805	-	-	-	-	2.94	12.90	-	-	-	-	-	-	-	-	4.80E-04	2.10E-03	568.67
HTR-803	0.049	0.21	0.041	0.18	0.0027	0.012	0.0073	0.032	0.0037	0.016	0.0037	0.016	0.0037	0.016	3.50E-06	1.53E-05	256.44
HTR-804	0.012	0.054	0.010	0.045	0.00067	0.0030	0.0018	0.0080	0.00093	0.0041	0.00093	0.0041	0.00093	0.0041	8.75E-07	3.83E-06	64.11
HTR-802	0.20	0.86	0.16	0.72	0.011	0.047	0.029	0.13	0.015	0.065	0.015	0.065	0.015	0.065	1.40E-05	6.13E-05	1025.78
HTR-730	0.67	2.93	0.56	2.46	0.037	0.16	0.10	0.44	0.051	0.22	0.051	0.22	0.051	0.22	4.78E-05	2.10E-04	3503.36
HTR-805	0.15	0.64	0.12	0.54	0.0081	0.035	0.022	0.10	0.011	0.049	0.011	0.049	0.011	0.049	1.05E-05	4.60E-05	769.33
WL1-TK601	-	-	-	-	62.87	1.23	-	-	-	-	-	-	-	-	1.54E-03	2.27E-05	3.19
WL1-TK602	-	-	-	-	62.87	1.23	-	-	-	-	-	-	-	-	1.54E-03	2.27E-05	3.19
WL1-TK603	-	-	-	-	62.87	1.23	-	-	-	-	-	-	-	-	1.54E-03	2.27E-05	3.19
WL2-TK8101	-	-	-	-	94.33	2.35	-	-	-	-	-	-	-	-	2.32E-03	4.51E-05	6.36
WL2-TK8102	-	-	-	-	94.33	2.35	-	-	-	-	-	-	-	-	2.32E-03	4.51E-05	6.36
WLCS-TK2301	-	-	-	-	364.51	0.08	-	-	-	-	-	-	-	-	8.83E-03	1.50E-06	4.71
WLCS-TK2302	-	-	-	-	364.51	0.08	-	-	-	-	-	-	-	-	8.83E-03	1.50E-06	4.71
WLCS-TK2303	-	-	-	-	364.51	0.08	-	-	-	-	-	-	-	-	8.83E-03	1.50E-06	4.71
ATM LOAD	-	-	-	-	31.44	11.91	-	-	-	-	-	-	-	-	4.79E-04	1.74E-04	3.20
NGL LOAD	-	-	-	-	0.0031	0.013	-	-	-	-	-	-	-	-	-	-	-
FUG	-	-	-	-	12.49	54.72	-	-	-	-	-	-	-	-	1.03E-04	4.51E-04	1871.22
PIGGING	-	-	-	-	0.30	1.31	-	-	-	-	-	-	-	-	4.99E-06	2.19E-05	213.97
SSM/M	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	1.00	-
Totals	**152.06**	**136.70**	**267.77**	**116.11**	**1719.60**	**140.52**	**2.56**	**9.05**	**1.76**	**7.72**	**1.76**	**7.72**	**1.76**	**7.72**	**0.044**	**1.01**	**102026.41**

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Maximum Uncontrolled HAP Emissions

Unit	HCHO		Acetaldehyde		Acrolein		Methanol		Toluene		Ethylbenzene		Xylenes		Benzene		n-Hexane		Total HAPs	
	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
C-1100	0.83	3.63	0.13	0.58	8.08E-02	3.54E-01	3.93E-02	1.72E-01	6.41E-03	2.81E-02	6.24E-04	2.73E-03	2.89E-03	1.27E-02	6.91E-03	3.03E-02	1.74E-02	7.64E-02	1.12	4.92
C-1200	0.83	3.63	0.043	0.19	4.06E-02	1.78E-01	4.72E-02	2.07E-01	8.61E-03	3.77E-02	3.83E-04	1.68E-03	3.01E-03	1.32E-02	2.44E-02	1.07E-01	-	-	1.01	4.42
C-2300	0.19	0.81	0.037	0.16	3.50E-02	1.53E-01	4.07E-02	1.78E-01	7.42E-03	3.25E-02	3.30E-04	1.45E-03	2.59E-03	1.14E-02	2.10E-02	9.21E-02	-	-	0.34	1.49
C-2400	0.19	0.81	0.037	0.16	3.50E-02	1.53E-01	4.07E-02	1.78E-01	7.42E-03	3.25E-02	3.30E-04	1.45E-03	2.59E-03	1.14E-02	2.10E-02	9.21E-02	-	-	0.34	1.49
ENG-1	0.83	3.62	0.12	0.52	7.29E-02	3.19E-01	3.54E-02	1.55E-01	5.78E-03	2.53E-02	5.63E-04	2.46E-03	2.61E-03	1.14E-02	6.24E-03	2.73E-02	1.57E-02	6.89E-02	1.09	4.78
ENG-2	0.83	3.62	0.12	0.52	7.29E-02	3.19E-01	3.54E-02	1.55E-01	5.78E-03	2.53E-02	5.63E-04	2.46E-03	2.61E-03	1.14E-02	6.24E-03	2.73E-02	1.57E-02	6.89E-02	1.09	4.78
ENG-3	0.83	3.62	0.12	0.52	7.29E-02	3.19E-01	3.54E-02	1.55E-01	5.78E-03	2.53E-02	5.63E-04	2.46E-03	2.61E-03	1.14E-02	6.24E-03	2.73E-02	1.57E-02	6.89E-02	1.09	4.78
ENG-4	0.83	3.62	0.12	0.52	7.29E-02	3.19E-01	3.54E-02	1.55E-01	5.78E-03	2.53E-02	5.63E-04	2.46E-03	2.61E-03	1.14E-02	6.24E-03	2.73E-02	1.57E-02	6.89E-02	1.09	4.78
ENG-5	0.83	3.62	0.12	0.52	7.29E-02	3.19E-01	3.54E-02	1.55E-01	5.78E-03	2.53E-02	5.63E-04	2.46E-03	2.61E-03	1.14E-02	6.24E-03	2.73E-02	1.57E-02	6.89E-02	1.09	4.78
WL2-FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WL2-FL Blowdown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WL1-FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WL1-FL Blowdown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEHY-803	-	-	-	-	-	-	-	-	9.08	39.78	1.23	5.39	4.87	21.32	0.15	0.66	2.59	11.33	17.92	78.47
DEHY-804	-	-	-	-	-	-	-	-	0.896	3.93	0.12	0.54	0.50	2.17	0.015	0.064	0.25	1.08	1.78	7.78
DEHY-EG	-	-	-	-	-	-	-	-	0.0047	0.021	0.0037	0.016	0.013	0.055	0.0034	0.015	0.015	0.065	0.039	0.17
DEHY-805	-	-	-	-	-	-	-	-	19.82	86.79	2.70	11.81	10.81	47.34	0.33	1.43	5.53	24.23	39.18	171.60
HTR-803	3.68E-05	1.61E-04	-	-	-	-	-	-	1.67E-06	7.30E-06	-	-	-	-	1.03E-06	4.51E-06	8.82E-04	3.86E-03	9.22E-04	4.04E-03
HTR-804	9.19E-06	4.03E-05	-	-	-	-	-	-	4.17E-07	1.83E-06	-	-	-	-	2.57E-07	1.13E-06	2.21E-04	9.66E-04	2.30E-04	1.01E-03
HTR-802	1.47E-04	6.44E-04	-	-	-	-	-	-	6.67E-06	2.92E-05	-	-	-	-	4.12E-06	1.80E-05	3.53E-03	1.55E-02	3.69E-03	1.62E-02
HTR-730	5.02E-04	2.20E-03	-	-	-	-	-	-	2.28E-05	9.97E-05	-	-	-	-	1.41E-05	6.16E-05	1.21E-02	5.28E-02	1.26E-02	5.52E-02
HTR-805	1.10E-04	4.83E-04	-	-	-	-	-	-	5.00E-06	2.19E-05	-	-	-	-	3.09E-06	1.35E-05	2.65E-03	1.16E-02	2.77E-03	1.21E-02
WL1-TK601	-	-	-	-	-	-	-	-	0.12	0.065	7.97E-03	4.51E-03	4.99E-02	2.84E-02	6.85E-02	3.42E-02	1.01	0.51	1.26	0.64
WL1-TK602	-	-	-	-	-	-	-	-	0.12	0.065	7.97E-03	4.51E-03	4.99E-02	2.84E-02	6.85E-02	3.42E-02	1.01	0.51	1.26	0.64
WL1-TK603	-	-	-	-	-	-	-	-	0.12	0.065	7.97E-03	4.51E-03	4.99E-02	2.84E-02	6.85E-02	3.42E-02	1.01	0.51	1.26	0.64
WL2-TK8101	-	-	-	-	-	-	-	-	0.18	0.12	1.19E-02	8.16E-03	7.45E-02	5.13E-02	1.03E-01	6.31E-02	1.51	0.94	1.88	1.18
WL2-TK8102	-	-	-	-	-	-	-	-	0.18	0.12	1.19E-02	8.16E-03	7.45E-02	5.13E-02	1.03E-01	6.31E-02	1.51	0.94	1.88	1.18
WLCS-TK2301	-	-	-	-	-	-	-	-	0.70	0.19	4.68E-02	1.33E-02	2.93E-01	8.38E-02	3.87E-01	1.01E-01	5.68	1.51	7.11	1.90
WLCS-TK2302	-	-	-	-	-	-	-	-	0.70	0.19	4.68E-02	1.33E-02	2.93E-01	8.38E-02	3.87E-01	1.01E-01	5.68	1.51	7.11	1.90
WLCS-TK2303	-	-	-	-	-	-	-	-	0.70	0.19	4.68E-02	1.33E-02	2.93E-01	8.38E-02	3.87E-01	1.01E-01	5.68	1.51	7.11	1.90
ATM LOAD	-	-	-	-	-	-	-	-	9.98E-02	3.83E-02	7.11E-03	2.73E-03	4.47E-02	1.71E-02	5.04E-02	1.92E-02	0.76	0.29	0.96	0.37
NGL LOAD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.63	2.74
PIGGING	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	0.05
SSM/M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
Totals	**6.16**	**27.00**	**0.84**	**3.68**	**0.56**	**2.43**	**0.35**	**1.51**	**32.79**	**131.82**	**4.25**	**17.84**	**17.43**	**71.44**	**2.22**	**3.17**	**32.32**	**45.45**	**97.64**	**308.50**

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Maximum Controlled HAP Emissions

Unit	HCHO		Acetaldehyde		Acrolein		Methanol		Toluene		Ethylbenzene		Xylenes		Benzene		n-Hexane		Total HAPs	
	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
C-1100	0.21	0.91	0.13	0.58	8.08E-02	3.54E-01	3.93E-02	1.72E-01	6.41E-03	2.81E-02	6.24E-04	2.73E-03	2.89E-03	1.27E-02	6.91E-03	3.03E-02	1.74E-02	7.64E-02	0.50	2.20
C-1200	0.17	0.73	0.043	0.19	4.06E-02	1.78E-01	4.72E-02	2.07E-01	8.61E-03	3.77E-02	3.83E-04	1.68E-03	3.01E-03	1.32E-02	2.44E-02	1.07E-01	-	-	0.35	1.51
C-2300	0.15	0.65	0.037	0.16	3.50E-02	1.53E-01	4.07E-02	1.78E-01	7.42E-03	3.25E-02	3.30E-04	1.45E-03	2.59E-03	1.14E-02	2.10E-02	9.21E-02	-	-	0.30	1.33
C-2400	0.15	0.65	0.037	0.16	3.50E-02	1.53E-01	4.07E-02	1.78E-01	7.42E-03	3.25E-02	3.30E-04	1.45E-03	2.59E-03	1.14E-02	2.10E-02	9.21E-02	-	-	0.30	1.33
ENG-1	0.25	1.09	0.12	0.52	7.29E-02	3.19E-01	3.54E-02	1.55E-01	5.78E-03	2.53E-02	5.63E-04	2.46E-03	2.61E-03	1.14E-02	6.24E-03	2.73E-02	1.57E-02	6.89E-02	0.51	2.25
ENG-2	0.25	1.09	0.12	0.52	7.29E-02	3.19E-01	3.54E-02	1.55E-01	5.78E-03	2.53E-02	5.63E-04	2.46E-03	2.61E-03	1.14E-02	6.24E-03	2.73E-02	1.57E-02	6.89E-02	0.51	2.25
ENG-3	0.25	1.09	0.12	0.52	7.29E-02	3.19E-01	3.54E-02	1.55E-01	5.78E-03	2.53E-02	5.63E-04	2.46E-03	2.61E-03	1.14E-02	6.24E-03	2.73E-02	1.57E-02	6.89E-02	0.51	2.25
ENG-4	0.25	1.09	0.12	0.52	7.29E-02	3.19E-01	3.54E-02	1.55E-01	5.78E-03	2.53E-02	5.63E-04	2.46E-03	2.61E-03	1.14E-02	6.24E-03	2.73E-02	1.57E-02	6.89E-02	0.51	2.25
ENG-5	0.25	1.09	0.12	0.52	7.29E-02	3.19E-01	3.54E-02	1.55E-01	5.78E-03	2.53E-02	5.63E-04	2.46E-03	2.61E-03	1.14E-02	6.24E-03	2.73E-02	1.57E-02	6.89E-02	0.51	2.25
WL2-FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0008	0.0034
WL2-FL Blowdown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21.73	0.56
WL1-FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.50	0.01
WL1-FL Blowdown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.13	0.029
DEHY-803	-	-	-	-	-	-	-	-	0.031	0.13	0.0019	0.0082	0.0059	0.026	0.0010	0.0045	0.052	0.23	0.092	0.40
DEHY-804	-	-	-	-	-	-	-	-	0.0030	0.013	0.00018	0.00081	0.00060	0.0026	0.000098	0.00043	0.0050	0.022	0.0089	0.039
DEHY-EG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEHY-805	-	-	-	-	-	-	-	-	0.067	0.29	0.0041	0.018	0.013	0.057	0.0022	0.0097	0.11	0.49	0.20	0.87
HTR-803	3.68E-05	1.61E-04	-	-	-	-	-	-	1.67E-06	7.30E-06	-	-	-	-	1.03E-06	4.51E-06	8.82E-04	3.86E-03	9.22E-04	4.04E-03
HTR-804	9.19E-06	4.03E-05	-	-	-	-	-	-	4.17E-07	1.83E-06	-	-	-	-	2.57E-07	1.13E-06	2.21E-04	9.66E-04	2.30E-04	1.01E-03
HTR-802	1.47E-04	6.44E-04	-	-	-	-	-	-	6.67E-06	2.92E-05	-	-	-	-	4.12E-06	1.80E-05	3.53E-03	1.55E-02	3.69E-03	1.62E-02
HTR-730	5.02E-04	2.20E-03	-	-	-	-	-	-	2.28E-05	9.97E-05	-	-	-	-	1.41E-05	6.16E-05	1.21E-02	5.28E-02	1.26E-02	5.52E-02
HTR-805	1.10E-04	4.83E-04	-	-	-	-	-	-	5.00E-06	2.19E-05	-	-	-	-	3.09E-06	1.35E-05	2.65E-03	1.16E-02	2.77E-03	1.21E-02
WL1-TK601	-	-	-	-	-	-	-	-	0.12	0.0033	0.0080	0.00023	0.050	0.0014	0.069	0.0017	1.01	0.026	1.26	0.032
WL1-TK602	-	-	-	-	-	-	-	-	0.12	0.0033	0.0080	0.00023	0.050	0.0014	0.069	0.0017	1.01	0.026	1.26	0.032
WL1-TK603	-	-	-	-	-	-	-	-	0.12	0.0033	0.0080	0.00023	0.050	0.0014	0.069	0.0017	1.01	0.026	1.26	0.032
WL2-TK8101	-	-	-	-	-	-	-	-	0.18	0.0060	0.012	0.00041	0.074	0.0026	0.10	0.0032	1.51	0.047	1.88	0.059
WL2-TK8102	-	-	-	-	-	-	-	-	0.18	0.0060	0.012	0.00041	0.074	0.0026	0.10	0.0032	1.51	0.047	1.88	0.059
WLCS-TK2301	-	-	-	-	-	-	-	-	0.70	0.0002	0.047	0.00001	0.29	0.0001	0.39	0.0001	5.68	0.002	7.11	0.00
WLCS-TK2302	-	-	-	-	-	-	-	-	0.70	0.0002	0.047	0.00001	0.29	0.0001	0.39	0.0001	5.68	0.002	7.11	0.00
WLCS-TK2303	-	-	-	-	-	-	-	-	0.70	0.0002	0.047	0.00001	0.29	0.0001	0.39	0.0001	5.68	0.002	7.11	0.00
ATM LOAD	-	-	-	-	-	-	-	-	0.10	0.038	0.0071	0.0027	0.045	0.017	0.050	0.019	0.76	0.29	0.96	0.37
NGL LOAD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.63	2.74
PIGGING	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.012	0.055
SSM/M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
Totals	**1.91**	**8.37**	**0.84**	**3.68**	**0.56**	**2.43**	**0.35**	**1.51**	**3.09**	**0.76**	**0.206**	**0.051**	**1.267**	**0.22**	**1.73**	**0.50**	**24.11**	**1.71**	**58.13**	**23.98**

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Unit:	C-1100		
Description:	CAT G3608 4SLB Inlet Gas Compressor Engine with Oxidation Catalyst		
Engine Power[1]:	2370	hp	Mfg. Data - 100% Load (DM8606-02)
Fuel Consumption:	6629	Btu/hp-hr	Mfg. Data - 100% Load (DM8606-02)
Fuel Type:	NG		Mfg. Data
Fuel Heating Value:	1020	Btu/scf	Fuel Gas Analysis
Operating Hours:	8760	hours	Continuous
Fuel Usage:	15402.68	scf/hr	Calculated
Annual Fuel Usage:	134.93	MMScf/yr	Calculated

Uncontrolled Emission Calculations

NO_x[2]	CO[2]	VOC[2]	SO_2[3]	PM[4,5]	H_2S[6]	HCHO[7]	Acetaldehyde[7]	Acrolein[7]	Methanol[7]	Toluene[7]	Ethylbenzene[7]	Xylenes[7]	Benzene[7]	n-Hexane[7]	1,3-Butadiene[7]	2,2,4-TMP[7]	HAPs[7]	
0.5	2.75	0.63																g/hp-hr
			5		0.25													gr/100 scf
			0.014	0.010	7.00E-06	5.28E-02	8.36E-03	5.14E-03	2.50E-03	4.08E-04	3.97E-05	1.84E-04	4.40E-04	1.11E-03	2.67E-04	2.50E-04		lb/MMBtu
2.61	14.37	4.12	0.23	0.16	1.10E-04	0.83	0.13	0.081	0.039	0.0064	0.00062	0.0029	0.0069	0.017	0.0042	0.0039	1.12	lb/hr[8]
11.44	62.93	18.05	1.01	0.69	4.82E-04	3.63	0.58	0.35	0.17	0.028	0.0027	0.013	0.030	0.076	0.018	0.017	4.92	tpy[9]

Controlled Emission Calculations

NO_x	CO	VOC	SO_2	PM	H_2S	HCHO	Acetaldehyde	Acrolein	Methanol	Toluene	Ethylbenzene	Xylenes	Benzene	n-Hexane	1,3-Butadiene	2,2,4-TMP	HAPs[10]	
	64%	75%				75%												Control efficiency[11]
0.5	1.0	0.16																g/hp-hr
2.61	5.22	1.03	0.23	0.16	1.10E-04	0.21	0.13	0.081	0.039	0.0064	0.00062	0.0029	0.0069	0.017	0.0042	0.0039	0.50	lb/hr[12]
11.44	22.89	4.51	1.01	0.69	4.82E-04	0.91	0.58	0.35	0.17	0.028	0.0027	0.013	0.030	0.076	0.018	0.017	2.20	tpy[9]

Greenhouse Gas Calculations[13]

CO_2	N_2O	CH_4	CO_2e	
441				g/hp-hr
	0.0001	0.001		kg/MMBtu
1	298	25		GWP[14]
2304.21	0.0035	0.035	2306.11	lb/hr[15]
10092.43	0.015	0.15	10100.74	tpy[9]

Footnotes

[1] No derate being requested

[2] For uncontrolled and controlled emissions, emission factors are taken from catalyst data. VOC emissions factors do not include HCHO. HCHO emissions are added to VOC calculated emissions; therefore, VOC emissions represent Total VOC.

[3] Assumes natural gas sulfur content of 5 gr/100 scf

SO_2 EF (lb/MMBtu) =[(5 gr S/100 scf * 1 lb/7000 gr * 64 lb/lbmol SO_2/32 lb/lbmol S) / HHV (Btu/scf)] * 10^6 Btu/MMBtu

Assume 100% conversion of combusted H_2S into SO_2 and 98% Combustion Efficiency. Additional SO_2 emissions from the combustion of H_2S:

SO_2 (lb/hr) from H_2S = 98%*[(0.25 gr H_2S/100 scf * 1 lb/7000 gr * 64 lb/lbmol SO_2/34 lb/lbmol H_2S) / HHV (Btu/scf)] * (Btu/hp-hr * hp)

[4] Emission Factors from AP-42 Table 3.2-2 (4SLB)

[5] PM includes Condensable + Filterable; assume PM_{10} = $PM_{2.5}$

[6] Assumes a conservative natural gas H_2S content of 0.25 gr/100 scf and 98% conversion to SO_2.

H_2S EF (lb/MMBtu) =2%*[(0.25 gr H_2S/100 scf * 1 lb/7000 gr) / HHV (Btu/scf)] * 10^6 Btu/MMbtu

[7] Uncontrolled HAP emissions based on AP-42 Table 3.2-2 (4SLB)

[8] NO_x, CO, and VOC lb/hr Emission Rate = EF * 1 lb/453.592 g * hp

PM & HAP lb/hr Emission Rate = EF * Fuel Consumption (Btu/hp-hr) * hp * 1 MMBtu/10^6 Btu

[9] tpy = lb/hr * hours of operation * 1 ton/2000 lb

[10] Controlled HAP emissions (lb/hr) = Uncontrolled Total HAPs (lb/hr) - Uncontrolled HCHO (lb/hr) + Controlled HCHO (lb/hr)

[11] Catalysts are guaranteed by manufacturer to be at least as efficient as claimed.

[12] lb/hr (controlled) = lb/hr (uncontrolled) * (1 - Control Efficiency)

[13] CO_2 emission factor from manufacturer's data. All other greenhouse gas emission factors are from 40 CFR 98 Subpart C

[14] 40 CFR 98 Subpart A, Table A-1

[15] CO_2 lb/hr = EF (g/hp-hr) * 1 lb/453.592 g * Engine hp

N_2O and CH_4 lb/hr = EF (kg/MMBtu) * 2.20462 lb/kg * Fuel consumption (Btu/hp-hr) * Engine hp * 1 MMBtu/10^6 Btu

CO_2e lb/hr = CO_2 lb/hr + (CH_4 lb/hr * GWP) + (N_2O lb/hr * GWP)

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Unit(s): C-1200

Description: Waukesha P9390GSI 4SRB Residue Gas Compressor Engine with NSCR

Engine Power[1]:	1980	hp	
Fuel Consumption:	7792	Btu/hp-hr	Mfg. specs
Fuel Type:	NG		Mfg Data
Fuel Heating Value:	1020	Btu/scf	Fuel Gas Analysis
Operating Hours:	8760	hour	Continuous
Hourly Fuel Usage:	15125.65	scf/hr	
Annual Fuel Usage:	132.50	MMscf/yr	

Uncontrolled Emission Calculations

NO_x[2]	CO[2]	VOC[2]	SO_2[3]	$PM^{4,5}$	H_2S[6]	HCHO[2]	Acetaldehyde[7]	Acrolein[7]	Methanol[7]	Toluene[7]	Ethylbenzene[7]	Xylenes[7]	Benzene[7]	1,3-Butadiene[7]	PAH[7]	HAPs[7]	
13.00	9.00	0.30				0.19											g/hp-hr
			5		0.25												gr/100 scf
			0.014	0.019	7.00E-06		2.79E-03	2.63E-03	3.06E-03	5.58E-04	2.48E-05	1.95E-04	1.58E-03	6.63E-04	1.41E-04		lb/MMBtu
56.75	39.29	2.14	0.23	0.30	1.08E-04	0.83	0.043	0.041	0.047	0.0086	0.00038	0.0030	0.024	0.010	0.0022	1.01	lb/hr[8]
248.55	172.07	9.37	0.99	1.31	4.73E-04	3.63	0.19	0.18	0.21	0.038	0.0017	0.013	0.11	0.045	0.0095	4.42	ton/yr[9]

Controlled Emission Calculations

NO_x	CO	VOC	SO_2	PM	H_2S	HCHO	Acetaldehyde	Acrolein	Methanol	Toluene	Ethylbenzene	Xylenes	Benzene	1,3-Butadiene	PAH	HAPs[10]	
85.0%	85.0%	60.0%				80.0%											Control Efficiency[11]
2.0	1.35	0.12				0.038											g/hp-hr
8.51	5.89	0.69	0.23	0.30	1.08E-04	0.17	0.043	0.041	0.047	0.0086	0.00038	0.0030	0.024	0.010	0.0022	0.35	lb/hr[12]
37.28	25.81	3.02	0.99	1.31	4.73E-04	0.73	0.19	0.18	0.21	0.038	0.0017	0.013	0.11	0.045	0.0095	1.51	ton/yr[9]

Greenhouse Gas Calculations[13]

CO_2	N_2O	CH_4	CO_2e	
53.1	0.0001	0.001		kg/MMBtu
1	298	25		GWP[14]
1804.7	0.0034	0.034	1806.6	lb/hr[15]
7904.8	0.015	0.15	7912.9	tpy

Footnotes

[1] No derate being requested

[2] For uncontrolled and controlled emissions, emission factors are taken from catalyst data. VOC emissions factors do not include HCHO. HCHO emissions are added to VOC calculated emissions; therefore, VOC emissions represent Total VOC.

[3] Assumes natural gas sulfur content of 5 gr/100 scf

SO_2 EF (lb/MMBtu) =[(5 gr S/100 scf * 1 lb/7000 gr * 64 lb/lbmol SO_2/32 lb/lbmol S) / HHV (Btu/scf)] * 10^6 Btu/MMBtu

Assume 100% conversion of combusted H_2S into SO_2 and 98% Combustion Efficiency. Additional SO_2 emissions from the combustion of H_2S:

SO_2 (lb/hr) from H_2S = 98%*[(0.25 gr H_2S/100 scf * 1 lb/7000 gr * 64 lb/lbmol SO_2/34 lb/lbmol H_2S) / HHV (Btu/scf)] * (Btu/hp-hr * hp)

[4] Emission Factors from AP-42 Table 3.2-3 (4SRB)

[5] PM includes Condensable + Filterable; assume PM_{10} = $PM_{2.5}$

[6] Assumes a conservative natural gas H_2S content of 0.25 gr/100 scf and 98% conversion to SO_2.

H_2S EF (lb/MMBtu) =2%*[(0.25 gr H_2S/100 scf * 1 lb/7000 gr) / HHV (Btu/scf)] * 10^6 Btu/MMbtu

[7] Uncontrolled HAP emissions based on AP-42 Table 3.2-3 (4SRB)

[8] NO_x, CO, and VOC lb/hr Emission Rate = EF * 1 lb/453.592 g * hp

PM & HAP lb/hr Emission Rate = EF * Fuel Consumption (Btu/hp-hr) * hp * 1 MMBtu/10^6 Btu

[9] tpy = lb/hr * hours of operation * 1 ton/2000 lb

[10] Controlled HAP emissions (lb/hr) = Uncontrolled Total HAPs (lb/hr) - Uncontrolled HCHO (lb/hr) + Controlled HCHO (lb/hr)

[11] Catalysts are guaranteed by manufacturer to be at least as efficient as claimed.

[12] lb/hr (controlled) = lb/hr (uncontrolled) * (1 - Control Efficiency)

[13] Greenhouse gas emission factors are from 40 CFR 98 Subpart C

[14] 40 CFR 98 Subpart A, Table A-1

[15] CO_2, N_2O, and CH_4 lb/hr = EF (kg/MMBtu) * 2.20462 lb/kg * Fuel consumption (Btu/hp-hr) * Engine hp * 1 MMBtu/10^6 Btu

CO_2e lb/hr = CO_2 lb/hr + (CH_4 lb/hr * GWP) + (N_2O lb/hr * GWP)

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Unit(s):	C-2300, C-2400		
Description:	Waukesha VHP-L7044GSI	4SRB	
Engine Power[1]:	1680	hp	
Fuel Consumption:	7919	Btu/hp-hr	Mfg. specs
Fuel Type:	NG		Mfg Data
Fuel Heating Value:	1020	Btu/scf	Fuel Gas Analysis
Operating Hours:	8760	hour	Continuous
Hourly Fuel Usage:	13043.06	scf/hr	
Annual Fuel Usage:	114.26	MMscf/yr	

Uncontrolled Emission Calculations

NO_x[2]	CO[2]	VOC[2]	SO_2[3]	PM[4,5]	H_2S[6]	HCHO[2]	Acetaldehyde[7]	Acrolein[7]	Methanol[7]	Toluene[7]	Ethylbenzene[7]	Xylenes[7]	Benzene[7]	1,3-Butadiene[7]	PAH[7]	HAPs[7]	
13.30	11.50	0.16				0.050											g/hp-hr
			5		0.25												gr/100 scf
			0.014	0.019	7.00E-06		2.79E-03	2.63E-03	3.06E-03	5.58E-04	2.48E-05	1.95E-04	1.58E-03	6.63E-04	1.41E-04		lb/MMBtu
49.26	42.59	0.78	0.19	0.26	9.32E-05	0.19	0.037	0.035	0.041	0.0074	0.00033	0.0026	0.021	0.0088	0.0019	0.34	lb/hr[8]
215.76	186.56	3.41	0.85	1.13	4.08E-04	0.81	0.16	0.15	0.18	0.033	0.0014	0.011	0.092	0.039	0.0082	1.49	ton/yr[9]

Controlled Emission Calculations

NO_x	CO	VOC	SO_2	PM	H_2S	HCHO	Acetaldehyde	Acrolein	Methanol	Toluene	Ethylbenzene	Xylenes	Benzene	1,3-Butadiene	PAH	HAPs[10]	
92.5%	91.3%	71.4%				20.0%											Control Efficiency[11]
1.00	1.00	0.060				0.040											g/hp-hr
3.70	3.70	0.37	0.19	0.26	9.32E-05	0.15	0.037	0.035	0.041	0.0074	0.00033	0.0026	0.021	0.0088	0.0019	0.30	lb/hr[12]
16.22	16.22	1.62	0.85	1.13	4.08E-04	0.65	0.16	0.15	0.18	0.033	0.0014	0.011	0.092	0.039	0.0082	1.33	ton/yr[9]

Greenhouse Gas Calculations[13]

CO_2	N_2O	CH_4	CO_2e	
53.1	0.0001	0.001		kg/MMBtu
1	298	25		GWP[14]
1556.3	0.0029	0.029	1557.9	lb/hr[15]
6816.4	0.013	0.13	6823.4	tpy

Footnotes

[1] No derate being requested

[2] For uncontrolled and controlled emissions, emission factors are taken from catalyst data. VOC emissions factors do not include HCHO. HCHO emissions are added to VOC calculated emissions; therefore, VOC emissions represent Total VOC.

[3] Assumes natural gas sulfur content of 5 gr/100 scf
SO_2 EF (lb/MMBtu) =[(5 gr S/100 scf * 1 lb/7000 gr * 64 lb/lbmol SO_2/32 lb/lbmol S) / HHV (Btu/scf)] * 10^6 Btu/MMBtu
Assume 100% conversion of combusted H_2S into SO_2 and 98% Combustion Efficiency. Additional SO_2 emissions from the combustion of H_2S:
SO_2 (lb/hr) from H_2S = 98%*[(0.25 gr H_2S/100 scf * 1 lb/7000 gr * 64 lb/lbmol SO_2/34 lb/lbmol H_2S) / HHV (Btu/scf)] * (Btu/hp-hr * hp)

[4] Emission Factors from AP-42 Table 3.2-3 (4SRB)

[5] PM includes Condensable + Filterable; assume PM_{10} = $PM_{2.5}$

[6] Assumes a conservative natural gas H_2S content of 0.25 gr/100 scf and 98% conversion to SO_2.
H_2S EF (lb/MMBtu) =2%*[(0.25 gr H_2S/100 scf * 1 lb/7000 gr) / HHV (Btu/scf)] * 10^6 Btu/MMbtu

[7] Uncontrolled HAP emissions based on AP-42 Table 3.2-3 (4SRB)

[8] NO_x, CO, and VOC lb/hr Emission Rate = EF * 1 lb/453.592 g * hp
PM & HAP lb/hr Emission Rate = EF * Fuel Consumption (Btu/hp-hr) * hp * 1 MMBtu/10^6 Btu

[9] tpy = lb/hr * hours of operation * 1 ton/2000 lb

[10] Controlled HAP emissions (lb/hr) = Uncontrolled Total HAPs (lb/hr) - Uncontrolled HCHO (lb/hr) + Controlled HCHO (lb/hr)

[11] Catalysts are guaranteed by manufacturer to be at least as efficient as claimed.

[12] lb/hr (controlled) = lb/hr (uncontrolled) * (1 - Control Efficiency)

[13] Greenhouse gas emission factors are from 40 CFR 98 Subpart C

[14] 40 CFR 98 Subpart A, Table A-1

[15] CO_2, N_2O, and CH_4 lb/hr = EF (kg/MMBtu) * 2.20462 lb/kg * Fuel consumption (Btu/hp-hr) * Engine hp * 1 MMBtu/10^6 Btu
CO_2e lb/hr = CO_2 lb/hr + (CH_4 lb/hr * GWP) + (N_2O lb/hr * GWP)

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Unit: ENG-1 through ENG-5
Description: Five (5) CAT G3606 4SLB Inlet Gas Compressor Engine with Oxidation Catalyst

Engine Power[1]:	1875	hp	Mfg. Data - 100% Load
Fuel Consumption:	7560	Btu/hp-hr	Mfg. Data - 100% Load
Fuel Type:	NG		Mfg. Data
Fuel Heating Value:	1020	Btu/scf	Fuel Gas Analysis
Operating Hours:	8760	hours	Continuous
Fuel Usage:	13897.06	scf/hr	Calculated
Annual Fuel Usage:	121.74	MMScf/yr	Calculated

Uncontrolled Emission Calculations

NO_x[2]	CO[2]	VOC[2]	SO_2[3]	PM[4,5]	H_2S[6]	HCHO[7]	Acetaldehyde[7]	Acrolein[7]	Methanol[7]	Toluene[7]	Ethylbenzene[7]	Xylenes[7]	Benzene[7]	n-Hexane[7]	1,3-Butadiene[7]	2,2,4-TMP[7]	HAPs[7]	
0.50	2.20	0.29				0.2												g/hp-hr
			5		0.25													gr/100 scf
			0.014	0.010	7.00E-06		8.36E-03	5.14E-03	2.50E-03	4.08E-04	3.97E-05	1.84E-04	4.40E-04	1.11E-03	2.67E-04	2.50E-04		lb/MMBtu
2.07	9.09	2.03	0.21	0.14	9.93E-05	0.83	0.12	0.073	0.035	0.0058	0.00056	0.0026	0.0062	0.016	0.0038	0.0035	1.09	lb/hr[8]
9.05	39.83	8.87	0.91	0.62	4.35E-04	3.62	0.52	0.32	0.16	0.025	0.0025	0.011	0.027	0.069	0.017	0.016	4.78	tpy[9]

Controlled Emission Calculations

NO_x	CO	VOC	SO_2	PM	H_2S	HCHO	Acetaldehyde	Acrolein	Methanol	Toluene	Ethylbenzene	Xylenes	Benzene	n-Hexane	1,3-Butadiene	2,2,4-TMP	HAPs[10]	
	90%	50%				70%												Control efficiency[11]
0.50	0.22	0.15				0.060												g/hp-hr
2.07	0.91	0.85	0.21	0.14	9.93E-05	0.25	0.12	0.073	0.035	0.0058	0.00056	0.0026	0.0062	0.016	0.0038	0.0035	0.51	lb/hr[12]
9.05	3.98	3.71	0.91	0.62	4.35E-04	1.09	0.52	0.32	0.16	0.025	0.0025	0.011	0.027	0.069	0.017	0.016	2.25	tpy[9]

Greenhouse Gas Calculations[13]

CO_2	N_2O	CH_4	CO_2e	
53.1	0.0001	0.001		kg/MMBtu
1	298	25		GWP[14]
1659.40	0.0031	0.031	1661.11	lb/hr[15]
7268.176	0.014	0.14	7275.68	tpy[9]

Footnotes

[1] No derate being requested

[2] For uncontrolled and controlled emissions, emission factors are taken from catalyst data. VOC emissions factors do not include HCHO. HCHO emissions are added to VOC calculated emissions; therefore, VOC emissions represent Total VOC.

[3] Assumes natural gas sulfur content of 5 gr/100 scf
SO_2 EF (lb/MMBtu) =[(5 gr S/100 scf * 1 lb/7000 gr * 64 lb/lbmol SO_2/32 lb/lbmol S) / HHV (Btu/scf)] * 10^6 Btu/MMBtu
Assume 100% conversion of combusted H_2S into SO_2 and 98% Combustion Efficiency. Additional SO_2 emissions from the combustion of H_2S:
SO_2 (lb/hr) from H_2S = 98%*[(0.25 gr H_2S/100 scf * 1 lb/7000 gr * 64 lb/lbmol SO_2/34 lb/lbmol H_2S) / HHV (Btu/scf)] * (Btu/hp-hr * hp)

[4] Emission Factors from AP-42 Table 3.2-2 (4SLB)

[5] PM includes Condensable + Filterable; assume PM_{10} = $PM_{2.5}$

[6] Assumes a conservative natural gas H_2S content of 0.25 gr/100 scf and 98% conversion to SO_2.
H_2S EF (lb/MMBtu) =2%*[(0.25 gr H_2S/100 scf * 1 lb/7000 gr) / HHV (Btu/scf)] * 10^6 Btu/MMbtu

[7] Uncontrolled HAP emissions based on AP-42 Table 3.2-2 (4SLB)

[8] NO_x, CO, and VOC lb/hr Emission Rate = EF * 1 lb/453.592 g * hp
PM & HAP lb/hr Emission Rate = EF * Fuel Consumption (Btu/hp-hr) * hp * 1 MMBtu/10^6 Btu

[9] tpy = lb/hr * hours of operation * 1 ton/2000 lb

[10] Controlled HAP emissions (lb/hr) = Uncontrolled Total HAPs (lb/hr) - Uncontrolled HCHO (lb/hr) + Controlled HCHO (lb/hr)

[11] Catalysts are guaranteed by manufacturer to be at least as efficient as claimed.

[12] lb/hr (controlled) = lb/hr (uncontrolled) * (1 - Control Efficiency)

[13] CO_2 emission factor from manufacturer's data. All other greenhouse gas emission factors are from 40 CFR 98 Subpart C

[14] 40 CFR 98 Subpart A, Table A-1

[15] CO_2, N_2O, and CH_4 lb/hr = EF (kg/MMBtu) * 2.20462 lb/kg * Fuel consumption (Btu/hp-hr) * Engine hp * 1 MMBtu/10^6 Btu
CO_2e lb/hr = CO_2 lb/hr + (CH_4 lb/hr * GWP) + (N_2O lb/hr * GWP)

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Unit(s): WL2-FL

Description: WL2 Process Flare

Fuel Data

Flare Pilot	65.0	scf/hr	Design
Flare Pilot	0.066	MMBtu/hr	
Ethylene Glycol Dehydrator Regen	1,840.0	scf/hr	GlyCalc
Ethylene Glycol Dehydrator Flash Tank	87.1	scf/hr	GlyCalc
Total flow from Dehy	1,927.1	scf/hr	
	0.001927	MMscf/hr	
	1020.00	Btu/scf[1]	Residue Gas, HHV
	1.966	MMBtu/hr	
	16.881396	MMscf/yr	

Emission Rates

Pilot Gas + Regen + Flash Tank

NOx	CO	VOC[3]	H_2S[3]	SO_2[4]	HAPs	Units	
0.1380	0.2755					lb/MMBtu[2]	TNRCC RG-109
			0.25	5		gr/100 scf	Assumed for Fuel Gas
		1.82	0.0094		0.039	lb/hr	From EG Dehydrator (Unit D3)
0.0091	0.018	-	2.32E-05	9.29E-04	-	lb/hr	Flare Pilot
0.040	0.080	-	1.02E-04	4.07E-03	-	tpy	
0.27	0.54	0.036	0.00019	0.017	0.0008	lb/hr	Controlled Emission Rate
1.19	2.37	0.16	0.00082	0.076	0.0034	tpy	

	NOx	CO	VOC[3]	H_2S[3]	SO_2[4]	HAPs	Units	
Pilot Gas + Regen + Flash Tank	**0.28**	**0.56**	**0.036**	**0.00021**	**0.018**	**0.0008**	**lb/hr**	Controlled Emission Rate
	1.23	**2.45**	**0.16**	**0.0009**	**0.080**	**0.0034**	**tpy**	

Greenhouse Gas Calculations[6]

CO_2	N_2O	CH_4	CO_2e	
53.1	0.0001	0.001		kg/MMBtu
1	298	25		GWP[7]
229.9	0.0004	0.004	230.2	lb/hr[8]
1007.1	0.002	0.019	1008.2	tpy[5]

[1] Based on pipeline quality gas

[2] To be conservative the TNRCC RG-109 emission factors for high-Btu flares were used.

[3] Assumed 98% combustion for H_2S, HAP, and VOC. Pilot H_2S emissions calculated based on 0.25 gr H_2S/100 scf.

[4] Assumed 100% conversion of combusted H_2S to SO_2, SO_2 (lb/hr)= 98% * (64 lb/lbmol SO_2/34 lb/lbmol H_2S)*Uncontrolled H_2S (lb/hr). Pilot SO_2 emissions based on assumption of 5 gr S/100 scf.

[5] ton/yr = lb/hr * Hours of operation (hr/yr) * 1ton/2000lb

[6] Greenhouse gas emission factors are from 40 CFR 98 Subpart C

[7] 40 CFR 98 Subpart A, Table A-1

[8] CO_2, N_2O and CH_4 lb/hr = EF (kg/MMBtu) * 2.20462lb/kg * Fuel consumption (MMBtu/hr)
CO_2e lb/hr = CO_2 lb/hr + (CH_4 lb/hr * GWP) + (N_2O lb/hr * GWP)

Crestwood New Mexico Pipeline LLC
Willow Lake Gas Processing Plant

Unit(s): **WL2-FL Blowdown**
Description: **Flare - Compressor Downtime Flaring**

Flare Emissions - Residue Compressor Blowdowns - NO_x and CO [1]

Input Data

Total Number of Events =	52	events/year	
Estimated Event Duration [2] =	1	hr/event	
Event Flowrate =	0.625	MMscf/event	Compressor Downtime Volume
Annual Event Hours =	52	hrs/yr	
Gas Stream Heat Value =	1,278	Btu/scf	Residue Gas Analysis
Maximum Hourly Flowrate [3] =	0.625	MMscf/hr	
Annual Flowrate [4] =	32.500	MMscf/yr	
Hourly Gas Stream Heat Input [5] =	799	MMBtu/hr	
Annual Gas Stream Heat Input [6] =	41,535	MMBtu/yr	

Compound	Flare Emission Factors [7] (lb/MMBtu)	Flare Emissions [8, 9]	
		(lb/hr)	(tpy)
NO_x	0.138	110.23	2.87
CO	0.2755	220.06	5.72

[1] Emergency blowdown of residue gas header is routed to flare.

[2] For events lasting less than 1 hour, it is assumed that no more than 1 event occurs per hour.

[3] Maximum hourly flowrate is not steady-state, but represents the maximum hourly flowrate at the time that a blowdown is routed to the flare.

Hourly Flowrate (MMscf/hr) = Event Flowrate (MMscf/event) / Event Duration (hrs/event)

$$\text{Hourly Flowrate (MMscf/hr)} = \frac{0.625\ \text{MMscf}}{\text{event}} \Big| \frac{\text{event}}{1\ \text{hr}} = \frac{0.625\ \text{MMscf}}{\text{hr}}$$

[4] Annual Flowrate (MMscf/yr) = Event Flowrate (MMscf/event) x Total Number of Event (events/yr)

$$\text{Annual Flowrate (MMscf/yr)} = \frac{0.625\ \text{MMscf}}{\text{event}} \Big| \frac{52\ \text{events}}{\text{yr}} = \frac{32.5\ \text{MMscf}}{\text{yr}}$$

[5] Hourly Gas Stream Heat Input (MMBtu/hr) = Hourly Flowrate (MMscf/hr) x Gas Stream Heat Value (Btu/scf)

$$\text{Hourly Gas Stream Heat Input (MMBtu/hr)} = \frac{0.625\ \text{MMscf}}{\text{hr}} \Big| \frac{1{,}278\ \text{Btu}}{\text{scf}} = \frac{799\ \text{MMBtu}}{\text{hr}}$$

[6] Annual Gas Stream Heat Input (MMBtu/yr) = Annual Flowrate (MMscf/yr) x Gas Stream Heat Value (Btu/scf)

$$\text{Annual Gas Stream Heat Input (MMBtu/yr)} = \frac{32.5\ \text{MMscf}}{\text{yr}} \Big| \frac{1{,}278\ \text{Btu}}{\text{scf}} = \frac{41{,}535\ \text{MMBtu}}{\text{yr}}$$

[7] From TCEQ "Air Permit Guidance For Chemical Sources, Flare And Vapor Oxidizers" (Draft Oct. 2000) Table 4, emission factors for industrial flares combusting high-Btu vapors.

[8] Maximum Potential Hourly Emission Rate (lb/hr) = Flare Emission Factor (lb/MMBtu) x Hourly Gas Stream Heat Input (MMBtu/hr)

$$\text{Example } NO_x \text{ Hourly Emission Rate (lb/hr)} = \frac{0.138\ \text{lb}}{\text{MMBtu}} \Big| \frac{799\ \text{MMBtu}}{\text{hr}} = \frac{110.23\ \text{lb}}{\text{hr}}$$

[9] Maximum Potential Annual Emission Rate (tpy) = Flare Emission Factor (lb/MMBtu) x Annual Gas Stream Heat Input (MMBtu/yr) x (1 ton / 2,000 lb)

$$\text{Example } NO_x \text{ Annual Emission Rate (tpy)} = \frac{0.138\ \text{lb}}{\text{MMBtu}} \Big| \frac{41{,}535\ \text{MMBtu}}{\text{yr}} \Big| \frac{1\ \text{ton}}{2{,}000\ \text{lb}} = \frac{2.87\ \text{ton}}{\text{yr}}$$

Crestwood New Mexico Pipeline LLC
Willow Lake Gas Processing Plant

Unit(s): **WL2-FL Blowdown**
Description: **Flare - Compressor Downtime Flaring**

Flare Emissions - Residue Compressor Emergency Blowdowns - VOC, SO_2, and H_2S

Input Data

Total Number of Events =	52	events/year
Estimated Event Duration [2] =	1	hr/event
Event Flowrate =	0.625	MMscf/event
Annual Event Hours =	52	hrs/yr
Gas Stream Heat Value =	1,278	Btu/scf
Hourly Flowrate [3] =	0.625	MMscf/hr
Annual Flowrate [4] =	32.50	MMscf/yr
Hourly Gas Stream Heat Input [5] =	799	MMBtu/hr
Annual Gas Stream Heat Input [6] =	41,535	MMBtu/yr

Compound	Composition [5] (Mole %)	MW (lb/lb-mole)	DRE [6] (%)	Gas Vented to Flare [7, 8] (lb/hr)	Gas Vented to Flare [7, 8] (tpy)	Controlled Emissions [9,10] (lb/hr)	Controlled Emissions [9,10] (tpy)
Propane	5.118	44	98%	3,708.70	96.43	74.17	1.93
i-Butane	0.731	58	98%	698.25	18.15	13.97	0.36
n-Butane	1.623	58	98%	1,550.30	40.31	31.01	0.81
i-Pentane	0.383	72	98%	454.15	11.81	9.08	0.24
n-Pentane	0.398	72	98%	471.94	12.27	9.44	0.25
Hexanes Plus	0.767	86	98%	1,086.33	28.24	21.73	0.56
H_2S	0.0004	34	98%	0.22	5.84E-03	4.49E-03	0.00012
VOC [11]	9.02			7969.66	207.21	159.39	4.14
SO_2		64				0.41	0.011

[1] Emergency blowdown of residue gas header is routed to flare.

[2] For events lasting less than 1 hour, it is assumed that no more than 1 event occurs per hour.

[3] Hourly Flowrate (MMscf/hr) = Event Flowrate (MMscf/event) / Event Duration (hrs/event)

$$\text{Hourly Flowrate (MMscf/hr)} = \frac{0.625\ \text{MMscf}}{\text{event}} \Big| \frac{\text{event}}{1\ \text{hr}} = \frac{0.625\ \text{MMscf}}{\text{hr}}$$

[4] Annual Flowrate (MMscf/yr) = Event Flowrate (MMscf/event) x Total Number of Event (events/yr)

$$\text{Annual Flowrate (MMscf/yr)} = \frac{0.625\ \text{MMscf}}{\text{event}} \Big| \frac{52\ \text{events}}{\text{yr}} = \frac{32.5\ \text{MMscf}}{\text{yr}}$$

[5] Composition of the gas stream is obtained from the Dehy Upstream Gas Analysis (05/28/2020). H_2S is conservatively assumed to be 4 ppm.

[6] Per TCEQ "Air Permit Guidance For Chemical Sources, Flare And Vapor Oxidizers" (Draft Oct. 2000), 98% of the H_2S is assumed to be oxidized to SO_2 while the remaining 2% is emitted as H_2S.

[7] Gas Vented to Flare (lb/hr) = Hourly Flowrate (MMscf/hr) x Mole Percent (%) / 100 x MW (lb/lb-mole) / 379.5 (scf/lb-mole) x (10^6 scf/1 MMscf)

$$\text{Example Propane Hourly Vented Rate (lb/hr)} = \frac{0.625\ \text{MMscf}}{\text{hr}} \Big| \frac{5.12\ \%}{100} \Big| \frac{44\ \text{lb}}{\text{lb-mole}} \Big| \frac{\text{lb-mole}}{379.5\ \text{scf}} \Big| \frac{10^6\ \text{scf}}{1\ \text{MMscf}} = \frac{3{,}708.70\ \text{lb}}{\text{hr}}$$

[8] Gas Vented to Flare (tpy) = Annual Flowrate (MMscf/yr) x Mole Percent (%) / 100 x MW (lb/lb-mole) / 379.5 (scf/lb-mole) x (10^6 scf/1MMscf) x (1ton/ 2,000 lb)

$$\text{Example Propane Annual Vented Rate (tpy)} = \frac{32.5\ \text{MMscf}}{\text{yr}} \Big| \frac{5.12\ \%}{100} \Big| \frac{44\ \text{lb}}{\text{lb-mole}} \Big| \frac{\text{lb-mole}}{379.5\ \text{scf}} \Big| \frac{10^6\ \text{scf}}{1\ \text{MMscf}} \Big| \frac{1\ \text{ton}}{2{,}000\ \text{lb}} = \frac{96.43\ \text{ton}}{\text{yr}}$$

[9] Controlled Maximum Potential Hourly Emission Rate (lb/hr) = Gas Vented to Flare (lb/hr) x (1 - DRE)
Controlled Maximum Potential Annual Emission Rate (tpy) = Gas Vented to Flare (tpy) x (1 - DRE)

$$\text{Example Controlled Propane Hourly Emission Rate (lb/hr)} = \frac{3{,}708.70\ \text{lb}}{\text{hr}} \Big| (1 - 0.98) = \frac{74.17\ \text{lb}}{\text{hr}}$$

[10] Controlled flare SO_2 Emission Rate (lb/hr) = [H_2S Inlet (lb/hr) - H_2S Outlet (lb/hr)] x SO_2 MW (lb/lb-mol) / H_2S MW (lb/lb-mol)

$$\text{Controlled } SO_2 \text{ Hourly Emission Rate (lb/hr)} = \frac{[0.22 - 0.00]\ \text{lb}}{\text{hr}} \Big| \frac{64.06\ \text{lb/lb-mol}}{34.08\ \text{lb/lb-mol}} = \frac{0.41\ \text{lb}}{\text{hr}}$$

[11] Total VOC taken as the sum of NMNEHC.

Crestwood New Mexico Pipeline LLC
Willow Lake Gas Processing Plant

Unit(s): **WL2-FL Blowdown**
Description: **Flare - Compressor Downtime Flaring**

Flare Emissions - Residue Compressor Emergency Blowdowns - Greenhouse Gas Calculations

CO_2	N_2O	CH_4	CO_2e	
53.1	0.0001	0.001	-	kg/MMBtu [1]
1	298	25	-	GWP [2]
2,431	0.005	0.05	2,434	tpy [3]

[1] Greenhouse gas emission factors are from 40 CFR 98 Subpart C.

[2] 40 CFR 98 Subpart A, Table A-1.

[3] GHG Emissions (tpy) = Emission Factor (kg/MMBtu) x Fuel Consumption (MMBtu/yr) x 2.20426 (lb/kg) / 2,000 (lb/ton)
CO_2e (tpy) = CO_2 tpy + (CH_4 tpy x CH_4 GWP) + (N_2O tpy x N_2O GWP)

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Unit(s): WL1-FL

Description: WL1 Process Flare

Fuel Data

Flare Pilot	55.0	scf/hr	Design
Flare Pilot	1020	Btu/scf	Fuel Gas
Flare Pilot	0.056	MMBtu/hr	Calculated
Tank Flash	0.381	MMSCFD	ProMax
Tank Flash	15,882.4	scf/hr	Calculated
Tank Flash	2,668.9	Btu/scf	ProMax
Total Flare Flowrate	15,937.4	scf/hr	
	0.015937	MMscf/hr	
	2668.95	Btu/scf[1]	ProMax
	42.536	MMBtu/hr	
	139.61	MMscf/yr	

Emission Rates

Pilot Gas + Tanks Vapors

NOx	CO	VOC[3]	H_2S[3]	SO_2[4]	HAPs	Units	
0.138	0.2755		0.25	5		lb/MMBtu[2]	TNRCC RG-109
						gr/100 scf	Assumed for Fuel Gas
		1282.13	0.031		25.09	lb/hr	Tank Vapors
		316.72	0.0059		7.64	tpy	Tank Vapors
0.0077	0.015	-	1.96E-05	7.86E-04	-	lb/hr	Pilot Emissions
0.034	0.068	-	8.60E-05	3.44E-03	-	tpy	
5.87	11.72	25.64	0.00062	0.057	0.50	lb/hr	Controlled Emission Rate
1.29	2.57	0.32	0.0000059	0.00054	0.0076	tpy[5]	

	NOx	CO	VOC[3]	H_2S[3]	SO_2[4]	HAPs	Units	
Pilot Gas + Tank Vapors	**5.88**	**11.73**	**25.64**	**0.00064**	**0.058**	**0.50**	**lb/hr**	Controlled Emission Rate
	1.32	**2.63**	**0.32**	**0.00009**	**0.004**	**0.01**	**tpy**	

Greenhouse Gas Calculations[6]

CO_2	N_2O	CH_4	CO_2e	
53.1	0.0001	0.001		kg/MMBtu
1	298	25		GWP[7]
4975.8	0.0094	0.094	4980.9	lb/hr[8]
21793.8	0.041	0.411	21816.3	tpy[5]

[1] Based on maximum heating value from ProMax simulation for WL1 or WLCS.

[2] To be conservative the TNRCC RG-109 emission factors for high-Btu flares were used.

[3] Assumed 98% combustion for H_2S, HAP and VOC. 98% DRE

[4] Assumed 100% conversion H_2S to SO_2, SO_2=(64/34)*uncontrolled H_2S.

[5] ton/yr emissions based on assumed 5% annual VRU downtime. MMScf/yr * 5% = Annual Flowrate

[6] Greenhouse gas emission factors are from 40 CFR 98 Subpart C

[7] 40 CFR 98 Subpart A, Table A-1

[8] CO_2, N_2O and CH_4 lb/hr = EF (kg/MMBtu) * 2.20462lb/kg * Fuel consumption (MMBtu/hr)
CO_2e lb/hr = CO_2 lb/hr + (CH_4 lb/hr * GWP) + (N_2O lb/hr * GWP)

Crestwood New Mexico Pipeline LLC
Willow Lake Gas Processing Plant

Unit(s): **WL1-FL**
Description: **Flare - Compressor Blowdowns**

Flare Emissions - Residue Compressor Blowdowns - NO_x and CO [1]

Input Data

Total Number of Events =	260	blowdowns/year
Total Number of Compressors =	5	compressors
Blowdown Volume per Compressor=	6,500	scf/blowdown
Estimated Event Duration [2]=	1	hr/event
Maximum Flowrate =	0.033	MMscf/event
Annual Event Hours =	260	hrs/yr
Gas Stream Heat Value =	1,278	Btu/scf
Maximum Hourly Flowrate [3] =	0.033	MMscf/hr
Annual Flowrate [4] =	1.690	MMscf/yr
Hourly Gas Stream Heat Input [5] =	42	MMBtu/hr
Annual Gas Stream Heat Input [6] =	2,160	MMBtu/yr

Compound	Flare Emission Factors [7] (lb/MMBtu)	Flare Emissions [8, 9]	
		(lb/hr)	(tpy)
NO_x	0.138	5.73	0.15
CO	0.2755	11.44	0.30

[1] Blowdown of compressors is routed to FL-2. Maximum of five blowdowns per event @ 6,500 scf/blowdown

[2] For events lasting less than 1 hour, it is assumed that no more than 1 event occurs per hour.

[3] Maximum hourly flowrate is not steady-state, but represents the maximum hourly flowrate at the time that a blowdown is routed to the flare.

Hourly Flowrate (MMscf/hr) = Event Flowrate (MMscf/event) / Event Duration (hrs/event)

$$\text{Hourly Flowrate (MMscf/hr)} = \frac{0.033\ \text{MMscf}}{\text{event}} \Big| \frac{\text{event}}{1\ \text{hr}} = \frac{0.033\ \text{MMscf}}{\text{hr}}$$

[4] Annual Flowrate (MMscf/yr) = Event Flowrate (MMscf/event) x Total Number of Event (events/yr)

$$\text{Annual Flowrate (MMscf/yr)} = \frac{0.033\ \text{MMscf}}{\text{event}} \Big| \frac{260\ \text{events}}{\text{yr}} = \frac{1.7\ \text{MMscf}}{\text{yr}}$$

[5] Hourly Gas Stream Heat Input (MMBtu/hr) = Hourly Flowrate (MMscf/hr) x Gas Stream Heat Value (Btu/scf)

$$\text{Hourly Gas Stream Heat Input (MMBtu/hr)} = \frac{0.033\ \text{MMscf}}{\text{hr}} \Big| \frac{1{,}278\ \text{Btu}}{\text{scf}} = \frac{42\ \text{MMBtu}}{\text{hr}}$$

[6] Annual Gas Stream Heat Input (MMBtu/yr) = Annual Flowrate (MMscf/yr) x Gas Stream Heat Value (Btu/scf)

$$\text{Annual Gas Stream Heat Input (MMBtu/yr)} = \frac{1.7\ \text{MMscf}}{\text{yr}} \Big| \frac{1{,}278\ \text{Btu}}{\text{scf}} = \frac{2{,}160\ \text{MMBtu}}{\text{yr}}$$

[7] From TCEQ "Air Permit Guidance For Chemical Sources, Flare And Vapor Oxidizers" (Draft Oct. 2000) Table 4, emission factors for industrial flares combusting high-Btu vapors.

[8] Maximum Potential Hourly Emission Rate (lb/hr) = Flare Emission Factor (lb/MMBtu) x Hourly Gas Stream Heat Input (MMBtu/hr)

$$\text{Example } NO_x \text{ Hourly Emission Rate (lb/hr)} = \frac{0.138\ \text{lb}}{\text{MMBtu}} \Big| \frac{42\ \text{MMBtu}}{\text{hr}} = \frac{5.73\ \text{lb}}{\text{hr}}$$

[9] Maximum Potential Annual Emission Rate (tpy) = Flare Emission Factor (lb/MMBtu) x Annual Gas Stream Heat Input (MMBtu/yr) x (1 ton / 2,000 lb)

$$\text{Example } NO_x \text{ Annual Emission Rate (tpy)} = \frac{0.138\ \text{lb}}{\text{MMBtu}} \Big| \frac{2{,}160\ \text{MMBtu}}{\text{yr}} \Big| \frac{1\ \text{ton}}{2{,}000\ \text{lb}} = \frac{0.15\ \text{ton}}{\text{yr}}$$

Flare Emissions - Residue Compressor Emergency Blowdowns - VOC, SO_2, and H_2S

Input Data

Total Number of Events =	260	blowdowns/year
Estimated Event Duration [2] =	1	hr/event
Maximum Flowrate =	0.033	MMscf/event
Annual Event Hours =	260	hrs/yr
Gas Stream Heat Value =	1,278	Btu/scf
Hourly Flowrate [3] =	0.033	MMscf/hr
Annual Flowrate [4] =	1.69	MMscf/yr
Hourly Gas Stream Heat Input [5] =	42	MMBtu/hr
Annual Gas Stream Heat Input [6] =	2,160	MMBtu/yr

Compound	Composition [5] (Mole %)	MW (lb/lb-mole)	DRE [6] (%)	Gas Vented to Flare [7, 8]		Controlled Emissions [9,10]	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)
Propane	5.118	44	98%	192.85	5.01	3.86	0.10
i-Butane	0.731	58	98%	36.31	0.94	0.73	0.02
n-Butane	1.623	58	98%	80.62	2.10	1.61	0.04
i-Pentane	0.383	72	98%	23.62	0.61	0.47	0.012
n-Pentane	0.398	72	98%	24.54	0.64	0.49	0.013
Hexanes Plus	0.767	86	98%	56.49	1.47	1.13	0.029
H_2S	0.0004	34	98%	1.17E-02	3.04E-04	2.33E-04	6.07E-06
VOC [11]	9.02			414.42	10.77	8.29	0.22
SO_2		64				0.02	5.59E-04

[1] Blowdown of compressor station engines are routed to flare.

[2] For events lasting less than 1 hour, it is assumed that no more than 1 event occurs per hour.

[3] Hourly Flowrate (MMscf/hr) = Event Flowrate (MMscf/event) / Event Duration (hrs/event)

$$\text{Hourly Flowrate (MMscf/hr)} = \frac{0.033\ \text{MMscf}}{\text{event}} \div \frac{\text{event}}{1\ \text{hr}} = \frac{0.033\ \text{MMscf}}{\text{hr}}$$

[4] Annual Flowrate (MMscf/yr) = Event Flowrate (MMscf/event) x Total Number of Event (events/yr)

$$\text{Annual Flowrate (MMscf/yr)} = \frac{0.033\ \text{MMscf}}{\text{event}} \times \frac{260\ \text{events}}{\text{yr}} = \frac{1.7\ \text{MMscf}}{\text{yr}}$$

[5] Composition of the gas stream is obtained from the Dehy Upstream Gas Analysis (05/28/2020). H_2S is conservatively assumed to be 4 ppm.

[6] Per TCEQ "Air Permit Guidance For Chemical Sources, Flare And Vapor Oxidizers" (Draft Oct. 2000), 98% of the H_2S is assumed to be oxidized to SO_2 while the remaining 2% is emitted as H_2S.

[7] Gas Vented to Flare (lb/hr) = Hourly Flowrate (MMscf/hr) x Mole Percent (%) / 100 x MW (lb/lb-mole) / 379.5 (scf/lb-mole) x (10^6 scf/1 MMscf)

$$\text{Example Propane Hourly Vented Rate (lb/hr)} = \frac{0.033\ \text{MMscf}}{\text{hr}} \times \frac{5.12\ \%}{100} \times \frac{44\ \text{lb}}{\text{lb-mole}} \div \frac{379.5\ \text{scf}}{\text{lb-mole}} \times \frac{10^6\ \text{scf}}{1\ \text{MMscf}} = \frac{0{,}192.85\ \text{lb}}{\text{hr}}$$

[8] Gas Vented to Flare (tpy) = Annual Flowrate (MMscf/yr) x Mole Percent (%) / 100 x MW (lb/lb-mole) / 379.5 (scf/lb-mole) x (10^6 scf/1MMscf) x (1ton/ 2,000 lb)

$$\text{Example Propane Annual Vented Rate (tpy)} = \frac{1.7\ \text{MMscf}}{\text{yr}} \times \frac{5.12\ \%}{100} \times \frac{44\ \text{lb}}{\text{lb-mole}} \div \frac{379.5\ \text{scf}}{\text{lb-mole}} \times \frac{10^6\ \text{scf}}{1\ \text{MMscf}} \times \frac{1\ \text{ton}}{2{,}000\ \text{lb}} = \frac{5.01\ \text{ton}}{\text{yr}}$$

[9] Controlled Maximum Potential Hourly Emission Rate (lb/hr) = Gas Vented to Flare (lb/hr) x (1 - DRE)

Controlled Maximum Potential Annual Emission Rate (tpy) = Gas Vented to Flare (tpy) x (1 - DRE)

$$\text{Example Controlled Propane Hourly Emission Rate (lb/hr)} = \frac{0{,}192.85\ \text{lb}}{\text{hr}} \times (1 - 0.98) = \frac{3.86\ \text{lb}}{\text{hr}}$$

[10] Controlled flare SO_2 Emission Rate (lb/hr) = [H_2S Inlet (lb/hr) - H_2S Outlet (lb/hr)] x SO_2 MW (lb/lb-mol) / H_2S MW (lb/lb-mol)

$$\text{Controlled } SO_2 \text{ Hourly Emission Rate (lb/hr)} = \frac{[0.01 - 0.00]\ \text{lb}}{\text{hr}} \times \frac{64.06\ \text{lb/lb-mol}}{34.08\ \text{lb/lb-mol}} = \frac{0.02\ \text{lb}}{\text{hr}}$$

[11] Total VOC taken as the sum of NMNEHC.

Flare Emissions - Residue Compressor Emergency Blowdowns - Greenhouse Gas Calculations

CO_2	N_2O	CH_4	CO_2e	
53.1	0.0001	0.001	-	kg/MMBtu [1]
1	298	25	-	GWP [2]
126	0.000	0.00	127	tpy [3]

[1] Greenhouse gas emission factors are from 40 CFR 98 Subpart C.

[2] 40 CFR 98 Subpart A, Table A-1.

[3] GHG Emissions (tpy) = Emission Factor (kg/MMBtu) x Fuel Consumption (MMBtu/yr) x 2.20426 (lb/kg) / 2,000 (lb/ton)
CO_2e (tpy) = CO_2 tpy + (CH_4 tpy x CH_4 GWP) + (N_2O tpy x N_2O GWP)

Crestwood New Mexico Pipeline LLC

Willow Lake

Emission Unit: DEHY-803
Source Description: Glycol Dehydrator

Annual Operating Hours: 8760 hr
Dry Gas Flow Rate: 25 MMscf/day

Criteria Pollutant Emissions

Compound	DRE (%)	Uncontrolled Flash Tank Emissions[1]		Uncontrolled Regenerator Emissions[2]		Total Uncontrolled Emissions[3]		Controlled Regenerator Emissions[4]		Total Controlled Emissions[5]	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
Carbon Dioxide[5]	0%	1.2900	5.6502	0.1090	0.4774	1.3990	6.1276	0.1070	0.4687	1.6764	7.3426
Hydrogen Sulfide	98%	0.0062	0.0272	0.0034	0.0149	0.0096	0.0420	0.0032	0.0140	0.0002	0.0010
Methane	98%	97.3095	426.2156	0.6597	2.8895	97.9692	429.1051	0.6569	2.8772	2.3512	10.2982
Ethane	98%	30.7329	134.6101	0.7663	3.3564	31.4992	137.9665	0.7490	3.2806	0.7556	3.3094
Propane	98%	22.1606	97.0634	1.1983	5.2486	23.3589	102.3120	1.0738	4.7032	0.5576	2.4424
Isobutane	98%	4.4301	19.4038	0.3713	1.6263	4.8014	21.0301	0.3021	1.3232	0.1136	0.4974
n-Butane	98%	10.6813	46.7841	1.1845	5.1881	11.8658	51.9722	0.9037	3.9582	0.2780	1.2178
Isopentane	98%	2.9814	13.0585	0.3866	1.6933	3.3680	14.7518	0.2046	0.8961	0.0765	0.3349
n-Pentane	98%	3.3602	14.7177	0.5454	2.3889	3.9056	17.1065	0.2752	1.2054	0.0872	0.3822
n-Hexane	98%	1.9850	8.6943	0.6025	2.6390	2.5875	11.3333	0.1865	0.8169	0.0521	0.2283
Other Hexanes	98%	2.2096	9.6780	0.5015	2.1966	2.7111	11.8746	0.1843	0.8072	0.0575	0.2516
Heptanes	98%	3.3209	14.5455	2.1406	9.3758	5.4615	23.9214	0.3014	1.3201	0.0869	0.3808
Benzene	98%	0.0151	0.0661	0.1349	0.5909	0.1500	0.6570	0.0280	0.1226	0.0010	0.0045
Toluene	98%	0.5918	2.5921	8.4893	37.1831	9.0811	39.7752	0.6903	3.0235	0.0308	0.1348
Ethylbenzene	98%	0.0461	0.2019	1.1841	5.1864	1.2302	5.3883	0.0317	0.1388	0.0019	0.0082
Xylenes	98%	0.1272	0.5571	4.7399	20.7608	4.8671	21.3179	0.1186	0.5195	0.0059	0.0258
C8+ Heavies	98%	0.9895	4.3340	7.7595	33.9866	8.7490	38.3206	0.0038	0.0166	0.0238	0.1044
VOC	98%	52.90	231.70	29.24	128.06	82.14	359.76	4.30	18.85	1.37	6.01
HAP	98%	2.77	12.11	15.15	66.360	17.92	78.47	1.06	4.62	0.092	0.40

Greenhouse Gas Emissions

CO_2	CH_4	CO_2e	
7.34	10.30		tons/yr[6]
1	25		GWP[7]
7.34	257.46	264.80	tons/yr CO_2e[8]

[1] From "Flash Tank Off Gas" stream in GLYCalc Report.
[2] From "Uncontrolled Regenerator Emissions" stream in GLYCalc Report.
[3] Summation of the Uncontrolled Flash Tank and Regenerator Emissions.
[4] From "Controlled Regenerator Emissions" stream in GLYCalc Report. The control provided in the GLYCalc report is by a condenser.
[5] Controlled maximum potential hourly emission rate = (Uncontrolled Flash Tank Emissions + Condenser Controlled Regenerator Emissions) * (1-DRE). A Safety Factor has been added. 20%
Flash tank emissions are routed into the reboiler fuel lines (assumed 98% DRE)
The post-condenser regenerator emissions are routed to the firebox when the reboiler is firing and glow plug when the reboiler is not firing (assumed 98% DRE).
[6] Carbon Dioxide emissions from "Condenser Vent Gas Stream" and "Flash Tank Off Gas Stream" in the GLYCalc report. A DRE of 0% is assumed for CO_2.
[7] 40 CFR 98 Subpart A, Table A-1
[8] CO_2e tons/yr = tons/yr * GWP

Crestwood New Mexico Pipeline LLC

Willow Lake

Emission Unit: DEHY-804
Source Description: Glycol Dehydrator

Annual Operating Hours: 8760 hr
Dry Gas Flow Rate: 3.5 MMscf/day

Criteria Pollutant Emissions

Compound	DRE (%)	Uncontrolled Flash Tank Emissions[1]		Uncontrolled Regenerator Emissions[2]		Total Uncontrolled Emissions[3]		Controlled Regenerator Emissions[4]		Total Controlled Emissions[5]	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
Carbon Dioxide[5]	0%	0.1240	0.5431	0.0103	0.0451	0.1343	0.5882	0.0101	0.0442	0.1609	0.7048
Hydrogen Sulfide	98%	0.0006	0.0026	0.0003	0.0013	0.0009	0.0039	0.0003	0.0013	0.0000	0.0001
Methane	98%	9.3595	40.9946	0.0622	0.2724	9.4217	41.2670	0.0619	0.2711	0.2261	0.9904
Ethane	98%	2.9459	12.9030	0.0709	0.3105	3.0168	13.2136	0.0692	0.3031	0.0724	0.3169
Propane	98%	2.1282	9.3215	0.1139	0.4989	2.2421	9.8204	0.1017	0.4454	0.0535	0.2344
Isobutane	98%	0.4250	1.8615	0.0351	0.1537	0.4601	2.0152	0.0284	0.1244	0.0109	0.0477
n-Butane	98%	1.0243	4.4864	0.1118	0.4897	1.1361	4.9761	0.0847	0.3710	0.0266	0.1166
Isopentane	98%	0.2859	1.2522	0.0363	0.1590	0.3222	1.4112	0.0190	0.0832	0.0073	0.0321
n-Pentane	98%	0.3221	1.4108	0.0512	0.2243	0.3733	1.6351	0.0254	0.1113	0.0083	0.0365
n-Hexane	98%	0.1903	0.8335	0.0562	0.2462	0.2465	1.0797	0.0170	0.0745	0.0050	0.0218
Other Hexanes	98%	0.2118	0.9277	0.0468	0.2050	0.2586	1.1327	0.0169	0.0740	0.0055	0.0240
Heptanes	98%	0.3192	1.3981	0.1983	0.8686	0.5175	2.2667	0.0271	0.1187	0.0083	0.0364
Benzene	98%	0.0015	0.0066	0.0132	0.0578	0.0147	0.0644	0.0026	0.0114	0.0001	0.0004
Toluene	98%	0.0599	0.2624	0.8363	3.6630	0.8962	3.9254	0.0654	0.2865	0.0030	0.0132
Ethylbenzene	98%	0.0047	0.0206	0.1176	0.5151	0.1223	0.5357	0.0030	0.0131	0.0002	0.0008
Xylenes	98%	0.0133	0.0583	0.4827	2.1142	0.4960	2.1725	0.0116	0.0508	0.0006	0.0026
C8+ Heavies	98%	0.0978	0.4284	0.7238	3.1702	0.8216	3.5986	0.0003	0.0013	0.0024	0.0103
VOC	98%	5.08	22.27	2.82	12.37	7.91	34.63	0.40	1.77	0.13	0.58
HAP	98%	0.27	1.18	1.51	6.60	1.78	7.78	0.10	0.44	0.0089	0.039

Greenhouse Gas Emissions

CO_2	CH_4	CO_2e	
0.70	0.99		tons/yr[5]
1	25		GWP[6]
0.705	24.7594	25.464	tons/yr CO_2e[7]

[1] From "Flash Tank Off Gas" stream in GLYCalc Report.
[2] From "Uncontrolled Regenerator Emissions" stream in GLYCalc Report.
[3] Summation of the Uncontrolled Flash Tank and Regenerator Emissions.
[4] From "Controlled Regenerator Emissions" stream in GLYCalc Report. The control provided in the GLYCalc report is by a condenser.
[5] Controlled maximum potential hourly emission rate = (Uncontrolled Flash Tank Emissions + Condenser Controlled Regenerator Emissions) * (1-DRE). A Safety Factor has been added. 20%
Flash tank emissions are routed into the reboiler fuel lines (assumed 98% DRE)
The post-condenser regenerator emissions are routed to the firebox when the reboiler is firing and glow plug when the reboiler is not firing (assumed 98% DRE).
[6] Carbon Dioxide emissions from "Condenser Vent Gas Stream" and "Flash Tank Off Gas Stream" in the GLYCalc report. A DRE of 0% is assumed for CO_2.
[7] 40 CFR 98 Subpart A, Table A-1
[8] CO_2e tons/yr = tons/yr * GWP

Crestwood New Mexico Pipeline LLC

Willow Lake

Emission Unit: DEHY-EG
Source Description: Ethylene Glycol Dehydrator

Annual Operating Hours: 8760 hr
Dry Gas Flow Rate: 35 MMscf/day

Criteria Pollutant Emissions

Compound	Uncontrolled Flash Tank Emissions[1]		Uncontrolled Regenerator Emissions[2]		Total Uncontrolled Emissions[3]		Total Controlled Emissions[4]	
	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
Carbon Dioxide[5]	0.5270	2.3083	0.6820	2.9872	1.2090	5.2954	-	-
Hydrogen Sulfide	0.0014	0.0061	0.0080	0.0350	0.0094	0.0412	-	-
Methane	1.2202	5.3445	0.1630	0.7139	1.3832	6.0584	-	-
Ethane	3.0956	13.5587	0.4700	2.0586	3.5656	15.6173	-	-
Propane	0.8371	3.6665	0.3432	1.5032	1.1803	5.1697	-	-
Isobutane	0.1032	0.4520	0.0392	0.1717	0.1424	0.6237	-	-
n-Butane	0.2334	1.0223	0.1110	0.4862	0.3444	1.5085	-	-
Isopentane	0.0382	0.1673	0.0215	0.0942	0.0597	0.2615	-	-
n-Pentane	0.0167	0.0731	0.0111	0.0486	0.0278	0.1218	-	-
n-Hexane	0.0079	0.0346	0.0069	0.0302	0.0148	0.0648	-	-
Other Hexanes	0.0123	0.0539	0.0085	0.0372	0.0208	0.0911	-	-
Heptanes	0.0022	0.0096	0.0026	0.0114	0.0048	0.0210	-	-
Benzene	0.0003	0.0013	0.0031	0.0136	0.0034	0.0149	-	-
Toluene	0.0003	0.0013	0.0044	0.0193	0.0047	0.0206	-	-
Ethylbenzene	0.0003	0.0013	0.0034	0.0149	0.0037	0.0162	-	-
Xylenes	0.0006	0.0026	0.0119	0.0521	0.0125	0.0548	-	-
C8+ Heavies	0.0001	0.0004	0.0001	0.0004	0.0002	0.0009	-	-
VOC	1.25	5.49	0.57	2.48	1.82	7.97	-	-
HAP	0.0094	0.041	0.030	0.13	0.039	0.17	-	-

Greenhouse Gas Emissions

CO_2	CH_4	CO_2e	
5.30	6.06		tons/yr[6]
1	25		GWP[7]
5.30	151.46	156.76	tons/yr CO_2e[8]

[1] From "Flash Tank Off Gas" Stream in GlyCalc Report.
[2] From "Uncontrolled Regenerator" Stream in GlyCalc Report.
[3] Summation of the Uncontrolled Flash Tank Emissions and Uncontrolled Regenerator Emissions
[4] Flash tank emissions and regenerator emissions are routed to the flare. Controlled emissions are represented under that unit (FL-1)
[5] Carbon Dioxide emissions from "Flash Tank off Gas" and "Regenerator Overheads" streams in the GLYCalc report.
[6] From "Uncontrolled Emissions", calculated above
[7] 40 CFR 98 Subpart A, Table A-1
[8] CO_2e tons/yr = tons/yr * GWP

Crestwood New Mexico Pipeline LLC

Willow Lake

Emission Unit: DEHY-805
Source Description: Triethylene Glycol Dehydrator

Annual Operating Hours: 8760 hr
Dry Gas Flow Rate: 65 MMscf/day

Criteria Pollutant Emissions

Compound	DRE (%)	Uncontrolled Flash Tank Emissions[1]		Uncontrolled Regenerator Emissions[2]		Total Uncontrolled Emissions[3]		Controlled Regenerator Emissions[4]		Total Controlled Emissions[5]	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
Carbon Dioxide[5]	0%	2.7700	12.1326	0.2320	1.0162	3.0020	13.1488	0.2280	0.9986	3.5976	15.7575
Hydrogen Sulfide	98%	0.0132	0.0578	0.0073	0.0320	0.0205	0.0898	0.0068	0.0298	0.0005	0.0021
Methane	98%	208.9957	915.4012	1.4039	6.1491	210.3996	921.5502	1.3979	6.1228	5.0494	22.1166
Ethane	98%	65.9011	288.6468	1.6159	7.0776	67.5170	295.7245	1.5788	6.9151	1.6195	7.0935
Propane	98%	47.5613	208.3185	2.5594	11.2102	50.1207	219.5287	2.2892	10.0267	1.1964	5.2403
Isobutane	98%	9.5035	41.6253	0.7913	3.4659	10.2948	45.0912	0.6413	2.8089	0.2435	1.0664
n-Butane	98%	22.9093	100.3427	2.5220	11.0464	25.4313	111.3891	1.9162	8.3930	0.5958	2.6097
Isopentane	98%	6.3946	28.0083	0.8215	3.5982	7.2161	31.6065	0.4313	1.8891	0.1638	0.7175
n-Pentane	98%	7.2055	31.5601	1.1584	5.0738	8.3639	36.6339	0.5788	2.5351	0.1868	0.8183
n-Hexane	98%	4.2568	18.6448	1.2758	5.5880	5.5326	24.2328	0.3897	1.7069	0.1115	0.4884
Other Hexanes	98%	4.7382	20.7533	1.0618	4.6507	5.8000	25.4040	0.3860	1.6907	0.1230	0.5387
Heptanes	98%	7.1305	31.2316	4.5189	19.7928	11.6494	51.0244	0.6258	2.7410	0.1862	0.8153
Benzene	98%	0.0331	0.1450	0.2927	1.2820	0.3258	1.4270	0.0595	0.2606	0.0022	0.0097
Toluene	98%	1.3065	5.7225	18.5091	81.0699	19.8156	86.7923	1.4731	6.4522	0.0667	0.2922
Ethylbenzene	98%	0.1025	0.4490	2.5935	11.3595	2.6960	11.8085	0.0678	0.2970	0.0041	0.0179
Xylenes	98%	0.2857	1.2514	10.5216	46.0846	10.8073	47.3360	0.2574	1.1274	0.0130	0.0571
C8+ Heavies	98%	2.1529	9.4297	16.4331	71.9770	18.5860	81.4067	0.0078	0.0342	0.0519	0.2271
VOC	98%	113.58	497.48	63.06	276.20	176.64	773.68	9.12	39.96	2.94	12.90
HAP	98%	5.98	26.21	33.19	145.38	39.18	171.60	2.25	9.84	0.20	0.87

Greenhouse Gas Emissions

CO_2	CH_4	CO_2e	
15.76	22.12		tons/yr[5]
1	25		GWP[6]
15.76	552.91	568.67	tons/yr CO_2e[7]

[1] From "Flash Tank Off Gas" stream in GLYCalc Report.
[2] From "Uncontrolled Regenerator Emissions" stream in GLYCalc Report.
[3] Summation of the Uncontrolled Flash Tank and Regenerator Emissions.
[4] From "Controlled Regenerator Emissions" stream in GLYCalc Report. The control provided in the GLYCalc report is by a condenser.
[5] Controlled maximum potential hourly emission rate = (Uncontrolled Flash Tank Emissions + Condenser Controlled Regenerator Emissions) * (1-DRE). A Safety Factor has been added. 20%
Flash tank emissions are routed into the reboiler fuel lines (assumed 98% DRE)
The post-condenser regenerator emissions are routed to the firebox when the reboiler is firing and glow plug when the reboiler is not firing (assumed 98% DRE).
[6] Carbon Dioxide emissions from "Condenser Vent Gas Stream" and "Flash Tank Off Gas Stream" in the GLYCalc report. A DRE of 0% is assumed for CO_2.
[7] 40 CFR 98 Subpart A, Table A-1
[8] CO_2e tons/yr = tons/yr * GWP

Crestwood New Mexico Pipeline LLC

Willow Lake

Emission Unit:	HTR-803		
Source Description:	DEHY 803 Reboiler		

Fuel Consumption

Input heat rate	0.500	MMBtu/hr	
Fuel heat value	1020	Btu/scf	Fuel Gas Analysis
Fuel rate	490.20	scf/hr	Input heat rate / fuel heat value
Fuel rate	0.00049	MMscf/hr	Converted to MMscf
Annual operating hours:	8760		
Annual fuel usage	4.29	MMscf/yr	

Emission Rates

NO_x[1]	CO[1]	VOC[1]	SO_2[2]	PM[1,3]	H_2S[4]	HCHO[5]	Toluene[5]	Benzene[5]	n-Hexane[5]	HAPs[5]	Units
100	84	5.5		7.6		0.075	0.0034	0.0021	1.80		lb/MMscf
100.0	84.0	5.5		7.6		0.075	0.0034	0.0021	1.80		lb/MMscf
0.049	0.041	0.0027	0.0073	0.0037	3.50E-06	3.68E-05	1.67E-06	1.03E-06	8.82E-04	9.22E-04	lb/hr[6]
0.21	0.18	0.012	0.032	0.016	1.53E-05	1.61E-04	7.30E-06	4.51E-06	3.86E-03	4.04E-03	tons/yr[7]

[1] Emission factors from AP-42 Tables 1.4-1 and 1.4-2 (7/98)
Emission factors have been adjusted according to AP-42: EF (at fuel heating value) = Fuel Heat Value / EF Heat Value (1020 Btu/scf) * EF (at 1020 Btu/scf)

[2] SO_2 emissions based on fuel content of 5 grains of sulfur per 100 scf
SO_2 lb/hr = 5gr S/100 scf * Fuel usage (scf/hr) * 1 lb/7000 gr * 64lb SO2/ 32lb S
Assume 100% conversion of combusted H_2S into SO_2 and 98% Combustion Efficiency. Additional SO_2 emissions from the combustion of H_2S:
SO_2 (lb/hr) from H_2S = 98%*[(0.25 gr H_2S/100 scf * 1 lb/7000 gr * 64 lb/lbmol SO_2/34 lb/lbmol H_2S*scf/hr)]

[3] Assumes PM (Total) = PM-10 = PM-2.5

[4] H_2S emissions fuel content of 0.25 grains of hydrogen sulfide per 100 scf and combustion efficiency of 98%
H_2S lb/hr = (1-0.98) * 0.25 gr H_2S/100 scf * Fuel usage (scf/hr) * 1 lb/7000 gr

[5] HAP emission factors from AP-42 Table 1.4-3
Emission factors have been adjusted according to AP-42: EF (at fuel heating value) = Fuel Heat Value / EF Heat Value (1020 Btu/scf) * EF (at 1020 Btu/scf)

[6] Hourly emission rates calculated as follows:
NOx, CO, VOC, PM, HAP lb/hr = EF (lb/MMscf) * Fuel usage (MMscf/hr)

[7] Annual emissions calculated as follows:
tons/yr = Hourly emissions (lb/hr) * Hours of operation * 1 ton/2000 lb

Greenhouse Gas Calculations

CO_2	N_2O	CH_4	CO_2e	
53.06	0.00010	0.0010		kg/MMBtu[8]
1	298	25		GWP[9]
58.5	0.000110	0.00110		lb/hr[10]
256.2	0.00048	0.0048	256.4	tpy[11]

[8] Greenhouse gas emission factors are from 40 CFR 98 Subpart C

[9] 40 CFR 98 Subpart A, Table A-1

[10] GHG lb/hr = EF (kg/MMBtu) * Heat input (MMBtu/hr) * 2.20462lb/kg

[11] CO_2, N_2O, CH_4 tpy = Hourly emission rate (lb/hr) * Hours of operation * 1ton/2000lb
CO_2e tpy = CO_2 Emission Rate + (N_2O Emission Rate * GWP) + (CH_4 Emission Rate * GWP)

Crestwood New Mexico Pipeline LLC

Willow Lake

Emission Unit:	HTR-804		
Source Description:	DEHY 804 Reboiler		

Fuel Consumption

Input heat rate	0.125	MMBtu/hr	
Fuel heat value	1020	Btu/scf	Fuel Gas Analysis
Fuel rate	122.55	scf/hr	Input heat rate / fuel heat value
Fuel rate	0.00012	MMscf/hr	Converted to MMscf
Annual operating hours:	8760		
Annual fuel usage	1.07	MMscf/yr	

Emission Rates

NO_x[1]	CO[1]	VOC[1]	SO_2[2]	PM[1,3]	H_2S[4]	HCHO[5]	Toluene[5]	Benzene[5]	n-Hexane[5]	HAPs[5]	Units
100	84	5.5		7.6		0.075	0.0034	0.0021	1.80		lb/MMscf
100.0	84.0	5.5		7.6		0.075	0.0034	0.0021	1.80		lb/MMscf
0.012	0.010	0.00067	0.0018	0.00093	8.75E-07	9.19E-06	4.17E-07	2.57E-07	2.21E-04	2.30E-04	lb/hr[6]
0.054	0.045	0.0030	0.0080	0.0041	3.83E-06	4.03E-05	1.83E-06	1.13E-06	9.66E-04	1.01E-03	tons/yr[7]

[1] Emission factors from AP-42 Tables 1.4-1 and 1.4-2 (7/98)
Emission factors have been adjusted according to AP-42: EF (at fuel heating value) = Fuel Heat Value / EF Heat Value (1020 Btu/scf) * EF (at 1020 Btu/scf)

[2] SO_2 emissions based on fuel content of 5 grains of sulfur per 100 scf
SO_2 lb/hr = 5gr S/100 scf * Fuel usage (scf/hr) * 1 lb/7000 gr * 64lb SO2/ 32lb S
Assume 100% conversion of combusted H_2S into SO_2 and 98% Combustion Efficiency. Additional SO_2 emissions from the combustion of H_2S:
SO_2 (lb/hr) from H_2S = 98%*[(0.25 gr H_2S/100 scf * 1 lb/7000 gr * 64 lb/lbmol SO_2/34 lb/lbmol H_2S*scf/hr)]

[3] Assumes PM (Total) = PM-10 = PM-2.5

[4] H_2S emissions fuel content of 0.25 grains of hydrogen sulfide per 100 scf and combustion efficiency of 98%
H_2S lb/hr = (1-0.98) * 0.25 gr H_2S/100 scf * Fuel usage (scf/hr) * 1 lb/7000 gr

[5] HAP emission factors from AP-42 Table 1.4-3
Emission factors have been adjusted according to AP-42: EF (at fuel heating value) = Fuel Heat Value / EF Heat Value (1020 Btu/scf) * EF (at 1020 Btu/scf)

[6] Hourly emission rates calculated as follows:
NOx, CO, VOC, PM, HAP lb/hr = EF (lb/MMscf) * Fuel usage (MMscf/hr)

[7] Annual emissions calculated as follows:
tons/yr = Hourly emissions (lb/hr) * Hours of operation * 1 ton/2000 lb

Greenhouse Gas Calculations

CO_2	N_2O	CH_4	CO_2e	
53.06	0.00010	0.0010		kg/MMBtu[8]
1	298	25		GWP[9]
14.6	0.000028	0.00028		lb/hr[10]
64.0	0.00012	0.0012	64.1	tpy[11]

[8] Greenhouse gas emission factors are from 40 CFR 98 Subpart C

[9] 40 CFR 98 Subpart A, Table A-1

[10] GHG lb/hr = EF (kg/MMBtu) * Heat input (MMBtu/hr) * 2.20462lb/kg

[11] CO_2, N_2O, CH_4 tpy = Hourly emission rate (lb/hr) * Hours of operation * 1ton/2000lb
CO_2e tpy = CO_2 Emission Rate + (N_2O Emission Rate * GWP) + (CH_4 Emission Rate * GWP)

Crestwood New Mexico Pipeline LLC

Willow Lake

Emission Unit:	HTR-802		
Source Description:	Regen Gas Heater		

Fuel Consumption

Input heat rate	2.00	MMBtu/hr	
Fuel heat value	1020	Btu/scf	Fuel Gas Analysis
Fuel rate	1960.78	scf/hr	Input heat rate / fuel heat value
Fuel rate	0.00196	MMscf/hr	Converted to MMscf
Annual operating hours:	8760		
Annual fuel usage	17.18	MMscf/yr	

Emission Rates

NO_x[1]	CO[1]	VOC[1]	SO_2[2]	PM[1,3]	H_2S[4]	HCHO[5]	Toluene[5]	Benzene[5]	n-Hexane[5]	HAPs[5]	Units
100	84	5.5		7.6		0.075	0.0034	0.0021	1.80		lb/MMscf
100.0	84.0	5.5		7.6		0.075	0.0034	0.0021	1.80		lb/MMscf
0.20	0.16	0.011	0.029	0.015	1.40E-05	1.47E-04	6.67E-06	4.12E-06	0.0035	0.0037	lb/hr[6]
0.86	0.72	0.047	0.13	0.065	6.13E-05	6.44E-04	2.92E-05	1.80E-05	0.015	0.016	tons/yr[7]

[1] Emission factors from AP-42 Tables 1.4-1 and 1.4-2 (7/98)
Emission factors have been adjusted according to AP-42: EF (at fuel heating value) = Fuel Heat Value / EF Heat Value (1020 Btu/scf) * EF (at 1020 Btu/scf)

[2] SO_2 emissions based on fuel content of 5 grains of sulfur per 100 scf
SO_2 lb/hr = 5gr S/100 scf * Fuel usage (scf/hr) * 1 lb/7000 gr * 64lb SO2/ 32lb S
Assume 100% conversion of combusted H_2S into SO_2 and 98% Combustion Efficiency. Additional SO_2 emissions from the combustion of H_2S:
SO_2 (lb/hr) from H_2S = 98%*[(0.25 gr H_2S/100 scf * 1 lb/7000 gr * 64 lb/lbmol SO_2/34 lb/lbmol H_2S*scf/hr)]

[3] Assumes PM (Total) = PM-10 = PM-2.5

[4] H_2S emissions fuel content of 0.25 grains of hydrogen sulfide per 100 scf and combustion efficiency of 98%
H_2S lb/hr = (1-0.98) * 0.25 gr H_2S/100 scf * Fuel usage (scf/hr) * 1 lb/7000 gr

[5] HAP emission factors from AP-42 Table 1.4-3
Emission factors have been adjusted according to AP-42: EF (at fuel heating value) = Fuel Heat Value / EF Heat Value (1020 Btu/scf) * EF (at 1020 Btu/scf)

[6] Hourly emission rates calculated as follows:
NOx, CO, VOC, PM, HAP lb/hr = EF (lb/MMscf) * Fuel usage (MMscf/hr)

[7] Annual emissions calculated as follows:
tons/yr = Hourly emissions (lb/hr) * Hours of operation * 1 ton/2000 lb

Greenhouse Gas Calculations

CO_2	N_2O	CH_4	CO_2e	
53.06	0.00010	0.0010		kg/MMBtu[8]
1	298	25		GWP[9]
234.0	0.000441	0.00441		lb/hr[10]
1024.7	0.00193	0.0193	1025.8	tpy[11]

[8] Greenhouse gas emission factors are from 40 CFR 98 Subpart C

[9] 40 CFR 98 Subpart A, Table A-1

[10] GHG lb/hr = EF (kg/MMBtu) * Heat input (MMBtu/hr) * 2.20462lb/kg

[11] CO_2, N_2O, CH_4 tpy = Hourly emission rate (lb/hr) * Hours of operation * 1ton/2000lb
CO_2e tpy = CO_2 Emission Rate + (N_2O Emission Rate * GWP) + (CH_4 Emission Rate * GWP)

Crestwood New Mexico Pipeline LLC

Willow Lake

Emission Unit:	HTR-730		
Source Description:	Hot Oil Heater		

Fuel Consumption

Input heat rate	6.83	MMBtu/hr	
Fuel heat value	1020	Btu/scf	Fuel Gas Analysis
Fuel rate	6696.71	scf/hr	Input heat rate / fuel heat value
Fuel rate	0.00670	MMscf/hr	Converted to MMscf
Annual operating hours:	8760		
Annual fuel usage	58.66	MMscf/yr	

Emission Rates

NO_x[1]	CO[1]	VOC[1]	SO_2[2]	PM[1,3]	H_2S[4]	HCHO[5]	Toluene[5]	Benzene[5]	n-Hexane[5]	HAPs[5]	Units
100	84	5.5		7.6		0.075	0.0034	0.0021	1.80		lb/MMscf
100.0	84.0	5.5		7.6		0.075	0.0034	0.0021	1.80		lb/MMscf
0.67	0.56	0.037	0.10	0.051	4.78E-05	5.02E-04	2.28E-05	1.41E-05	0.012	0.013	lb/hr[6]
2.93	2.46	0.16	0.44	0.22	2.10E-04	2.20E-03	9.97E-05	6.16E-05	0.053	0.055	tons/yr[7]

[1] Emission factors from AP-42 Tables 1.4-1 and 1.4-2 (7/98)
Emission factors have been adjusted according to AP-42: EF (at fuel heating value) = Fuel Heat Value / EF Heat Value (1020 Btu/scf) * EF (at 1020 Btu/scf)

[2] SO_2 emissions based on fuel content of 5 grains of sulfur per 100 scf
SO_2 lb/hr = 5gr S/100 scf * Fuel usage (scf/hr) * 1 lb/7000 gr * 64lb SO2/ 32lb S
Assume 100% conversion of combusted H_2S into SO_2 and 98% Combustion Efficiency. Additional SO_2 emissions from the combustion of H_2S:
SO_2 (lb/hr) from H_2S = 98%*[(0.25 gr H_2S/100 scf * 1 lb/7000 gr * 64 lb/lbmol SO_2/34 lb/lbmol H_2S*scf/hr)]

[3] Assumes PM (Total) = PM-10 = PM-2.5

[4] H_2S emissions fuel content of 0.25 grains of hydrogen sulfide per 100 scf and combustion efficiency of 98%
H_2S lb/hr = (1-0.98) * 0.25 gr H_2S/100 scf * Fuel usage (scf/hr) * 1 lb/7000 gr

[5] HAP emission factors from AP-42 Table 1.4-3
Emission factors have been adjusted according to AP-42: EF (at fuel heating value) = Fuel Heat Value / EF Heat Value (1020 Btu/scf) * EF (at 1020 Btu/scf)

[6] Hourly emission rates calculated as follows:
NOx, CO, VOC, PM, HAP lb/hr = EF (lb/MMscf) * Fuel usage (MMscf/hr)

[7] Annual emissions calculated as follows:
tons/yr = Hourly emissions (lb/hr) * Hours of operation * 1 ton/2000 lb

Greenhouse Gas Calculations

CO_2	N_2O	CH_4	CO_2e	
53.06	0.00010	0.0010		kg/MMBtu[8]
1	298	25		GWP[9]
799.0	0.001506	0.01506		lb/hr[10]
3499.7	0.00660	0.0660	3503.4	tpy[11]

[8] Greenhouse gas emission factors are from 40 CFR 98 Subpart C

[9] 40 CFR 98 Subpart A, Table A-1

[10] GHG lb/hr = EF (kg/MMBtu) * Heat input (MMBtu/hr) * 2.20462lb/kg

[11] CO_2, N_2O, CH_4 tpy = Hourly emission rate (lb/hr) * Hours of operation * 1ton/2000lb
CO_2e tpy = CO_2 Emission Rate + (N_2O Emission Rate * GWP) + (CH_4 Emission Rate * GWP)

Crestwood New Mexico Pipeline LLC

Willow Lake

Emission Unit: HTR-805

Source Description: DEHY 805 Reboiler

Fuel Consumption

Input heat rate	1.50	MMBtu/hr	
Fuel heat value	1020	Btu/scf	Fuel Gas Analysis
Fuel rate	1470.59	scf/hr	Input heat rate / fuel heat value
Fuel rate	0.00147	MMscf/hr	Converted to MMscf
Annual operating hours:	8760		
Annual fuel usage	12.88	MMscf/yr	

Emission Rates

NO_x[1]	CO[1]	VOC[1]	SO_2[2]	PM[1,3]	H_2S[4]	HCHO[5]	Toluene[5]	Benzene[5]	n-Hexane[5]	HAPs[5]	Units
100	84	5.5		7.6		0.075	0.0034	0.0021	1.80		lb/MMscf
100.0	84.0	5.5		7.6		0.075	0.0034	0.0021	1.80		lb/MMscf
0.15	0.12	0.0081	0.022	0.011	1.05E-05	1.10E-04	5.00E-06	3.09E-06	0.0026	0.0028	lb/hr[6]
0.64	0.54	0.035	0.096	0.049	4.60E-05	4.83E-04	2.19E-05	1.35E-05	0.012	0.012	tons/yr[7]

[1] Emission factors from AP-42 Tables 1.4-1 and 1.4-2 (7/98)
Emission factors have been adjusted according to AP-42: EF (at fuel heating value) = Fuel Heat Value / EF Heat Value (1020 Btu/scf) * EF (at 1020 Btu/scf)

[2] SO_2 emissions based on fuel content of 5 grains of sulfur per 100 scf
SO_2 lb/hr = 5gr S/100 scf * Fuel usage (scf/hr) * 1 lb/7000 gr * 64lb SO2/ 32lb S
Assume 100% conversion of combusted H_2S into SO_2 and 98% Combustion Efficiency. Additional SO_2 emissions from the combustion of H_2S:
SO_2 (lb/hr) from H_2S = 98%*[(0.25 gr H_2S/100 scf * 1 lb/7000 gr * 64 lb/lbmol SO_2/34 lb/lbmol H_2S*scf/hr)]

[3] Assumes PM (Total) = PM-10 = PM-2.5

[4] H_2S emissions fuel content of 0.25 grains of hydrogen sulfide per 100 scf and combustion efficiency of 98%
H_2S lb/hr = (1-0.98) * 0.25 gr H_2S/100 scf * Fuel usage (scf/hr) * 1 lb/7000 gr

[5] HAP emission factors from AP-42 Table 1.4-3
Emission factors have been adjusted according to AP-42: EF (at fuel heating value) = Fuel Heat Value / EF Heat Value (1020 Btu/scf) * EF (at 1020 Btu/scf)

[6] Hourly emission rates calculated as follows:
NOx, CO, VOC, PM, HAP lb/hr = EF (lb/MMscf) * Fuel usage (MMscf/hr)

[7] Annual emissions calculated as follows:
tons/yr = Hourly emissions (lb/hr) * Hours of operation * 1 ton/2000 lb

Greenhouse Gas Calculations

CO_2	N_2O	CH_4	CO_2e	
53.06	0.00010	0.0010		kg/MMBtu[8]
1	298	25		GWP[9]
175.5	0.000331	0.00331		lb/hr[10]
768.5	0.00145	0.0145	769.3	tpy[11]

[8] Greenhouse gas emission factors are from 40 CFR 98 Subpart C

[9] 40 CFR 98 Subpart A, Table A-1

[10] GHG lb/hr = EF (kg/MMBtu) * Heat input (MMBtu/hr) * 2.20462lb/kg

[11] CO_2, N_2O, CH_4 tpy = Hourly emission rate (lb/hr) * Hours of operation * 1ton/2000lb
CO_2e tpy = CO_2 Emission Rate + (N_2O Emission Rate * GWP) + (CH_4 Emission Rate * GWP)

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Unit: WL1-TK601 through WL1-TK603

Description: WL1 210 bbl Condensate Tanks

Number of Tanks 3

Uncontrolled Emissions (per tank)[1,2]

VOC	Benzene	Toluene	Ethylbenzene	Xylenes	n-Hexane	Total HAPs	H_2S			
188.61	0.21	0.37	0.024	0.15	3.02	3.77	0.0046	lb/hr	ProMax Report	
74.05	0.10	0.20	0.014	0.085	1.54	1.93	0.0014	tpy	ProMax Report	
62.87	0.069	0.12	0.0080	0.050	1.01	1.26	0.0015	lb/hr	Per Tank	Uncontrolled
24.68	0.034	0.065	0.0045	0.028	0.51	0.64	0.00045	tpy	Per Tank	Uncontrolled
62.87	0.069	0.12	0.0080	0.050	1.01	1.26	0.0015	lb/hr	Per Tank	Controlled[3]
1.23	0.0017	0.0033	0.00023	0.0014	0.026	0.032	0.000023	tpy	Per Tank	Controlled[3]

CO_2	Methane		
0.45	27.70	lb/hr	ProMax Report
0.13	7.65	tpy	ProMax Report

CO_2e[4]		
191.30	tpy	
63.77	tpy	Per Tank

Notes

[1] ProMax simulation utilized the following conservative throughputs:

14 bbl/hr of condensate for lb/hr calculations and 7,500 bbl/yr of condensate for tpy calculations.

1 bbl/hr of produced water for lb/hr calculations and 10,000 bbl/yr of produced water for tpy calculations.

[2] Emissions include working, breathing and flash and are per tank.

[3] Emissions from the tanks are controlled by a VRU with an assumed annual 5% downtime. VRU control only applied to annual emissions. 5%

[4] CO_2e tpy Emission Rate = CO_2 Emission Rate + CH_4 Emission Rate *GWP Factor

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Unit: WL2-TK8101 and WL2-TK8102
Description: WL 2 400 bbl Condensate Tanks
Number of Tanks 2

Uncontrolled Emissions (per tank)[1,2]

VOC	Benzene	Toluene	Ethylbenzene	Xylenes	n-Hexane	Total HAPs	H_2S			
188.67	0.21	0.36	0.024	0.15	3.01	3.75	0.0046	lb/hr	ProMax Report	
93.93	0.13	0.24	0.016	0.10	1.88	2.36	0.0018	tpy	ProMax Report	
94.33	0.10	0.18	0.012	0.074	1.51	1.88	0.0023	lb/hr	Per Tank	Uncontrolled
46.96	0.063	0.12	0.0082	0.051	0.94	1.18	0.00090	tpy	Per Tank	Uncontrolled
94.33	0.10	0.18	0.012	0.074	1.51	1.88	0.0023	lb/hr	Per Tank	Controlled[3]
2.35	0.0032	0.0060	0.00041	0.0026	0.047	0.059	0.000045	tpy	Per Tank	Controlled[3]

CO_2	Methane		
0.45	27.72	lb/hr	ProMax Report
0.17	10.17	tpy	ProMax Report

CO_2e[3]		
254.44	tpy	
127.22	tpy	Per Tank

Notes

[1] ProMax simulation utilized the following conservative throughputs:

14 bbl/hr of condensate for lb/hr calculations and 10,000 bbl/yr of condensate for tpy calculations.

1 bbl/hr of produced water for lb/hr calculations and 10,000 bbl/yr of produced water for tpy calculations.

[2] Emissions include working, breathing and flash and are per tank.

[3] Emissions from the tanks are controlled by a VRU with an assumed annual 5% downtime. VRU control only applied to annual emissions. 5%

[4] CO_2e tpy Emission Rate = CO_2 Emission Rate + CH_4 Emission Rate *GWP Factor

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Unit: WLCS-TK2301 through WLCS-TK2303
Description: WLCS 400 bbl Condensate Tanks
Number of Tanks 3

Uncontrolled Emissions (per tank)[1,2]

VOC	Benzene	Toluene	Ethylbenzene	Xylenes	n-Hexane	Total HAPs	H_2S			
1093.53	1.16	2.10	0.14	0.88	17.04	21.32	0.026	lb/hr	ProMax Report	
242.67	0.30	0.58	0.040	0.25	4.53	5.70	0.0045	tpy	ProMax Report	
364.51	0.39	0.70	0.047	0.29	5.68	7.11	0.0088	lb/hr	Per Tank	Uncontrolled
80.89	0.10	0.19	0.013	0.084	1.51	1.90	0.0015	tpy	Per Tank	Uncontrolled
364.51	0.39	0.70	0.047	0.29	5.68	7.11	0.0088	lb/hr	Per Tank	Controlled[3]
0.081	1.01E-04	1.93E-04	1.33E-05	8.38E-05	1.51E-03	1.90E-03	1.50E-06	tpy	Per Tank	Controlled[3]

CO_2	Methane		
1.907	70.51	lb/hr	ProMax Report
0.32	11.29	tpy	ProMax Report

CO_2e[3]		
282.60	tpy	
94.20	tpy	Per Tank

Notes

[1] ProMax simulation utilized the following conservative throughputs:
125 bbl/hr of condensate for lb/hr calculations and 39,000 bbl/yr of condensate for tpy calculations.
1 bbl/hr of produced water for lb/hr calculations and 39,000 bbl/yr of produced water for tpy calculations.

[2] Emissions include working, breathing and flash and are per tank.

[3] Emissions from the tanks are controlled by a VRU with an assumed annual 5% downtime. VRU control only applied to annual emissions. 5%
During VRU downtime, the emissions will be routed to a flare (WL1-FL) with an assumed additional 98% DRE 98%

[4] CO_2e tpy Emission Rate = CO_2 Emission Rate + CH_4 Emission Rate *GWP Factor

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Unit: ATM LOAD

Description: Atmospheric Tank Loadout from All Tanks

Number of Tanks 8

Uncontrolled Loading Emissions[1]

VOC	Benzene	Toluene	Ethylbenzene	Xylenes	n-Hexane	Total HAPs	H_2S		
31.44	0.050	0.10	0.0071	0.045	0.76	0.96	0.00048	lb/hr	ProMax Report
11.91	0.019	0.038	0.0027	0.017	0.29	0.37	0.00017	tpy	ProMax Report

CO_2	Methane		
0.0330	0.811	lb/hr	ProMax Report
0.0102	0.127	tpy	ProMax Report

CO_2e[2]	
3.20	tpy

Notes

[1] Loading emissions from tanks at WL1, WL2 and WLCS portions of the facility.
lb/hr emissions based on maximum bbl/hr flowrate; tpy emissions based on annual bbl/yr throughput.

[2] CO_2e tpy Emission Rate = CO_2 Emission Rate + CH_4 Emission Rate *GWP Factor

Crestwood New Mexico Pipeline LLC

Willow Lake

Unit: NGL LOAD

Hose Parameters

Vapor Hose Diameter	2	inches
Vapor Hose Length	1	foot
Hose Volume	0.022	ft^3
Number of Hoses	2	
Total Hose Volume	0.044	ft^3

NGL Data[1]

NGL Tank Pressure	321.27	psia
NGL Throughput	3571.43	bbl/day
NGL Throughput	4500000	gal/month
Capacity of Tank	9000	gal/load
NGL Throughput	500.00	loads/month

[1] Values obtained from a similar Crestwood facility.

Physical Data

Loadout Temperature (T)	591.67	R
Molecular Weight	46.315	lb/lbmol
Moles in the vapor phase (n)	2.21E-03	$lbmol/ft^3$
Vapor Density[2]	1.02E-01	lb/ft^3

[2] Calculated using PV = nRT, where R = Universal Gas Constant 10.73 cubic feet *psi/lbmole * deg R

VOC Emissions from Pressurized NGL Loadout

Source	Density (lb/ft^3)	Hose Volume (ft^3/load)	Loads per month	Monthly Emissions (lb/month)[3]	Annual Emissions (tpy)[4]
Vapor Hoses	0.102	0.044	500.00	2.23	0.013
Total				2.23	0.013

[3] Monthly Emissions (lb/month) = Density (lb/ft^3) x Hose Volume (ft^3/load) x Loads per month (load/month)

$$\text{Monthly Emission Rate (lb/month)} = \frac{0.10\ \text{lb}}{ft^3} \times \frac{0.043633231}{\text{load}} \times \frac{500}{\text{month}} = \frac{2.23\ \text{lb}}{\text{month}}$$

[4] Annual Emission Rate (tpy) = Uncontrolled emission rate (lb/hr) x (8,760 hr/yr) / (2,000 lb/ton).

$$\text{Annual Emission Rate (tpy)} = \frac{2.23}{\text{month}} \times \frac{12\ \text{months}}{\text{yr}} \times \frac{1\ \text{ton}}{2{,}000\ \text{lb}} = \frac{1.34\text{E-}02\ \text{lb}}{\text{yr}}$$

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Unit: HAUL
Description: Truck Loadout of Condensate, PW and NGL

Haul Road Inputs

Max Facility Throughput:

		bbl/week	bbl/yr	Truck Capacity (bbl)	Vehicles Per Day (VPD)[5]
Haul-1	Condensate + PW	2221.15	115500	139	2.27
Haul-2	NGL	25000	1300000	200	17.81
	Total	27221.154	1415500	170	20.08

	Weight (tons)					
Vehicle Type	Empty Vehicle[1]	Load Size[2]	Loaded Vehicle[3]	Mean Vehicle[4]	Segments per trip	Trips per hour[6]
Haul-1	16	22.0	38.0	27.0	1	1.000
Haul-2	16	24.5	40.5	28.3	1	1.000

	Haul-1	Haul-2
Hours of Operation per Day	24	24
Total Vehicles Per Day	3.00	18.00
Mean Vehicle Weight (tons)	27.0	28.3
Total Trips per Hour	1.00	1.00

Footnotes

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

[2] Cargo, transported materials, etc. (Water Density*SG*8400 gal truck/ 2000lb/ton)

[3] Loaded vehicle weight = Empty + Load Size

[4] Mean Vehicle weight = (Loaded Weight + Empty Weight) / 2

[5] Vehicles per day =Maximum Facility Throughput per year*(1/Truck Capacity)*(1 year/365 days)

[6] Trips per hour = Vehicles per day * Segments per trip ÷ Hours of Operation per Day

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Unit: HAUL
Description: Truck Loadout of Condensate, PW and NGL

Haul Road Emission Factor Calculation

Emission Factor Calculation (AP-42 Sec. 13.2.2.3 November, 2006, Equation 2)

Unit	Operating Hours	s, silt content[1] %	W, Avg. Veh. Wt. tons	k, PM-10 lb/VMT	k, PM-2.5 lb/VMT	a, PM-10 lb/VMT	a, PM-2.5 lb/VMT	b, PM-10 lb/VMT	b, PM-2.5 lb/VMT
HAUL-1	8760	4.8	27.0	1.5	0.15	0.9	0.9	0.45	0.45
HAUL-2	8760	4.8	28.3	1.5	0.15	0.9	0.9	0.45	0.45

	Hourly Emission Factor[2]		Wet Day, Adjusted Emission Factor[3]		
	E, PM-10 lb/VMT	E, PM-2.5 lb/VMT	Wet Days	E, PM-10 lb/VMT	E, PM-2.5 lb/VMT
HAUL-1	1.77	0.18	70	1.43	0.14
HAUL-2	1.80	0.18	70	1.46	0.15

Haul Road Emission Calculations

Unit	Avg. Trips per Hour T	Avg. Trips per Day T	Segment Length mi	Average VMT/hr[4] mi/hr	Average VMT/yr[5] mi/yr	PM-10[6] lb/hr	PM-10[6] tpy	PM-2.5[6] lb/hr	PM-2.5[6] tpy
Haul-1	1.00	3.00	0.096	0.0964	105.56	0.17	0.075	0.017	0.0075
Haul-2	1.00	18.00	0.085	0.0850	558.70	0.15	0.41	0.015	0.041
		Total				**0.32**	**0.48**	**0.032**	**0.048**

Footnotes

[1] Surface silt = % of 75 micron diameter and smaller particles (NMED Default)

[2] E = k x (s/12)^a x (W/3)^b (AP-42 page 13.2.2-4 Equation 1a, November 2006)
E= Size Specific Emission Factor (lb/VMT)
s = surface material silt content (%)
k, a, b = constants from AP-42 Table 13.2.2-2
W = Weighted Mean Vehicle Weight from Haul Road Inputs (tons)

[3] Wet Day Emission Factor = E * (365 - Wet Days)/365. Wet days value is the NM default allowed by NMED without additional justification.

[4] VMT/hr = Vehicle Miles Travelled per hour= Trips per hour * Segment Length

[5] VMT/yr = Vehicle Miles Travelled per year = Trips per day * 365 days per year * Segment Length

[6] lb/hr PM = lb/VMT * VMT/hr
tpy PM = lb/VMT * VMT/yr * 1 ton/2000 lb

Crestwood New Mexico Pipeline LLC

Willow Lake Gas Processing Plant

Unit: FUG

Description: Facility-wide fugitive emissions

Facility-wide Fugitive Emissions Per Piece of Equipment									
Subcomponent		**Emission Factor[1] (kg/hr/comp)**	**Emission Factor[1] (lb/hr/comp)**	**VOC Content[2] (wt%)**	**HAP Content[2] (wt%)**	**H_2S Content[2] (wt%)**	**CO_2 Content[2] (wt%)**	**CH_4 Content[2] (wt%)**	**Subcomponent Counts[3]**
Valves	Gas	4.50E-03	9.92E-03	23.15%	0.85%	0.0004%	1.00%	79.00%	1817
	Heavy Oil	8.40E-06	1.85E-05	100.00%	100.00%	0.0000%	0.00%	0.00%	77
	Light Oil - MeOH	2.50E-03	5.51E-03	100.00%	100.00%	0.0000%	0.00%	0.00%	41
	Light Oil- Propane	2.50E-03	5.51E-03	100.00%	0.00%	0.0000%	0.00%	0.00%	413
	Light Oil - Cond/PW	2.50E-03	5.51E-03	100.00%	1.23%	0.0004%	0.072%	0.75%	599
Flanges	Gas	3.90E-04	8.60E-04	23.15%	0.85%	0.0004%	1.00%	79.00%	727
	Heavy Oil	3.90E-07	8.60E-07	100.00%	100.00%	0.0000%	0.00%	0.00%	48
	Light Oil - MeOH	1.10E-04	2.43E-04	100.00%	100.00%	0.0000%	0.00%	0.00%	9
	Light Oil- Propane	1.10E-04	2.43E-04	100.00%	0.00%	0.0000%	0.00%	0.00%	248
	Light Oil - Cond/PW	1.10E-04	2.43E-04	100.00%	1.23%	0.0004%	0.072%	0.75%	327
Connectors	Gas	2.00E-04	4.41E-04	23.15%	0.85%	0.0004%	1.00%	79.00%	5567
	Heavy Oil	7.50E-06	1.65E-05	100.00%	100.00%	0.0000%	0.00%	0.00%	371
	Light Oil - MeOH	2.10E-04	4.63E-04	100.00%	100.00%	0.0000%	0.00%	0.00%	143
	Light Oil- Propane	2.10E-04	4.63E-04	100.00%	0.00%	0.0000%	0.00%	0.00%	942
	Light Oil - Cond/PW	2.10E-04	4.63E-04	100.00%	1.23%	0.0004%	0.072%	0.75%	1690
Other	Gas	8.80E-03	1.94E-02	23.15%	0.85%	0.0004%	1.00%	79.00%	15
	Heavy Oil	3.20E-05	7.05E-05	100.00%	100.00%	0.0000%	0.00%	0.00%	0
	Light Oil - MeOH	7.50E-03	1.65E-02	100.00%	100.00%	0.0000%	0.00%	0.00%	0
	Light Oil- Propane	7.50E-03	1.65E-02	100.00%	0.00%	0.0000%	0.00%	0.00%	3
	Light Oil - Cond/PW	7.50E-03	1.65E-02	100.00%	1.23%	0.0004%	0.072%	0.75%	0
Pump Seals	Gas	2.40E-03	5.29E-03	23.15%	0.85%	0.0004%	1.00%	79.00%	0
	Light Oil - MeOH	1.30E-02	2.87E-02	100.00%	100.00%	0.0000%	0.00%	0.00%	3
	Light Oil- Propane	1.30E-02	2.87E-02	100.00%	0.00%	0.0000%	0.00%	0.00%	3
	Light Oil - Cond/PW	1.30E-02	2.87E-02	100.00%	1.23%	0.0004%	0.072%	0.75%	0
Open Ended-Lines	Gas	2.03E-03	4.48E-03	23.15%	0.85%	0.0004%	1.00%	79.00%	41
	Heavy Oil	1.40E-04	3.09E-04	100.00%	100.00%	0.0000%	0.00%	0.00%	0
	Light Oil - MeOH	1.40E-03	3.09E-03	100.00%	100.00%	0.0000%	0.00%	0.00%	1
	Light Oil- Propane	1.40E-03	3.09E-03	100.00%	0.00%	0.0000%	0.00%	0.00%	3
	Light Oil - Cond/PW	1.40E-03	3.09E-03	100.00%	1.23%	0.0004%	0.072%	0.75%	1

Hourly VOC Emission Rate (lb/hr)[4]	12.49
Annual VOC Emission Rate (tpy)[5]	54.72
Hourly HAP Emission Rate (lb/hr)[4]	0.63
Annual HAP Emission Rate (tpy)[5]	2.74
Hourly H_2S Emission Rate (lb/hr)[4]	0.00010
Annual H_2S Emission Rate (tpy)[5]	0.00045
Annual CO_2 Emission Rate (tpy)[6]	0.96
Annual CH_4 Emission Rate (tpy)[6]	74.81
Annual CO_2e Emission Rate (tpy)[7]	1871.22

[1] Emission factors from Table 2-4 of EPA Protocol for Equipment Leak Emission Estimates, 1995.

[2] Weight percent of gas and light liquid - Cond/PW components from facility gas analysis and liquid stream from ProMax report. H_2S is conservatively assumed to be 4 ppm.
Weight percent of heavy liquids and light liquids assumed to be 100% VOC. Propane assumed to have 0% HAP. Heavy liquid (glycol) and methanol assumed to be 100% HAP.

[3] Component counts are based on actual facility counts plus estimated counts for new modification. A safety factor is included for non-methanol service components.
The safety factor provides a conservative estimate of fugitive components, and conservatively estimates emissions to account for variation in gas quality.
Safety Factor 15%

[4] Hourly Emissions [lb/hr] = Emissions Factor [lb/hr/component] * Weight Content of Chemical Component [%] * Subcomponent Count.

[5] Annual Emissions [ton/yr] = Hourly Emissions [lb/hr] * Operating Hours [hr/yr] * 1/2000 [ton/lb].

[6] Annual GHG Emissions [tpy] = Emissions Factor [lb/hr/component] * Weight Content of Chemical Component [%] * Subcomponent Count * Operating Hours [hr/yr] * 1/2000 [ton/lb]

[7] CO_2e tpy Emission Rate = CO_2 Emission Rate + CH_4 Emission Rate *GWP Factor

Crestwood New Mexico Pipeline LLC

Willow Lake

Emission Unit: PIGGING

Source Description: Pig Receiver and Launcher Emissions - WL1, WL2, WLCS

Area	Type	Qty	Blowdowns (per year)	Actual cubic ft.	Pressure (psig)	Temperature (F)	scf/event per pig trap
WL CS	Receiver	2	312	21.4	50	80	92.10
WL1	Auto-Launcher	1	26	88.5	1000	80	5973.15
WL1	Receiver	1	26	11.8	150	80	129.27
WL2	Receiver	1	26	11.8	150	80	129.27

Inlet Gas [1]

Molecular Weight	21.74	lb/lb-mol
Methane	55.99%	wt%
CO2	0.19%	wt%
VOC	24%	wt%
HAPs	1%	wt%
H_2S	0.0004%	wt%

[1] Weight percent of gas from facility inlet gas analysis. HAPs are based of inlet to dehy gas analysis. H_2S is conservatively assumed to be 4 ppm.

Total Emissions	VOC Emissions (lb/hr)	VOC Emissions (tpy)	HAP Emissions (lb/hr)	HAP Emissions (tpy)	H_2S Emissions (lb/hr)	H_2S Emissions (tpy)	CO2 Emissions (tpy)	Methane Emissions (tpy)
WL CS	0.045	0.20	0.0019	0.0082	7.52E-07	3.29E-06	1.56E-03	3.16E-02
WL1	0.24	1.07	0.010	0.044	4.06E-06	1.78E-05	8.45E-03	8.48E+00
WL1	0.0053	0.023	0.00022	0.0010	8.79E-08	3.85E-07	1.83E-04	2.45E-02
WL2	0.0053	0.023	0.00022	0.0010	8.79E-08	3.85E-07	1.83E-04	2.45E-02
Total	**0.30**	**1.31**	**0.012**	**0.055**	**4.99E-06**	**2.19E-05**	**1.04E-02**	**8.56E+00**

Notes

$$\text{Emissions (tpy)} = \frac{\text{Number of events per year} * \text{Gas Volume (scf/event)} * \text{Molecular Weight of Gas (lb/lb-mol)} * \text{Weight Fraction of Pollutant}}{\text{Density of Natural Gas (379 scf/lb-mol)} * \text{2000 (lb/ton)}}$$

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.

Compressor Engines (Units C-1100, C-1200, C-2300, C-2400, and ENG-1 to ENG-5)
- Manufacturer and catalyst data
- AP-42 Tables 3.2-1 and 2
- 40 CFR 98 Subparts A and C

Glycol Dehydrators (Units DEHY-803, DEHY-804, DEHY-EG, DEHY-805)
- GRI GlyCalc 4.0
- Dehy Upstream Gas Analysis (5/28/2020)
- 40 CFR 98 Subpart A

Heaters and Reboilers (Units HTR-802, HTR-803, HTR-804, HTR-805, HTR-730)
- AP-42 Tables 1.4-1, 1.4-2, and 1.4-3
- 40 CFR 98 Subparts A and C

Fugitive Components (Unit FUG)
- Table 2-4 of EPA Protocol for Equipment Leak Emission Estimates (1995)
- Dehy Upstream Gas Analysis (5/28/2020)
- BR&E ProMax Report

Storage Tanks (Units WL1-TK601 through WL1-TK603, WL2-TK8101 and WL2-TK8102, WLCS-TK2301 to WLCS-TK2303)
- BR&E ProMax
- Condensate Liquid Analysis (5/28/2020)

Condensate Loading (Unit ATM LOAD)
- BR&E ProMax
- Condensate Liquid Analysis (5/28/2020)

Natural Gas Liquid Loading (Unit NGL LOAD)
- Loading hose dimensions, volumes, and throughputs
- Estimated physical properties of NGL

Unpaved Haul Road (Unit HAUL)
- AP-42 13.2.2.3
- Facility throughputs and truck capacities

Process Flares (Units WL1-FL and WL2-FL)
- Tank and dehydrator streams from BR&E ProMax
- TNRCC RG-109 emission factors

Miscellaneous Equipment (Units WL1-FL Blowdown, WL2-FL Blowdown, PIGGING)
- Engineer estimates for blowdown volumes and frequency
- Dehy Upstream Gas Analysis (05/28/2020)
- TNRCC RG-109 emission factors

Cypress Engine Accessories

MIRATECH

Equipment Specification

Proposal Information

Proposal Number:	CEA-20-005080	Date:	**8/17/2020**
Project Reference:	Crestwood		

Engine Information

Engine Make:	Caterpillar	Speed:	Rated
Engine Model:	G 3608 LE TA	Power Output:	2,370 bhp
Rated Speed:	1000 RPM	Exhaust Flow Rate:	16,144 acfm (cfm)
Fuel Description:	Natural Gas	Exhaust Temperature:	857 F
Hours Of Operation:	8760 Hours per year	Fuel Consumption:	6,629 btu/bhp-hr
Load:	100%	O_2:	12.3%
		H_2O:	17%

Emission Data (100% Load)

Emission	Raw Engine Emissions						Target Outlet Emissions						Calculated Reduction
	g/bhp-hr	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	*g/bhp-hr*	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	
NO_x*	*0.5*	11.44	47	68	0.671	1.48							
CO	*2.75*	62.93	421	613	3.688	8.13	*1*	22.89	153	223	1.341	2.96	63.6%
THC**	*6.29*	143.95	1,680	2,448	8.435	18.6							
NMNEHC***	*0.63*	14.42	168	245	0.845	1.86	0.16	3.66	43	62	0.215	0.47	74.6%
CH_2O	*0.26*	5.95	37	54	0.349	0.77	*0.04*	0.92	6	8	0.054	0.12	84.6%

System Specifications

Catalyst (Replacement Catalyst)

Design Exhaust Flow Rate:	16,144 acfm (cfm)
Design Exhaust Temperature:	857°F
Element Model Number:	MECB-O□-S□-1500-2400-350
Number of Catalyst Layers:	1
Number of Catalyst Per Layer:	3
Catalyst Back Pressure:	4.0 inches of WC (Clean) (10.0 mBar)
Dimensions:	15 x 24
Exhaust Temperature Limits†:	550 – 1250°F (catalyst inlet); 1350°F (catalyst outlet) 288 – 677°C (catalyst inlet); 732°C (catalyst outlet)

* MW referenced as NO_2

** MW referenced as CH_4

*** MW referenced as CH_4. Propane in the exhaust shall not exceed 15% by volume of the NMNEHC compounds in the exhaust, excluding aldehydes. The 15% (vol.) shall be established on a wet basis, reported on a methane molecular weight basis. The measurement of exhaust NMNEHC composition shall be based upon EPA method 320 (FTIR), and shall exclude formaldehyde.

† General catalyst temperature operating range. Performance is based on the Design Exhaust Temperature.

Cypress Engine Accessories

MIRATECH

Equipment Specification

Proposal Information

Proposal Number:	CEA-20-005082	Date:	**8/17/2020**
Project Reference:	Crestwood		

Engine Information

Engine Make:	Waukesha	Speed:	Rated
Engine Model:	P 9390 GSI	Power Output:	1,970 bhp
Rated Speed:	1200 RPM	Exhaust Flow Rate:	9,774 acfm (cfm)
Fuel Description:	Natural Gas	Exhaust Temperature:	1,250 F
Hours Of Operation:	8760 Hours per year	Fuel Consumption:	8,278 btu/bhp-hr
Load:	100%	O_2:	0.3%
		H_2O:	18.5%

Emission Data (100% Load)

Emission	Raw Engine Emissions						Target Outlet Emissions						Calculated Reduction
	g/bhp-hr	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	*g/bhp-hr*	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	
NO_x*	*13*	247.3	917	3,203	17.433	38.43	*2*	38.05	141	493	2.682	5.91	84.6%
CO	*9*	171.21	1,043	3,642	12.069	26.61	*1.35*	25.68	156	546	1.81	3.99	85%
THC**	*2*	38.05	405	1,413	2.682	5.91							
NMNEHC***	*0.3*	5.71	61	212	0.402	0.89	0.12	2.28	24	85	0.161	0.35	60%
CH_2O	*0.05*	0.95	5	19	0.067	0.15	*0.04*	0.72	4	14	0.051	0.11	24%

System Specifications

Catalyst (Replacement Catalyst)

Design Exhaust Flow Rate:	9,774 acfm (cfm)
Design Exhaust Temperature:	1,250°F
Element Model Number:	MECB-TW-RO-3350-0000-350
Number of Catalyst Layers:	1
Number of Catalyst Per Layer:	2
Catalyst Back Pressure:	2.0 inches of WC (Clean) (5.0 mBar)
Dimensions:	Ø 33.5
Exhaust Temperature Limits†:	750 – 1250°F (catalyst inlet); 1350°F (catalyst outlet) 399 – 677°C (catalyst inlet); 732°C (catalyst outlet)

* MW referenced as NO_2

** MW referenced as CH_4

*** MW referenced as CH_4. Propane in the exhaust shall not exceed 15% by volume of the NMNEHC compounds in the exhaust, excluding aldehydes. The 15% (vol.) shall be established on a wet basis, reported on a methane molecular weight basis. The measurement of exhaust NMNEHC composition shall be based upon EPA method 320 (FTIR), and shall exclude formaldehyde.

† General catalyst temperature operating range. Performance is based on the Design Exhaust Temperature.

Cypress Engine Accessories

MIRATECH

Equipment Specification

Proposal Information

Proposal Number:	CEA-20-005083	Date:	**8/1□/2020**
Project Reference:	Crestwood		

Engine Information

Engine Make:	Waukesha	Speed:	Rated
Engine Model:	L 7044 GSI	Power Output:	1,680 bhp
Rated Speed:	1200 RPM	Exhaust Flow Rate:	7,524 acfm (cfm)
Fuel Description:	Natural Gas	Exhaust Temperature:	1,152 F
Hours Of Operation:	8760 Hours per year	Fuel Consumption:	7,806 btu/bhp-hr
Load:	100%	O_2:	0.3%
		H_2O:	18.5%

Emission Data (100% Load)

Emission	Raw Engine Emissions						Target Outlet Emissions						Calculated Reduction
	g/bhp-hr	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	*g/bhp-hr*	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	
NO_x*	*13.3*	215.76	980	3,422	17.836	39.32	*1*	16.22	74	257	1.341	2.96	92.5%
CO	*11.5*	186.56	1,392	4,860	15.422	34	*1*	16.22	121	423	1.341	2.96	91.3%
THC**	*0.72*	11.68	152	531	0.966	2.13							
NMNEHC***	*0.16*	2.6	34	118	0.215	0.47	0.06	0.97	13	44	0.08	0.18	62.5%
CH_2O	*0.05*	0.81	6	20	0.067	0.15	*0.04*	0.65	5	16	0.054	0.12	20%

System Specifications

Catalyst (Replacement Catalyst)

Design Exhaust Flow Rate:	7,524 acfm (cfm)
Design Exhaust Temperature:	1,152°F
Element Model Number:	MECB-TW-S□-1500-2400-350
Number of Catalyst Layers:	2
Number of Catalyst Per Layer:	2
Catalyst Back Pressure:	6.0 inches of WC (Clean) (14.9 mBar)
Dimensions:	15 x 24
Exhaust Temperature Limits†:	750 – 1250°F (catalyst inlet); 1350°F (catalyst outlet) 399 – 677°C (catalyst inlet); 732°C (catalyst outlet)

* MW referenced as NO_2

** MW referenced as CH_4

*** MW referenced as CH_4. Propane in the exhaust shall not exceed 15% by volume of the NMNEHC compounds in the exhaust, excluding aldehydes. The 15% (vol.) shall be established on a wet basis, reported on a methane molecular weight basis. The measurement of exhaust NMNEHC composition shall be based upon EPA method 320 (FTIR), and shall exclude formaldehyde.

† General catalyst temperature operating range. Performance is based on the Design Exhaust Temperature.

G3606

GAS ENGINE SITE SPECIFIC TECHNICAL DATA
WL 3606

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:	18

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

SITE CONDITIONS:

FUEL:	2019 Willow Lake Fuel Gas
FUEL PRESSURE RANGE(psig): (See note 1)	58.0-70.3
FUEL METHANE NUMBER:	90.3
FUEL LHV (Btu/scf):	922
ALTITUDE(ft):	3000
INLET AIR TEMPERATURE(°F):	77
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	77	77	77	77
ENGINE DATA						
FUEL CONSUMPTION (LHV)	(3)	Btu/bhp-hr	6811	6811	7089	7668
FUEL CONSUMPTION (HHV)	(3)	Btu/bhp-hr	7560	7560	7867	8510
AIR FLOW (@inlet air temp, 14.7 psia) (WET)	(4)(5)	ft3/min	4586	4586	3474	2389
AIR FLOW (WET)	(4)(5)	lb/hr	20334	20334	15403	10593
FUEL FLOW (60ºF, 14.7 psia)		scfm	231	231	180	130
INLET MANIFOLD PRESSURE	(6)	in Hg(abs)	100.0	100.0	76.7	54.9
EXHAUST TEMPERATURE - ENGINE OUTLET	(7)	°F	835	835	907	990
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia) (WET)	(8)(5)	ft3/min	11806	11806	9455	6913
EXHAUST GAS MASS FLOW (WET)	(8)(5)	lb/hr	20943	20943	15878	10936
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	2.20	2.20	2.20	2.19
THC (mol. wt. of 15.84)	(9)(10)	g/bhp-hr	4.60	4.60	4.80	5.07
NMHC (mol. wt. of 15.84)	(9)(10)	g/bhp-hr	0.43	0.43	0.44	0.47
NMNEHC (VOCs) (mol. wt. of 15.84)	(9)(10)(11)	g/bhp-hr	0.29	0.29	0.30	0.32
HCHO (Formaldehyde)	(9)(10)	g/bhp-hr	0.20	0.20	0.21	0.24
CO2	(9)(10)	g/bhp-hr	433	433	447	484
EXHAUST OXYGEN	(9)(12)	% DRY	10.9	10.9	10.7	10.3
HEAT REJECTION						
HEAT REJ. TO JACKET WATER (JW)	(13)	Btu/min	21991	21991	17926	14591
HEAT REJ. TO ATMOSPHERE	(13)	Btu/min	5701	5701	5588	5385
HEAT REJ. TO LUBE OIL (OC)	(13)	Btu/min	11708	11708	10800	9347
HEAT REJ. TO A/C - STAGE 1 (1AC)	(13)(14)	Btu/min	14737	14737	7183	2054
HEAT REJ. TO A/C - STAGE 2 (2AC)	(13)(14)	Btu/min	6993	6993	4282	2155
COOLING SYSTEM SIZING CRITERIA						
TOTAL JACKET WATER CIRCUIT (JW+1AC)	(14)(15)	Btu/min	39665			
TOTAL STAGE 2 AFTERCOOLER CIRCUIT (OC+2AC)	(14)(15)	Btu/min	21393			

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. Lowest load point is the lowest continuous duty operating load allowed. No overload permitted at rating shown.

For notes information consult page three.

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PREPARED FOR: Moe Wolfe
CRESTWOOD

QUOTE: EQN-2005-0074
EXPIRES: 7/31/2020

APPLICATION INFORMATION

Driver:	Engine
Make:	Caterpillar
Model:	G3606A4
Horsepower:	1875
RPM:	1000
Compression Ratio:	7.6:1
Exhaust Flow Rate:	11982
Exhaust Temperature:	822
Reference:	GERP
Fuel:	Natural Gas
Annual Operating Hours:	8760

CATALYST ELEMENTS

Catalyst Model:	RT-3615-Z
Catalyst Type:	Oxidation, Standard Precious Metals Group
Catalyst Size:	Rectangle, 36"x15"x3.5"
Required Quantity:	(2) RT-3615-Z Elements

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

UNCONTROLLED EMISSIONS DATA

	g/bhp-hr
NOx:	0.50
CO:	2.50
THC:	5.22
NMHC:	0.48
NMNEHC:	0.32
HCHO:	0.19
Oxygen:	11.0%

POST CATALYST EMISSIONS DATA

	% Reduction
NOx:	Unaffected by Oxidation Catalysts
CO:	< 90%
VOC:	< 50%
HCHO:	< 70%

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES[a]
(SCC 2-02-002-54)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x[c] 90 - 105% Load	4.08 E+00	B
NO_x[c] <90% Load	8.47 E-01	B
CO[c] 90 - 105% Load	3.17 E-01	C
CO[c] <90% Load	5.57 E-01	B
CO_2[d]	1.10 E+02	A
SO_2[e]	5.88 E-04	A
TOC[f]	1.47 E+00	A
Methane[g]	1.25 E+00	C
VOC[h]	1.18 E-01	C
PM10 (filterable)[i]	7.71 E-05	D
PM2.5 (filterable)[i]	7.71 E-05	D
PM Condensable[j]	9.91 E-03	D
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[k]	<4.00 E-05	E
1,1,2-Trichloroethane[k]	<3.18 E-05	E
1,1-Dichloroethane	<2.36 E-05	E
1,2,3-Trimethylbenzene	2.30 E-05	D
1,2,4-Trimethylbenzene	1.43 E-05	C
1,2-Dichloroethane	<2.36 E-05	E
1,2-Dichloropropane	<2.69 E-05	E
1,3,5-Trimethylbenzene	3.38 E-05	D
1,3-Butadiene[k]	2.67E-04	D
1,3-Dichloropropene[k]	<2.64 E-05	E
2-Methylnaphthalene[k]	3.32 E-05	C
2,2,4-Trimethylpentane[k]	2.50 E-04	C
Acenaphthene[k]	1.25 E-06	C

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES (Continued)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Acenaphthylene[k]	5.53 E-06	C
Acetaldehyde[k,l]	8.36 E-03	A
Acrolein[k,l]	5.14 E-03	A
Benzene[k]	4.40 E-04	A
Benzo(b)fluoranthene[k]	1.66 E-07	D
Benzo(e)pyrene[k]	4.15 E-07	D
Benzo(g,h,i)perylene[k]	4.14 E-07	D
Biphenyl[k]	2.12 E-04	D
Butane	5.41 E-04	D
Butyr/Isobutyraldehyde	1.01 E-04	C
Carbon Tetrachloride[k]	<3.67 E-05	E
Chlorobenzene[k]	<3.04 E-05	E
Chloroethane	1.87 E-06	D
Chloroform[k]	<2.85 E-05	E
Chrysene[k]	6.93 E-07	C
Cyclopentane	2.27 E-04	C
Ethane	1.05 E-01	C
Ethylbenzene[k]	3.97 E-05	B
Ethylene Dibromide[k]	<4.43 E-05	E
Fluoranthene[k]	1.11 E-06	C
Fluorene[k]	5.67 E-06	C
Formaldehyde[k,l]	5.28 E-02	A
Methanol[k]	2.50 E-03	B
Methylcyclohexane	1.23 E-03	C
Methylene Chloride[k]	2.00 E-05	C
n-Hexane[k]	1.11 E-03	C
n-Nonane	1.10 E-04	C

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES
(Continued)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
n-Octane	3.51 E-04	C
n-Pentane	2.60 E-03	C
Naphthalene[k]	7.44 E-05	C
PAH[k]	2.69 E-05	D
Phenanthrene[k]	1.04 E-05	D
Phenol[k]	2.40 E-05	D
Propane	4.19 E-02	C
Pyrene[k]	1.36 E-06	C
Styrene[k]	<2.36 E-05	E
Tetrachloroethane[k]	2.48 E-06	D
Toluene[k]	4.08 E-04	B
Vinyl Chloride[k]	1.49 E-05	C
Xylene[k]	1.84 E-04	B

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

[b] Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA Method 19. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by the heat content of the fuel. If the heat content is not available, use 1020 Btu/scf. To convert from (lb/MMBtu) to (lb/hp-hr) use the following equation:

$$\text{lb/hp-hr} = (\text{lb/MMBtu})\ (\text{heat input, MMBtu/hr})\ (\text{1/operating HP, 1/hp})$$

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

[d] Based on 99.5% conversion of the fuel carbon to CO_2. CO_2 [lb/MMBtu] = (3.67)(%CON)(C)(D)(1/h), where %CON = percent conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.75), D = density of fuel, 4.1 E+04 lb/10^6 scf, and

h = heating value of natural gas (assume 1020 Btu/scf at 60°F).

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

[f] Emission factor for TOC is based on measured emission levels from 22 source tests.

[g] Emission factor for methane is determined by subtracting the VOC and ethane emission factors from the TOC emission factor. Measured emission factor for methane compares well with the calculated emission factor, 1.31 lb/MMBtu vs. 1.25 lb/MMBtu, respectively.

[h] VOC emission factor is based on the sum of the emission factors for all speciated organic compounds less ethane and methane.

[i] Considered $\leq$ 1 μm in aerodynamic diameter. Therefore, for filterable PM emissions, PM10(filterable) = PM2.5(filterable).

[j] PM Condensable = PM Condensable Inorganic + PM-Condensable Organic

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

[l] For lean burn engines, aldehyde emissions quantification using CARB 430 may reflect interference with the sampling compounds due to the nitrogen concentration in the stack. The presented emission factor is based on FTIR measurements. Emissions data based on CARB 430 are available in the background report.

Table 3.2-3. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE RICH-BURN ENGINES[a]
(SCC 2-02-002-53)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x[c] 90 - 105% Load	2.21 E+00	A
NO_x[c] <90% Load	2.27 E+00	C
CO[c] 90 - 105% Load	3.72 E+00	A
CO[c] <90% Load	3.51 E+00	C
CO_2[d]	1.10 E+02	A
SO_2[e]	5.88 E-04	A
TOC[f]	3.58 E-01	C
Methane[g]	2.30 E-01	C
VOC[h]	2.96 E-02	C
PM10 (filterable)[i,j]	9.50 E-03	E
PM2.5 (filterable)[j]	9.50 E-03	E
PM Condensable[k]	9.91 E-03	E
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[l]	2.53 E-05	C
1,1,2-Trichloroethane[l]	<1.53 E-05	E
1,1-Dichloroethane	<1.13 E-05	E
1,2-Dichloroethane	<1.13 E-05	E
1,2-Dichloropropane	<1.30 E-05	E
1,3-Butadiene[l]	6.63 E-04	D
1,3-Dichloropropene[l]	<1.27 E-05	E
Acetaldehyde[l,m]	2.79 E-03	C
Acrolein[l,m]	2.63 E-03	C
Benzene[l]	1.58 E-03	B
Butyr/isobutyraldehyde	4.86 E-05	D
Carbon Tetrachloride[l]	<1.77 E-05	E

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

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

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

[b] Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA Method 19. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by the heat content of the fuel. If the heat content is not available, use 1020 Btu/scf. To convert from (lb/MMBtu) to (lb/hp-hr) use the following equation:

$$\text{lb/hp-hr} = (\text{lb/MMBtu})(\text{heat input, MMBtu/hr})(\text{1/operating HP, 1/hp})$$

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

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

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

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

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

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

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

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

[j] Considered $\leq$ 1 μm in aerodynamic diameter. Therefore, for filterable PM emissions, PM10(filterable) = PM2.5(filterable).

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

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

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

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

References For Section 3.2

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2. *Standards Support And Environmental Impact Statement, Volume I: Stationary Internal Combustion Engines*, EPA-450/2-78-125a, U. S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, July 1979.

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4. *Handbook - Control Technologies For Hazardous Air Pollutants*, EPA-625/6-91-014, June 1991.

5. *Limiting Net Greenhouse Gas Emissions In The United States, Volume II: Energy Responses,* Report for the Office of Environmental Analysis, Office of Policy, Planning and Analysis, Department of Energy (DOE), DOE/PE-0101 Volume II, September 1991.

6. C. Castaldini, *NO_x Reduction Technologies For Natural Gas Industry Prime Movers*, GRI-90/0215, Gas Research Institute, Chicago, IL, August 1990.

7. *Emission Factor Documentation for AP-42 Section 3.2, Natural Gas-Fired Reciprocating Engines*, EPA Contract No. 68-D2-0160, Alpha-Gamma Technologies, Inc., Raleigh, North Carolina, July 2000.

Federal Environment and Safety Codified Regulations
TITLE 40—Protection of Environment
PART 98—MANDATORY GREENHOUSE GAS REPORTING
SUBPART A—General Provision

Table A-1 to Subpart A of Part 98 —Global Warming Potentials

[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Chemical-Specific GWPs			
Carbon dioxide	124-38-9	CO_2	1
Methane	74-82-8	CH_4	[a] 25
Nitrous oxide	10024-97-2	N_2O	[a] 298
Fully Fluorinated GHGs			
Sulfur hexafluoride	2551-62-4	SF_6	[a] 22,800
Trifluoromethyl sulphur pentafluoride	373-80-8	SF_5CF_3	17,700
Nitrogen trifluoride	7783-54-2	NF_3	17,200
PFC-14 (Perfluoromethane)	75-73-0	CF_4	[a] 7,390
PFC-116 (Perfluoroethane)	76-16-4	C_2F_6	[a] 12,200
PFC-218 (Perfluoropropane)	76-19-7	C_3F_8	[a] 8,830
Perfluorocyclopropane	931-91-9	$C\text{-}C_3F_6$	17,340
PFC-3-1-10 (Perfluorobutane)	355-25-9	C_4F_{10}	[a] 8,860
PFC-318 (Perfluorocyclobutane)	115-25-3	$C\text{-}C_4F_8$	[a] 10,300
PFC-4-1-12 (Perfluoropentane)	678-26-2	C_5F_{12}	[a] 9,160
PFC-5-1-14 (Perfluorohexane, FC-72)	355-42-0	C_6F_{14}	[a] 9,300
PFC-6-1-12	335-57-9	C_7F_{16}; $CF_3(CF_2)_5CF_3$	[b] 7,820
PFC-7-1-18	307-34-6	C_8F_{18}; $CF_3(CF_2)_6CF_3$	[b] 7,620
PFC-9-1-18	306-94-5	$C_{10}F_{18}$	7,500
PFPMIE (HT-70)	NA	$CF_3OCF(CF_3)CF_2OCF_2OCF_3$	10,300
Perfluorodecalin (cis)	60433-11-6	$Z\text{-}C_{10}F_{18}$	[b] 7,236
Perfluorodecalin (trans)	60433-12-7	$E\text{-}C_{10}F_{18}$	[b] 6,288
Saturated Hydrofluorocarbons (HFCs) With Two or Fewer Carbon-Hydrogen Bonds			
HFC-23	75-46-7	CHF_3	[a] 14,800
HFC-32	75-10-5	CH_2F_2	[a] 675
HFC-125	354-33-6	C_2HF_5	[a] 3,500
HFC-134	359-35-3	$C_2H_2F_4$	[a] 1,100
HFC-134a	811-97-2	CH_2FCF_3	[a] 1,430
HFC-227ca	2252-84-8	$CF_3CF_2CHF_2$	[b] 2640

Federal Environment and Safety Codified Regulations
TITLE 40—Protection of Environment
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

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
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
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 page 71950, Nov. 29, 2013; 81 FR page 89252, Dec. 9, 2016; corrected at 82 FR 41343, Aug. 31, 2017]

ISSN 2167-8065

Federal Environment and Safety Codified Regulations
TITLE 40—Protection of Environment
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.

[75 FR page 79154, Dec. 17, 2010; 78 FR page 71952, Nov. 29, 2013; 81 FR page 89252, Dec. 9, 2016]

ISSN 2167-8065

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: 2020 Willow Lake Dehy 1
File Name: P:\1. CLIENTS\Crestwood\Willow Lake NSR\ProMax and GlyCalc\GlyCalc Runs\2020 Dehy1 WillowLake 2020 0817.ddf
Date: August 17, 2020

DESCRIPTION:

Description: 2020 PTE Calculations

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	0.0032	0.077	0.0140
Methane	0.6569	15.766	2.8774
Ethane	0.7490	17.976	3.2807
Propane	1.0738	25.771	4.7032
Isobutane	0.3021	7.252	1.3234
n-Butane	0.9037	21.688	3.9581
Isopentane	0.2046	4.910	0.8960
n-Pentane	0.2752	6.604	1.2053
n-Hexane	0.1865	4.476	0.8168
Other Hexanes	0.1843	4.423	0.8072
Heptanes	0.3014	7.233	1.3199
Benzene	0.0280	0.672	0.1227
Toluene	0.6903	16.566	3.0233
Ethylbenzene	0.0317	0.760	0.1388
Xylenes	0.1186	2.847	0.5196
C8+ Heavies	0.0038	0.090	0.0164
Total Emissions	5.7130	137.112	25.0229
Total Hydrocarbon Emissions	5.7098	137.035	25.0089
Total VOC Emissions	4.3038	103.292	18.8508
Total HAP Emissions	1.0551	25.322	4.6212
Total BTEX Emissions	0.8686	20.846	3.8044

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	0.0034	0.082	0.0150
Methane	0.6597	15.832	2.8893
Ethane	0.7663	18.391	3.3564
Propane	1.1983	28.760	5.2487
Isobutane	0.3716	8.919	1.6277
n-Butane	1.1845	28.429	5.1883
Isopentane	0.3866	9.278	1.6932
n-Pentane	0.5454	13.091	2.3890
n-Hexane	0.6025	14.460	2.6390
Other Hexanes	0.5015	12.036	2.1965
Heptanes	2.1406	51.376	9.3760

Benzene	0.1349	3.239	0.5911
Toluene	8.4893	203.744	37.1833
Ethylbenzene	1.1841	28.418	5.1863
Xylenes	4.7399	113.757	20.7606
C8+ Heavies	7.7595	186.227	33.9865
Total Emissions	30.6682	736.038	134.3269
Total Hydrocarbon Emissions	30.6648	735.956	134.3119
Total VOC Emissions	29.2389	701.732	128.0662
Total HAP Emissions	15.1507	363.618	66.3603
Total BTEX Emissions	14.5482	349.158	63.7213

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	0.0062	0.148	0.0270
Methane	97.3095	2335.427	426.2154
Ethane	30.7329	737.591	134.6103
Propane	22.1606	531.854	97.0634
Isobutane	4.4301	106.322	19.4037
n-Butane	10.6813	256.352	46.7843
Isopentane	2.9814	71.553	13.0585
n-Pentane	3.3602	80.645	14.7178
n-Hexane	1.9850	47.640	8.6943
Other Hexanes	2.2096	53.030	9.6781
Heptanes	3.3209	79.702	14.5455
Benzene	0.0151	0.363	0.0663
Toluene	0.5918	14.203	2.5920
Ethylbenzene	0.0461	1.107	0.2020
Xylenes	0.1272	3.054	0.5573
C8+ Heavies	0.9895	23.747	4.3339
Total Emissions	180.9474	4342.738	792.5498
Total Hydrocarbon Emissions	180.9413	4342.591	792.5228
Total VOC Emissions	52.8989	1269.573	231.6971
Total HAP Emissions	2.7653	66.366	12.1119
Total BTEX Emissions	0.7803	18.727	3.4176

EQUIPMENT REPORTS:

CONDENSER

Condenser Outlet Temperature:	120.00 deg. F
Condenser Pressure:	13.50 psia
Condenser Duty:	5.14e-002 MM BTU/hr
Hydrocarbon Recovery:	2.01 bbls/day
Produced Water:	4.05 bbls/day
VOC Control Efficiency:	85.28 %
HAP Control Efficiency:	93.04 %
BTEX Control Efficiency:	94.03 %
Dissolved Hydrocarbons in Water:	380.15 mg/L

Component	Emitted	Condensed
Water	0.60%	99.40%

Carbon Dioxide	98.16%	1.84%
Hydrogen Sulfide	93.58%	6.42%
Nitrogen	99.59%	0.41%
Methane	99.59%	0.41%
Ethane	97.74%	2.26%
Propane	89.61%	10.39%
Isobutane	81.31%	18.69%
n-Butane	76.29%	23.71%
Isopentane	52.92%	47.08%
n-Pentane	50.45%	49.55%
n-Hexane	30.95%	69.05%
Other Hexanes	36.75%	63.25%
Heptanes	14.08%	85.92%
Benzene	20.76%	79.24%
Toluene	8.13%	91.87%
Ethylbenzene	2.68%	97.32%
Xylenes	2.50%	97.50%
C8+ Heavies	0.05%	99.95%

ABSORBER

NOTE: Because the Calculated Absorber Stages was below the minimum allowed, GRI-GLYCalc has set the number of Absorber Stages to 1.25 and has calculated a revised Dry Gas Dew Point.

Calculated Absorber Stages:	1.25
Calculated Dry Gas Dew Point:	2.81 lbs. H2O/MMSCF
Temperature:	100.0 deg. F
Pressure:	975.0 psig
Dry Gas Flow Rate:	25.0000 MMSCF/day
Glycol Losses with Dry Gas:	0.6630 lb/hr
Wet Gas Water Content:	Saturated
Calculated Wet Gas Water Content:	59.85 lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	7.06 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	4.69%	95.31%
Carbon Dioxide	99.61%	0.39%
Hydrogen Sulfide	97.69%	2.31%
Nitrogen	99.96%	0.04%
Methane	99.97%	0.03%
Ethane	99.91%	0.09%
Propane	99.87%	0.13%
Isobutane	99.84%	0.16%
n-Butane	99.79%	0.21%
Isopentane	99.81%	0.19%
n-Pentane	99.76%	0.24%
n-Hexane	99.64%	0.36%
Other Hexanes	99.72%	0.28%
Heptanes	99.40%	0.60%
Benzene	86.26%	13.74%
Toluene	82.31%	17.69%
Ethylbenzene	79.16%	20.84%
Xylenes	72.43%	27.57%
C8+ Heavies	98.58%	1.42%

FLASH TANK

Flash Control: Vented to atmosphere
Flash Temperature: 120.0 deg. F
Flash Pressure: 45.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.75%	0.25%
Carbon Dioxide	7.78%	92.22%
Hydrogen Sulfide	35.68%	64.32%
Nitrogen	0.65%	99.35%
Methane	0.67%	99.33%
Ethane	2.43%	97.57%
Propane	5.13%	94.87%
Isobutane	7.74%	92.26%
n-Butane	9.98%	90.02%
Isopentane	11.67%	88.33%
n-Pentane	14.18%	85.82%
n-Hexane	23.51%	76.49%
Other Hexanes	18.93%	81.07%
Heptanes	39.41%	60.59%
Benzene	90.41%	9.59%
Toluene	93.99%	6.01%
Ethylbenzene	96.64%	3.36%
Xylenes	97.72%	2.28%
C8+ Heavies	89.87%	10.13%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	49.86%	50.14%
Carbon Dioxide	0.00%	100.00%
Hydrogen Sulfide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	1.87%	98.13%
n-Pentane	1.75%	98.25%
n-Hexane	1.26%	98.74%
Other Hexanes	2.81%	97.19%
Heptanes	0.90%	99.10%
Benzene	5.44%	94.56%
Toluene	8.30%	91.70%
Ethylbenzene	10.65%	89.35%
Xylenes	13.12%	86.88%
C8+ Heavies	11.57%	88.43%

STREAM REPORTS:

WET GAS STREAM

Temperature: 100.00 deg. F
Pressure: 989.70 psia
Flow Rate: 1.04e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.26e-001	6.25e+001
Carbon Dioxide	1.81e-001	2.19e+002
Hydrogen Sulfide	4.00e-004	3.74e-001
Nitrogen	7.90e-001	6.09e+002
Methane	7.87e+001	3.47e+004
Ethane	1.12e+001	9.27e+003
Propane	5.11e+000	6.20e+003
Isobutane	7.30e-001	1.17e+003
n-Butane	1.62e+000	2.59e+003
Isopentane	3.83e-001	7.59e+002
n-Pentane	3.98e-001	7.89e+002
n-Hexane	1.79e-001	4.24e+002
Other Hexanes	2.15e-001	5.09e+002
Heptanes	2.33e-001	6.41e+002
Benzene	4.99e-004	1.07e+000
Toluene	2.00e-002	5.06e+001
Ethylbenzene	2.00e-003	5.83e+000
Xylenes	5.99e-003	1.75e+001
C8+ Heavies	1.12e-001	5.24e+002
Total Components	100.00	5.86e+004

DRY GAS STREAM

Temperature: 100.00 deg. F
Pressure: 989.70 psia
Flow Rate: 1.04e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	5.93e-003	2.93e+000
Carbon Dioxide	1.80e-001	2.18e+002
Hydrogen Sulfide	3.91e-004	3.66e-001
Nitrogen	7.91e-001	6.08e+002
Methane	7.88e+001	3.47e+004
Ethane	1.12e+001	9.26e+003
Propane	5.11e+000	6.19e+003
Isobutane	7.30e-001	1.17e+003
n-Butane	1.62e+000	2.59e+003
Isopentane	3.82e-001	7.58e+002
n-Pentane	3.97e-001	7.87e+002
n-Hexane	1.78e-001	4.22e+002
Other Hexanes	2.15e-001	5.08e+002
Heptanes	2.32e-001	6.38e+002
Benzene	4.32e-004	9.25e-001
Toluene	1.65e-002	4.17e+001
Ethylbenzene	1.58e-003	4.62e+000

Component	Conc. (wt%)	Loading (lb/hr)
Xylenes	4.35e-003	1.27e+001
C8+ Heavies	1.10e-001	5.17e+002
Total Components	100.00	5.84e+004

LEAN GLYCOL STREAM

Temperature: 100.00 deg. F
Flow Rate: 6.99e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.84e+001	3.88e+003
Water	1.50e+000	5.91e+001
Carbon Dioxide	2.16e-012	8.52e-011
Hydrogen Sulfide	2.19e-014	8.64e-013
Nitrogen	5.78e-013	2.28e-011
Methane	9.44e-018	3.72e-016
Ethane	9.93e-008	3.91e-006
Propane	8.10e-009	3.19e-007
Isobutane	1.43e-009	5.64e-008
n-Butane	3.39e-009	1.33e-007
Isopentane	1.87e-004	7.37e-003
n-Pentane	2.46e-004	9.70e-003
n-Hexane	1.95e-004	7.67e-003
Other Hexanes	3.69e-004	1.45e-002
Heptanes	4.92e-004	1.94e-002
Benzene	1.97e-004	7.76e-003
Toluene	1.95e-002	7.68e-001
Ethylbenzene	3.59e-003	1.41e-001
Xylenes	1.82e-002	7.15e-001
C8+ Heavies	2.58e-002	1.02e+000
Total Components	100.00	3.94e+003

RICH GLYCOL AND PUMP GAS STREAM

Temperature: 100.00 deg. F
Pressure: 989.70 psia
Flow Rate: 7.59e+000 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.20e+001	3.87e+003
Water	2.82e+000	1.19e+002
Carbon Dioxide	3.33e-002	1.40e+000
Hydrogen Sulfide	2.27e-004	9.57e-003
Nitrogen	4.16e-002	1.75e+000
Methane	2.33e+000	9.80e+001
Ethane	7.48e-001	3.15e+001
Propane	5.55e-001	2.34e+001
Isobutane	1.14e-001	4.80e+000
n-Butane	2.82e-001	1.19e+001
Isopentane	8.02e-002	3.38e+000
n-Pentane	9.30e-002	3.92e+000
n-Hexane	6.16e-002	2.60e+000
Other Hexanes	6.47e-002	2.73e+000
Heptanes	1.30e-001	5.48e+000

Benzene	3.75e-003	1.58e-001
Toluene	2.34e-001	9.85e+000
Ethylbenzene	3.26e-002	1.37e+000
Xylenes	1.33e-001	5.58e+000
C8+ Heavies	2.32e-001	9.76e+000
Total Components	100.00	4.21e+003

FLASH TANK OFF GAS STREAM

Temperature: 120.00 deg. F
Pressure: 59.70 psia
Flow Rate: 3.09e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.99e-001	2.91e-001
Carbon Dioxide	3.60e-001	1.29e+000
Hydrogen Sulfide	2.22e-003	6.16e-003
Nitrogen	7.63e-001	1.74e+000
Methane	7.45e+001	9.73e+001
Ethane	1.26e+001	3.07e+001
Propane	6.17e+000	2.22e+001
Isobutane	9.36e-001	4.43e+000
n-Butane	2.26e+000	1.07e+001
Isopentane	5.07e-001	2.98e+000
n-Pentane	5.72e-001	3.36e+000
n-Hexane	2.83e-001	1.98e+000
Other Hexanes	3.15e-001	2.21e+000
Heptanes	4.07e-001	3.32e+000
Benzene	2.38e-003	1.51e-002
Toluene	7.89e-002	5.92e-001
Ethylbenzene	5.33e-003	4.61e-002
Xylenes	1.47e-002	1.27e-001
C8+ Heavies	7.13e-002	9.89e-001
Total Components	100.00	1.84e+002

FLASH TANK GLYCOL STREAM

Temperature: 120.00 deg. F
Flow Rate: 7.18e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.62e+001	3.87e+003
Water	2.94e+000	1.18e+002
Carbon Dioxide	2.71e-003	1.09e-001
Hydrogen Sulfide	8.48e-005	3.42e-003
Nitrogen	2.84e-004	1.14e-002
Methane	1.64e-002	6.60e-001
Ethane	1.90e-002	7.66e-001
Propane	2.98e-002	1.20e+000
Isobutane	9.23e-003	3.72e-001
n-Butane	2.94e-002	1.18e+000
Isopentane	9.78e-003	3.94e-001
n-Pentane	1.38e-002	5.55e-001
n-Hexane	1.52e-002	6.10e-001

Other Hexanes	1.28e-002	5.16e-001
Heptanes	5.36e-002	2.16e+000
Benzene	3.54e-003	1.43e-001
Toluene	2.30e-001	9.26e+000
Ethylbenzene	3.29e-002	1.33e+000
Xylenes	1.35e-001	5.46e+000
C8+ Heavies	2.18e-001	8.77e+000
Total Components	100.00	4.03e+003

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 1.39e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.00e+001	5.94e+001
Carbon Dioxide	6.76e-002	1.09e-001
Hydrogen Sulfide	2.74e-003	3.42e-003
Nitrogen	1.12e-002	1.14e-002
Methane	1.12e+000	6.60e-001
Ethane	6.96e-001	7.66e-001
Propane	7.42e-001	1.20e+000
Isobutane	1.75e-001	3.72e-001
n-Butane	5.56e-001	1.18e+000
Isopentane	1.46e-001	3.87e-001
n-Pentane	2.06e-001	5.45e-001
n-Hexane	1.91e-001	6.03e-001
Other Hexanes	1.59e-001	5.01e-001
Heptanes	5.83e-001	2.14e+000
Benzene	4.72e-002	1.35e-001
Toluene	2.51e+000	8.49e+000
Ethylbenzene	3.04e-001	1.18e+000
Xylenes	1.22e+000	4.74e+000
C8+ Heavies	1.24e+000	7.76e+000
Total Components	100.00	9.02e+001

CONDENSER VENT GAS STREAM

Temperature: 120.00 deg. F
Pressure: 13.50 psia
Flow Rate: 5.96e+001 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.26e+001	3.57e-001
Carbon Dioxide	1.55e+000	1.07e-001
Hydrogen Sulfide	5.98e-002	3.20e-003
Nitrogen	2.59e-001	1.14e-002
Methane	2.61e+001	6.57e-001
Ethane	1.59e+001	7.49e-001
Propane	1.55e+001	1.07e+000
Isobutane	3.31e+000	3.02e-001
n-Butane	9.91e+000	9.04e-001
Isopentane	1.81e+000	2.05e-001

n-Pentane	2.43e+000	2.75e-001
n-Hexane	1.38e+000	1.86e-001
Other Hexanes	1.36e+000	1.84e-001
Heptanes	1.92e+000	3.01e-001
Benzene	2.29e-001	2.80e-002
Toluene	4.77e+000	6.90e-001
Ethylbenzene	1.90e-001	3.17e-002
Xylenes	7.12e-001	1.19e-001
C8+ Heavies	1.40e-002	3.75e-003
Total Components	100.00	6.19e+000

CONDENSER PRODUCED WATER STREAM

Temperature: 120.00 deg. F
Flow Rate: 1.18e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)	(ppm)
Water	1.00e+002	5.90e+001	999606.
Carbon Dioxide	1.25e-003	7.36e-004	12.
Hydrogen Sulfide	1.22e-004	7.20e-005	1.
Nitrogen	3.46e-006	2.04e-006	0.
Methane	3.85e-004	2.27e-004	4.
Ethane	4.99e-004	2.95e-004	5.
Propane	7.36e-004	4.34e-004	7.
Isobutane	1.13e-004	6.66e-005	1.
n-Butane	4.47e-004	2.64e-004	4.
Isopentane	7.14e-005	4.22e-005	1.
n-Pentane	1.03e-004	6.09e-005	1.
n-Hexane	5.79e-005	3.42e-005	1.
Other Hexanes	4.61e-005	2.72e-005	0.
Heptanes	5.18e-005	3.06e-005	1.
Benzene	1.39e-003	8.19e-004	14.
Toluene	2.81e-002	1.66e-002	281.
Ethylbenzene	9.72e-004	5.74e-004	10.
Xylenes	5.05e-003	2.98e-003	50.
C8+ Heavies	4.07e-007	2.40e-007	0.
Total Components	100.00	5.91e+001	1000000.

CONDENSER RECOVERED OIL STREAM

Temperature: 120.00 deg. F
Flow Rate: 5.86e-002 gpm

Component	Conc. (wt%)	Loading (lb/hr)
Water	3.98e-002	9.92e-003
Carbon Dioxide	5.10e-003	1.27e-003
Hydrogen Sulfide	5.91e-004	1.47e-004
Nitrogen	1.81e-004	4.52e-005
Methane	1.01e-002	2.51e-003
Ethane	6.81e-002	1.70e-002
Propane	4.98e-001	1.24e-001
Isobutane	2.78e-001	6.94e-002
n-Butane	1.12e+000	2.81e-001
Isopentane	7.29e-001	1.82e-001

n-Pentane	1.08e+000	2.70e-001
n-Hexane	1.67e+000	4.16e-001
Other Hexanes	1.27e+000	3.17e-001
Heptanes	7.37e+000	1.84e+000
Benzene	4.25e-001	1.06e-001
Toluene	3.12e+001	7.78e+000
Ethylbenzene	4.62e+000	1.15e+000
Xylenes	1.85e+001	4.62e+000
C8+ Heavies	3.11e+001	7.76e+000
Total Components	100.00	2.49e+001

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: 2020 Willow Lake Dehy 2
File Name: P:\1. CLIENTS\Crestwood\Willow Lake NSR\ProMax and GlyCalc\GlyCalc Runs\2020 Dehy2 WillowLake 2020 0817.ddf
Date: August 17, 2020

DESCRIPTION:

Description: 2020 PTE Calculations

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	0.0003	0.007	0.0013
Methane	0.0619	1.487	0.2713
Ethane	0.0692	1.661	0.3032
Propane	0.1017	2.441	0.4454
Isobutane	0.0284	0.681	0.1242
n-Butane	0.0847	2.032	0.3708
Isopentane	0.0190	0.455	0.0830
n-Pentane	0.0254	0.609	0.1112
n-Hexane	0.0170	0.408	0.0744
Other Hexanes	0.0169	0.404	0.0738
Heptanes	0.0271	0.651	0.1188
Benzene	0.0026	0.063	0.0115
Toluene	0.0654	1.570	0.2865
Ethylbenzene	0.0030	0.072	0.0132
Xylenes	0.0116	0.278	0.0508
C8+ Heavies	0.0003	0.008	0.0015
Total Emissions	0.5345	12.827	2.3409
Total Hydrocarbon Emissions	0.5342	12.820	2.3396
Total VOC Emissions	0.4030	9.672	1.7652
Total HAP Emissions	0.0996	2.391	0.4364
Total BTEX Emissions	0.0827	1.984	0.3620

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	0.0003	0.008	0.0014
Methane	0.0622	1.493	0.2725
Ethane	0.0709	1.701	0.3104
Propane	0.1139	2.733	0.4987
Isobutane	0.0351	0.842	0.1537
n-Butane	0.1118	2.683	0.4897
Isopentane	0.0363	0.872	0.1591
n-Pentane	0.0512	1.229	0.2243
n-Hexane	0.0562	1.349	0.2462
Other Hexanes	0.0468	1.122	0.2048
Heptanes	0.1983	4.760	0.8688

Benzene	0.0132	0.316	0.0577
Toluene	0.8363	20.071	3.6629
Ethylbenzene	0.1176	2.822	0.5150
Xylenes	0.4827	11.584	2.1142
C8+ Heavies	0.7238	17.371	3.1702
Total Emissions	2.9565	70.957	12.9496
Total Hydrocarbon Emissions	2.9562	70.949	12.9482
Total VOC Emissions	2.8231	67.755	12.3653
Total HAP Emissions	1.5059	36.142	6.5960
Total BTEX Emissions	1.4497	34.794	6.3498

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	0.0006	0.014	0.0026
Methane	9.3595	224.628	40.9946
Ethane	2.9459	70.702	12.9031
Propane	2.1282	51.076	9.3214
Isobutane	0.4250	10.200	1.8616
n-Butane	1.0243	24.584	4.4865
Isopentane	0.2859	6.862	1.2523
n-Pentane	0.3221	7.730	1.4108
n-Hexane	0.1903	4.567	0.8335
Other Hexanes	0.2118	5.083	0.9277
Heptanes	0.3192	7.660	1.3980
Benzene	0.0015	0.036	0.0066
Toluene	0.0599	1.437	0.2623
Ethylbenzene	0.0047	0.114	0.0207
Xylenes	0.0133	0.319	0.0582
C8+ Heavies	0.0978	2.348	0.4285
Total Emissions	17.3900	417.361	76.1684
Total Hydrocarbon Emissions	17.3895	417.347	76.1658
Total VOC Emissions	5.0840	122.017	22.2681
Total HAP Emissions	0.2697	6.473	1.1813
Total BTEX Emissions	0.0794	1.906	0.3478

EQUIPMENT REPORTS:

CONDENSER

Condenser Outlet Temperature:	120.00 deg. F
Condenser Pressure:	13.50 psia
Condenser Duty:	1.21e-002 MM BTU/hr
Hydrocarbon Recovery:	0.20 bbls/day
Produced Water:	0.56 bbls/day
VOC Control Efficiency:	85.72 %
HAP Control Efficiency:	93.38 %
BTEX Control Efficiency:	94.30 %
Dissolved Hydrocarbons in Water:	385.68 mg/L

Component	Emitted	Condensed
Water	0.41%	99.59%

Carbon Dioxide	97.80%	2.20%
Hydrogen Sulfide	92.47%	7.53%
Nitrogen	99.55%	0.45%
Methane	99.56%	0.44%
Ethane	97.67%	2.33%
Propane	89.31%	10.69%
Isobutane	80.83%	19.17%
n-Butane	75.73%	24.27%
Isopentane	52.18%	47.82%
n-Pentane	49.59%	50.41%
n-Hexane	30.22%	69.78%
Other Hexanes	36.04%	63.96%
Heptanes	13.67%	86.33%
Benzene	20.00%	80.00%
Toluene	7.82%	92.18%
Ethylbenzene	2.57%	97.43%
Xylenes	2.40%	97.60%
C8+ Heavies	0.05%	99.95%

ABSORBER

NOTE: Because the Calculated Absorber Stages was below the minimum allowed, GRI-GLYCalc has set the number of Absorber Stages to 1.25 and has calculated a revised Dry Gas Dew Point.

Calculated Absorber Stages:	1.25
Calculated Dry Gas Dew Point:	3.31 lbs. H2O/MMSCF
Temperature:	100.0 deg. F
Pressure:	975.0 psig
Dry Gas Flow Rate:	3.5000 MMSCF/day
Glycol Losses with Dry Gas:	0.0929 lb/hr
Wet Gas Water Content:	Saturated
Calculated Wet Gas Water Content:	59.85 lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	4.87 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	5.52%	94.48%
Carbon Dioxide	99.73%	0.27%
Hydrogen Sulfide	98.43%	1.57%
Nitrogen	99.97%	0.03%
Methane	99.98%	0.02%
Ethane	99.94%	0.06%
Propane	99.91%	0.09%
Isobutane	99.89%	0.11%
n-Butane	99.86%	0.14%
Isopentane	99.87%	0.13%
n-Pentane	99.83%	0.17%
n-Hexane	99.76%	0.24%
Other Hexanes	99.81%	0.19%
Heptanes	99.60%	0.40%
Benzene	90.39%	9.61%
Toluene	87.52%	12.48%
Ethylbenzene	85.19%	14.81%
Xylenes	79.92%	20.08%
C8+ Heavies	99.05%	0.95%

FLASH TANK

Flash Control: Vented to atmosphere
Flash Temperature: 120.0 deg. F
Flash Pressure: 45.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.75%	0.25%
Carbon Dioxide	7.69%	92.31%
Hydrogen Sulfide	35.16%	64.84%
Nitrogen	0.64%	99.36%
Methane	0.66%	99.34%
Ethane	2.35%	97.65%
Propane	5.08%	94.92%
Isobutane	7.63%	92.37%
n-Butane	9.84%	90.16%
Isopentane	11.47%	88.53%
n-Pentane	13.93%	86.07%
n-Hexane	23.03%	76.97%
Other Hexanes	18.52%	81.48%
Heptanes	38.54%	61.46%
Benzene	90.24%	9.76%
Toluene	93.84%	6.16%
Ethylbenzene	96.53%	3.47%
Xylenes	97.67%	2.33%
C8+ Heavies	89.33%	10.67%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	40.69%	59.31%
Carbon Dioxide	0.00%	100.00%
Hydrogen Sulfide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	1.89%	98.11%
n-Pentane	1.76%	98.24%
n-Hexane	1.27%	98.73%
Other Hexanes	2.85%	97.15%
Heptanes	0.91%	99.09%
Benzene	5.45%	94.55%
Toluene	8.32%	91.68%
Ethylbenzene	10.67%	89.33%
Xylenes	13.14%	86.86%
C8+ Heavies	11.60%	88.40%

STREAM REPORTS:

WET GAS STREAM

Temperature: 100.00 deg. F
Pressure: 989.70 psia
Flow Rate: 1.46e+005 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.26e-001	8.74e+000
Carbon Dioxide	1.81e-001	3.06e+001
Hydrogen Sulfide	4.00e-004	5.24e-002
Nitrogen	7.90e-001	8.52e+001
Methane	7.87e+001	4.86e+003
Ethane	1.12e+001	1.30e+003
Propane	5.11e+000	8.68e+002
Isobutane	7.30e-001	1.63e+002
n-Butane	1.62e+000	3.63e+002
Isopentane	3.83e-001	1.06e+002
n-Pentane	3.98e-001	1.10e+002
n-Hexane	1.79e-001	5.93e+001
Other Hexanes	2.15e-001	7.12e+001
Heptanes	2.33e-001	8.98e+001
Benzene	4.99e-004	1.50e-001
Toluene	2.00e-002	7.09e+000
Ethylbenzene	2.00e-003	8.16e-001
Xylenes	5.99e-003	2.45e+000
C8+ Heavies	1.12e-001	7.34e+001
Total Components	100.00	8.20e+003

DRY GAS STREAM

Temperature: 100.00 deg. F
Pressure: 989.70 psia
Flow Rate: 1.46e+005 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	6.98e-003	4.83e-001
Carbon Dioxide	1.81e-001	3.05e+001
Hydrogen Sulfide	3.94e-004	5.16e-002
Nitrogen	7.91e-001	8.52e+001
Methane	7.88e+001	4.86e+003
Ethane	1.12e+001	1.30e+003
Propane	5.12e+000	8.67e+002
Isobutane	7.30e-001	1.63e+002
n-Butane	1.62e+000	3.62e+002
Isopentane	3.83e-001	1.06e+002
n-Pentane	3.97e-001	1.10e+002
n-Hexane	1.79e-001	5.92e+001
Other Hexanes	2.15e-001	7.11e+001
Heptanes	2.32e-001	8.94e+001
Benzene	4.52e-004	1.36e-001
Toluene	1.75e-002	6.20e+000
Ethylbenzene	1.70e-003	6.96e-001

Component	Conc. (wt%)	Loading (lb/hr)
Xylenes	4.80e-003	1.96e+000
C8+ Heavies	1.11e-001	7.27e+001
Total Components	100.00	8.18e+003

LEAN GLYCOL STREAM

Temperature: 100.00 deg. F
Flow Rate: 6.69e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.84e+001	3.71e+002
Water	1.50e+000	5.65e+000
Carbon Dioxide	2.15e-012	8.12e-012
Hydrogen Sulfide	2.18e-014	8.21e-014
Nitrogen	5.69e-013	2.14e-012
Methane	9.31e-018	3.51e-017
Ethane	9.76e-008	3.68e-007
Propane	8.05e-009	3.03e-008
Isobutane	1.42e-009	5.35e-009
n-Butane	3.36e-009	1.27e-008
Isopentane	1.85e-004	6.99e-004
n-Pentane	2.44e-004	9.19e-004
n-Hexane	1.92e-004	7.25e-004
Other Hexanes	3.64e-004	1.37e-003
Heptanes	4.84e-004	1.82e-003
Benzene	2.01e-004	7.59e-004
Toluene	2.01e-002	7.59e-002
Ethylbenzene	3.73e-003	1.40e-002
Xylenes	1.94e-002	7.30e-002
C8+ Heavies	2.52e-002	9.49e-002
Total Components	100.00	3.77e+002

RICH GLYCOL AND PUMP GAS STREAM

Temperature: 100.00 deg. F
Pressure: 989.70 psia
Flow Rate: 7.31e-001 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.14e+001	3.71e+002
Water	3.43e+000	1.39e+001
Carbon Dioxide	3.30e-002	1.34e-001
Hydrogen Sulfide	2.25e-004	9.12e-004
Nitrogen	4.15e-002	1.68e-001
Methane	2.32e+000	9.42e+000
Ethane	7.44e-001	3.02e+000
Propane	5.53e-001	2.24e+000
Isobutane	1.13e-001	4.60e-001
n-Butane	2.80e-001	1.14e+000
Isopentane	7.96e-002	3.23e-001
n-Pentane	9.22e-002	3.74e-001
n-Hexane	6.09e-002	2.47e-001
Other Hexanes	6.41e-002	2.60e-001
Heptanes	1.28e-001	5.19e-001

Benzene	3.81e-003	1.54e-002
Toluene	2.40e-001	9.72e-001
Ethylbenzene	3.36e-002	1.36e-001
Xylenes	1.40e-001	5.69e-001
C8+ Heavies	2.26e-001	9.17e-001
Total Components	100.00	4.06e+002

FLASH TANK OFF GAS STREAM

Temperature: 120.00 deg. F
Pressure: 59.70 psia
Flow Rate: 2.97e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	2.44e-001	3.44e-002
Carbon Dioxide	3.59e-001	1.24e-001
Hydrogen Sulfide	2.22e-003	5.91e-004
Nitrogen	7.63e-001	1.67e-001
Methane	7.45e+001	9.36e+000
Ethane	1.25e+001	2.95e+000
Propane	6.16e+000	2.13e+000
Isobutane	9.34e-001	4.25e-001
n-Butane	2.25e+000	1.02e+000
Isopentane	5.06e-001	2.86e-001
n-Pentane	5.70e-001	3.22e-001
n-Hexane	2.82e-001	1.90e-001
Other Hexanes	3.14e-001	2.12e-001
Heptanes	4.07e-001	3.19e-001
Benzene	2.46e-003	1.51e-003
Toluene	8.30e-002	5.99e-002
Ethylbenzene	5.69e-003	4.73e-003
Xylenes	1.60e-002	1.33e-002
C8+ Heavies	7.34e-002	9.78e-002
Total Components	100.00	1.77e+001

FLASH TANK GLYCOL STREAM

Temperature: 120.00 deg. F
Flow Rate: 6.92e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.56e+001	3.71e+002
Water	3.58e+000	1.39e+001
Carbon Dioxide	2.66e-003	1.03e-002
Hydrogen Sulfide	8.26e-005	3.21e-004
Nitrogen	2.76e-004	1.07e-003
Methane	1.60e-002	6.22e-002
Ethane	1.83e-002	7.09e-002
Propane	2.94e-002	1.14e-001
Isobutane	9.04e-003	3.51e-002
n-Butane	2.88e-002	1.12e-001
Isopentane	9.55e-003	3.70e-002
n-Pentane	1.34e-002	5.21e-002
n-Hexane	1.47e-002	5.69e-002

Other Hexanes	1.24e-002	4.81e-002
Heptanes	5.16e-002	2.00e-001
Benzene	3.59e-003	1.39e-002
Toluene	2.35e-001	9.12e-001
Ethylbenzene	3.39e-002	1.32e-001
Xylenes	1.43e-001	5.56e-001
C8+ Heavies	2.11e-001	8.19e-001
Total Components	100.00	3.88e+002

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 1.87e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.29e+001	8.24e+000
Carbon Dioxide	4.75e-002	1.03e-002
Hydrogen Sulfide	1.91e-003	3.21e-004
Nitrogen	7.76e-003	1.07e-003
Methane	7.87e-001	6.22e-002
Ethane	4.78e-001	7.09e-002
Propane	5.24e-001	1.14e-001
Isobutane	1.23e-001	3.51e-002
n-Butane	3.90e-001	1.12e-001
Isopentane	1.02e-001	3.63e-002
n-Pentane	1.44e-001	5.12e-002
n-Hexane	1.32e-001	5.62e-002
Other Hexanes	1.10e-001	4.68e-002
Heptanes	4.02e-001	1.98e-001
Benzene	3.42e-002	1.32e-002
Toluene	1.84e+000	8.36e-001
Ethylbenzene	2.25e-001	1.18e-001
Xylenes	9.23e-001	4.83e-001
C8+ Heavies	8.62e-001	7.24e-001
Total Components	100.00	1.12e+001

CONDENSER VENT GAS STREAM

Temperature: 120.00 deg. F
Pressure: 13.50 psia
Flow Rate: 5.58e+000 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.26e+001	3.34e-002
Carbon Dioxide	1.56e+000	1.01e-002
Hydrogen Sulfide	5.91e-002	2.96e-004
Nitrogen	2.59e-001	1.07e-003
Methane	2.63e+001	6.19e-002
Ethane	1.57e+001	6.92e-002
Propane	1.57e+001	1.02e-001
Isobutane	3.32e+000	2.84e-002
n-Butane	9.90e+000	8.47e-002
Isopentane	1.79e+000	1.90e-002

n-Pentane	2.39e+000	2.54e-002
n-Hexane	1.34e+000	1.70e-002
Other Hexanes	1.33e+000	1.69e-002
Heptanes	1.84e+000	2.71e-002
Benzene	2.29e-001	2.63e-003
Toluene	4.83e+000	6.54e-002
Ethylbenzene	1.93e-001	3.02e-003
Xylenes	7.42e-001	1.16e-002
C8+ Heavies	1.34e-002	3.36e-004
Total Components	100.00	5.79e-001

CONDENSER PRODUCED WATER STREAM

Temperature: 120.00 deg. F
Flow Rate: 1.64e-002 gpm

Component	Conc. (wt%)	Loading (lb/hr)	(ppm)
Water	1.00e+002	8.21e+000	999601.
Carbon Dioxide	1.25e-003	1.03e-004	13.
Hydrogen Sulfide	1.21e-004	9.91e-006	1.
Nitrogen	3.45e-006	2.83e-007	0.
Methane	3.87e-004	3.18e-005	4.
Ethane	4.92e-004	4.04e-005	5.
Propane	7.44e-004	6.10e-005	7.
Isobutane	1.13e-004	9.27e-006	1.
n-Butane	4.47e-004	3.67e-005	4.
Isopentane	7.07e-005	5.80e-006	1.
n-Pentane	1.01e-004	8.33e-006	1.
n-Hexane	5.63e-005	4.62e-006	1.
Other Hexanes	4.50e-005	3.70e-006	0.
Heptanes	4.98e-005	4.09e-006	0.
Benzene	1.39e-003	1.14e-004	14.
Toluene	2.84e-002	2.33e-003	284.
Ethylbenzene	9.88e-004	8.11e-005	10.
Xylenes	5.26e-003	4.32e-004	53.
C8+ Heavies	3.89e-007	3.19e-008	0.
Total Components	100.00	8.21e+000	1000000.

CONDENSER RECOVERED OIL STREAM

Temperature: 120.00 deg. F
Flow Rate: 5.69e-003 gpm

Component	Conc. (wt%)	Loading (lb/hr)
Water	4.03e-002	9.76e-004
Carbon Dioxide	5.13e-003	1.24e-004
Hydrogen Sulfide	5.88e-004	1.42e-005
Nitrogen	1.89e-004	4.57e-006
Methane	1.01e-002	2.43e-004
Ethane	6.67e-002	1.61e-003
Propane	5.01e-001	1.21e-002
Isobutane	2.78e-001	6.72e-003
n-Butane	1.12e+000	2.71e-002
Isopentane	7.18e-001	1.74e-002

n-Pentane	1.07e+000	2.58e-002
n-Hexane	1.62e+000	3.92e-002
Other Hexanes	1.24e+000	2.99e-002
Heptanes	7.08e+000	1.71e-001
Benzene	4.31e-001	1.04e-002
Toluene	3.18e+001	7.69e-001
Ethylbenzene	4.73e+000	1.14e-001
Xylenes	1.94e+001	4.71e-001
C8+ Heavies	2.99e+001	7.23e-001
Total Components	100.00	2.42e+000

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Willow Lake Dehy 3
File Name: P:\1. CLIENTS\Crestwood\Willow Lake NSR\ProMax and GlyCalc\GlyCalc Runs\2020 Dehy3 WillowLake 2020 0817.ddf
Date: August 17, 2020

DESCRIPTION:

Description: 2020 PTE Calculations Dehy 3

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	0.0080	0.191	0.0348
Methane	0.1630	3.911	0.7138
Ethane	0.4700	11.280	2.0586
Propane	0.3432	8.237	1.5032
Isobutane	0.0392	0.940	0.1716
n-Butane	0.1110	2.665	0.4864
Isopentane	0.0215	0.517	0.0943
n-Pentane	0.0111	0.266	0.0485
n-Hexane	0.0069	0.167	0.0304
Other Hexanes	0.0085	0.204	0.0373
Heptanes	0.0026	0.062	0.0112
Benzene	0.0031	0.075	0.0137
Toluene	0.0044	0.105	0.0191
Ethylbenzene	0.0034	0.081	0.0147
Xylenes	0.0119	0.285	0.0520
C8+ Heavies	<0.0001	<0.001	0.0001
Total Emissions	1.2077	28.984	5.2896
Total Hydrocarbon Emissions	1.1997	28.793	5.2548
Total VOC Emissions	0.5668	13.602	2.4824
Total HAP Emissions	0.0297	0.712	0.1299
Total BTEX Emissions	0.0227	0.545	0.0995

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	0.0014	0.033	0.0060
Methane	1.2202	29.285	5.3445
Ethane	3.0956	74.295	13.5589
Propane	0.8371	20.091	3.6666
Isobutane	0.1032	2.476	0.4518
n-Butane	0.2334	5.600	1.0221
Isopentane	0.0382	0.916	0.1671
n-Pentane	0.0167	0.401	0.0732
n-Hexane	0.0079	0.189	0.0345
Other Hexanes	0.0123	0.294	0.0537
Heptanes	0.0022	0.052	0.0095

Benzene	0.0003	0.007	0.0013
Toluene	0.0003	0.008	0.0015
Ethylbenzene	0.0003	0.006	0.0011
Xylenes	0.0006	0.015	0.0026
C8+ Heavies	<0.0001	<0.001	0.0001
Total Emissions	5.5696	133.669	24.3947
Total Hydrocarbon Emissions	5.5682	133.636	24.3886
Total VOC Emissions	1.2524	30.057	5.4853
Total HAP Emissions	0.0094	0.225	0.0411
Total BTEX Emissions	0.0015	0.036	0.0066

EQUIPMENT REPORTS:

COLD SEPARATOR

Cold Separator Temperature:	-45.0 deg. F
Cold Separator Pressure:	250.0 psig
Dry Gas Flow Rate:	35.0000 MMSCF/day
Calculated Dry Gas Dew Point:	0.22 lbs. H2O/MMSCF
Glycol Losses with Dry Gas:	0.0163 lb/hr
Wet Gas Water Content:	Saturated
Calculated Wet Gas Water Content:	69.06 lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	4.18 gal/lb H2O
Produced Liquid:	1.32e+003 bbls/day
Glycol Losses in Produced Liquids:	5.0528 lb/hr

Component	Remaining in Dry Gas	Absorbed or Condensed
Water	0.29%	99.71%
Carbon Dioxide	94.47%	5.53%
Hydrogen Sulfide	79.02%	20.98%
Nitrogen	99.58%	0.42%
Methane	98.34%	1.66%
Ethane	96.59%	3.41%
Propane	49.87%	50.13%
Isobutane	23.84%	76.16%
n-Butane	15.47%	84.53%
Isopentane	4.98%	95.02%
n-Pentane	1.44%	98.56%
n-Hexane	0.58%	99.42%
Other Hexanes	1.13%	98.87%
Heptanes	0.05%	99.95%
Benzene	0.46%	99.54%
Toluene	0.01%	99.99%
Ethylbenzene	0.03%	99.97%
Xylenes	0.01%	99.99%
C8+ Heavies	0.00%	100.00%

FLASH TANK

Flash Control:	Vented to atmosphere
Flash Temperature:	170.0 deg. F
Flash Pressure:	45.0 psig

Component	Left in Oil and Glycol	Removed in Flash Gas
Water	99.97%	0.03%
Carbon Dioxide	56.43%	43.57%
Hydrogen Sulfide	85.25%	14.75%
Nitrogen	9.49%	90.51%
Methane	11.79%	88.21%
Ethane	13.19%	86.81%
Propane	29.09%	70.91%
Isobutane	27.53%	72.47%
n-Butane	32.26%	67.74%
Isopentane	36.39%	63.61%
n-Pentane	40.16%	59.84%
n-Hexane	47.10%	52.90%
Other Hexanes	41.57%	58.43%
Heptanes	54.34%	45.66%
Benzene	91.80%	8.20%
Toluene	93.34%	6.66%
Ethylbenzene	93.53%	6.47%
Xylenes	95.78%	4.22%
C8+ Heavies	57.81%	42.19%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	89.82%	10.18%
Carbon Dioxide	0.00%	100.00%
Hydrogen Sulfide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	1.37%	98.63%
n-Pentane	1.25%	98.75%
n-Hexane	1.06%	98.94%
Other Hexanes	2.41%	97.59%
Heptanes	0.92%	99.08%
Benzene	5.45%	94.55%
Toluene	8.46%	91.54%
Ethylbenzene	11.12%	88.88%
Xylenes	13.47%	86.53%
C8+ Heavies	20.76%	79.24%

STREAM REPORTS:

WET GAS STREAM

Temperature: 100.00 deg. F
Pressure: 814.70 psia
Flow Rate: 1.58e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.46e-001	1.09e+002
Carbon Dioxide	1.81e-001	3.32e+002
Hydrogen Sulfide	3.99e-004	5.68e-001
Nitrogen	7.90e-001	9.23e+002
Methane	7.87e+001	5.26e+004
Ethane	1.12e+001	1.41e+004
Propane	5.11e+000	9.40e+003
Isobutane	7.30e-001	1.77e+003
n-Butane	1.62e+000	3.93e+003
Isopentane	3.82e-001	1.15e+003
n-Pentane	3.97e-001	1.20e+003
n-Hexane	1.79e-001	6.42e+002
Other Hexanes	2.15e-001	7.72e+002
Heptanes	2.33e-001	9.72e+002
Benzene	4.99e-004	1.63e+000
Toluene	2.00e-002	7.67e+001
Ethylbenzene	2.00e-003	8.84e+000
Xylenes	5.99e-003	2.65e+001
C8+ Heavies	1.12e-001	7.95e+002
Total Components	100.00	8.88e+004

DRY GAS STREAM

Temperature: -45.00 deg. F
Pressure: 264.70 psia
Flow Rate: 1.46e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	4.60e-004	3.18e-001
Carbon Dioxide	1.85e-001	3.13e+002
Hydrogen Sulfide	3.43e-004	4.49e-001
Nitrogen	8.54e-001	9.19e+002
Methane	8.40e+001	5.18e+004
Ethane	1.17e+001	1.36e+004
Propane	2.77e+000	4.69e+003
Isobutane	1.89e-001	4.22e+002
n-Butane	2.72e-001	6.08e+002
Isopentane	2.07e-002	5.74e+001
n-Pentane	6.21e-003	1.72e+001
n-Hexane	1.13e-003	3.73e+000
Other Hexanes	2.63e-003	8.72e+000
Heptanes	1.24e-004	4.78e-001
Benzene	2.51e-006	7.53e-003
Toluene	1.36e-006	4.82e-003
Ethylbenzene	5.75e-007	2.35e-003
Xylenes	9.75e-007	3.98e-003
C8+ Heavies	6.20e-007	4.06e-003
Total Components	100.00	7.24e+004

LEAN GLYCOL STREAM

Temperature: 100.00 deg. F
Flow Rate: 7.00e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
EG	8.00e+001	3.05e+003
Water	2.00e+001	7.62e+002
Carbon Dioxide	3.17e-012	1.21e-010
Hydrogen Sulfide	2.45e-014	9.33e-013
Nitrogen	4.55e-014	1.73e-012
Methane	1.22e-018	4.65e-017
Ethane	4.42e-008	1.68e-006
Propane	1.26e-009	4.80e-008
Isobutane	1.12e-010	4.27e-009
n-Butane	2.24e-010	8.54e-009
Isopentane	7.87e-006	3.00e-004
n-Pentane	3.67e-006	1.40e-004
n-Hexane	1.95e-006	7.44e-005
Other Hexanes	5.51e-006	2.10e-004
Heptanes	6.25e-007	2.38e-005
Benzene	4.72e-006	1.80e-004
Toluene	1.06e-005	4.04e-004
Ethylbenzene	1.11e-005	4.21e-004
Xylenes	4.85e-005	1.85e-003
C8+ Heavies	1.36e-007	5.20e-006
Total Components	100.00	3.81e+003

RICH GLYCOL STREAM

Temperature: -45.00 deg. F
Pressure: 264.70 psia
Flow Rate: 7.18e+000 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
EG	7.80e+001	3.04e+003
Water	2.18e+001	8.48e+002
Carbon Dioxide	3.10e-002	1.21e+000
Hydrogen Sulfide	2.39e-004	9.33e-003
Nitrogen	4.45e-004	1.73e-002
Methane	3.55e-002	1.38e+000
Ethane	9.14e-002	3.56e+000
Propane	3.03e-002	1.18e+000
Isobutane	3.65e-003	1.42e-001
n-Butane	8.83e-003	3.44e-001
Isopentane	1.54e-003	6.00e-002
n-Pentane	7.16e-004	2.79e-002
n-Hexane	3.82e-004	1.49e-002
Other Hexanes	5.38e-004	2.10e-002
Heptanes	1.22e-004	4.76e-003
Benzene	9.22e-005	3.59e-003
Toluene	1.31e-004	5.11e-003
Ethylbenzene	1.04e-004	4.05e-003
Xylenes	3.68e-004	1.43e-002
C8+ Heavies	1.11e-006	4.33e-005

Total Components	100.00	3.90e+003

COLD SEPARATOR OIL STREAM

Temperature: -45.00 deg. F
Flow Rate: 3.84e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
EG	3.09e-002	5.05e+000
Water	1.38e-001	2.25e+001
Carbon Dioxide	1.05e-001	1.71e+001
Hydrogen Sulfide	6.72e-004	1.10e-001
Nitrogen	2.35e-002	3.84e+000
Methane	5.33e+000	8.70e+002
Ethane	2.92e+000	4.76e+002
Propane	2.89e+001	4.71e+003
Isobutane	8.25e+000	1.35e+003
n-Butane	2.03e+001	3.32e+003
Isopentane	6.70e+000	1.09e+003
n-Pentane	7.22e+000	1.18e+003
n-Hexane	3.91e+000	6.39e+002
Other Hexanes	4.67e+000	7.63e+002
Heptanes	5.95e+000	9.72e+002
Benzene	9.90e-003	1.62e+000
Toluene	4.70e-001	7.67e+001
Ethylbenzene	5.41e-002	8.84e+000
Xylenes	1.62e-001	2.65e+001
C8+ Heavies	4.87e+000	7.95e+002
Total Components	100.00	1.63e+004

FLASH TANK OFF GAS STREAM

Temperature: 170.00 deg. F
Pressure: 59.70 psia
Flow Rate: 8.71e+001 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	5.26e+000	2.18e-001
Carbon Dioxide	5.21e+000	5.27e-001
Hydrogen Sulfide	1.76e-002	1.38e-003
Nitrogen	2.44e-001	1.57e-002
Methane	3.32e+001	1.22e+000
Ethane	4.49e+001	3.10e+000
Propane	8.27e+000	8.37e-001
Isobutane	7.74e-001	1.03e-001
n-Butane	1.75e+000	2.33e-001
Isopentane	2.30e-001	3.82e-002
n-Pentane	1.01e-001	1.67e-002
n-Hexane	3.98e-002	7.88e-003
Other Hexanes	6.20e-002	1.23e-002
Heptanes	9.46e-003	2.17e-003
Benzene	1.64e-003	2.95e-004
Toluene	1.61e-003	3.40e-004
Ethylbenzene	1.08e-003	2.62e-004
Xylenes	2.48e-003	6.05e-004

C8+ Heavies	4.68e-005	1.83e-005
Total Components	100.00	6.33e+000

FLASH TANK OIL STREAM

Temperature: 170.00 deg. F

The calculated flow rate is less than 0.000001 #mol/hr.
The stream flow rate and composition are not reported.

FLASH TANK GLYCOL STREAM

Temperature: 170.00 deg. F
Flow Rate: 7.17e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
EG	7.82e+001	3.04e+003
Water	2.18e+001	8.48e+002
Carbon Dioxide	1.75e-002	6.82e-001
Hydrogen Sulfide	2.04e-004	7.96e-003
Nitrogen	4.22e-005	1.64e-003
Methane	4.19e-003	1.63e-001
Ethane	1.21e-002	4.70e-001
Propane	8.82e-003	3.43e-001
Isobutane	1.01e-003	3.92e-002
n-Butane	2.85e-003	1.11e-001
Isopentane	5.61e-004	2.18e-002
n-Pentane	2.88e-004	1.12e-002
n-Hexane	1.80e-004	7.01e-003
Other Hexanes	2.24e-004	8.72e-003
Heptanes	6.65e-005	2.59e-003
Benzene	8.48e-005	3.30e-003
Toluene	1.23e-004	4.77e-003
Ethylbenzene	9.73e-005	3.79e-003
Xylenes	3.53e-004	1.37e-002
C8+ Heavies	6.43e-007	2.50e-005
Total Components	100.00	3.89e+003

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 1.84e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.89e+001	8.63e+001
Carbon Dioxide	3.20e-001	6.82e-001
Hydrogen Sulfide	4.82e-003	7.95e-003
Nitrogen	1.21e-003	1.64e-003
Methane	2.10e-001	1.63e-001
Ethane	3.22e-001	4.70e-001
Propane	1.61e-001	3.43e-001
Isobutane	1.39e-002	3.92e-002
n-Butane	3.94e-002	1.11e-001

Isopentane	6.15e-003	2.15e-002
n-Pentane	3.17e-003	1.11e-002
n-Hexane	1.66e-003	6.94e-003
Other Hexanes	2.04e-003	8.51e-003
Heptanes	5.28e-004	2.56e-003
Benzene	8.24e-004	3.12e-003
Toluene	9.77e-004	4.36e-003
Ethylbenzene	6.54e-004	3.37e-003
Xylenes	2.31e-003	1.19e-002
C8+ Heavies	2.40e-006	1.98e-005
Total Components	100.00	8.82e+001

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: 2020 Willow Lake Dehy 5
File Name: P:\1. CLIENTS\Crestwood\Willow Lake NSR\ProMax and GlyCalc\GlyCalc Runs\2020 Dehy5 WillowLake 2020 0817.ddf
Date: August 17, 2020

DESCRIPTION:

Description: 2020 PTE Calculations

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	0.0068	0.162	0.0296
Methane	1.3979	33.549	6.1227
Ethane	1.5788	37.892	6.9152
Propane	2.2892	54.940	10.0266
Isobutane	0.6413	15.392	2.8090
n-Butane	1.9162	45.989	8.3930
Isopentane	0.4313	10.351	1.8891
n-Pentane	0.5788	13.892	2.5352
n-Hexane	0.3897	9.353	1.7069
Other Hexanes	0.3860	9.263	1.6905
Heptanes	0.6258	15.020	2.7412
Benzene	0.0595	1.429	0.2608
Toluene	1.4731	35.354	6.4522
Ethylbenzene	0.0678	1.628	0.2971
Xylenes	0.2574	6.177	1.1273
C8+ Heavies	0.0078	0.186	0.0340
Total Emissions	12.1073	290.576	53.0302
Total Hydrocarbon Emissions	12.1006	290.414	53.0006
Total VOC Emissions	9.1239	218.974	39.9627
Total HAP Emissions	2.2475	53.941	9.8442
Total BTEX Emissions	1.8578	44.588	8.1373

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	0.0073	0.174	0.0318
Methane	1.4039	33.693	6.1490
Ethane	1.6159	38.783	7.0778
Propane	2.5594	61.425	11.2102
Isobutane	0.7913	18.992	3.4661
n-Butane	2.5220	60.527	11.0462
Isopentane	0.8215	19.716	3.5981
n-Pentane	1.1584	27.801	5.0736
n-Hexane	1.2758	30.620	5.5881
Other Hexanes	1.0618	25.484	4.6508
Heptanes	4.5189	108.454	19.7928

Benzene	0.2927	7.025	1.2820
Toluene	18.5091	444.218	81.0698
Ethylbenzene	2.5935	62.244	11.3596
Xylenes	10.5216	252.517	46.0844
C8+ Heavies	16.4331	394.394	71.9769
Total Emissions	66.0861	1586.067	289.4572
Total Hydrocarbon Emissions	66.0789	1585.892	289.4254
Total VOC Emissions	63.0590	1513.417	276.1985
Total HAP Emissions	33.1927	796.624	145.3839
Total BTEX Emissions	31.9168	766.004	139.7958

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	0.0132	0.317	0.0579
Methane	208.9957	5015.897	915.4011
Ethane	65.9011	1581.625	288.6466
Propane	47.5613	1141.472	208.3186
Isobutane	9.5035	228.084	41.6253
n-Butane	22.9093	549.824	100.3428
Isopentane	6.3946	153.471	28.0084
n-Pentane	7.2055	172.932	31.5601
n-Hexane	4.2568	102.162	18.6446
Other Hexanes	4.7382	113.716	20.7531
Heptanes	7.1305	171.131	31.2314
Benzene	0.0331	0.795	0.1451
Toluene	1.3065	31.356	5.7225
Ethylbenzene	0.1025	2.461	0.4491
Xylenes	0.2857	6.857	1.2515
C8+ Heavies	2.1529	51.671	9.4299
Total Emissions	388.4904	9323.770	1701.5880
Total Hydrocarbon Emissions	388.4772	9323.453	1701.5301
Total VOC Emissions	113.5804	2725.931	497.4823
Total HAP Emissions	5.9847	143.632	26.2128
Total BTEX Emissions	1.7279	41.470	7.5682

EQUIPMENT REPORTS:

CONDENSER

Condenser Outlet Temperature:	120.00 deg. F
Condenser Pressure:	13.50 psia
Condenser Duty:	1.24e-001 MM BTU/hr
Hydrocarbon Recovery:	4.35 bbls/day
Produced Water:	10.49 bbls/day
VOC Control Efficiency:	85.53 %
HAP Control Efficiency:	93.23 %
BTEX Control Efficiency:	94.18 %
Dissolved Hydrocarbons in Water:	383.12 mg/L

Component	Emitted	Condensed
Water	0.49%	99.51%

Carbon Dioxide	97.99%	2.01%
Hydrogen Sulfide	93.05%	6.95%
Nitrogen	99.57%	0.43%
Methane	99.57%	0.43%
Ethane	97.70%	2.30%
Propane	89.44%	10.56%
Isobutane	81.04%	18.96%
n-Butane	75.98%	24.02%
Isopentane	52.50%	47.50%
n-Pentane	49.97%	50.03%
n-Hexane	30.55%	69.45%
Other Hexanes	36.35%	63.65%
Heptanes	13.85%	86.15%
Benzene	20.34%	79.66%
Toluene	7.96%	92.04%
Ethylbenzene	2.61%	97.39%
Xylenes	2.45%	97.55%
C8+ Heavies	0.05%	99.95%

ABSORBER

NOTE: Because the Calculated Absorber Stages was below the minimum allowed, GRI-GLYCalc has set the number of Absorber Stages to 1.25 and has calculated a revised Dry Gas Dew Point.

Calculated Absorber Stages:	1.25
Calculated Dry Gas Dew Point:	3.04 lbs. H2O/MMSCF
Temperature:	100.0 deg. F
Pressure:	975.0 psig
Dry Gas Flow Rate:	65.0000 MMSCF/day
Glycol Losses with Dry Gas:	1.7246 lb/hr
Wet Gas Water Content:	Saturated
Calculated Wet Gas Water Content:	59.85 lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	5.84 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	5.07%	94.93%
Carbon Dioxide	99.68%	0.32%
Hydrogen Sulfide	98.10%	1.90%
Nitrogen	99.97%	0.03%
Methane	99.97%	0.03%
Ethane	99.93%	0.07%
Propane	99.90%	0.10%
Isobutane	99.87%	0.13%
n-Butane	99.83%	0.17%
Isopentane	99.84%	0.16%
n-Pentane	99.80%	0.20%
n-Hexane	99.70%	0.30%
Other Hexanes	99.77%	0.23%
Heptanes	99.51%	0.49%
Benzene	88.52%	11.48%
Toluene	85.15%	14.85%
Ethylbenzene	82.43%	17.57%
Xylenes	76.44%	23.56%
C8+ Heavies	98.84%	1.16%

FLASH TANK

Flash Control: Vented to atmosphere
Flash Temperature: 120.0 deg. F
Flash Pressure: 45.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.75%	0.25%
Carbon Dioxide	7.74%	92.26%
Hydrogen Sulfide	35.44%	64.56%
Nitrogen	0.64%	99.36%
Methane	0.67%	99.33%
Ethane	2.39%	97.61%
Propane	5.11%	94.89%
Isobutane	7.69%	92.31%
n-Butane	9.92%	90.08%
Isopentane	11.58%	88.42%
n-Pentane	14.06%	85.94%
n-Hexane	23.29%	76.71%
Other Hexanes	18.74%	81.26%
Heptanes	39.01%	60.99%
Benzene	90.33%	9.67%
Toluene	93.92%	6.08%
Ethylbenzene	96.59%	3.41%
Xylenes	97.70%	2.30%
C8+ Heavies	89.62%	10.38%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	45.15%	54.85%
Carbon Dioxide	0.00%	100.00%
Hydrogen Sulfide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	1.88%	98.12%
n-Pentane	1.75%	98.25%
n-Hexane	1.26%	98.74%
Other Hexanes	2.83%	97.17%
Heptanes	0.90%	99.10%
Benzene	5.44%	94.56%
Toluene	8.31%	91.69%
Ethylbenzene	10.66%	89.34%
Xylenes	13.13%	86.87%
C8+ Heavies	11.58%	88.42%

STREAM REPORTS:

WET GAS STREAM

Temperature: 100.00 deg. F
Pressure: 989.70 psia
Flow Rate: 2.71e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.26e-001	1.62e+002
Carbon Dioxide	1.81e-001	5.69e+002
Hydrogen Sulfide	4.00e-004	9.73e-001
Nitrogen	7.90e-001	1.58e+003
Methane	7.87e+001	9.02e+004
Ethane	1.12e+001	2.41e+004
Propane	5.11e+000	1.61e+004
Isobutane	7.30e-001	3.03e+003
n-Butane	1.62e+000	6.74e+003
Isopentane	3.83e-001	1.97e+003
n-Pentane	3.98e-001	2.05e+003
n-Hexane	1.79e-001	1.10e+003
Other Hexanes	2.15e-001	1.32e+003
Heptanes	2.33e-001	1.67e+003
Benzene	4.99e-004	2.79e+000
Toluene	2.00e-002	1.32e+002
Ethylbenzene	2.00e-003	1.52e+001
Xylenes	5.99e-003	4.55e+001
C8+ Heavies	1.12e-001	1.36e+003
Total Components	100.00	1.52e+005

DRY GAS STREAM

Temperature: 100.00 deg. F
Pressure: 989.70 psia
Flow Rate: 2.71e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	6.40e-003	8.23e+000
Carbon Dioxide	1.80e-001	5.67e+002
Hydrogen Sulfide	3.93e-004	9.55e-001
Nitrogen	7.91e-001	1.58e+003
Methane	7.88e+001	9.02e+004
Ethane	1.12e+001	2.41e+004
Propane	5.11e+000	1.61e+004
Isobutane	7.30e-001	3.03e+003
n-Butane	1.62e+000	6.72e+003
Isopentane	3.83e-001	1.97e+003
n-Pentane	3.97e-001	2.05e+003
n-Hexane	1.79e-001	1.10e+003
Other Hexanes	2.15e-001	1.32e+003
Heptanes	2.32e-001	1.66e+003
Benzene	4.43e-004	2.47e+000
Toluene	1.70e-002	1.12e+002
Ethylbenzene	1.65e-003	1.25e+001

Component	Conc. (wt%)	Loading (lb/hr)
Xylenes	4.59e-003	3.48e+001
C8+ Heavies	1.11e-001	1.35e+003
Total Components	100.00	1.52e+005

LEAN GLYCOL STREAM

Temperature: 100.00 deg. F
Flow Rate: 1.50e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.84e+001	8.30e+003
Water	1.50e+000	1.27e+002
Carbon Dioxide	2.16e-012	1.82e-010
Hydrogen Sulfide	2.19e-014	1.85e-012
Nitrogen	5.74e-013	4.84e-011
Methane	9.38e-018	7.92e-016
Ethane	9.85e-008	8.31e-006
Propane	8.08e-009	6.82e-007
Isobutane	1.43e-009	1.20e-007
n-Butane	3.38e-009	2.85e-007
Isopentane	1.86e-004	1.57e-002
n-Pentane	2.45e-004	2.07e-002
n-Hexane	1.94e-004	1.63e-002
Other Hexanes	3.66e-004	3.09e-002
Heptanes	4.88e-004	4.12e-002
Benzene	2.00e-004	1.68e-002
Toluene	1.99e-002	1.68e+000
Ethylbenzene	3.67e-003	3.10e-001
Xylenes	1.88e-002	1.59e+000
C8+ Heavies	2.55e-002	2.15e+000
Total Components	100.00	8.44e+003

RICH GLYCOL AND PUMP GAS STREAM

Temperature: 100.00 deg. F
Pressure: 989.70 psia
Flow Rate: 1.63e+001 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.17e+001	8.30e+003
Water	3.11e+000	2.81e+002
Carbon Dioxide	3.32e-002	3.00e+000
Hydrogen Sulfide	2.26e-004	2.05e-002
Nitrogen	4.16e-002	3.76e+000
Methane	2.32e+000	2.10e+002
Ethane	7.46e-001	6.75e+001
Propane	5.54e-001	5.01e+001
Isobutane	1.14e-001	1.03e+001
n-Butane	2.81e-001	2.54e+001
Isopentane	7.99e-002	7.23e+000
n-Pentane	9.26e-002	8.38e+000
n-Hexane	6.13e-002	5.55e+000
Other Hexanes	6.44e-002	5.83e+000
Heptanes	1.29e-001	1.17e+001

Benzene	3.79e-003	3.43e-001
Toluene	2.37e-001	2.15e+001
Ethylbenzene	3.32e-002	3.01e+000
Xylenes	1.37e-001	1.24e+001
C8+ Heavies	2.29e-001	2.07e+001
Total Components	100.00	9.05e+003

FLASH TANK OFF GAS STREAM

Temperature: 120.00 deg. F
Pressure: 59.70 psia
Flow Rate: 6.64e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	2.20e-001	6.92e-001
Carbon Dioxide	3.60e-001	2.77e+000
Hydrogen Sulfide	2.22e-003	1.32e-002
Nitrogen	7.63e-001	3.74e+000
Methane	7.45e+001	2.09e+002
Ethane	1.25e+001	6.59e+001
Propane	6.17e+000	4.76e+001
Isobutane	9.35e-001	9.50e+000
n-Butane	2.25e+000	2.29e+001
Isopentane	5.07e-001	6.39e+000
n-Pentane	5.71e-001	7.21e+000
n-Hexane	2.82e-001	4.26e+000
Other Hexanes	3.14e-001	4.74e+000
Heptanes	4.07e-001	7.13e+000
Benzene	2.42e-003	3.31e-002
Toluene	8.11e-002	1.31e+000
Ethylbenzene	5.52e-003	1.03e-001
Xylenes	1.54e-002	2.86e-001
C8+ Heavies	7.23e-002	2.15e+000
Total Components	100.00	3.96e+002

FLASH TANK GLYCOL STREAM

Temperature: 120.00 deg. F
Flow Rate: 1.54e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.59e+001	8.30e+003
Water	3.24e+000	2.80e+002
Carbon Dioxide	2.68e-003	2.32e-001
Hydrogen Sulfide	8.38e-005	7.25e-003
Nitrogen	2.80e-004	2.43e-002
Methane	1.62e-002	1.40e+000
Ethane	1.87e-002	1.62e+000
Propane	2.96e-002	2.56e+000
Isobutane	9.14e-003	7.91e-001
n-Butane	2.91e-002	2.52e+000
Isopentane	9.67e-003	8.37e-001
n-Pentane	1.36e-002	1.18e+000
n-Hexane	1.49e-002	1.29e+000

Other Hexanes	1.26e-002	1.09e+000
Heptanes	5.27e-002	4.56e+000
Benzene	3.58e-003	3.10e-001
Toluene	2.33e-001	2.02e+001
Ethylbenzene	3.35e-002	2.90e+000
Xylenes	1.40e-001	1.21e+001
C8+ Heavies	2.15e-001	1.86e+001
Total Components	100.00	8.66e+003

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 3.54e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.16e+001	1.54e+002
Carbon Dioxide	5.66e-002	2.32e-001
Hydrogen Sulfide	2.28e-003	7.25e-003
Nitrogen	9.29e-003	2.43e-002
Methane	9.38e-001	1.40e+000
Ethane	5.76e-001	1.62e+000
Propane	6.22e-001	2.56e+000
Isobutane	1.46e-001	7.91e-001
n-Butane	4.65e-001	2.52e+000
Isopentane	1.22e-001	8.21e-001
n-Pentane	1.72e-001	1.16e+000
n-Hexane	1.59e-001	1.28e+000
Other Hexanes	1.32e-001	1.06e+000
Heptanes	4.84e-001	4.52e+000
Benzene	4.02e-002	2.93e-001
Toluene	2.15e+000	1.85e+001
Ethylbenzene	2.62e-001	2.59e+000
Xylenes	1.06e+000	1.05e+001
C8+ Heavies	1.03e+000	1.64e+001
Total Components	100.00	2.20e+002

CONDENSER VENT GAS STREAM

Temperature: 120.00 deg. F
Pressure: 13.50 psia
Flow Rate: 1.26e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.26e+001	7.57e-001
Carbon Dioxide	1.55e+000	2.28e-001
Hydrogen Sulfide	5.95e-002	6.75e-003
Nitrogen	2.59e-001	2.42e-002
Methane	2.62e+001	1.40e+000
Ethane	1.58e+001	1.58e+000
Propane	1.56e+001	2.29e+000
Isobutane	3.31e+000	6.41e-001
n-Butane	9.90e+000	1.92e+000
Isopentane	1.80e+000	4.31e-001

n-Pentane	2.41e+000	5.79e-001
n-Hexane	1.36e+000	3.90e-001
Other Hexanes	1.35e+000	3.86e-001
Heptanes	1.88e+000	6.26e-001
Benzene	2.29e-001	5.95e-002
Toluene	4.80e+000	1.47e+000
Ethylbenzene	1.92e-001	6.78e-002
Xylenes	7.28e-001	2.57e-001
C8+ Heavies	1.37e-002	7.76e-003
Total Components	100.00	1.31e+001

CONDENSER PRODUCED WATER STREAM

Temperature: 120.00 deg. F
Flow Rate: 3.06e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)	(ppm)
Water	1.00e+002	1.53e+002	999603.
Carbon Dioxide	1.25e-003	1.91e-003	12.
Hydrogen Sulfide	1.21e-004	1.86e-004	1.
Nitrogen	3.46e-006	5.29e-006	0.
Methane	3.86e-004	5.91e-004	4.
Ethane	4.96e-004	7.59e-004	5.
Propane	7.39e-004	1.13e-003	7.
Isobutane	1.13e-004	1.73e-004	1.
n-Butane	4.47e-004	6.84e-004	4.
Isopentane	7.10e-005	1.09e-004	1.
n-Pentane	1.02e-004	1.56e-004	1.
n-Hexane	5.70e-005	8.73e-005	1.
Other Hexanes	4.55e-005	6.97e-005	0.
Heptanes	5.08e-005	7.77e-005	1.
Benzene	1.39e-003	2.13e-003	14.
Toluene	2.83e-002	4.33e-002	283.
Ethylbenzene	9.81e-004	1.50e-003	10.
Xylenes	5.16e-003	7.90e-003	52.
C8+ Heavies	3.97e-007	6.08e-007	0.
Total Components	100.00	1.53e+002	1000000.

CONDENSER RECOVERED OIL STREAM

Temperature: 120.00 deg. F
Flow Rate: 1.27e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
Water	4.01e-002	2.16e-002
Carbon Dioxide	5.12e-003	2.76e-003
Hydrogen Sulfide	5.90e-004	3.18e-004
Nitrogen	1.85e-004	9.99e-005
Methane	1.01e-002	5.42e-003
Ethane	6.74e-002	3.64e-002
Propane	4.99e-001	2.69e-001
Isobutane	2.78e-001	1.50e-001
n-Butane	1.12e+000	6.05e-001
Isopentane	7.23e-001	3.90e-001

n-Pentane	1.07e+000	5.79e-001
n-Hexane	1.64e+000	8.86e-001
Other Hexanes	1.25e+000	6.76e-001
Heptanes	7.22e+000	3.89e+000
Benzene	4.28e-001	2.31e-001
Toluene	3.15e+001	1.70e+001
Ethylbenzene	4.68e+000	2.52e+000
Xylenes	1.90e+001	1.03e+001
C8+ Heavies	3.04e+001	1.64e+001
Total Components	100.00	5.39e+001

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GAS EXTENDED ANALYSIS REPORT

LAB REPORT NUMBER: 200601-5000-05-060120-01

PHYSICAL CONSTANTS PER GPA 2145-09 & TP-17 (1998)

CUSTOMER :	CRESTWOOD	DATE ON:	05/28/2020
STATION:	BLACK RIVER COMP DEHY UPSTREAM	DATE ANALYZED:	06/01/2020
PRODUCER:	CRESTWOOD	EFFECTIVE DATE:	05/01/2020
LEASE:	BLACK RIVER COMP DEHY UPSTREAM	DATE OFF:	

COMPONENT	MOLE %	GPM	WT. %
H2S	0.000		0.000
OXYGEN	0.002		0.003
NITROGEN	0.791		1.044
CARBON DIOXIDE	0.181		0.375
METHANE	78.781		59.530
ETHANE	11.225	3.012	15.898
PROPANE	5.118	1.415	10.628
I-BUTANE	0.731	0.240	2.001
N-BUTANE	1.623	0.513	4.443
I-PENTANE	0.383	0.141	1.302
N-PENTANE	0.398	0.145	1.353
HEXANES (C6's)	0.394	0.163	1.599
HEPTANES (C7+)	0.253	0.109	1.177
OCTANES (C8+)	0.109	0.055	0.582
NONANES (C9+)	0.007	0.002	0.041
DECANES (C10+)	0.004	0.001	0.024
TOTAL	100.000	5.796	100.000

REAL SP. GRAVITY	0.7354	REAL BTU DRY	1277.894
MOL. WT.	21.230	REAL BTU SAT	1255.646
Z FACTOR	0.9963	PRESS BASE	14.730
C2+ GPM	5.796	C4+ GPM	1.369
C3+ GPM	2.784	C5+ GPM	0.616
C6-C10+ MOL WT	103.795	C6-C10+ GRAVITY	3.574

SAMPLED BY	WJ	SAMPLE PRESS:	865
SAMPLE TYPE:	SPOT	SAMPLE TEMP:	100
CYLINDER NO.:		COUNTY / STATE:	14.73
COMMENT:	SPOT	ANALYST	MIKE HOBGOOD

* SEE NEXT PAGE FOR C6+ COMPOSITIONAL BREAKDOWN

06-04-2020

STATION: BLACK RIVER COMP DEH LEASE: BLACK RIVER COMP DEHY UPSTREAM

C6+ FRACTION COMPOSITION

HEXANE ISOMERS (C6'S)		MOLE %	GPM	WT. %
2,2-Dimethylbutane	P	0.010	0.004	0.040
2,3-Dimethylbutane	PN	0.000	0.000	0.000
2-Methylpentane	P	0.133	0.055	0.538
3-Methylpentane	P	0.071	0.029	0.288
Methylcyclopentane	N	0.000	0.000	0.000
Benzene	A	0.000	0.000	0.000
Cyclohexane	N	0.002	0.001	0.008
n-Hexane	P	0.179	0.074	0.725
HEPTANE ISOMERS (C7'S)				
3,3-Dimethylpentane	P	0.000	0.000	0.001
2,2-Dimethylpentane	P	0.003	0.001	0.012
2,4-Dimethylpentane	P	0.007	0.003	0.034
2 & 3-Methylhexane	P	0.031	0.015	0.148
2,3-Dimethylpentane	P	0.020	0.009	0.093
1,t-3-Dimethylcyclopentane	N	0.000	0.000	0.000
1,c-3-Dimethylcyclopentane	N	0.000	0.000	0.000
3-Ethlypentane	N	0.000	0.000	0.000
1,t-2-Dimethylcyclopentane	N	0.000	0.000	0.000
Toluene	A	0.020	0.007	0.087
Methylcyclohexane	N	0.105	0.043	0.487
Ethylcyclopentane	N	0.000	0.000	0.000
n-Heptane	P	0.067	0.031	0.315
OCTANE ISOMERS (C8'S)				
2,4 & 2,5-Dimethylhexane	P	0.006	0.003	0.033
2,2,4-Trimethylpentane	N	0.000	0.000	0.000
1,t-2,c-4-Trimethylcyclopentane	N	0.000	0.000	0.000
1,t-2,c-3-Trimethylcyclopentane	N	0.000	0.000	0.000
2-Methylheptane	P	0.021	0.011	0.112
1,c-2,t-4-Trimethylcyclopentane	N	0.000	0.000	0.000
3-Methylheptane	P	0.013	0.007	0.071
1,c-3-Dimethylcyclohexane	N	0.004	0.002	0.019
1,t-4-Dimethylcyclohexane	N	0.000	0.000	0.000
methyl-ethylcyclopentanes	N	0.000	0.000	0.000
1,t-3 & 1,c-4 Dimethylcyclohexane	N	0.009	0.004	0.046
1,c-2-Dimethylcyclohexane	N	0.002	0.001	0.000
Ethylcyclohexane	N	0.013	0.006	0.069
Ethylbenzene	A	0.002	0.001	0.012
m & p-Xylene	A	0.002	0.001	0.008
o-Xylene	A	0.004	0.002	0.022
Cyclooctane	P	0.001	0.000	0.005
n-Octane	P	0.032	0.017	0.174

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STATION: BLACK RIVER COMP DEH **LEASE:** BLACK RIVER COMP DEHY UPSTREAM

C6+ FRACTION COMPOSITION

NONANE ISOMERS (C9'S)		MOLE %	GPM	WT. %
Trimethylhexanes	P	0.000	0.000	0.000
Dimethylpentanes	P	0.000	0.000	0.000
Isopropylcyclopentane	N	0.000	0.000	0.000
n-Propylcyclopentane	N	0.000	0.000	0.000
3-Methyloctane	P	0.000	0.000	0.000
Trimethylcyclohexanes	N	0.000	0.000	0.000
Isopropylbenzene	A	0.003	0.001	0.016
Isopropylcyclohexane	N	0.000	0.000	0.000
n-Propylcyclohexane	N	0.000	0.000	0.002
n-Propyllbenzene	A	0.002	0.001	0.014
m-Ethyltoluene	A	0.000	0.000	0.000
p-Ethyltoluene	A	0.000	0.000	0.000
1,3,5-Trimethylbenzene	A	0.000	0.000	0.001
4 & 5-Methylnonane	P	0.000	0.000	0.000
o-Ethyltoluene & 3-Methylnonane	AP	0.000	0.000	0.000
1,2,3-Trimethylbenzene	A	0.000	0.000	0.000
1,2,4-Trimethylbenzene	A	0.001	0.000	0.006
n-Nonane	P	0.000	0.000	0.002
DECANE ISOMERS (C10'S)				
2-Methylnonane	P	0.000	0.000	0.000
tert-Butylbenzene	A	0.003	0.001	0.017
Isobutylcyclohexane & tert-Butylcyclohexane		0.000	0.000	0.000
Isobutylbenzene	A	0.000	0.000	0.000
sec-Butylbenzene	A	0.000	0.000	0.002
n-Butylcyclohexane	N	0.001	0.000	0.005
1,3-Diethylbenzene	A	0.000	0.000	0.000
1,2-Diethylbenzene & n-Butylbenzene	A	0.000	0.000	0.000
1,4-Diethylbenzene	A	0.000	0.000	0.000
n-Decane	P	0.000	0.000	0.000
UNDECANE ISOMERS (C11'S)				
n-Undecane	P	0.000	0.000	0.000
DODECANE ISOMERS (C12'S)				
n-Dodecane +	P	0.000	0.000	0.000

X Michael Holsomb

ANALYST

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO_x[b]		CO	
	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS)[c]	280	A	84	B
Uncontrolled (Post-NSPS)[c]	190	A	84	B
Controlled - Low NO_x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO_x burners	50	D	84	B
Controlled - Low NO_x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from $1b/10^6$ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

[b] Expressed as NO_2. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_X emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_X emission factor.

[c] NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION[a]

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
CO_2[b]	120,000	A
Lead	0.0005	D
N_2O (Uncontrolled)	2.2	E
N_2O (Controlled-low-NO_X burner)	0.64	E
PM (Total)[c]	7.6	D
PM (Condensable)[c]	5.7	D
PM (Filterable)[c]	1.9	B
SO_2[d]	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

[b] Based on approximately 100% conversion of fuel carbon to CO_2. $CO_2[lb/10^6 scf] = (3.67) (CON) (C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, $4.2x10^4$ $lb/10^6$ scf.

[c] All PM (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM_{10}, $PM_{2.5}$ or PM_1 emissions. Total PM is the sum of the filterable PM and condensible PM. Condensible PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content is natural gas of 2,000 grains/10^6 scf. The SO_2 emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf.

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TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION[a]

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

WDEOH#1706#PLVVLRQ#DFWRUV#RU#SHFLDWHG#RUJDQLF#FRPSRXQGV#URP#
QDWXUDO#DV#FRPEXVWLRQ#Frqwlqxhg,#

#

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $1b/10^6$ scf to lb/MMBtu, divide by 1,020. Emission Factors preceeded with a less-than symbol are based on method detection limits.

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

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

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

United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park NC 27711

EPA-453/R-95-017
November 1995

Air

EPA

Protocol for Equipment Leak Emission Estimates

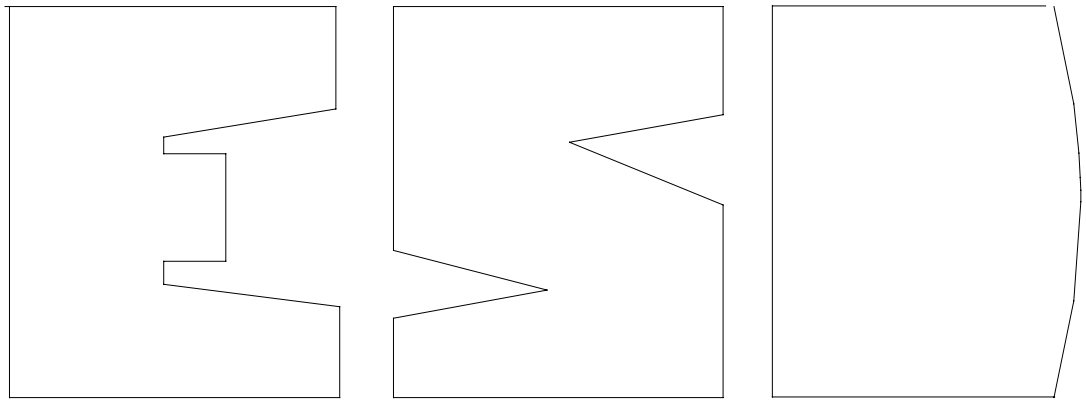


TABLE 2-4. OIL AND GAS PRODUCTION OPERATIONS AVERAGE EMISSION FACTORS (kg/hr/source)

Equipment Type	Service[a]	Emission Factor (kg/hr/source)[b]
Valves	Gas	4.5E-03
	Heavy Oil	8.4E-06
	Light Oil	2.5E-03
	Water/Oil	9.8E-05
Pump seals	Gas	2.4E-03
	Heavy Oil	NA
	Light Oil	1.3E-02
	Water/Oil	2.4E-05
Others[c]	Gas	8.8E-03
	Heavy Oil	3.2E-05
	Light Oil	7.5E-03
	Water/Oil	1.4E-02
Connectors	Gas	2.0E-04
	Heavy Oil	7.5E-06
	Light Oil	2.1E-04
	Water/Oil	1.1E-04
Flanges	Gas	3.9E-04
	Heavy Oil	3.9E-07
	Light Oil	1.1E-04
	Water/Oil	2.9E-06
Open-ended lines	Gas	2.0E-03
	Heavy Oil	1.4E-04
	Light Oil	1.4E-03
	Water/Oil	2.5E-04

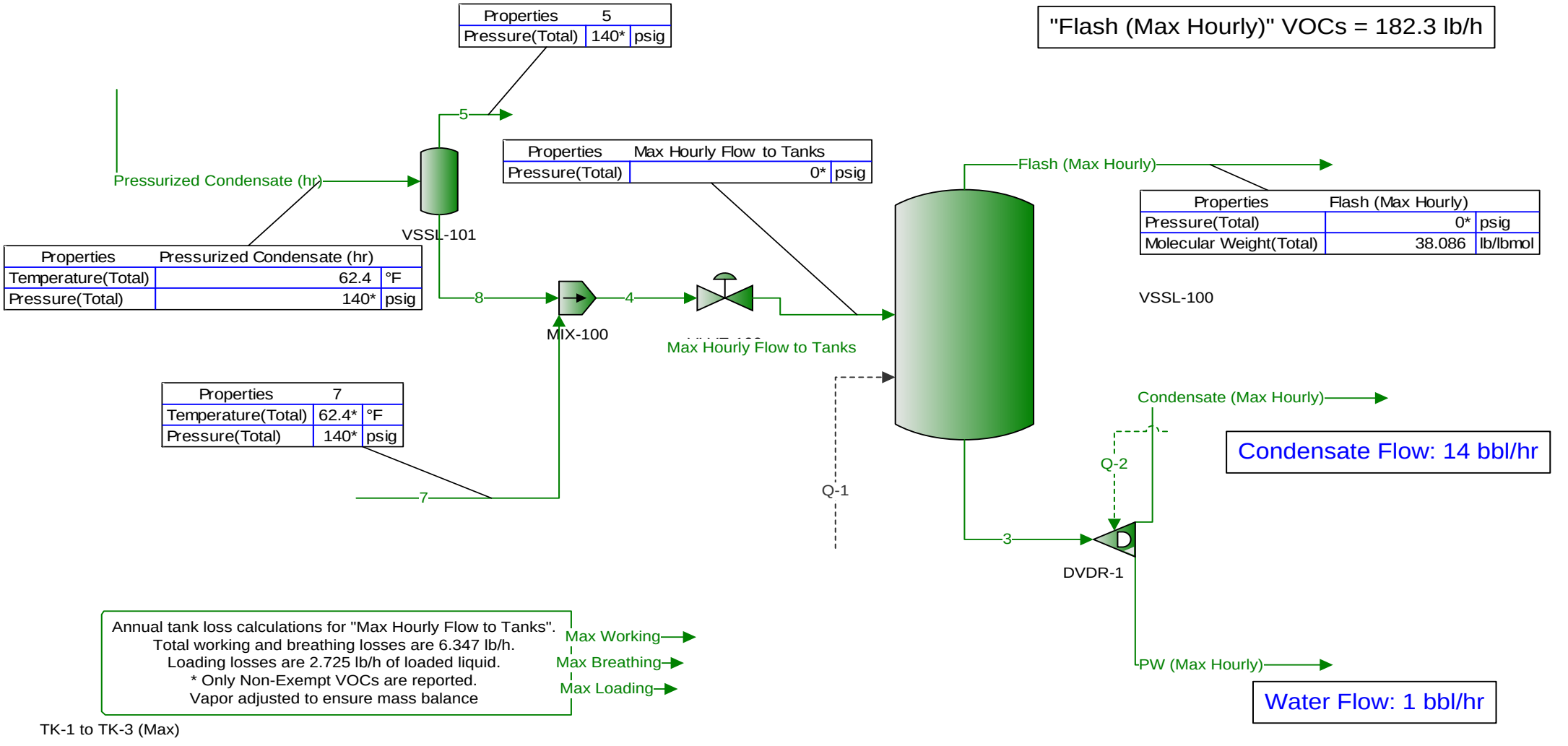
[a]Water/Oil emission factors apply to water streams in oil service with a water content greater than 50%, from the point of origin to the point where the water content reaches 99%. For water streams with a water content greater than 99%, the emission rate is considered negligible.

[b]These factors are for total organic compound emission rates (including non-VOC's such as methane and ethane) and apply to light crude, heavy crude, gas plant, gas production, and off shore facilities. "NA" indicates that not enough data were available to develop the indicated emission factor.

[c]The "other" equipment type was derived from compressors, diaphrams, drains, dump arms, hatches, instruments, meters, pressure relief valves, polished rods, relief valves, and vents. This "other" equipment type should be applied for any equipment type other than connectors, flanges, open-ended lines, pumps, or valves.

Willow Lake Gas Plant
Plant 1 Tanks

210 BBL Tanks – Max Hourly Emissions



Willow Lake Gas Plant
Plant 1 Tanks

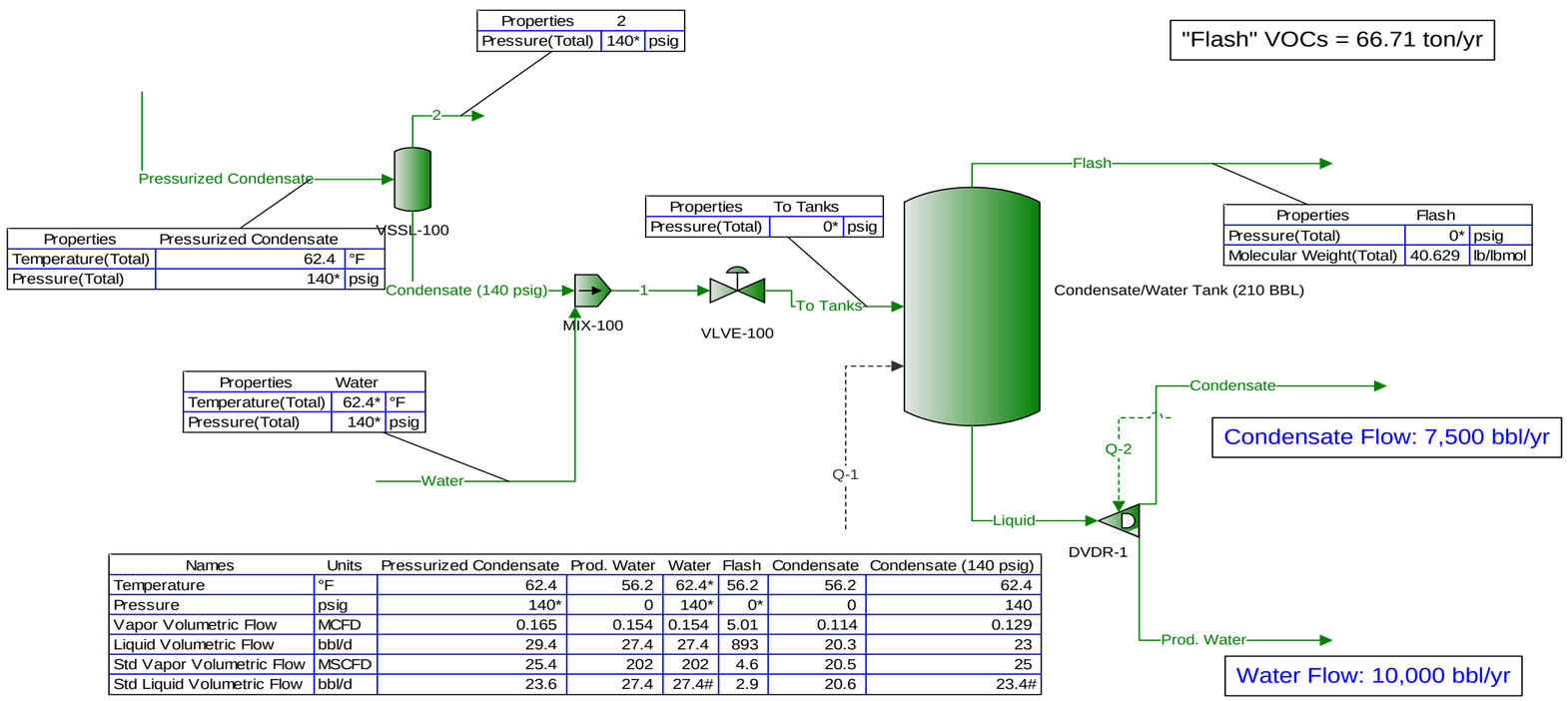
210 BBL Tanks – Annual Emissions

Annual tank loss calculations for "To Tanks".
Total working and breathing losses are 7.346 ton/yr.
Loading losses are 1.667 ton/yr of loaded liquid.
* Only Non-Exempt VOCs are reported.
Vapor adjusted to ensure mass balance

Working
Breathing
Loading

TK-1 to TK-3

"Flash" VOCs = 66.71 ton/yr



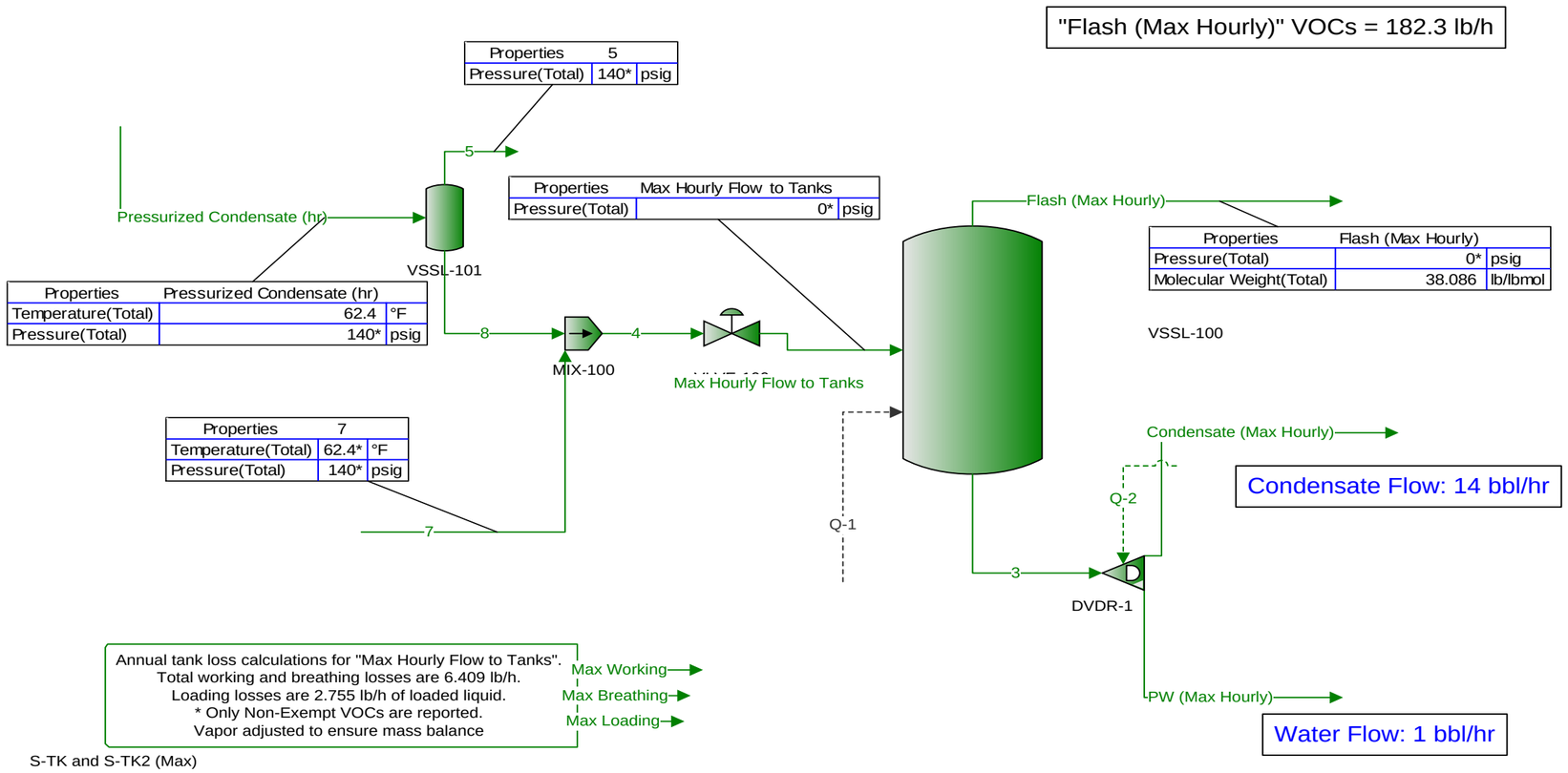
Condensate Flow: 7,500 bbl/yr

Water Flow: 10,000 bbl/yr

Names	Units	Pressurized Condensate	Prod. Water	Water	Flash	Condensate	Condensate (140 psig)
Temperature	°F	62.4	56.2	62.4*	56.2	56.2	62.4
Pressure	psig	140*	0	140*	0*	0	140
Vapor Volumetric Flow	MCFD	0.165	0.154	0.154	5.01	0.114	0.129
Liquid Volumetric Flow	bbl/d	29.4	27.4	27.4	893	20.3	23
Std Vapor Volumetric Flow	MSCFD	25.4	202	202	4.6	20.5	25
Std Liquid Volumetric Flow	bbl/d	23.6	27.4	27.4#	2.9	20.6	23.4#

Willow Lake Gas Plant
Plant 2 Tanks

400 BBL Tanks – Max Hourly Emissions



Willow Lake Gas Plant
Plant 2 Tanks

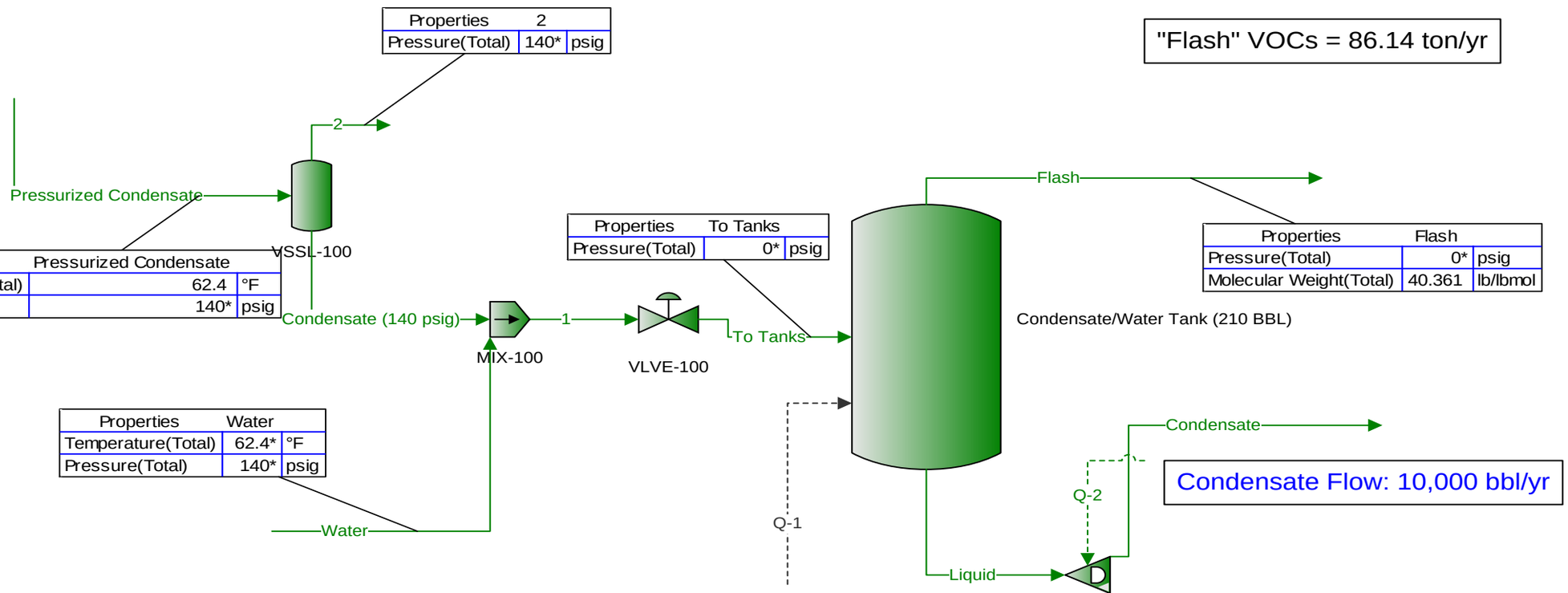
400 BBL Tanks – Annual Emissions

Annual tank loss calculations for "To Tanks".
Total working and breathing losses are 7.792 ton/yr.
Loading losses are 1.909 ton/yr of loaded liquid.
* Only Non-Exempt VOCs are reported.
Vapor adjusted to ensure mass balance

Working
Breathing
Loading

S-TK and S-TK2

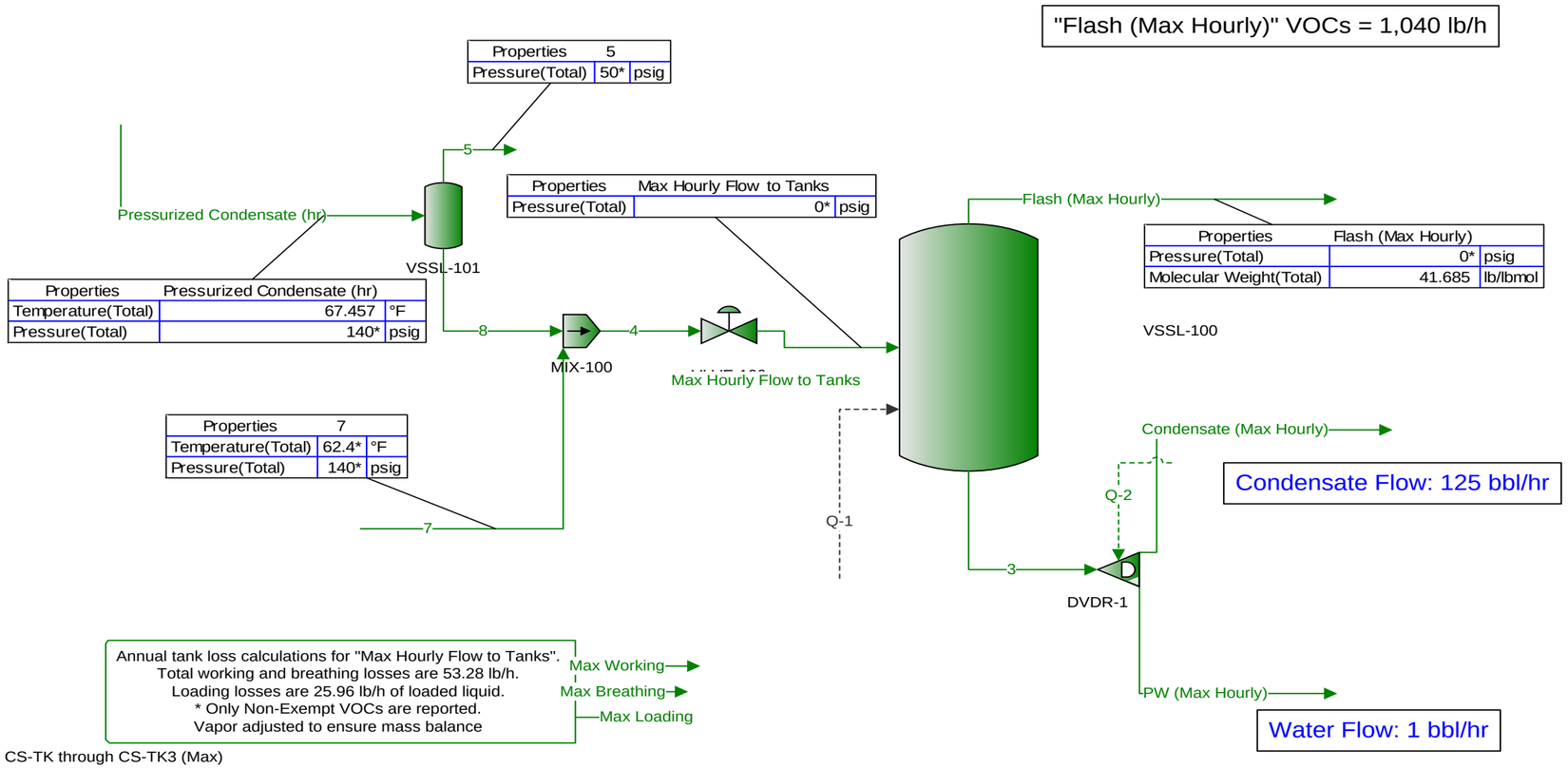
"Flash" VOCs = 86.14 ton/yr



Names	Units	Pressurized Condensate	Prod. Water	Water	Flash	Condensate	Condensate (140 psig)
Temperature	°F	62.4	54.8	62.4*	54.8	54.8	62.4
Pressure	psig	140*	0	140*	0*	0	140
Vapor Volumetric Flow	MCFD	0.219	0.154	0.154	6.54	0.152	0.171
Liquid Volumetric Flow	bbl/d	39	27.4	27.4	1.16e+03	27	30.5
Std Vapor Volumetric Flow	MSCFD	33.8	202	202	6.02	27.3	33.3
Std Liquid Volumetric Flow	bbl/d	31.4	27.4	27.4#	3.78	27.4	31.2#

Willow Lake Gas Plant
Compressor Station Tanks

400 BBL Tanks – Max Hourly Emissions



Willow Lake Gas Plant
Compressor Station Tanks

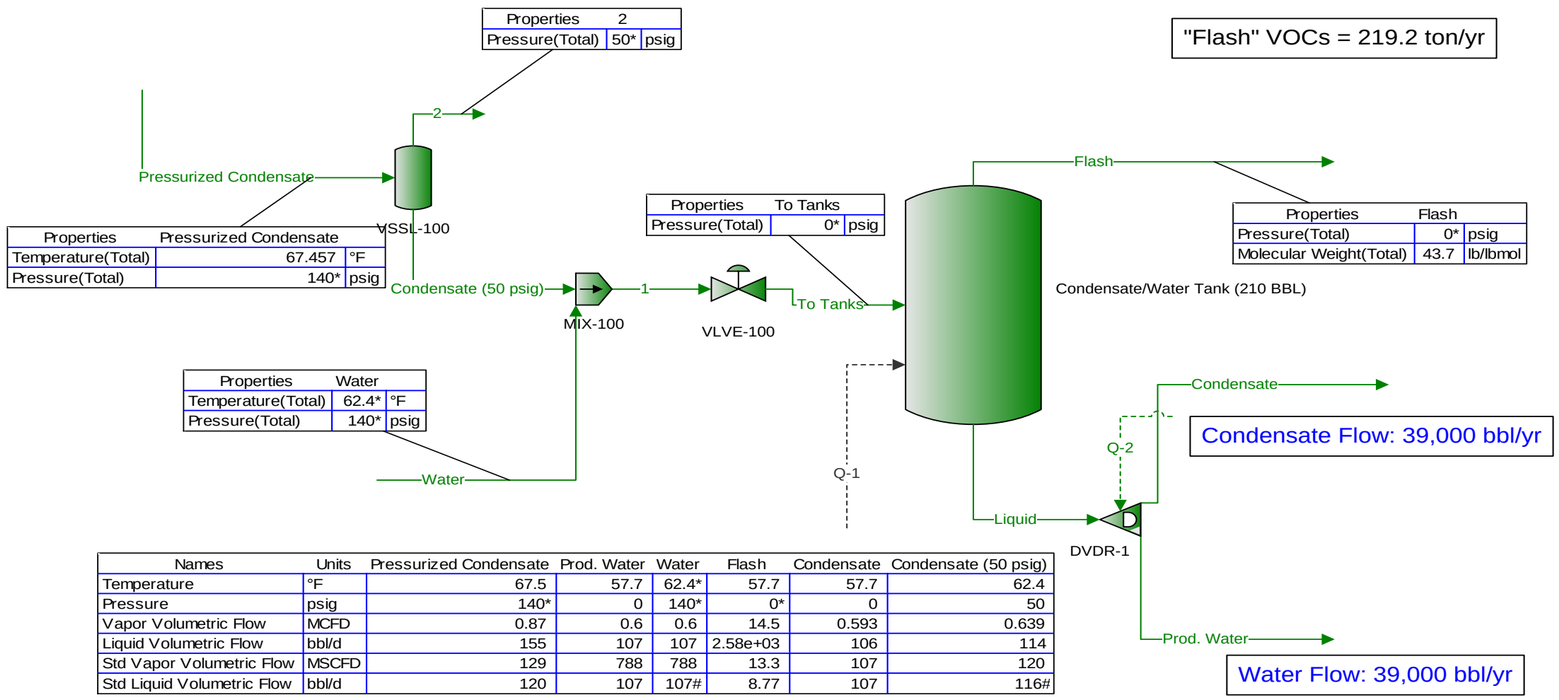
400 BBL Tanks – Annual Emissions

Annual tank loss calculations for "To Tanks".
Total working and breathing losses are 23.47 ton/yr.
Loading losses are 8.337 ton/yr of loaded liquid.
* Only Non-Exempt VOCs are reported.
Vapor adjusted to ensure mass balance

Working
Breathing
Loading

CS-TK through CS-TK3

"Flash" VOCs = 219.2 ton/yr



Names	Units	Pressurized Condensate	Prod. Water	Water	Flash	Condensate	Condensate (50 psig)
Temperature	°F	67.5	57.7	62.4*	57.7	57.7	62.4
Pressure	psig	140*	0	140*	0*	0	50
Vapor Volumetric Flow	MCFD	0.87	0.6	0.6	14.5	0.593	0.639
Liquid Volumetric Flow	bbl/d	155	107	107	2.58e+03	106	114
Std Vapor Volumetric Flow	MSCFD	129	788	788	13.3	107	120
Std Liquid Volumetric Flow	bbl/d	120	107	107#	8.77	107	116#

HOWARD
Athens, TX (903) 677-0700 . Beeville, TX (361) 354-5200 . Edmond, OK (405) 525-0579

LIQUID EXTENDED ANALYSIS REPORT

LABORATORY REPORT NUMBER 200604-5000-05-060420-01

PHYSICAL CONSTANTS PER GPA 2145-09 & TP-17 (1998)

CUSTOMER :	CRESTWOOD	DATE ON:	05/28/2020
STATION:	BLACK RIVER CONDENSATE	DATE ANALYZED:	06/04/2020
PRODUCER:	CRESTWOOD	EFFECTIVE DATE:	05/01/2020`
LEASE:	BLACK RIVER CONDENSATE	DATE OFF:	

COMPONENT	MOLE %	LIQUID VOL %	WT. %
H2S	0.000	0.000	0.000
OXYGEN	0.000	0.000	0.000
NITROGEN	0.085	0.024	0.029
CARBON DIOXIDE	0.027	0.012	0.014
METHANE	5.070	2.214	0.974
ETHANE	4.815	3.316	1.734
PROPANE	7.670	5.441	4.052
I-BUTANE	2.497	2.104	1.738
N-BUTANE	8.122	6.595	5.654
I-PENTANE	4.386	4.131	3.790
N-PENTANE	6.011	5.612	5.195
HEXANES (C6's)	12.302	12.277	12.581
HEPTANES (C7+)	19.991	21.607	23.563
OCTANES (C8+)	22.113	27.049	29.782
NONANES (C9+)	4.108	5.505	6.191
DECANES (C10+)	2.803	4.113	4.703
TOTAL	100.000	100.000	100.000

IDEAL SP. GRAVITY	0.6813	BTU / GAL	116521.77
MOL. WT.	83.486	VAPOR PRESS.	319.80
CUBIC FT / GAL	25.819	LBS / GAL	5.68
C1/C2 LV % RATIO	66.767	API GRAVITY	76.19
CO2/C2 LV % RATIO	0.362	SP GRAV AS VAPOR	2.88
C6-C10+ MOL WT	104.594	C6-C10+ GRAVITY	

SAMPLED BY	WJ	SAMPLE PRESS:	140
SAMPLE TYPE:	SPOT	SAMPLE TEMP:	80
CYLINDER NO.:		COUNTY / STATE:	0
COMMENT:	SPOT	ANALYST	MIKE HOBGOOD

* SEE NEXT PAGE FOR C6+ COMPOSITIONAL BREAKDOWN

06-04-2020

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STATION: BLACK RIVER CONDENS/ LEASE: BLACK RIVER CONDENSATE

C6+ FRACTION COMPOSITION

HEXANE ISOMERS (C6'S)		MOLE %	LIQ VOL %	WT. %
2,2-Dimethylbutane	P	0.106	0.114	0.109
2,3-Dimethylbutane	PN	0.000	0.000	0.000
2-Methylpentane	P	2.369	2.531	2.446
3-Methylpentane	P	1.434	1.506	1.480
Methylcyclopentane	N	0.000	0.000	0.000
Benzene	A	0.341	0.246	0.320
Cyclohexane	N	3.535	3.097	3.564
n-Hexane	P	4.516	4.783	4.662
HEPTANE ISOMERS (C7'S)				
3,3-Dimethylpentane	P	0.038	0.044	0.045
2,3-Dimethylpentane	P	0.000	0.000	0.000
2,2-Dimethylpentane	P	0.096	0.116	0.115
2,4-Dimethylpentane	P	0.579	0.698	0.695
2 & 3-Methylhexane	P	1.260	1.499	1.512
1,t-3-Dimethylcyclopentane	N	0.000	0.000	0.000
1,c-3-Dimethylcyclopentane	N	0.000	0.000	0.000
1,t-2-Dimethylcyclopentane	N	0.000	0.000	0.000
3-Ethylpentane	N	0.000	0.000	0.000
Toluene	A	2.011	1.734	2.220
Methylcyclohexane	N	9.803	10.144	11.529
Ethylcyclopentane	N	0.000	0.000	0.000
n-Heptane	P	6.204	7.372	7.447
OCTANE ISOMERS (C8'S)				
2,4 & 2,5-Dimethylhexane	P	0.525	0.701	0.718
1,t-2,c-4-Trimethylcyclopentane	N	0.000	0.000	0.000
1,t-2,c-3-Trimethylcyclopentane	N	0.000	0.000	0.000
2-Methylheptane	P	3.883	5.151	5.313
1,c-2,t-4-Trimethylcyclopentane	N	0.000	0.000	0.000
3-Methylheptane	P	1.857	2.437	2.541
1,c-3-Dimethylcyclohexane	N	0.257	0.305	0.345
1,t-4-Dimethylcyclohexane	N	0.000	0.000	0.000
methyl-ethylcyclopentanes	N	0.000	0.000	0.000
1,t-3 & 1,c-4 Dimethylcyclohexane	N	1.359	1.576	1.827
1,c-2-Dimethylcyclohexane	N	2.510	2.869	3.374
Ethylcyclohexane	N	1.904	2.199	2.559
Ethylbenzene	A	0.413	0.411	0.526
m & p-Xylene	A	2.415	2.407	3.071
o-Xylene	A	0.520	0.509	0.661
n-Octane	P	6.242	8.236	8.541

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STATION: BLACK RIVER CONDENS/ **LEASE:** BLACK RIVER CONDENSATE

C6+ FRACTION COMPOSITION

NONANE ISOMERS (C9'S)		MOLE %	LIQ VOL %	WT. %
Trimethylhexanes	P	0.000	0.000	0.000
Dimethylpentanes	P	0.000	0.000	0.000
Isopropylcyclopentane	N	0.000	0.000	0.000
n-Propylcyclopentane	N	0.000	0.000	0.000
3-Methyloctane	P	0.000	0.000	0.000
Trimethylcyclohexanes	N	0.000	0.000	0.000
Isopropylbenzene	A	0.201	0.228	0.290
Isopropylcyclohexane	N	0.000	0.000	0.000
n-Propylcyclohexane	N	0.550	0.710	0.832
n-Propyllbenzene	A	0.372	0.421	0.535
m-Ethyltoluene	A	0.000	0.000	0.000
p-Ethyltoluene	A	0.000	0.000	0.000
1,3,5-Trimethylbenzene	A	0.006	0.007	0.009
4 & 5-Methylnonane	P	0.000	0.000	0.000
o-Ethyltoluene & 3-Methylnonane	AP	0.000	0.000	0.000
1,2,3-Trimethylbenzene	A	0.000	0.000	0.000
1,2,4-Trimethylbenzene	A	0.530	0.590	0.763
n-Nonane	P	2.449	3.549	3.762
DECANE ISOMERS (C10'S)				
2-Methylnonane	P	0.000	0.000	0.000
tert-Butylbenzene	A	0.187	0.235	0.301
Isobutylcyclohexane & tert-Butylcyclohexane		0.497	0.696	0.835
Isobutylbenzene	A	0.113	0.145	0.182
sec-Butylbenzene	A	0.089	0.112	0.142
n-Butylcyclohexane	N	0.365	0.520	0.613
1,3-Diethylbenzene	A	0.000	0.000	0.000
1,2-Diethylbenzene & n-Butylbenzene	A	0.152	0.192	0.244
1,4-Diethylbenzene	A	0.000	0.000	0.000
n-Decane	P	1.400	2.213	2.386
UNDECANE ISOMERS (C11'S)				
n-Undecane	P	0.000	0.000	0.000
DODECANE ISOMERS (C12'S)				
n-Dodecane +	P	0.000	0.000	0.000

X Michael Holgood

ANALYST

Table 13.2.2-1. TYPICAL SILT CONTENT VALUES OF SURFACE MATERIAL ON INDUSTRIAL UNPAVED ROADS[a]

Industry	Road Use Or Surface Material	Plant Sites	No. Of Samples	Silt Content (%)	
				Range	Mean
Copper smelting	Plant road	1	3	16 - 19	17
Iron and steel production	Plant road	19	135	0.2 - 19	6.0
Sand and gravel processing	Plant road	1	3	4.1 - 6.0	4.8
	Material storage area	1	1	-	7.1
Stone quarrying and processing	Plant road	2	10	2.4 - 16	10
	Haul road to/from pit	4	20	5.0-15	8.3
Taconite mining and processing	Service road	1	8	2.4 - 7.1	4.3
	Haul road to/from pit	1	12	3.9 - 9.7	5.8
Western surface coal mining	Haul road to/from pit	3	21	2.8 - 18	8.4
	Plant road	2	2	4.9 - 5.3	5.1
	Scraper route	3	10	7.2 - 25	17
	Haul road (freshly graded)	2	5	18 - 29	24
Construction sites	Scraper routes	7	20	0.56-23	8.5
Lumber sawmills	Log yards	2	2	4.8-12	8.4
Municipal solid waste landfills	Disposal routes	4	20	2.2 - 21	6.4

[a]References 1,5-15.

The following empirical expressions may be used to estimate the quantity in pounds (lb) of size-specific particulate emissions from an unpaved road, per vehicle mile traveled (VMT):

For vehicles traveling on unpaved surfaces at industrial sites, emissions are estimated from the following equation:

$$E = k\,(s/12)^a (W/3)^b \quad (1a)$$

and, for vehicles traveling on publicly accessible roads, dominated by light duty vehicles, emissions may be estimated from the following:

$$E = \frac{k\,(s/12)^a (S/30)^d}{(M/0.5)^c} - C \quad (1b)$$

where k, a, b, c and d are empirical constants (Reference 6) given below and

E = size-specific emission factor (lb/VMT)
s = surface material silt content (%)
W = mean vehicle weight (tons)
M = surface material moisture content (%)
S = mean vehicle speed (mph)
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.

The source characteristics s, W and M are referred to as correction parameters for adjusting the emission estimates to local conditions. The metric conversion from lb/VMT to grams (g) per vehicle kilometer traveled (VKT) is as follows:

1 lb/VMT = 281.9 g/VKT

The constants for Equations 1a and 1b based on the stated aerodynamic particle sizes are shown in Tables 13.2.2-2 and 13.2.2-4. The PM-2.5 particle size multipliers (k-factors) are taken from Reference 27.

Table 13.2.2-2. CONSTANTS FOR EQUATIONS 1a AND 1b

Constant	Industrial Roads (Equation 1a)			Public Roads (Equation 1b)		
	PM-2.5	PM-10	PM-30*	PM-2.5	PM-10	PM-30*
k (lb/VMT)	0.15	1.5	4.9	0.18	1.8	6.0
a	0.9	0.9	0.7	1	1	1
b	0.45	0.45	0.45	-	-	-
c	-	-	-	0.2	0.2	0.3
d	-	-	-	0.5	0.5	0.3
Quality Rating	B	B	B	B	B	B

*Assumed equivalent to total suspended particulate matter (TSP)
"-" = not used in the emission factor equation

Table 13.2.2-2 also contains the quality ratings for the various size-specific versions of Equation 1a and 1b. The equation retains the assigned quality rating, if applied within the ranges of source conditions, shown in Table 13.2.2-3, that were tested in developing the equation:

Table 13.2.2-3. RANGE OF SOURCE CONDITIONS USED IN DEVELOPING EQUATION 1a AND 1b

Emission Factor	Surface Silt Content, %	Mean Vehicle Weight		Mean Vehicle Speed		Mean No. of Wheels	Surface Moisture Content, %
		Mg	ton	km/hr	mph		
Industrial Roads (Equation 1a)	1.8-25.2	1.8-260	2-290	8-69	5-43	4-17[a]	0.03-13
Public Roads (Equation 1b)	1.8-35	1.4-2.7	1.5-3	16-88	10-55	4-4.8	0.03-13

[a] See discussion in text.

As noted earlier, the models presented as Equations 1a and 1b were developed from tests of traffic on unpaved surfaces. Unpaved roads have a hard, generally nonporous surface that usually dries quickly after a rainfall or watering, because of traffic-enhanced natural evaporation. (Factors influencing how fast a road dries are discussed in Section 13.2.2.3, below.) The quality ratings given above pertain to the mid-range of the measured source conditions for the equation. A higher mean vehicle weight and a higher than normal traffic rate may be justified when performing a worst-case analysis of emissions from unpaved roads.

The emission factors for the exhaust, brake wear and tire wear of a 1980's vehicle fleet (*C*) was obtained from EPA's MOBILE6.2 model [23]. The emission factor also varies with aerodynamic size range

as shown in Table 13.2.2-4

Table 13.2.2-4. EMISSION FACTOR FOR 1980'S VEHICLE FLEET EXHAUST, BRAKE WEAR AND TIRE WEAR

Particle Size Range[a]	*C*, Emission Factor for Exhaust, Brake Wear and Tire Wear[b] lb/VMT
$PM_{2.5}$	0.00036
PM_{10}	0.00047
PM_{30}[c]	0.00047

[a] Refers to airborne particulate matter (PM-x) with an aerodynamic diameter equal to or less than x micrometers.
[b] Units shown are pounds per vehicle mile traveled (lb/VMT).
[c] PM-30 is sometimes termed "suspendable particulate" (SP) and is often used as a surrogate for TSP.

It is important to note that the vehicle-related source conditions refer to the average weight, speed, and number of wheels for all vehicles traveling the road. For example, if 98 percent of traffic on the road are 2-ton cars and trucks while the remaining 2 percent consists of 20-ton trucks, then the mean weight is 2.4 tons. More specifically, Equations 1a and 1b are *not* intended to be used to calculate a separate emission factor for each vehicle class within a mix of traffic on a given unpaved road. That is, in the example, one should *not* determine one factor for the 2-ton vehicles and a second factor for the 20-ton trucks. Instead, only one emission factor should be calculated that represents the "fleet" average of 2.4 tons for all vehicles traveling the road.

Moreover, to retain the quality ratings when addressing a group of unpaved roads, it is necessary that reliable correction parameter values be determined for the road in question. The field and laboratory procedures for determining road surface silt and moisture contents are given in AP-42 Appendices C.1 and C.2. Vehicle-related parameters should be developed by recording visual observations of traffic. In some cases, vehicle parameters for industrial unpaved roads can be determined by reviewing maintenance records or other information sources at the facility.

In the event that site-specific values for correction parameters cannot be obtained, then default values may be used.In the absence of site-specific silt content information, an appropriate mean value from Table 13.2.2-1 may be used as a default value, but the quality rating of the equation is reduced by two letters. Because of significant differences found between different types of road surfaces and between different areas of the country, use of the default moisture content value of 0.5 percent in Equation 1b is discouraged. The quality rating should be downgraded two letters when the default moisture content value is used. (It is assumed that readers addressing industrial roads have access to the information needed to develop average vehicle information in Equation 1a for their facility.)

The effect of routine watering to control emissions from unpaved roads is discussed below in Section 13.2.2.3, “Controls”. However, all roads are subject to some natural mitigation because of rainfall and other precipitation. The Equation 1a and 1b emission factors can be extrapolated to annual

average uncontrolled conditions (but including natural mitigation) under the simplifying assumption that annual average emissions are inversely proportional to the number of days with measurable (more than 0.254 mm [0.01 inch]) precipitation:

$$E_{ext} = E\ [(365 - P)/365] \quad (2)$$

where:

E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT

E = emission factor from Equation 1a or 1b

P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation (see below)

Figure 13.2.2-1 gives the geographical distribution for the mean annual number of "wet" days for the United States.

Equation 2 provides an estimate that accounts for precipitation on an annual average basis for the purpose of inventorying emissions. It should be noted that Equation 2 does not account for differences in the temporal distributions of the rain events, the quantity of rain during any event, or the potential for the rain to evaporate from the road surface. In the event that a finer temporal and spatial resolution is desired for inventories of public unpaved roads, estimates can be based on a more complex set of assumptions. These assumptions include:

1. The moisture content of the road surface material is increased in proportion to the quantity of water added;
2. The moisture content of the road surface material is reduced in proportion to the Class A pan evaporation rate;
3. The moisture content of the road surface material is reduced in proportion to the traffic volume; and
4. The moisture content of the road surface material varies between the extremes observed in the area. The CHIEF Web site (http://www.epa.gov/ttn/chief/ap42/ch13/related/c13s02-2.html) has a file which contains a spreadsheet program for calculating emission factors which are temporally and spatially resolved. Information required for use of the spreadsheet program includes monthly Class A pan evaporation values, hourly meteorological data for precipitation, humidity and snow cover, vehicle traffic information, and road surface material information.

It is emphasized that the simple assumption underlying Equation 2 and the more complex set of assumptions underlying the use of the procedure which produces a finer temporal and spatial resolution have not been verified in any rigorous manner. For this reason, the quality ratings for either approach should be downgraded one letter from the rating that would be applied to Equation 1.

13.2.2.3 Controls[18-22]

A wide variety of options exist to control emissions from unpaved roads. Options fall into the following three groupings:

1. Vehicle restrictions that limit the speed, weight or number of vehicles on the road;

2. Surface improvement, by measures such as (a) paving or (b) adding gravel or slag to a dirt road; and
3. Surface treatment, such as watering or treatment with chemical dust suppressants.

Available control options span broad ranges in terms of cost, efficiency, and applicability. For example, traffic controls provide moderate emission reductions (often at little cost) but are difficult to enforce. Although paving is highly effective, its high initial cost is often prohibitive. Furthermore, paving is not feasible for industrial roads subject to very heavy vehicles and/or spillage of material in transport. Watering and chemical suppressants, on the other hand, are potentially applicable to most industrial roads at moderate to low costs. However, these require frequent reapplication to maintain an acceptable level of control. Chemical suppressants are generally more cost-effective than water but not in cases of temporary roads (which are common at mines, landfills, and construction sites). In summary, then, one needs to consider not only the type and volume of traffic on the road but also how long the road will be in service when developing control plans.

Vehicle restrictions. These measures seek to limit the amount and type of traffic present on the road or to lower the mean vehicle speed. For example, many industrial plants have restricted employees from driving on plant property and have instead instituted bussing programs. This eliminates emissions due to employees traveling to/from their worksites. Although the heavier average vehicle weight of the busses increases the base emission factor, the decrease in vehicle-miles-traveled results in a lower overall emission rate.

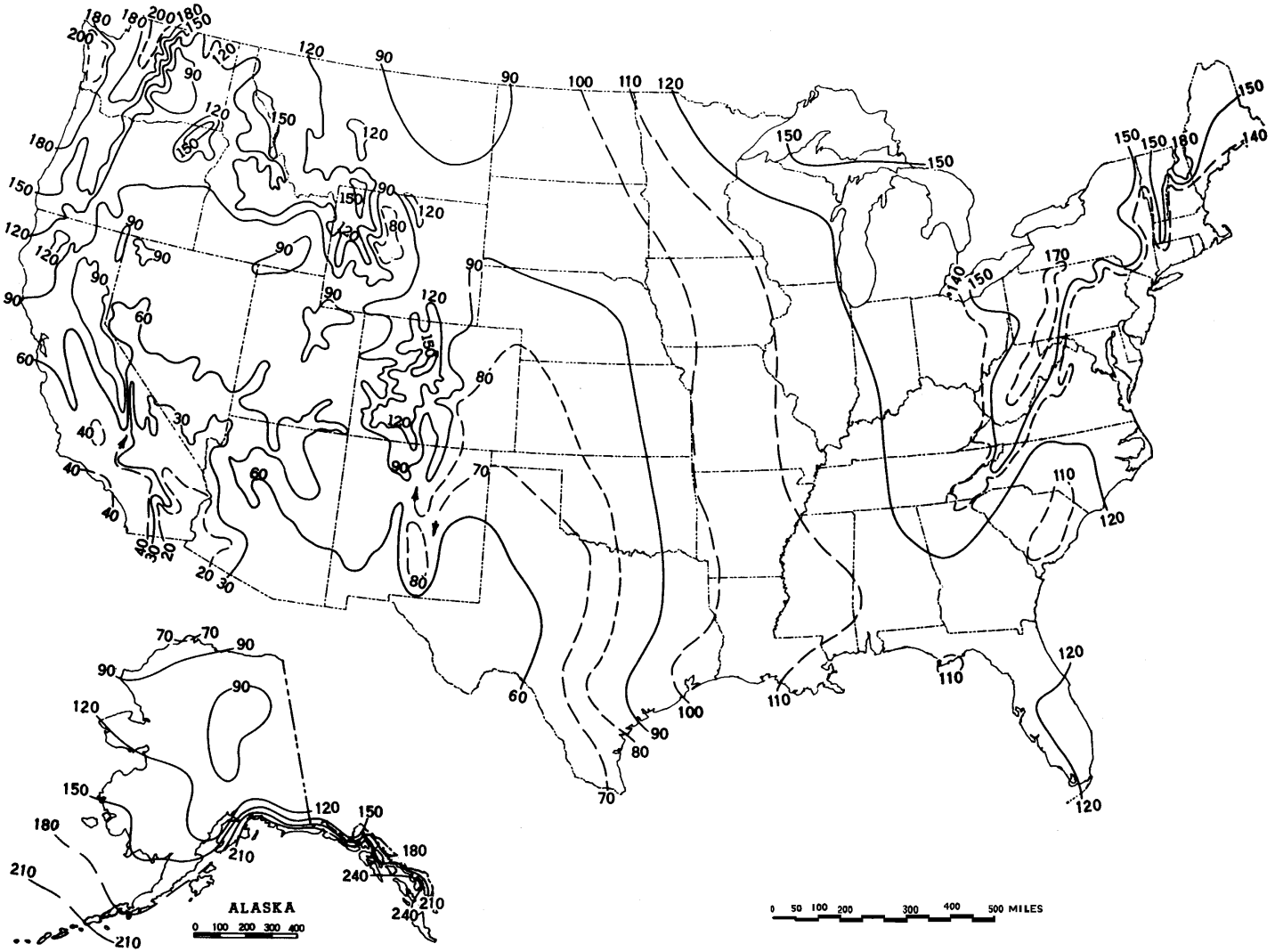


Figure 13.2.2-1. Mean number of days with 0.01 inch or more of precipitation in United States.

New Mexico
ENVIRONMENT DEPARTMENT

505 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
Phone (505) 476-4300
Fax (505) 476-4375
www.env.nm.gov

SUSANA MARTINEZ
GOVERNOR

JOHN A. SANCHEZ
LIEUTENANT GOVERNOR

BUTCH TONGATE
CABINET SECRETARY-
DESIGATE

JC BORREGO
DEPUTY SECRETARY

DEPARTMENT ACCEPTED VALUES FOR:
AGGREGATE HANDLING, STORAGE PILE, and HAUL ROAD EMISSIONS

TO: Applicants and Air Quality Bureau Permitting Staff

SUBJECT: Department accepted default values for percent silt, wind speed, moisture content, and control efficiencies for haul road control measures

This guidance document provides the Department accepted default values for correction parameters in the emission calculation equations for aggregate handling and storage piles emissions in construction permit applications and notices of intent submitted under 20.2.72 and 20.2.73 NMAC; and the Department accepted control efficiencies for haul road control measures for applications submitted under 20.2.72 NMAC.

Aggregate Handling and Storage Pile Emission Calculations

Applicants should calculate the particulate matter emissions from aggregate handling and storage piles using the EPA's AP-42 Chapter 13.2.4.
http://www3.epa.gov/ttn/chief/ap42/ch13/final/c13s0204.pdf

Equation 1 from Chapter 13.2.4 requires users to input values for two correction parameters, U and M, where U = mean wind speed and M = material moisture content. Below are the accepted values for U and M:

Default Values for Chapter 13.2.4, Equation 1:

Parameter	Default Value
U = Mean wind speed (miles per hour)	11 mph
M = Material moisture content (% water)	2%

Applicants must receive preapproval from the Department if they wish to assume a higher moisture content and/or a lower wind speed in these calculations. Higher moisture contents may require site specific testing either as a permit condition or submitted with the application. Applicants may assume higher wind speeds and lower percent moisture content in their calculations without prior approval from the Department.

Haul Road Emissions and Control Measure Efficiencies

Applicants should calculate the particulate matter emissions from unpaved haul roads using the EPA's AP-42 Chapter 13.2.2. http://www3.epa.gov/ttn/chief/ap42/ch13/final/c13s0202.pdf

Equation 1(a) from Chapter 13.2.2 requires users to input values for two correction parameters, s and W, where s = surface material silt content (%) and W = mean vehicle weight (tons). The applicant should calculate the mean vehicle weight in accordance with the chapter's instructions. Below is the accepted value for the parameter s:

Default Values for Chapter 13.2.2, Equation 1(a):

Parameter	Default Value
s = surface material silt content (%)	4.8%

Applicants may use a higher silt content without prior approval from the Department. Use of a lower silt content requires prior approval from the Department and may require site specific testing in support of the request.

Equation 2 from Chapter 13.2.2 allows users to take credit for the number of days that receive precipitation in excess of 0.01 inches, in the annual emissions calculation, where P = number of days in a year with at least 0.01 inches of precipitation.

Default Values for Chapter 13.2.2, Equation 2:

Parameter	Default Value
P = number of days in a year with at least 0.01 inches of precipitation	70 days

Applications submitted under Part 72 may request to apply control measures to reduce the particulate matter emissions from facility haul roads. Applications submitted under Part 73 may not consider any emission reduction from control measures in the potential emission rate calculation, as registrations issued under Part 73 are not federally enforceable under the Clean Air Act or the New Mexico Air Quality Control Act. In order for those control measures to be federally enforceable, the controls must be a requirement in an air quality permit.

Below are the Department accepted control efficiencies for various haul road control measures:

Haul Road Control Measures and Control Efficiency:

Control Measure	Control Efficiency
None	0%
Base course **or** watering	60%
Base course **and** watering	80%
Base course **and** surfactant	90%
Paved **and** Swept	95%

October 2000
RG-109 (Draft)

Air Permit Technical Guidance for Chemical Sources:

Flares and Vapor Oxidizers

printed on recycled paper

Air Permits Division

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Waste Stream	Destruction/Removal Efficiency (DRE)		
VOC	98 percent (generic) 99 percent for compounds containing no more than 3 carbons that contain no elements other than carbon and hydrogen in addition to the following compounds: methanol, ethanol, propanol, ethylene oxide and propylene oxide		
H_2S	98 percent		
NH_3	case by case		
CO	case by case		
Air Contaminants	**Emission Factors**		
thermal NO_x	steam-assist:	high Btu	0.0485 lb/MMBtu
		low Btu	0.068 lb/MMBtu
	other:	high Btu	0.138 lb/MMBtu
		low Btu	0.0641 lb/MMBtu
fuel NO_x	NO_x is 0.5 wt percent of inlet NH_3, other fuels case by case		
CO	steam-assist:	high Btu	0.3503 lb/MMBtu
		low Btu	0.3465 lb/MMBtu
	other:	high Btu	0.2755 lb/MMBtu
		low Btu	0.5496 lb/MMBtu
PM	none, required to be smokeless		
SO_2	100 percent S in fuel to SO_2		

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

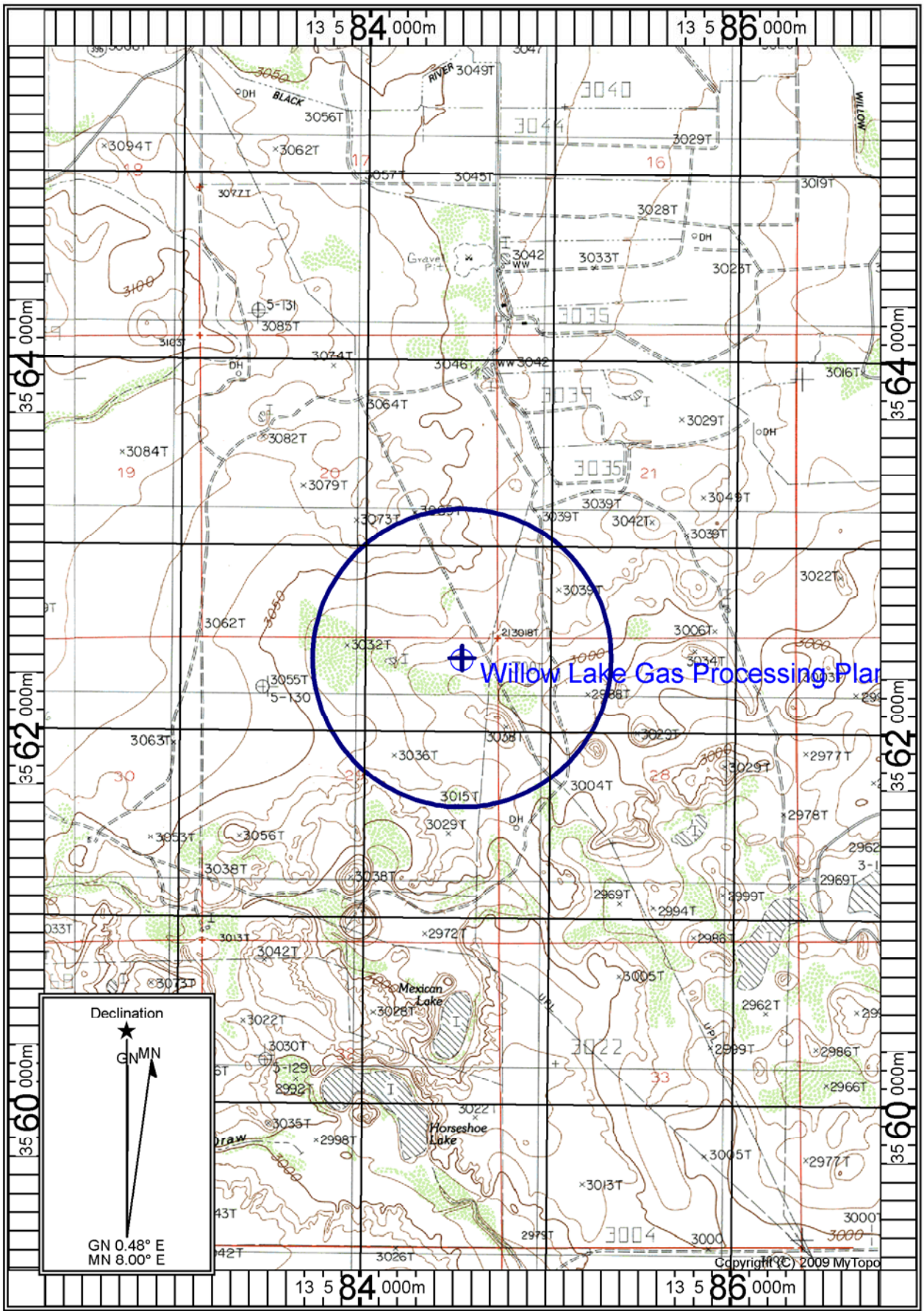
Section 8

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 topographic map is attached.



Map Name: MALAGA
Print Date: 08/20/20
Scale: 1 inch = 2,500 ft.
Map Center: 13 0584520 E 3562399 N

Horizontal Datum: WGS84

Section 9

Proof of Public Notice

(for NSR applications submitting under 20.2.72 or 20.2.74 NMAC)
(This proof is required by: 20.2.72.203.A.14 NMAC "Documentary Proof of applicant's public notice")

☑ **I have read the AQB "Guidelines for Public Notification for Air Quality Permit Applications"**
This document provides detailed instructions about public notice requirements for various permitting actions. It also provides public notice examples and certification forms. Material mistakes in the public notice will require a re-notice before issuance of the permit.

Unless otherwise allowed elsewhere in this document, the following items document proof of the applicant's Public Notification. Please include this page in your proof of public notice submittal with checkmarks indicating which documents are being submitted with the application.

New Permit and **Significant Permit Revision** public notices must include all items in this list.

Technical Revision public notices require only items 1, 5, 9, and 10.

Per the Guidelines for Public Notification document mentioned above, include:

1. ☑ A copy of the certified letter receipts with post marks (20.2.72.203.B NMAC)
2. ☑ A list of the places where the public notice has been posted in at least four publicly accessible and conspicuous places, including the proposed or existing facility entrance. (e.g: post office, library, grocery, etc.)
3. ☑ A copy of the property tax record (20.2.72.203.B NMAC).
4. ☑ A sample of the letters sent to the owners of record.
5. ☑ A sample of the letters sent to counties, municipalities, and Indian tribes.
6. ☑ A sample of the public notice posted and a verification of the local postings.
7. ☑ A table of the noticed citizens, counties, municipalities and tribes and to whom the notices were sent in each group.
8. ☑ A copy of the public service announcement (PSA) sent to a local radio station and documentary proof of submittal.
9. ☑ A copy of the classified or legal ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
10. ☑ A copy of the display ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
11. ☑ A map with a graphic scale showing the facility boundary and the surrounding area in which owners of record were notified by mail. This is necessary for verification that the correct facility boundary was used in determining distance for notifying land owners of record.

All public notice requirements have been satisfied and are included in this section as applicable.

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Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

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Sent To: EDDY COUNTY MANAGER
Street & Apt. No., or PO Box No.: 101 W GREENE ST, SUITE 110
City, State, ZIP+4: CARLSBAD, NM 88220

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7014 2870 0001 4719 3853

Sent To: CITY OF LOVING MANAGER
Street & Apt. No., or PO Box No.: 415 W CEDAR
City, State, ZIP+4: LOVING, NM 88256

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City, State, ZIP+4: SANTA FE, NM 87504

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Total Postage & Fees	$

Postmark Here

7014 2870 0001 4719 3846

Sent To: BUREAU OF LAND MANAGEMENT
Street & Apt. No., or PO Box No.: 301 DINOSAUR TRAIL
City, State, ZIP+4: SANTA FE, NM 87508

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Total Postage & Fees	$

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7014 2870 0001 4719 3914

Sent To: CRESTWOOD NEW MEXICO PIPELINE, LLC
Street & Apt. No., or PO Box No.: 2440 PERSHING RD, SUITE 600
City, State, ZIP+4: KANSAS CITY, MO 64108

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Street & Apt. No., or PO Box No.: 10330 LAKE RD, SUITE DD
City, State, ZIP+4: HOUSTON, TX 77070

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

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Street & Apt. No., or PO Box No.: Po Box 1346
City, State, ZIP+4: ROSWELL, NM 88202

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

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7014 2870 0001 4719 3877

Sent To: WIGGINS, CHARLES R & COATS, RICHARD H & AGAR, FRANK R
Street & Apt. No., or PO Box No.: Po Box 10862
City, State, ZIP+4: MIDLAND, TX 79702

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

7014 2870 0001 4719 3891

Sent To: NEARWOOD, MARY & BRENT ALAN & DICKSON, CARLA KAY
Street & Apt. No., or PO Box No.: 405 N OAKS LN
City, State, ZIP+4: RUSSELLVILLE, AR 72802

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8100-M4 Wyoming Blvd N.
Albuquerque, NM 87113
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First Class Package
Tracking# 701428700000147193914
002 008237 (022) TO $ 6.75
First Class Package
Tracking# 701428700000147193907
003 008237 (022) TO $ 6.75
First Class Package
Tracking# 701428700000147193860
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First Class Package
Tracking# 701428700000147193884
009 008237 (022) TO $ 6.75
First Class Package
Tracking# 701428700000147193891

SubTotal $ 60.75
Total $ 60.75

Section 9

Crestwood New Mexico Pipeline LLC

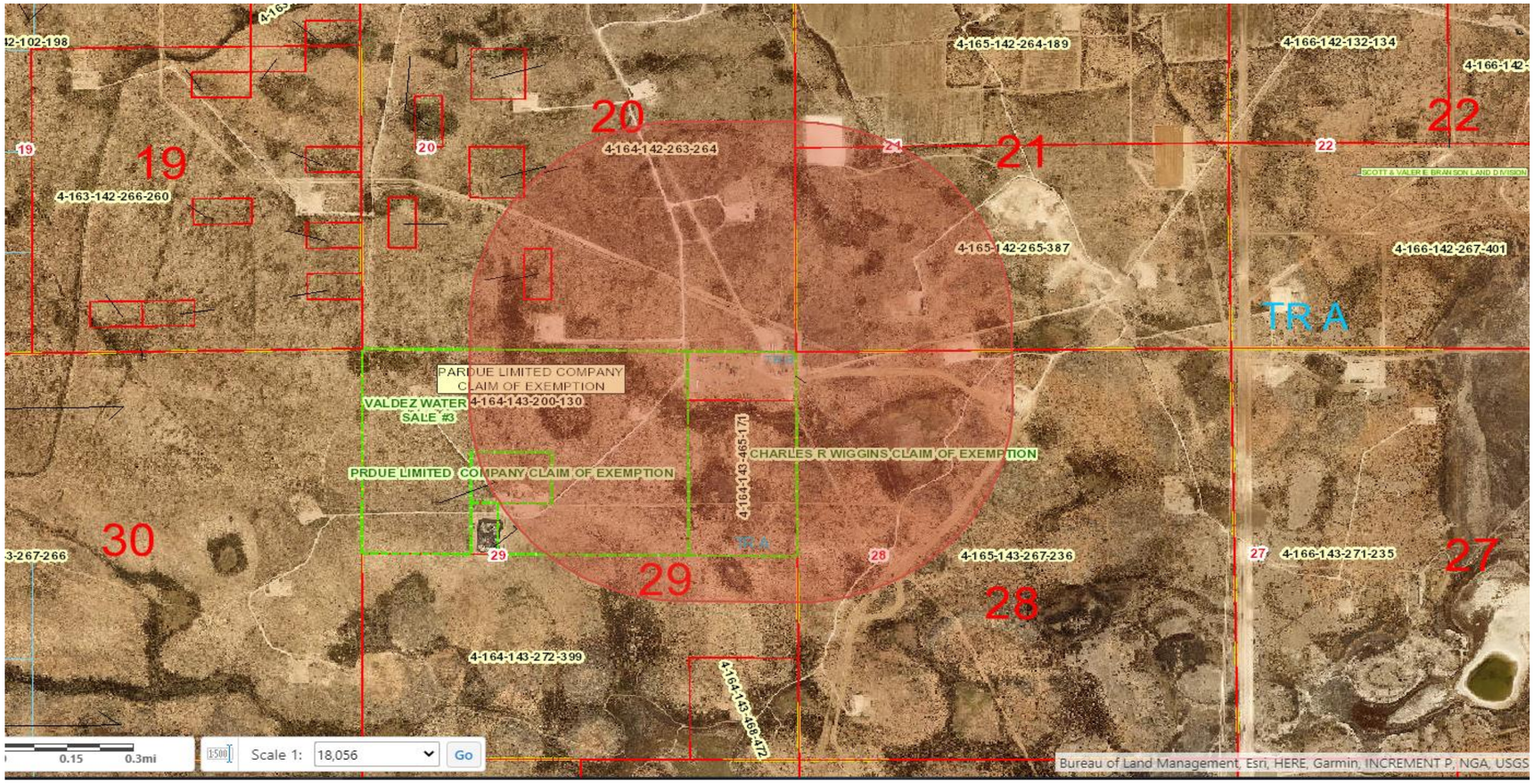
PROPERTY OWNERS

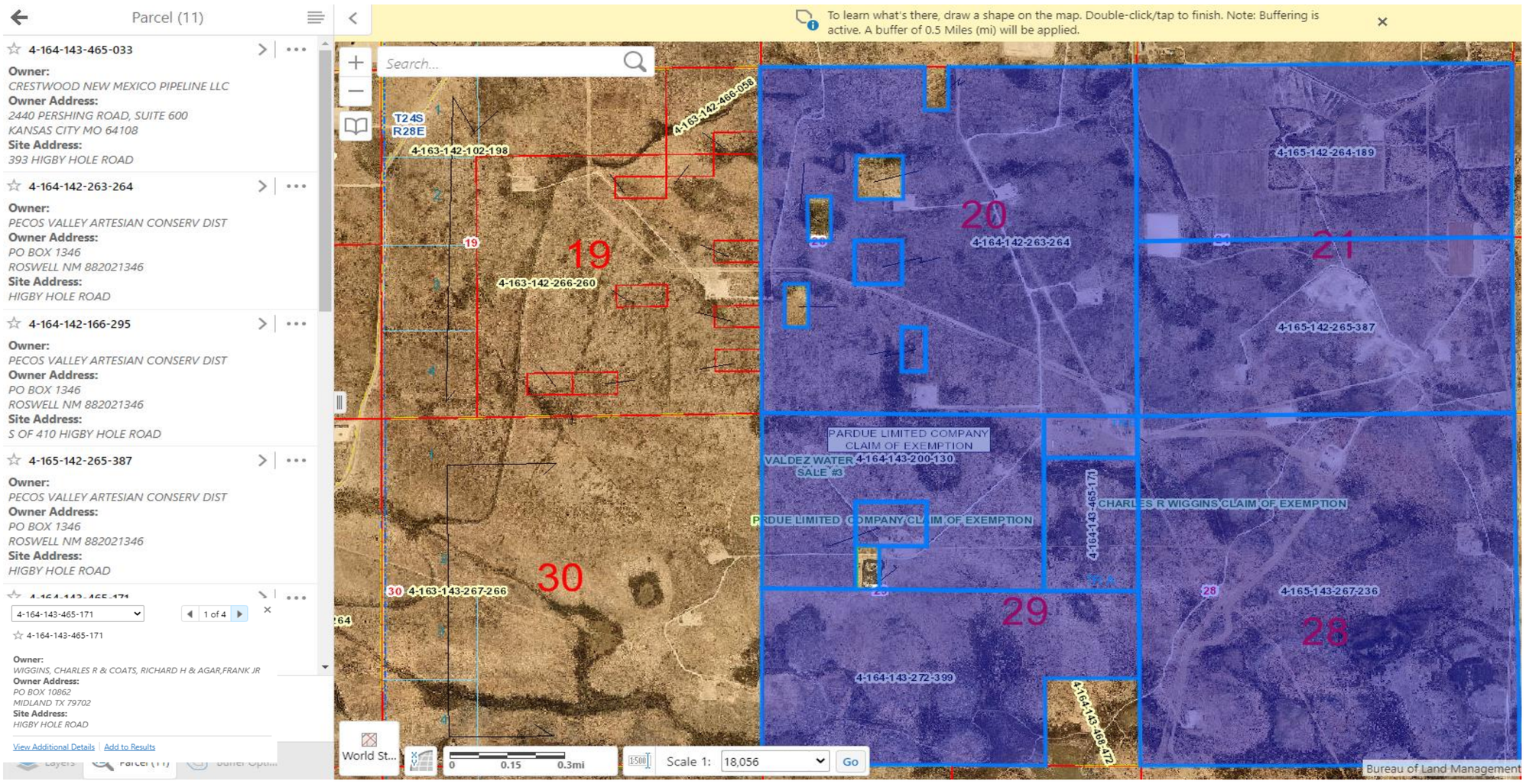
PROPERTY OWNERS			
PARCEL ID	OWNER NAME	ADDRESS	CITYSTATEZIP
4-164-143-465-033	CRESTWOOD NEW MEXICO PIPELINE LLC	2440 PERSHING ROAD, SUITE 600	KANSAS CITY, MO 64108
4-164-142-263-264 4-164-142-166-295 4-165-142-265-387 4-165-142-264-189 4-164-143-200-130	PECOS VALLEY ARTESIAN CONSERV DIST	PO BOX 1346	ROSWELL, NM 88202
4-164-143-465-171	WIGGINS, CHARLES R & COATS, RICHARD H & AGAR, FRANK JR	PO BOX 10862	MIDLAND, TX 79702
4-164-143-181-168	LEGEND NATURAL GAS III LP	10330 LAKE ROAD, SUITE DD	HOUSTON, TX 77070
4-164-142-217-428	NEARHOOD, MARY & BRENT ALAN, & DICKSON, CARLA KAY NEARHOOD	405 N OAKS LN	RUSSELLVILLE, AR 72802
4-164-144-091-396	STATE OF NEW MEXICO	310 OLD SANTA FE TRAIL	SANTA FE, NM 87504
4-163-143-267-266	BUREAU OF LAND MANAGEMENT	301 DINOSAUR TRAIL	SANTA FE, NM 87508

Section 9

Crestwood New Mexico Pipeline LLC

0.5 Mile Radius

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KANSAS CITY MO 64108
Site Address:
393 HIGBY HOLE ROAD
4-164-142-263-264
Owner:
PECOS VALLEY ARTESIAN CONSERV DIST
Owner Address:
PO BOX 1346
ROSWELL NM 882021346
Site Address:
HIGBY HOLE ROAD
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Owner:
PECOS VALLEY ARTESIAN CONSERV DIST
Owner Address:
PO BOX 1346
ROSWELL NM 882021346
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Owner:
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Site Address:
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Owner:
WIGGINS, CHARLES R & COATS, RICHARD H & AGAR,FRANK JR
Owner Address:
PO BOX 10862
MIDLAND TX 79702
Site Address:
HIGBY HOLE ROAD
View Additional Details | Add to Results
To learn what's there, draw a shape on the map. Double-click/tap to finish. Note: Buffering is active. A buffer of 0.5 Miles (mi) will be applied.
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VALDEZ WATER 4-164-143-200-130
SALE #3
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CHARLES R WIGGINS CLAIM OF EXEMPTION
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Go
Bureau of Land Management

☆ 4-164-143-181-168

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LEGEND NATURAL GAS III LP
Owner Address:
10330 LAKE ROAD STE DD
HOUSTON TX 770701886
Site Address:
SW OF 410 HIGBY HOLE ROAD

☆ 4-164-142-217-428

Owner:
NEARHOOD, MARY & BRENT ALAN, & DICKSON, CARLA KAY NEARHOOD
Owner Address:
405 N OAKS LN
RUSSELLVILLE AR 728028708
Site Address:
410 HIGBY HOLE ROAD

☆ 4-164-143-272-399

Owner:
Owner Address:

Site Address:

☆ 4-165-142-264-189

Owner:
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Owner Address:
PO BOX 1346
ROSWELL NM 882021346
Site Address:
HIGBY HOLE ROAD

☆ 4-164-143-200-130

Owner:
PECOS VALLEY ARTESIAN CONSERV DIST
Owner Address:
PO BOX 1346
ROSWELL NM 882021346
Site Address:
SW OF 410 HIGBY HOLE ROAD

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Page 1 of 1

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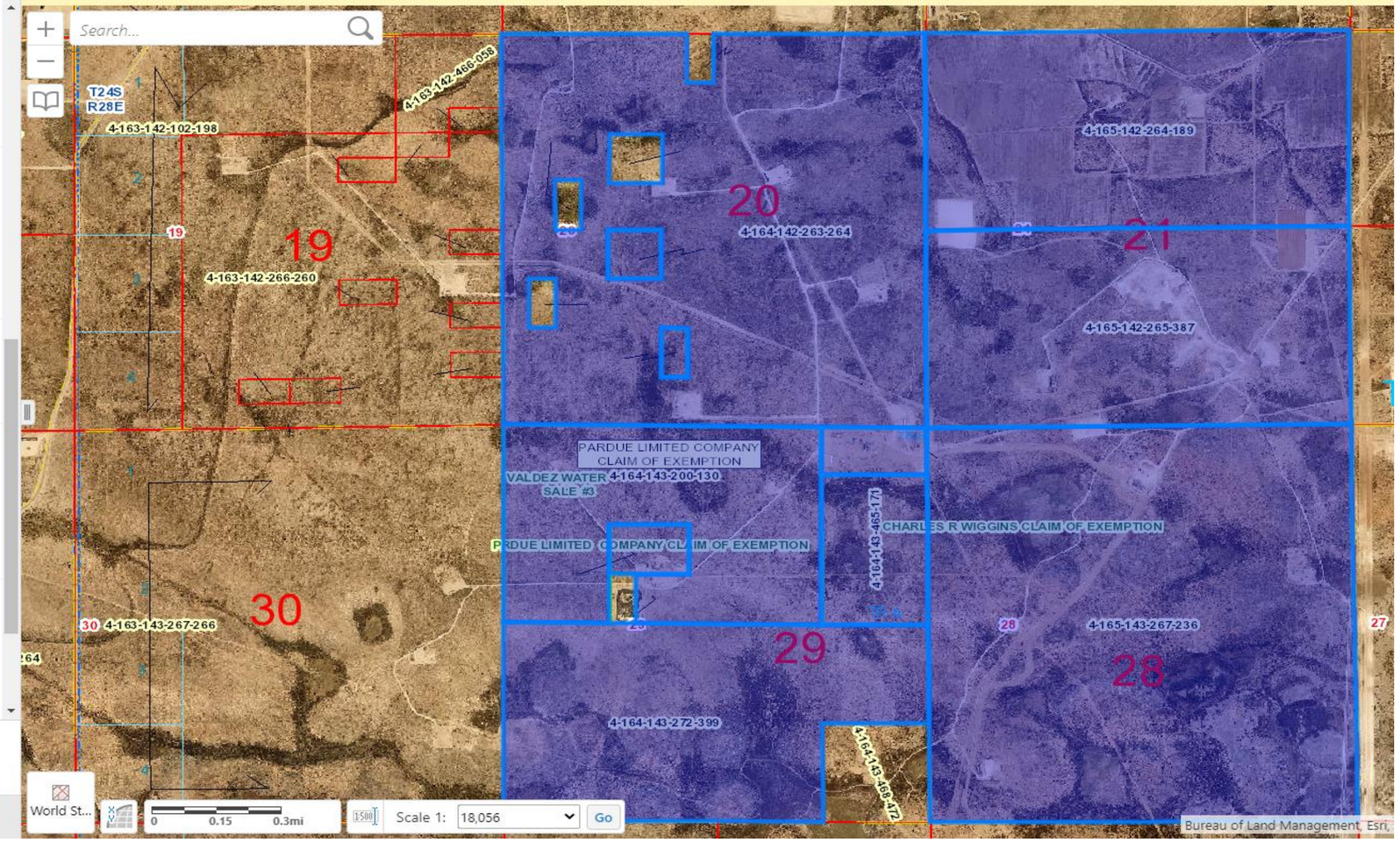

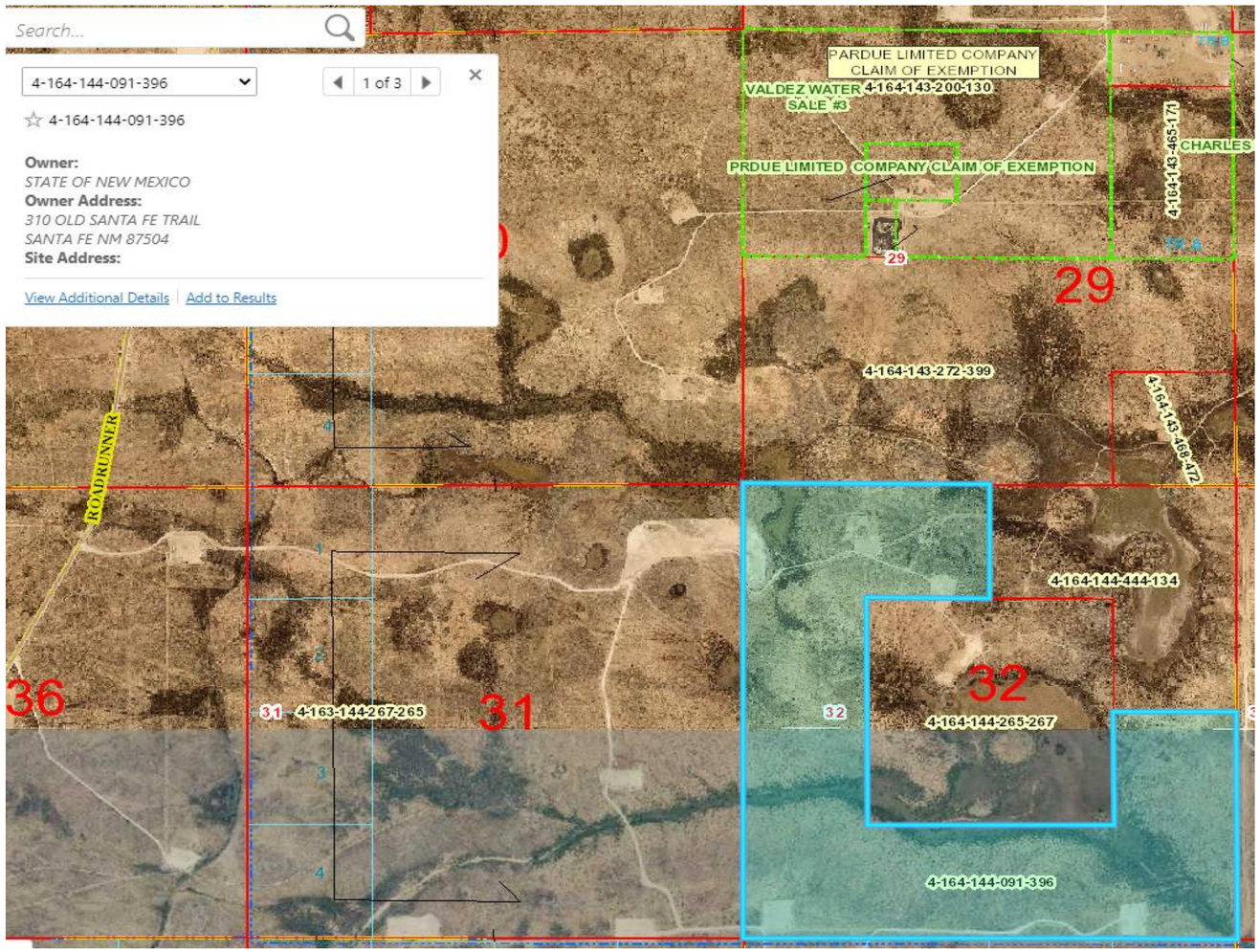
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STATE OF NEW MEXICO
Owner Address:
310 OLD SANTA FE TRAIL
SANTA FE NM 87504
Site Address:
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Add to Results
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VALDEZ WATER SALE #3
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PRDUE LIMITED COMPANY CLAIM OF EXEMPTION
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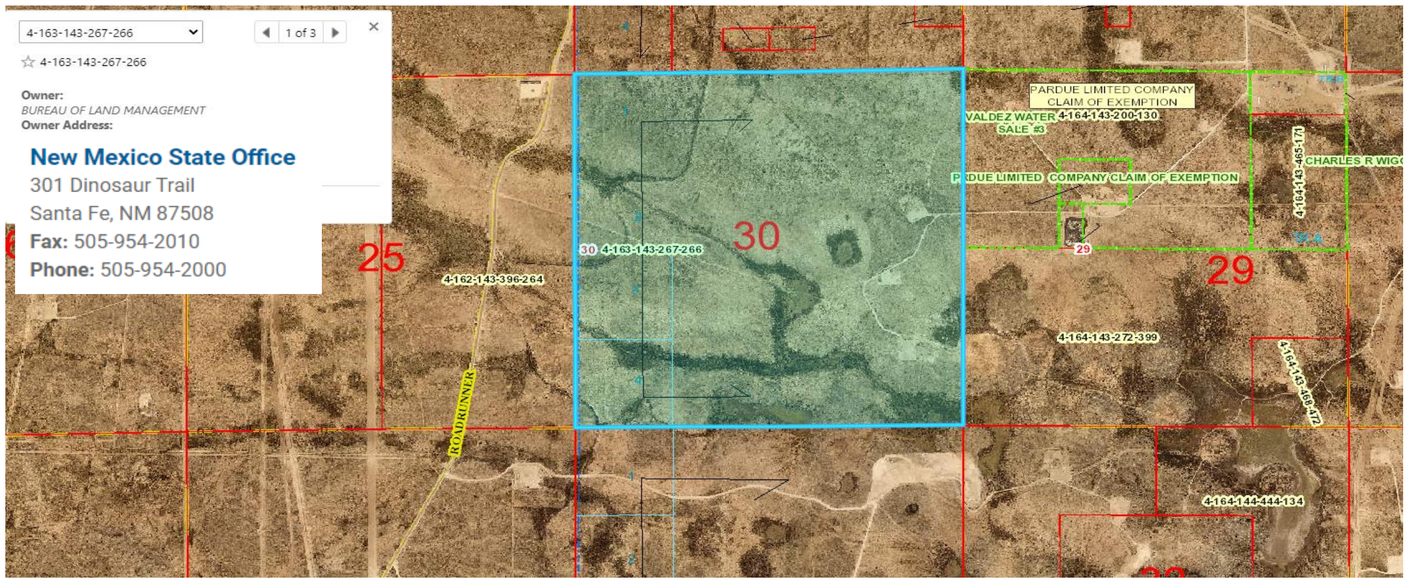
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1 of 3
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BUREAU OF LAND MANAGEMENT
Owner Address:
New Mexico State Office
301 Dinosaur Trail
Santa Fe, NM 87508
Fax: 505-954-2010
Phone: 505-954-2000
25
30
4-163-143-267-266
4-162-143-396-264
ROADRUNNER
PARDUE LIMITED COMPANY
CLAIM OF EXEMPTION
VALDEZ WATER
SALE #3
4-164-143-200-130
PARDUE LIMITED COMPANY CLAIM OF EXEMPTION
29
4-164-143-465-171
CHARLES R WIG
4-164-143-272-399
4-164-144-444-134

Section 9

Crestwood New Mexico Pipeline LLC

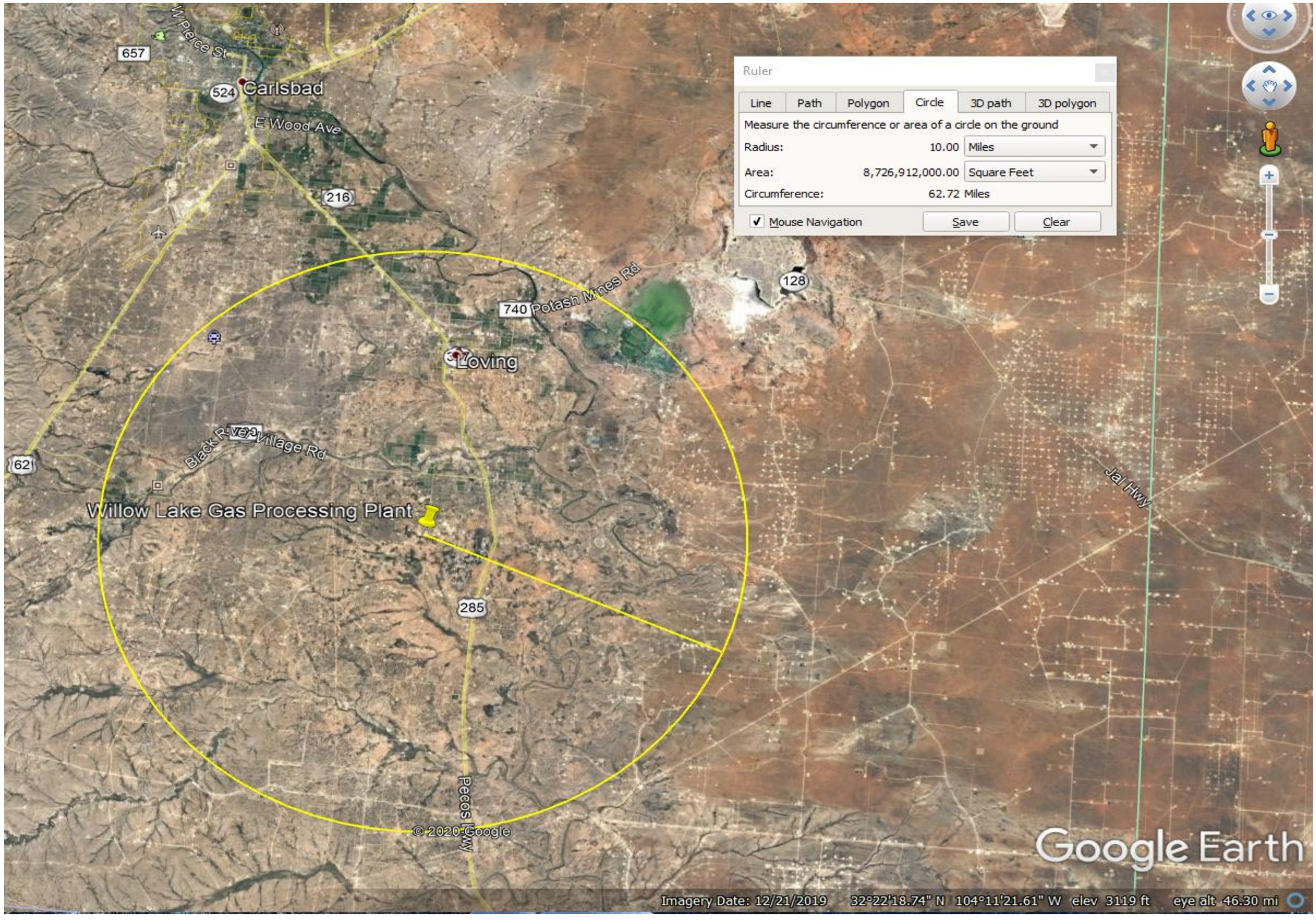
TRIBES, COUNTIES & MUNICIPALITIES WITHIN 10 MILE RADIUS

TRIBES					
N/A - No tribes within 10 mile radius.					
COUNTIES					
EDDY COUNTY	COUNTY MANAGER	101 W GREENE STREET, SUITE 110	CARLSBAD	NM	88220
MUNICIPALITIES					
LOVING	CITY MANAGER	415 W CEDAR	LOVING	NM	88256

Section 9

Crestwood New Mexico Pipeline LLC

Municipalities within 10 miles - Loving

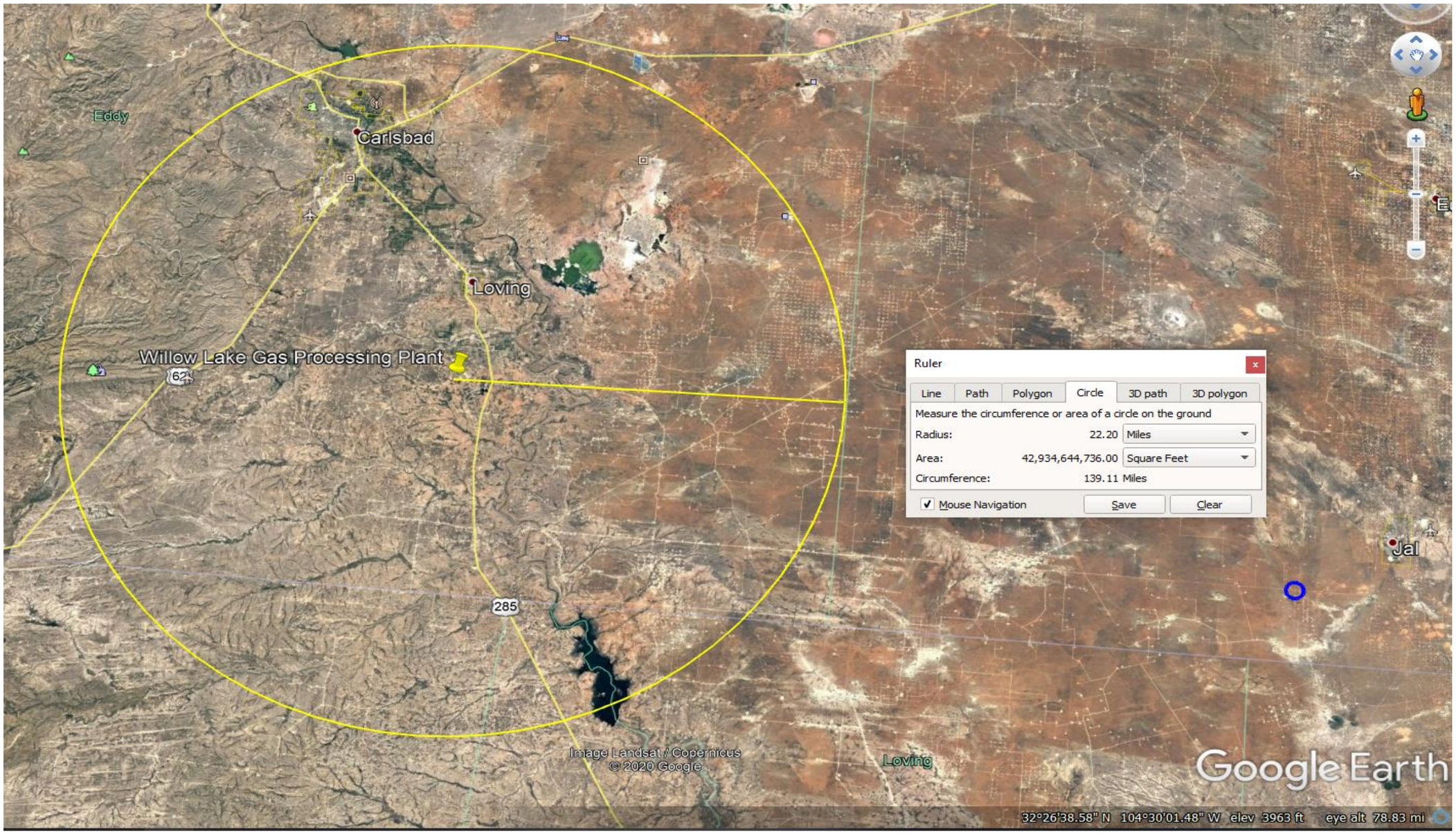


Section 9

Crestwood New Mexico Pipeline LLC

Counties within 10 miles - Eddy

Lea County 20+ miles away

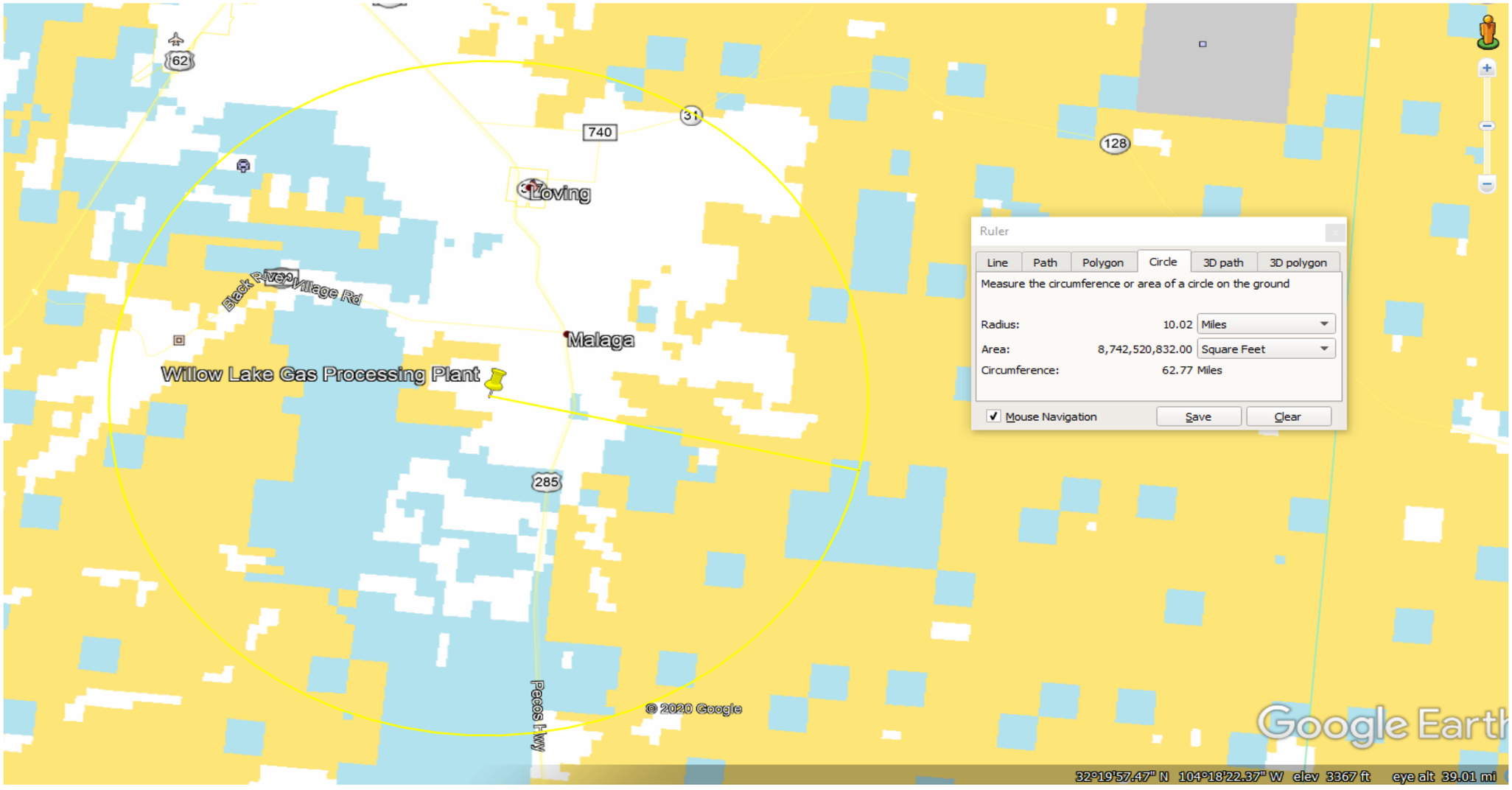


Section 9

Crestwood New Mexico Pipeline LLC

Tribes within 10 miles - N/A

All Federal, State or Private Ownership



August 18, 2020

CERTIFIED MAIL 7014 2870 0001 4719 3846
RETURN RECEIPT REQUESTED *(certified mail is required, **return receipt is optional**)*

Dear **Bureau of Land Management,**

Crestwood New Mexico Pipeline LLC (Crestwood) announces its application submittal to the New Mexico Environment Department for an air quality permit for the **modification** of its **gas processing** facility. The expected date of application submittal to the Air Quality Bureau is **August 24th, 2020.**

The exact location for the facility known as, **Willow Lake Gas Processing Plant**, is at **393 Higby Hole Road, Malaga, NM 88263.** The approximate location of this facility is **2.7** miles **southwest** of **Malaga, NM** in **Eddy** county.

The proposed **modification** consists of adding new equipment and transitioning the facility from a GCP-4 permit to a minor NSR.
The estimated maximum quantities of any regulated air contaminant will be as follows in pound per hour (pph) and tons per year (tpy) and could change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	3 pph	10 tpy
PM_{10}	3 pph	10 tpy
$PM_{2.5}$	3 pph	9 tpy
Sulfur Dioxide (SO_2)	3 pph	11 tpy
Hydrogen Sulfide (H_2S)	1 pph	2 tpy
Nitrogen Oxides (NO_x)	175 pph	158 tpy
Carbon Monoxide (CO)	308 pph	134 tpy
Volatile Organic Compounds (VOC)	1977 pph	157 tpy
Total sum of all Hazardous Air Pollutants (HAPs)	67 pph	24 tpy
Toxic Air Pollutant (TAP)	N/A	N/A
Green House Gas Emissions as Total CO_2e	N/A	120,000 tpy

The standard and maximum operating schedules of the facility will be continuous
7 days a week and a maximum of 52 weeks per year

The owner and/or operator of the Facility is:

Crestwood New Mexico Pipeline LLC
811 Main Street, Suite 3400
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; (505) 476-4300; 1 800 224-7009; https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html. Other comments and questions may be submitted verbally.

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

General information about air quality and the permitting process can be found at the Air Quality Bureau's web site. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC. This regulation can be found in the "Permits" section of this web site.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-476-5557.

Sincerely,
Crestwood New Mexico Pipeline LLC
811 Main Street, Suite 3400
Houston, TX 77002

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: Kristine Yurdin, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. 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.

August 18, 2020

CERTIFIED MAIL 7014 2870 0001 4719 3839
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Dear **Eddy County Manager,**

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Houston, TX 77002

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General Posting of Notices – Certification

I, Kiara Doporto, the undersigned, certify that on **August 20, 2020,** posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in the **village of Loving** of **Eddy** County, State of New Mexico on the following dates:

1. Facility entrance 8/18/2020
2. Malaga, NM Post Office 8/20/2020
3. Loving, NM Village Hall 8/20/2020
4. Loving, NM Post Office 8/20/2020

Signed this 2020 day of August, 20,

K Doporto
Signature

8/20/2020
Date

Kiara Doporto
Printed Name

Administrative Assistant
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

Mike Celente

From: Mike Celente
To: don@carlsbadradio.com
Subject: PSA Request for Air Quality Permit - Willow Lake Gas Processing Plant

Dear Carlsbad Radio,

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

The public service announcement request must contain the following information about the facility or proposed facility (20.2.72.203.D NMAC).

(a) The name: **Willow Lake Gas Processing Plant**, location: **393 Higby Hole Road, Malaga, NM 88263** and type of business: **Gas Processing Plant.**
(b) The name of the principal owner or operator: **Crestwood New Mexico Pipeline, LLC** – owner & operator.
(c) The type of process or change for which the permit is sought: **Initial NSR Minor Source Construction Permit – facility modifications and additional equipment.**
(d) Locations where the notices have been posted**: (1) Willow Lake Facility Entrance; (2) Malaga Post Office; (3) Loving Village Hall; (4) Loving Post Office**
(e) The Department's address or telephone number to which comments may be directed: **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**

Best Regards,
Mike

Michael Celente, M.S.
Senior Consultant

P 505.266.6611
9400 Holly Ave NE, Building 3, Suite 300 | Albuquerque, NM 87122
Email: mcelente@trinityconsultants.com

Submittal of Public Service Announcement – Certification

I, MICHAEL CELENTE, the undersigned, certify that on **August 27th, 2020**, submitted a public service announcement to **RADIO KATK – 92.1 FM** that serves the City of **CARLSBAD**, in **EDDY** County, New Mexico, in which the source is or is proposed to be located and that **RADIO KATK DID NOT RESPOND THAT IT WOULD AIR THE ANNOUNCEMENT.**

Signed this 27 day of AUGUST, 2020.

Signature

8/27/2020
Date

MICHAEL CELENTE
Printed Name

TRINITY CONSULTANTS
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

Religion

Gotta start somewhere

Pastor's Corner

By Ty Houghtaling

I'm learning that when you start a home improvement project, you need to do some planning before the actual work takes place.

I know that you already knew that, but I am a little slow. I get impatient, and while I can see the project completed in my mind, I sometimes lack the patience to do it right.

Recently, I have been doing some landscaping. I am moving some largish rocks (by wheelbarrow) to cover areas of the property and to provide a barrier for different locations in my backyard. These rocks are oddly sized, and you really can't use a shovel. So, I pick them up by hand and load them in to a wheelbarrow.

The other day, I dumped a load and began to spread them out when I realized I had cut off my path to an area where I would need to put rocks. The wheelbarrow wasn't going to maneuver through the rocks I had just dumped, so I picked them all back up and moved deeper into the area, where I could now work my way back out.

I wasn't thinking; I was daydreaming, and I saw this spot where I needed rocks and I just dumped there. Then, it dawned on me that I would have to pick them all back up to finish the project right.

I am going to now suggest that, all too often, this type of work scenario is where way too many of us find ourselves. We make some decision about life and then we realize that we have cut off our path forward or even backwards. We just don't think through the ramifications of our actions.

Why is that? Well, I am going to say it is because we have not the right plan before we begin the work.

The popular Bible parable about the wise and foolish builder illustrates this to some degree. Jesus says, "Therefore everyone who hears these words of mine and puts them into practice is like a wise man who built his house on the rock." (Matthew 7:24 NIV)

Maybe, you are a science guy. Maybe with COVID-19, you want to follow the science. Maybe, you are an "old earth" believer -- believing that the earth is millions of years old. Maybe you see the idea of "karma" all over the place. Whatever you believe about this life is what you are building with.

I know that might seem like an unusual metaphor, but it does seem to be true: the idea that my beliefs about various aspects of life are the building materials that I am using to construct my life. So, if this is accurate, then what beliefs are causing you and I to have to constantly pick up what we just dumped in order to move it around so that we can get where we want to go?

I think for all too many of us, we don't start with the right plan when we begin our work. A friend of mine would always tell me, "Plan your work, then work your plan." The problem is not necessarily that we don't have a plan or that we take shortcuts in the process (though that often leads to problems); the real problem is what foundation we are building on. That is why it is so important that you and I honestly look at our lives and make decisions from this day forward to build on the solid rock that is Christ Jesus.

In Matthew chapter 7, Jesus says if we put His words into practice, we will be a wise builder. If you haven't already, read Matthew 7 and start putting His words into practice. That will be a great starting place, a good plan, for any decision one can make.

(EDITOR'S NOTE: Ty Houghtaling is the lead pastor at First Baptist Church. Contact him at ty@fbcartesia.org.)

That which is learned can be unlearned

Pastor's Corner

By David Grousnick

According to Billy Strayhorn, he believes that those Road Runner cartoons, Wile E. Coyote, and all the Acme products the Coyote bought may be the reason we have so many warning labels on products today.

Warning labels point to dangers in life. Most warning labels make sense, but some of them are just downright ridiculous and make you wonder why a company had to put that particular warning label on their product.

Consider the following real warning labels found on real products:

"Do not put in mouth." On a box of bottle rockets.

"Not dishwasher safe." On a remote control for a TV.

"Do not attempt to stop the blade with your hand." In the manual for a Swedish chainsaw.

"Warning: May contain nuts." On a package of peanuts.

"Caution: The contents of this bottle should not be fed to fish." On a bottle of shampoo for dogs.

"Do not use in shower." On a hair dryer.

"Warning: May contain small parts." On a frisbee.

"For use by trained personnel only." On a can of air freshener.

"This product may contain eggs." On a carton of eggs.

"Do not drive with sun shield in place." On a reflective cardboard sun shade for car dashboards.

"Contents may catch fire." On a blow torch gas bottle.

"Caution: Remove infant before folding for storage." On a portable stroller.

"May be harmful if swallowed." On a shipment of hammers.

"May cause drowsiness." On a package of sleeping pills.

"Avoid death." On a New Holland small tractor.

And finally, my personal favorite -- "Not suitable for children aged 36 months or less." On a birthday card for a 1 year old!

Strayhorn wonders if we are all related to Wile E. Coyote?

We all know some folks who aren't the sharpest knife in the drawer. I've even been like that about certain things. But are we all dumber than a bowl of pudding?

Apparently, the Warning Label people think so.

Let's face it, life can be dangerous. Sometimes it can be like nothing more than an ongoing obstacle course or a minefield. You never know when something's going to blow up in your face or what the next challenge is going to be. Maybe that's why the game show Survivor is so popular.

(Without Googling it – Do you remember who won the very first episode of Survivor? Location? Date? Answers below...)

Sara Jewett tells the story of a woman who ascended the pathway leading to the home of a retired sea captain in the state of Maine. On the way, the woman sees a number of wooden stakes scattered about the property in no particular order.

Each stake is painted white and trimmed in yellow, just like the captain's house. With great curiosity and no small bewilderment, she asks the captain what they mean. He explains.

When he first plowed the ground, his plow snagged on many large rocks lying just below the surface. So he set out stakes where the rocks lay in order to avoid them in the future. That way, he did not have to relearn where every rock was every time he plowed.

The captain's prudence gave him the opportunity to farm productively in what might otherwise be an inhospitable environment.

So it is with our world, according to the scriptures, points out Harold Warlick. Evil is here, both within and without, for us. But that which is learned can be unlearned, or at least controlled.

People of faith are urged not only to be cautious as to their lifestyle but to put out stakes of opportunity: "Speak to one another with psalms, hymns, and spiritual songs. Sing and make music in your heart to the Lord, always giving thanks to God for everything, in the name of our Lord Jesus Christ."

Have a great weekend!

And by the way, Richard Hatch won the first episode of Survivor. Location - Borneo, May 31, 2000.

(EDITOR'S NOTE: David Grousnick is the pastor of First Christian Church.)

Your secret devotions: giving

By RICK SMITH

Today we begin a short series entitled Your Secret Devotions. When we say "your" we mean you if you are a follower/disciple of Jesus. In Matthew 6:1-18 Jesus deals with those secret devotions that the disciple will have and how we are to live obediently to Him in them. There's always a danger of our devotions (giving, prayer, and fasting) becoming an area of pride and self-promotion.

In Luke 18 Jesus tells the parable of the Publican and the Pharisee. The Pharisee perfectly illustrates the problem of pride that can develop with our devotions. All three of these necessary disciplines are illustrated by the Pharisee. "The Pharisee stood and prayed thus with himself, God, I thank thee, that I am not as other men are, extortioners, unjust, adulterers, or even as this publican.

I fast twice in the week, I give tithes of all that I possess (Luke 18:11-12)." So many of those far from God (like the Publican) think that we Christians have that kind of attitude and it can turn them from Christ. Our purpose is to live to the glory of God our Father and our Lord Jesus Christ. Jesus teaches us, "Take heed that ye do not your alms before men, to be seen of them: otherwise ye have no reward of your Father which is in heaven (Matthew 6:1)."

"Alms" means giving, but it also means much more. Some translate the Greek word for "alms" in our passage as "righteousness" or "righteous deeds". It means your good deeds – your service in helping others. For those in that time it would involve the giving of money to the poor. So you have Jesus saying to the rich young ruler, "...One thing thou lackest: go thy way, sell whatsoever thou hast, and give to the poor, and thou shalt have treasure in heaven: and come, take up the cross, and follow me (Mark 10:21)." And if you think that this only applied to the rich young ruler, Jesus said to His disciples, "Sell that ye have, and give alms; provide yourselves bags which wax not old, a treasure in the heavens that faileth not, where no thief approacheth, neither moth corrupteth (Luke 12:33)."

In fact, this encouragement to give was illustrated by one of the early disciples in the book of Acts. This man was known for his giving spirit, because he had land and "...sold it, and brought the money, and laid it at the apostles' feet (Acts 4:36-37)." The apostles nicknamed him Barnabas, which means "son of consolation."

Pay careful heed to Jesus' command and warning: "Take heed that ye do not your alms before men, to be seen of them: otherwise ye have no reward of your Father which is in heaven." Do not do your giving, service, prayer, or fasting before people to be seen of them. We are not to do our righteousness before men so that they will think well of us, but so that they will see and glorify God the Father.

"Let your light so shine before men, that they may see your good works, and glorify your Father which is in heaven (Matthew 5:16)." So, "Whether therefore ye eat, or drink, or whatsoever ye do, do all to the glory of God (1 Corinthians 10:31)." If we bring glory to God by our deeds, then we will be storing up rewards for ourselves in heaven. But if all you want is glory from those of this world, then that is all that you will have.

The world seeks to call us hypocrites for the things that we do. They look for every weakness and failure. Don't give them a chance in those good things that you do. The hypocrites take great pains to insure that they get the credit for every "good deed" that they do. They sound the trumpet, or call out the news media, or ask that a plaque be placed to insure that everyone knows what they did. They seek glory for themselves, not the glory of God. Jesus says, "They have their reward."

But what does Jesus command His disciples to do? "But when thou doest alms, let not thy left hand know what thy right hand doeth... (Matthew 6:3)." What does Jesus mean? The hypocrite makes a show to draw attention to himself in order to get the praise of man. As a result he loses the praise and reward of God. So the Christian does his good deed without even thinking about getting the credit.

Every year at Christmas time someone places thousands of dollars in gold coins in the Salvation Army kettles. No one knows who it is – but God knows, and He will reward that soul. I have known people to receive needed funds in an envelope dropped through the window of their car door. God sees.

Why should we do this? "That thine alms may be in secret: and thy Father which seeth in secret himself shall reward thee openly (Matthew 6:4)." If God is glorified by what we do and He alone gets the praise, then He will reward us. It all depends on who your audience is. Is it people, or is it God your Father? That is the question that only you can answer.

If you have any questions, we invite you to visit with us this Sunday. Bible study is at 9:45 a.m. and worship at 10:50 a.m. We are located at 711 W. Washington Ave. Visit online at www.facebook.com/calvary-missionarybaptistartesia.

(EDITOR'S NOTE: Rick Smith is the pastor of Calvary Baptist Church.)

NOTICE OF AIR QUALITY PERMIT APPLICATION

Crestwood New Mexico Pipeline LLC (Crestwood) announces its application submittal to the New Mexico Environment Department for an air quality permit for the modification of its gas processing facility. The expected date of application submittal to the Air Quality Bureau is August 24 th , 2020.

The exact location for the facility known as, Willow Lake Gas Processing Plant, is at 393 Higby Hole Road, Malaga, NM 88263. The approximate location of this facility is 2.7 miles southwest of Malaga, NM in Eddy County.

The proposed modification consists of adding new equipment and transitioning the facility from a GCP-4 permit to a minor NSR.

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

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	3 pph	10 tpy
PM 10	3 pph	10 tpy
PM 2.5	3 pph	9 tpy
Sulfur Dioxide (SO2)	3 pph	11 tpy
Hydrogen Sulfide (H 2 S)	1 pph	2 tpy
Nitrogen Oxides (NO x)	175 pph	158 tpy
Carbon Monoxide (CO)	308 pph	134 tpy
Volatile Organic Compounds (VOC)	1977 pph	157 tpy
Total sum of all Hazardous Air Pollutants(HAPs)	67 pph	24 tpy
Toxic Air Pollutant (TAP)	N/A	N/A
Green House Gas Emissions as Total CO2e	N/A	120,000 tpy

The standard and maximum operating schedules of the facility will be continuous 7 days a week and a maximum of 52 weeks per year

The owner and/or operator of the Facility is:

Crestwood New Mexico Pipeline LLC
811 Main Street, Suite 3400
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; (505) 476-4300; 1 800 224-7009; https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html. Other comments and questions may be submitted verbally.

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

General information about air quality and the permitting process can be found at the Air Quality Bureau's web site. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC. This regulation can be found in the "Permits" section of this web site.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-476-5557.

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: Kristine Yurdin, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. 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.

Legal Notice

STATE OF NEW MEXICO
COUNTY OF EDDY
FIFTH JUDICIAL DISTRICT COURT

IN THE MATTER OF THE PETITION
FOR NAME CHANGE OF
Benjamin Flores
Petitioner. No. D-503-CV-2020-552

NOTICE OF CHANGE OF NAME

NOTICE IS GIVEN as required by NMSA 1978, 40-8-1 to 40-8-3 that the Petition for Name Change of the Petitioner Benjamin Flores, shall come before the Honorable Raymond L. Romero, District Judge of the Fifth Judicial District, Eddy County, New Mexico at the Eddy County Courthouse, 102 N. Canal, Carlsbad, New Mexico 88220 at 1:45 pm on the 3rd day of September 2020, where the Petitioner will request entry of an Order Changing Name changing the Petitioner's name from Benjamin Cordell Flores to Benjamin Cordell Orosco

KAREN CHRISTESSON
CLERK OF THE DISTRICT COURT
/s/
Deputy Clerk/Clerk

Submitted by:
Benjamin Cordell Flores
Published in the Artesia Daily Press, Artesia, N.M., Aug 13, 20 2020 Legal No. 25520.

Legal Notice

NOTICE OF AIR QUALITY PERMIT APPLICATION

Crestwood New Mexico Pipeline LLC (Crestwood) announces its application submittal to the New Mexico Environment Department for an air quality permit for the modification of its gas processing facility. The expected date of application submittal to the Air Quality Bureau is August 24 th , 2020.

The exact location for the facility known as, **Willow Lake Gas Processing Plant**, is at **393 Higby Hole Road, Malaga, NM 88263**. The approximate location of this facility is **2.7 miles southwest of Malaga, NM in Eddy County.**

The proposed modification consists of adding new equipment and transitioning the facility from a GCP-4 permit to a minor NSR.

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

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	3 pph	10 tpy
PM 10	3 pph	10 tpy
PM 2.5	3 pph	9 tpy
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Nitrogen Oxides (NO x)	175 pph	158 tpy
Carbon Monoxide (CO)	308 pph	134 tpy
Volatile Organic Compounds (VOC)	1977 pph	157 tpy
Total sum of all Hazardous Air Pollutants(HAPs)	67 pph	24 tpy
Toxic Air Pollutant (TAP)	N/A	N/A
Green House Gas Emissions as Total CO2e	N/A	120,000 tpy

The standard and maximum operating schedules of the facility will be continuous 7 days a week and a maximum of 52 weeks per year

The owner and/or operator of the Facility is:

Crestwood New Mexico Pipeline LLC
811 Main Street, Suite 3400
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; (505) 476-4300; 1 800 224-7009; https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html. Other comments and questions may be submitted verbally.

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

General information about air quality and the permitting process can be found at the Air Quality Bureau's web site. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC. This regulation can be found in the "Permits" section of this web site.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-476-5557.

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: Kristine Yurdin, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. 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.

Published in the Artesia Daily Press, Artesia, N.M., August 20, 2020 Legal No. 25528.

Legal Notice

STATE OF NEW MEXICO
COUNTY OF EDDY
FIFTH JUDICIAL DISTRICT COURT

IN THE MATTER OF THE PETITION
FOR NAME CHANGE OF
Hector Flores
Petitioner. No. D-503-CV-2020-552

NOTICE OF CHANGE OF NAME

NOTICE IS GIVEN as required by NMSA 1978, 40-8-1 to 40-8-3 that the Petition for Name Change of the Petitioner Hector Flores, shall come before the Honorable Raymond L. Romero, District Judge of the Fifth Judicial District, Eddy County, New Mexico at the Eddy County Courthouse, 102 N. Canal, Carlsbad, New Mexico 88220 at 1:30 pm on the 3rd day of September 2020, where the Petitioner will request entry of an Order Changing Name changing the Petitioner's name from Hector Jesus Flores to Hector Jesus Orosco

KAREN CHRISTESSON
CLERK OF THE DISTRICT COURT
/s/
Deputy Clerk/Clerk

Submitted by:
Hector Jesus Flores
Published in the Artesia Daily Press, Artesia, N.M., Aug 13, 20 2020 Legal No. 25521.

Legal Notice

NOTICE OF AIR QUALITY PERMIT APPLICATION

XTO Energy, Inc. announces its application to the New Mexico Environment Department for an air quality permit for the modification of the Bulldog Compressor Station. The expected date of application submittal to the Air Quality Bureau is August 28, 2020.

The exact location for the facility known as the Bulldog Compressor Station will be latitude 32 deg, 33 min, 24 sec and longitude
-103 deg, 51 min, 19 sec. The approximate location of this facility is 22 miles northeast of Carlsbad in Eddy County.

The proposed modification consists removing two engines, updating engine emission rates, updating glycol recirculation rate, removing two heaters, and updating oil/water production rates.

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)	27 pph	17 tpy
PM 10	27 pph	17 tpy
PM 2.5	27 pph	17 tpy
Sulfur Dioxide (SO2)	10 pph	20 tpy
Nitrogen Oxides (NOx)	587 pph	206 tpy
Carbon Monoxide (CO)	1130 pph	228 tpy
Volatile Organic Compounds (VOC)	1113 pph	260 tpy
Total sum of all Hazardous Air Pollutants (HAPs)	35 pph	29 tpy
Toxic Air Pollutant (TAP)	35 pph	29 tpy
Green House Gas Emissions as Total CO2e	n/a	240,024 tpy

The standard and maximum operating schedule of the facility will be 24 hours per day, 7 days a week and a maximum of 52 weeks per year. The owner and/or operator of the Facility is: XTO Energy, Inc.; 22777 Springwoods Village Pkwy-W4.6B.347; Spring, Texas 77389.

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; (505) 476-4300; 1 800 224-7009; https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html. Other comments and questions may be submitted verbally.

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

General information about air quality and the permitting process can be found at the Air Quality Bureau's web site. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC. This regulation can be found in the "Permits" section of this web site.

Attención
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Published in the Artesia Daily Press, Artesia, N.M., August 20, 2020 Legal No. 25527.

Legal Notice

FIFTH JUDICIAL DISTRICT COURT
COUNTY OF EDDY
STATE OF NEW MEXICO

IN THE MATTER OF THE ESTATE
OF No. D-503-PB-2020-00036
CECILIA ANN B. CHENEY, Deceased.

AMENDED NOTICE OF HEARING ON PETITION FOR PETITION FOR ADJUDICATION OF INTESTACY AND DETERMINATION OF HEIRS

TO: Unknown heirs of CECILIA ANN B. CHENEY, deceased, and all unknown persons who have or claim any interest in the estate of CECILIA ANN B. CHENEY, deceased ("Decedent")

NOTICE IS HEREBY GIVEN that Frank Harry Cheney has filed with the above-named Court a Petition for Adjudication of Intestacy and Determination of Heirs, which requests the Court to enter an Order that determines Decedent died intestate; determines the heirs of Decedent; and provides for such other and further relief as may be proper.

Hearing has been set to consider the Petition at 1:30 p.m. on September 28, 2020, at the Eddy County Courthouse, Carlsbad, New Mexico, before the Honorable Raymond L. Romero, District Judge.

The attorneys for Petitioner are Holloman Law, LLC, P. O. Box 3408, Hobbs, New Mexico 88241-3408.

Dated August 18, 2020

HOLLOMAN LAW, LLC
By: /s/Scotty Holloman
SCOTTY HOLLOMAN
Attorneys for Petitioner
P. O. Box 3408
Hobbs, New Mexico 88241-340
575/441-0056
scotty.holloman@outlook.com

Published in the Artesia Daily Press, Artesia, N.M., August 20, 27, September 3, 2020 Legal No. 25530.

Legal Notice

FIFTH JUDICIAL DISTRICT COURT
COUNTY OF EDDY
STATE OF NEW MEXICO

IN THE MATTER OF THE ESTATE

OF No. D-503-PB-2019-00095
PHOEBE JANE WELCH, Deceased.

NOTICE OF HEARING ON PETITION FOR PETITION FOR ADJUDICATION OF INTESTACY AND DETERMINATION OF HEIRS

TO: Unknown heirs of PHOEBE JANE WELCH, deceased, and all unknown persons who have or claim any interest in the estate of PHOEBE JANE WELCH, deceased ("Decedent")

NOTICE IS HEREBY GIVEN that Michael I. Welch has filed with the above-named Court a Petition for Adjudication of Intestacy and Determination of Heirs, which requests the Court to enter an Order that determines Decedent died intestate; determines the heirs of Decedent; and provides for such other and further relief as may be proper.

Hearing has been set to consider the Petition at 9:30 a.m. on September 28, 2020, at the Eddy County Courthouse, Carlsbad, New Mexico, before the Honorable Jane Shuler-Gray, District Judge.

The attorneys for Petitioner are Holloman Law, LLC, P. O. Box 3408, Hobbs, New Mexico 88241-3408.

Dated August 18, 2020

HOLLOMAN LAW, LLC
By: /s/Scotty Holloman
SCOTTY HOLLOMAN
Attorneys for Petitioner
P. O. Box 3408
Hobbs, New Mexico 88241-3408
575/441-0056
scotty.holloman@outlook.com

Published in the Artesia Daily Press, Artesia, N.M., August 20, 27, September 3, 2020 Legal No. 25529.

Legal Notice

NOTICE OF PUBLIC HEARING AND REQUEST FOR PUBLIC COMMENTS ON THE

STATE OF NEW MEXICO LOW INCOME HOUSING TAX CREDIT QUALIFIED ALLOCATION PLAN EFFECTIVE FOR 2021

The New Mexico Mortgage Finance Authority (MFA), as the designated Housing Credit Agency for the state of New Mexico, is responsible for administering the Low Income Housing Tax Credit Program and allocating tax credits to eligible low-income housing projects. MFA will make allocations of tax credits pursuant to a Qualified Allocation Plan which: 1.) sets forth selection criteria to be used to determine housing priorities appropriate to local conditions; 2.) gives preference in allocating housing credit dollar amounts among selected projects to: a.) projects serving the lowest income tenants; b.) projects obligated to serve qualified tenants for the longest periods; and 3.) provides a procedure that MFA will use in monitoring for noncompliance.

This notice is to advise that the draft Low Income Housing Tax Credit Qualified Allocation Plan effective for 2021 will be available for review and download (both a clean version and a redline comparison version to the 2020 QAP) on August 17, 2020 from the MFA website at www.housingnm.org/developers/low-income-housing-tax-credits-lihtc. The 21-day public comment period begins on August 17, 2020 and continues through 5:00 p.m. on September 8, 2020.

Written comments on the Draft Qualified Allocation Plan may be delivered by email, mail, by courier service or by hand to MFA at the following address:

MFA
Attn: Kathryn Turner
344 4th Street SW
Albuquerque, NM 87102
kturner@housingnm.org

Comments may also be made verbally at the following web-based public hearing:

September 2, 2020 from 1:30 p.m. to 3:00 p.m.
Register for free for the virtual hearing by visiting www.housingnm.org/developers

If you would like additional information, please contact Kathryn Turner at kturner@housingnm.org or 505.843.6880.

Published in the Artesia Daily Press, Artesia, N.M., August 20, 2020 Legal No. 25523.

Affidavit of Publication

No.

State of New Mexico Publisher

County of Eddy:

Danny Scott Danny Scott

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

of the Artesia Daily Press, a daily newspaper of General circulation, published in English at Artesia, said county and state, and that the hereto attached

Display Ad

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

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

First Publication August 20, 2020

Second Publication

Third Publication

Fourth Publication

Fifth Publication

Sixth Publication

Seventh Publication

Subscribed and sworn before me this

20th day of August 2020

OFFICIAL SEAL
Latisha Romine
NOTARY PUBLIC-STATE OF NEW MEXICO
My commission expires: 5/12/2023

Latisha Romine

Latisha Romine

Notary Public, Eddy County, New Mexico

Copy of Publication:

NOTICE OF AIR QUALITY PERMIT APPLICATION

Crestwood New Mexico Pipeline LLC (Crestwood) announces its application submittal to the New Mexico Environment Department for an air quality permit for the modification of its gas processing facility. The expected date of application submittal to the Air Quality Bureau is August 24 th , 2020.

The exact location for the facility known as, Willow Lake Gas Processing Plant, is at 393 Higby Hole Road, Malaga, NM 88263. The approximate location of this facility is 2.7 miles southwest of Malaga, NM in Eddy County.

The proposed modification consists of adding new equipment and transitioning the facility from a GCP-4 permit to a minor NSR.

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Toxic Air Pollutant (TAP)	N/A	N/A
Green House Gas Emissions as Total CO2e	N/A	120,000 tpy

The standard and maximum operating schedules of the facility will be continuous 7 days a week and a maximum of 52 weeks per year

The owner and/or operator of the Facility is:

Crestwood New Mexico Pipeline LLC
811 Main Street, Suite 3400
Houston, TX 77002

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Affidavit of Publication

No. 25528

State of New Mexico Publisher

County of Eddy:

Danny Scott

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

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Legal Ad

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

First Publication August 20, 2020

Second Publication

Third Publication

Fourth Publication

Fifth Publication

Sixth Publication

Seventh Publication

Subscribed and sworn before me this

20th day of August 2020

OFFICIAL SEAL
Latisha Romine
NOTARY PUBLIC-STATE OF NEW MEXICO
My commission expires: 5/12/2023

Latisha Romine

Latisha Romine

Notary Public, Eddy County, New Mexico

Copy of Publication:

Legal Notice

NOTICE OF AIR QUALITY PERMIT APPLICATION

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Hydrogen Sulfide (H 2 S)	1 pph	2 tpy
Nitrogen Oxides (NO x)	175 pph	158 tpy
Carbon Monoxide (CO)	308 pph	134 tpy
Volatile Organic Compounds (VOC)	1977 pph	157 tpy
Total sum of all Hazardous Air Pollutants(HAPs)	67 pph	24 tpy
Toxic Air Pollutant (TAP)	N/A	N/A
Green House Gas Emissions as Total CO2e	N/A	120,000 tpy

The standard and maximum operating schedules of the facility will be continuous 7 days a week and a maximum of 52 weeks per year

The owner and/or operator of the Facility is:

Crestwood New Mexico Pipeline LLC
811 Main Street, Suite 3400
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; (505) 476-4300; 1 800 224-7009; https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html. Other comments and questions may be submitted verbally.

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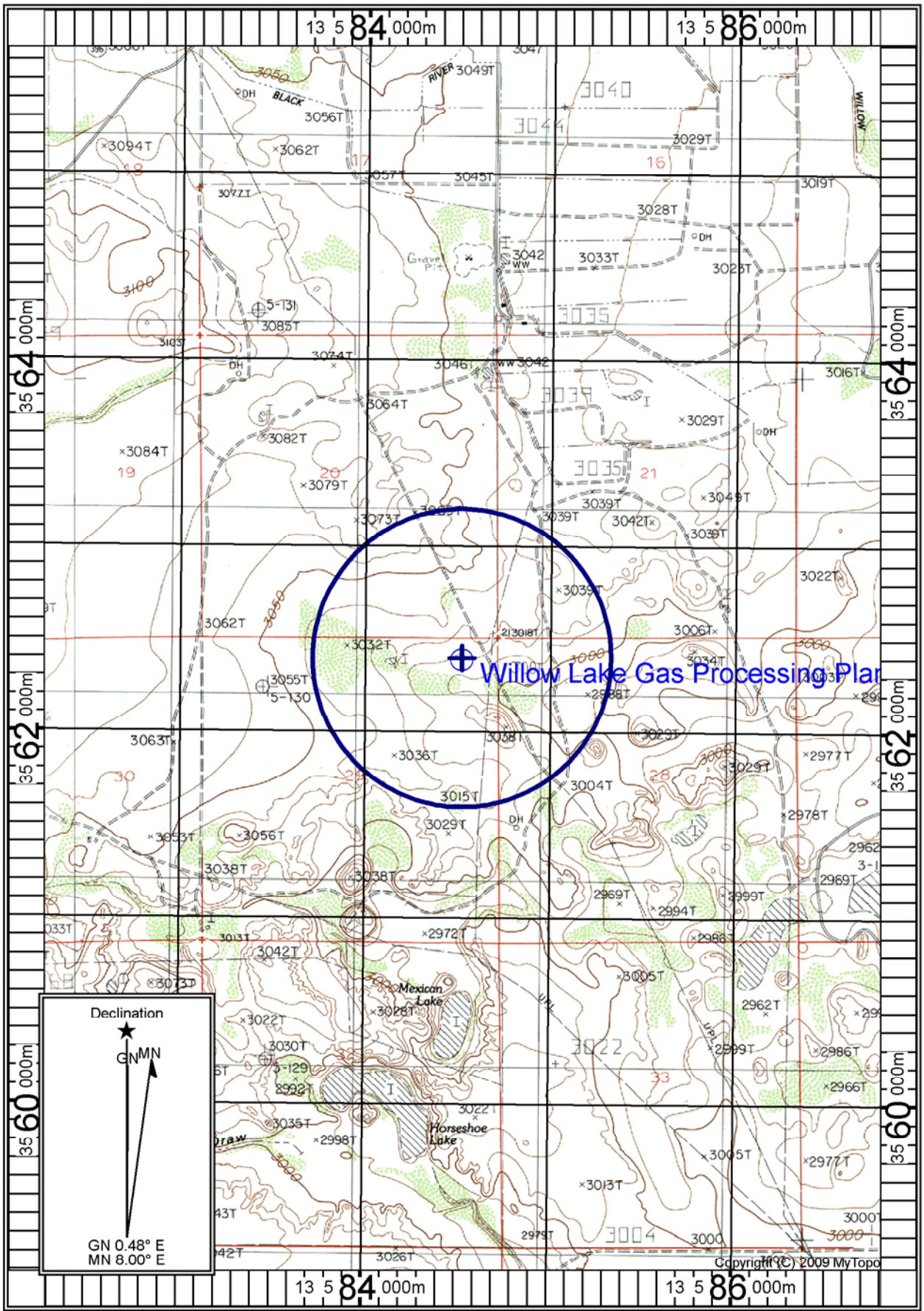

Map Name: MALAGA
Print Date: 08/20/20
Scale: 1 inch = 2,500 ft.
Map Center: 13 0584520 E 3562399 N

Horizontal Datum: WGS84

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.

Crestwood New Mexico Pipeline LLC (Crestwood) owns and operates the Willow Lake Gas Processing Plant (Willow Lake) located in Eddy County, New Mexico. As permitted, The Willow Lake facility consists of two (2) process units to recover natural gas liquids (NGL): Willow Lake 1 consists of a turbo-expander cryogenic separation system that removes a significant fraction of the C2+ compounds from the cooled gas stream, and Willow Lake 2 consists of a refrigerated Joule-Thompson (RJT) plant that also removes C2+ compounds using a combination of mechanical refrigeration and a Joule-Thompson effect. The NGL streams from these units are routed to pressurized storage tanks prior to truck loading and transport. Willow Lake 1 has a maximum processing capacity of 20 MMSCFD of natural gas. Willow Lake 2 has a maximum processing capacity of 35 MMSCFD of natural gas. The two processing units have separate inlets but share two outlet residue lines.

During normal operation, the gas enters Willow Lake 1 through an inlet scrubber. Produced water and condensate is sent to atmospheric storage tanks, and the gas stream is sent to inlet compression and filter separation. The gas is then sent to a 25 MMSCFD TEG dehydration unit (Unit DEHY-803) where water is removed from the wet gas. The dry gas from the contactor is sent to a molecular sieve dehydrator to further remove water from the gas stream before additional processing. Gas that is utilized during molecular sieve regeneration is routed to a 3.5 MMSCFD TEG dehydration unit (Unit DEHY-804) The cryogenic separation system separates and extracts NGLs from the dry gas stream. The resulting lean residual gas stream is sent to the residue compressor and to the sales pipeline. The resulting NGL stream is sent to one 90,000-gallon bullet tank, then trucked offsite.

Gas enters Willow Lake 2 through an inlet gas separator. The produced water is sent to atmospheric storage tanks, and the gas stream is sent to the RJT skid. A combination of mechanical refrigeration and a Joule-Thompson effect separates and extracts NGLs. The resulting lean residual gas stream is sent to two residue compressors and to the sales pipeline. The resulting NGL stream is sent to three 30,000 gallon bullet tanks, then trucked offsite. Ethylene glycol is injected at various stages in the RJT process for hydrate formation prevention. The system includes a 35 MMSCF ethylene glycol unit (Unit DEHY-EG), whose associated flash tank and still column are controlled by a flare. Relief valves and blowdowns at Willow Lake 2 also are routed to the flare.

Willow Lake 1 and Willow Lake 2 (in addition operating as two processing units) may also operate as a standalone compressor station (i.e., without processing). This project includes the addition of five compressor engines (units ENG-1 through ENG-5) which will operate as a compressor station within the existing Willow Lake 1 area. The capacity of the existing compressor station TEG dehydrator (Unit DEHY-805) will be increased to 65 MMscf/day by replacing one of the three glycol pumps so that the maximum glycol recirculation rate will be 15 gallons per minute. The project will also include the installation of three (3) 400 barrel atmospheric storage tanks (Units WLCS-TK2301 through WLCS-TK2303) to store produced water and condensate. A VRU will control emissions from the new storage tanks and Willow Lake 1 existing tanks; storage tank emissions during VRU downtime will be directed to a new flare (Unit WL1-FL). The new flare will also control emissions from new equipment installed as part of this project including compressor blowdowns and upset events. The project will also include the installation of two pig receivers and additional piping and fugitive components associated with the new compressor station.

The emissions represented in this application represent the worst-case emissions calculated as if each piece of equipment operates 8,760 hours/year, even though only certain equipment will actually be operated in each scenario.

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)**:**
See emission sources listed in Table 2-A.

B. Apply the 3 criteria for determining a single source:

SIC Code: Surrounding or associated sources belong to the same 2-digit industrial grouping (2-digit SIC code) as this facility, OR surrounding or associated sources that belong to different 2-digit SIC codes are support facilities for this source.

☑ **Yes** ☐ **No**

Common Ownership or Control: Surrounding or associated sources are under common ownership or control as this source.

☑ **Yes** ☐ **No**

Contiguous or Adjacent: Surrounding or associated sources are contiguous or adjacent with this source.

☑ **Yes** ☐ **No**

C. Make a determination:

☑ The source, as described in this application, constitutes the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes. If in "A" above you evaluated only the source that is the subject of this application, all "**YES**" boxes should be checked. If in "A" above you evaluated other sources as well, you must check **AT LEAST ONE** of the boxes "**NO**" to conclude that the source, as described in the application, is the entire source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes.

☐ The source, as described in this application, **does not** constitute the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes (A permit may be issued for a portion of a source). The entire source consists of the following facilities or emissions sources (list and describe):

Section 12

Section 12.A
PSD Applicability Determination for All Sources

(Submitting under 20.2.72, 20.2.74 NMAC)

A PSD applicability determination for all sources. For sources applying for a significant permit revision, apply the applicable requirements of 20.2.74.AG and 20.2.74.200 NMAC and to determine whether this facility is a major or minor PSD source, and whether this modification is a major or a minor PSD modification. It may be helpful to refer to the procedures for Determining the Net Emissions Change at a Source as specified by Table A-5 (Page A.45) of the EPA New Source Review Workshop Manual to determine if the revision is subject to PSD review.

A. This facility is:

- ☑ **a minor PSD source before and after this modification (if so, delete C and D below).**
- ☐ **a major PSD source before this modification. This modification will make this a PSD minor source.**
- ☐ **an existing PSD Major Source that has never had a major modification requiring a BACT analysis.**
- ☐ **an existing PSD Major Source that has had a major modification requiring a BACT analysis**
- ☐ **a new PSD Major Source after this modification.**

Section 13

Determination of State & Federal Air Quality Regulations

This section lists each state and federal air quality regulation that may apply to your facility and/or equipment that are stationary sources of regulated air pollutants.

Not all state and federal air quality regulations are included in this list. Go to the Code of Federal Regulations (CFR) or to the Air Quality Bureau's regulation page to see the full set of air quality regulations.

Required Information for Specific Equipment:
For regulations that apply to specific source types, in the 'Justification' column **provide any information needed to determine if the regulation does or does not apply**. **For example**, to determine if emissions standards at 40 CFR 60, Subpart IIII apply to your three identical stationary engines, we need to know the construction date as defined in that regulation; the manufacturer date; the date of reconstruction or modification, if any; if they are or are not fire pump engines; if they are or are not emergency engines as defined in that regulation; their site ratings; and the cylinder displacement.

Required Information for Regulations that Apply to the Entire Facility:
See instructions in the 'Justification' column for the information that is needed to determine if an 'Entire Facility' type of regulation applies (e.g. 20.2.70 or 20.2.73 NMAC).

Regulatory Citations for Regulations That Do Not, but Could Apply:
If there is a state or federal air quality regulation that does not apply, but you have a piece of equipment in a source category for which a regulation has been promulgated, you must **provide the low level regulatory citation showing why your piece of equipment is not subject to or exempt from the regulation. For example** if you have a stationary internal combustion engine that is not subject to 40 CFR 63, Subpart ZZZZ because it is an existing 2 stroke lean burn stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, your citation would be 40 CFR 63.6590(b)(3)(i). **We don't want a discussion of every non-applicable regulation, but if it is possible a regulation could apply, explain why it does not. For example,** if your facility is a power plant, you do not need to include a citation to show that 40 CFR 60, Subpart OOO does not apply to your non-existent rock crusher.

Regulatory Citations for Emission Standards:
For each unit that is subject to an emission standard in a source specific regulation, such as 40 CFR 60, Subpart OOO or 40 CFR 63, Subpart HH, include the low level regulatory citation of that emission standard. Emission standards can be numerical emission limits, work practice standards, or other requirements such as maintenance. **Here are examples:** a glycol dehydrator is subject to the general standards at 63.764C(1)(i) through (iii); an engine is subject to 63.6601, Tables 2a and 2b; a crusher is subject to 60.672(b), Table 3 and all transfer points are subject to 60.672(e)(1)

Federally Enforceable Conditions:
All federal regulations are federally enforceable. All Air Quality Bureau State regulations are federally enforceable except for the following: affirmative defense portions at 20.2.7.6.B, 20.2.7.110(B)(15), 20.2.7.11 through 20.2.7.113, 20.2.7.115, and 20.2.7.116; 20.2.37; 20.2.42; 20.2.43; 20.2.62; 20.2.63; 20.2.86; 20.2.89; and 20.2.90 NMAC. Federally enforceable means that EPA can enforce the regulation as well as the Air Quality Bureau and federally enforceable regulations can count toward determining a facility's potential to emit (PTE) for the Title V, PSD, and nonattainment permit regulations.

INCLUDE ANY OTHER INFORMATION NEEDED TO COMPLETE AN APPLICABILITY DETERMINATION OR THAT IS RELEVENT TO YOUR FACILITY'S NOTICE OF INTENT OR PERMIT.

EPA Applicability Determination Index for 40 CFR 60, 61, 63, etc: http://cfpub.epa.gov/adi/

STATE REGULATIONS:

STATE REGU-LATIONS CITATION	Title	Applies?	Unit(s) or Facility	JUSTIFICATION:
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 SIP approved regulation that limits the maximum allowable concentration of Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide. The facility meets maximum allowable concentrations of SO_2, H_2S, NO_x, and CO under this regulation.
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 emission per 20.2.7.110 NMAC.
20.2.23 NMAC	Fugitive Dust Control	No	Facility	This regulation does not apply as the facility has no need to fugitive dust control measures as the facility does not generate enough particulate matter.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	N/A	This facility does not have gas burning equipment (external combustion emission sources, such as gas fired boilers and heaters) having a heat input of greater than 1,000,000 million British Thermal Units per year per unit. The facility is not subject to this regulation and does not have emission sources that meet the applicability requirements under 20.2.33.108 NMAC.
20.2.34 NMAC	Oil Burning Equipment: NO_2	No	N/A	This facility does not have oil burning equipment (external combustion emission sources, such as oil fired boilers and heaters) having a heat input of greater than 1,000,000 million British Thermal Units per year per unit. The facility is not subject to this regulation and does not have emission sources that meet the applicability requirements under 20.2.34.108 NMAC.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No	N/A	This regulation establishes sulfur emission standards for natural gas processing plants. The facility does not meet the minimum sulfur emission requirement of an average of 5 tons/day [20.2.35.110.A NMAC]. Therefore, this facility is not subject to the operational, recordkeeping, or reporting requirements of this regulation.
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	N/A	N/A	These regulations were repealed by the Environmental Improvement Board. If you had equipment subject to 20.2.37 NMAC before the repeal, your combustion emission sources are now subject to 20.2.61 NMAC.
20.2.38 NMAC	Hydrocarbon Storage Facility	No	N/A	This facility does not meet the definition of a petroleum production facility or tank battery as defined in 20.2.38 NMAC and is therefore not subject to this regulation.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	This regulation establishes sulfur emission standards for sulfur recovery plants that are not part of petroleum or natural gas processing facilities. This regulation does not apply to the facility because this facility does not have a sulfur recovery plant.
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	C-1100, C-1200, C-2300, C-2400, and ENG-1 to ENG-5, HTR-802 to HTR-805, HTR-730, WL1-FL, WL2-FL	This regulation establishes controls on smoke and visible emissions from certain sources, including stationary combustion equipment. The engines, heaters, flares and combustors at this facility are subject to this regulation.
20.2.70 NMAC	Operating Permits	Yes	N/A	The facility will be increasing emissions to above Title V thresholds with this transition to a minor NSR. It will be major with respect to Title V and will have to submit an initial Title V permit within one (1) year of commencing operations as a Title V facility.
20.2.71 NMAC	Operating Permit Fees	Yes	N/A	This facility will be subject to 20.2.70 and will therefore comply with the fee requirements of this regulation.
20.2.72 NMAC	Construction Permits	Yes	Facility	This regulation establishes the requirements for obtaining a construction permit. This facility is subject to the requirements of this subpart and currently complies with GCP-4-5142-M6. After this permit is issued, the facility will comply with a NSR permit.

STATE REGU-LATIONS CITATION	Title	Applies?	Unit(s) or Facility	JUSTIFICATION:
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	This regulation establishes emission inventory requirements. The facility meets the applicability requirements of 20.2.73.300 NMAC. The facility will meet all applicable reporting requirements under 20.2.73.300.B.1 NMAC.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	Facility	This regulation establishes requirements for obtaining a prevention of significant deterioration permit. This facility is not a major source with respect to PSD and is therefore not subject to 20.2.74 NMAC.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This regulation establishes a schedule of operating permit emission fees. This facility is subject to 20.2.72 NMAC and in turn subject to 20.2.75 NMAC. The facility is exempt from annual fees under this part (20.2.75.11.E NMAC) as it is subject to fees pursuant to 20.2.71 NMAC.
20.2.77 NMAC	New Source Performance Standards	Yes	C-1100, C-1200, C-2300 C-2400, ENG-1 to ENG-5, FUG	The facility currently operates equipment that is subject to subparts of 40 CFR 60: the compressors associated with Units C-2300, C-2400 and units ENG-1 to ENG-5 will be subject to subpart OOOOa. All engines will be subject to subpart JJJJ. Additionally, the new fugitive components associated with the addition of the compressor station will trigger subpart OOOOa applicability. The collection of fugitive components at Willow Lake 1 will still remain subject to NSPS OOOO as the new compressor station will be considered a separate process unit.
20.2.78 NMAC	Emission Standards for HAPS	No	Units Subject to 40 CFR 61	This regulation establishes state authority to implement emission standards for hazardous air pollutants subject to 40 CFR Part 61. This facility does not emit hazardous air pollutants which are subject to the requirements of 40 CFR Part 61 and is therefore not subject to this regulation.
20.2.79 NMAC	Permits – Nonattainment Areas	No	Facility	This regulation establishes the requirements for obtaining a nonattainment area permit. The facility is not located in a non-attainment area and therefore is not subject to this regulation.
20.2.80 NMAC	Stack Heights	Yes	Facility	This regulation establishes requirements for the evaluation of stack heights and other dispersion techniques. As this facility is a new facility pursuant to 20.2.80.110, this facility is subject to this regulation.
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	C-1100, C-1200, C-2300, C-2400, and ENG-1 to ENG-5, DEHY-803, DEHY-804, and DEHY-805	The engines at this facility are subject to 40 CFR 63 subpart ZZZZ and the TEG dehydrators at this facility are subject to 40 CFR 63 subpart HH. Therefore, this regulation applies.

FEDERAL REGULATIONS:

FEDERAL REGU-LATIONS CITATION	Title	Applies?	Unit(s) or Facility	JUSTIFICATION:
40 CFR 50	NAAQS	Yes	Facility	This regulation defines national ambient air quality standards. The facility meets all applicable national ambient air quality standards for NO_X, CO, SO_2, H_2S, PM_{10}, and $PM_{2.5}$ under this regulation.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	C-1100, C-1200, C-2300 C-2400, ENG-1 to ENG-5, FUG	The facility currently operates equipment that is subject to subparts of 40 CFR 60: the compressors associated with Units C-2300, C-2400 and units ENG-1 to ENG-5 will be subject to subpart OOOOa. All engines will be subject to subpart JJJJ. Additionally, the new fugitive components associated with the addition of the compressor station will trigger subpart OOOOa applicability. The collection of fugitive components at Willow Lake 1 will still remain subject to NSPS OOOO as the new compressor station will be considered a separate process unit.

FEDERAL REGULATIONS CITATION	Title	Applies?	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for Electric Utility Steam Generating Units	No	N/A	This regulation establishes standards of performance for fossil-fuel-fired stream generators. This regulation does not apply as the facility does not have any fossil-fuel-fired steam generating units with a heat input rate of 250 MMBtu/hr [60.40(a)(1)].
NSPS 40 CFR60.40b Subpart Db	Electric Utility Steam Generating Units	No	N/A	This regulation establishes standards of performance for electric utility steam generating units. This regulation does not apply because the facility does not operate any electric utility steam generating units.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	No	N/A	This regulation does not apply as the facility does not have any steam generating units which meet the applicability criteria of a heat input greater than or equal to 10 MMBtu/hr.
NSPS 40 CFR 60, Subpart Ka	Standards of Performance for Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984	No	N/A	This regulation establishes performance standards for storage vessels for petroleum liquids for which construction, reconstruction, or modification commenced after May 18, 1978, and prior to July 23, 1984. The tanks at the facility, which are regulated emission sources, are 400 bbl (16,800 gallons) and 210 bbl (8,820 gallons). The capacities of the tanks at the facility are less than 40,000 gallons and are not subject to this regulation. [40 CFR Part 60.110a(a)]
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984	No	N/A	This regulation establishes performance standards for volatile organic liquid storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction, or modification commenced after July 23, 1984. This facility does not have any storage vessels with a capacity greater than or equal to 75 cubic meters that were constructed, reconstructed or modified after July 23, 1984. This regulation is not applicable."
NSPS 40 CFR 60.330 Subpart GG	Stationary Gas Turbines	No	N/A	There are no stationary gas turbines at this facility; this regulation does not apply.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from Onshore Gas Plants	No	N/A	This subpart applies to gas processing plants constructed after January 20, 1984, and on or before August 23, 2011. The gas processing plants were constructed after August 23, 2011.

FEDERAL REGULATIONS CITATION	Title	Applies?	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for Onshore Natural Gas Processing: SO_2 Emissions	No	N/A	NSPS Subpart LLL applies to onshore natural gas processing facilities that contain sweetening units that commenced construction after January 20, 1984 but before August 23, 2011. The facility is an onshore natural gas processing plant for which construction, reconstruction, or modification commenced after August 23, 2011. This subpart does not apply.
NSPS 40 CFR Part 60 Subpart OOOO	Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution for which construction, modification or reconstruction commenced after August 23, 2011 and before September 18, 2015	Yes	FUG	Units C-1100 and C-1200 were constructed prior to August 23, 2011 and are therefore not subject to this regulation. The compressors associated with Units C-2300, C-2400 and units ENG-1 to ENG-5 will be or were constructed or modified after September 18, 2015 and are subject to subpart OOOOa. The collection of fugitive components at Willow Lake 1 will remain subject to NSPS OOOO as the new compressor station will be considered a separate process unit. Finally, the new fugitive components associated with the addition of the compressor station will trigger subpart OOOOa applicability (not NSPS OOOO). The storage vessels at this facility each emit less than 6 tpy of VOC and are therefore not subject to this regulation.
NSPS 40 CFR Part 60 Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015	Yes	C-2300 C-2400, ENG-1 to ENG-5, FUG	The compressors associated with Units C-2300, C-2400 and units ENG-1 to ENG-5 will be or were constructed or modified after September 18, 2015 and are subject to subpart OOOOa. The collection of fugitive components at Willow Lake 1 will remain subject to NSPS OOOO as the new compressor station will be considered a separate process unit. Finally, the new fugitive components associated with the addition of the compressor station will trigger subpart OOOOa applicability (not NSPS OOOO). The fugitive components installed as part of the compressor station will operate as a separate process unit than the WL1 gas processing plant. The fugitive components at the WL1 gas processing plant will remain subject to NSPS OOOO and the new compressor station component will be subject to NSPS OOOOa. The storage vessels at this facility each emit less than 6 tpy of VOC and are therefore not subject to this regulation.
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	No	N/A	There are no CI engines at this facility; this regulation does not apply.

FEDERAL REGULATIONS CITATION	Title	Applies?	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	Yes	C-1100, C-1200, C-2300, C-2400, ENG-1 to ENG-5	All engines at this facility are new stationary spark ignition engines with respect to NSPS JJJJ pursuant to 40 CFR 60.4230(4)(i). This regulation applies.
NSPS 40 CFR 60 Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units	No	N/A	There are no electric generating units at this facility; this regulation does not apply.
NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No	N/A	There are no electric utility generating units at this facility; this regulation does not apply.
NSPS 40 CFR 60, Subparts WWW, XXX, Cc, and Cf	Standards of performance for Municipal Solid Waste (MSW) Landfills	No	N/A	This facility is not a municipal solid waste landfill; this regulation does not apply.
NESHAP 40 CFR 61 Subpart A	General Provisions	No	N/A	NSPS 40 CFR 61 does not apply to the facility because the facility does not emit or have the triggering substances on site and/or the facility is not involved in the triggering activity. The facility is not subject to this regulation. None of the subparts of Part 61 apply to the facility.
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. This facility does no process mercury ore, use mercury chlor-alkali cells, or incinerate or dry wastewater treatment plant sludge. Therefore, this facility is not subject to this regulation.
NESHAP 40 CFR 61 Subpart V	National Emission Standards for Equipment Leaks (Fugitive Emission Sources)	No	N/A	This regulation establishes national emission standards for equipment leaks (fugitive emission sources). The facility does not have equipment that operates in volatile hazardous air pollutant (VHAP) service [40 CFR Part 61.240]. The regulated activities subject to this regulation do not take place at this facility. The facility is not subject to this regulation.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	C-1100, C-1200, C-2300, C-2400, and ENG-1 to ENG-5, DEHY-803, DEHY-804, and DEHY-805	The engines at this facility are subject to 40 CFR 63 subpart ZZZZ and the TEG dehydrators at this facility are subject to 40 CFR 63 subpart HH. Therefore, this regulation applies.

FEDERAL REGULATIONS CITATION	Title	Applies?	Unit(s) or Facility	JUSTIFICATION:
MACT 40 CFR 63.760 Subpart HH	Oil and Natural Gas Production Facilities	Yes	DEHY-803, DEHY-804, and DEHY-805	This regulation establishes national emission standards for hazardous air pollutants from oil and natural gas production facilities. The facility is an area source of HAPs and meets the definition of a natural gas processing plant. MACT Subpart HH applies to emission points at oil and natural gas production facilities that are HAP major or HAP area sources and that process, upgrade, or store either hydrocarbon liquids or natural gas prior to the point of custody transfer. This regulation applies to TEG units at area sources pursuant to 40 CFR 63.760(b)(2). Unit DEHY-EG is an ethylene glycol unit and is not subject to this regulation. The facility's TEG dehydrators will comply with the requirements of this subpart as applicable. Since benzene emissions from each dehydrator are less than 1 tpy, the facility is subject to only recordkeeping requirements.
MACT 40 CFR 63 Subpart HHH	Natural Gas Transmission and Storage Facilities	No	N/A	This regulation establishes national emission standards for hazardous air pollutants from boilers and heaters at major sources for HAPs. This facility is an area source for HAPs therefore this regulation does not apply. [63.1270(a)]. Additionally, this facility is not a natural gas transmission or storage facility, as defined by this regulation.
MACT 40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	No	N/A	Subpart DDDDD covers majors sources of HAPs. Willow Lake GPP is an area source of HAPS; and therefore, is not subject to Subpart DDDDD.
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 subpart establishes national emission limitations and work practice standards for hazardous air pollutants (HAP) emitted from coal- and oil-fired electric utility steam generating units (EGUs) as defined in §63.10042 of this subpart. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations. This facility does not contain the affected units and is therefore not subject to this regulation.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary RICE	Yes	C-1100, C-1200, C-2300, C-2400, ENG-1 to ENG-5	The engines at this facility are subject to MACT ZZZZ. Units C-1100, C-1200, C-2300, C-2400 and ENG-1 to ENG-5 will fulfill the requirements of this regulation by complying with NSPS JJJJ.
40 CFR 64	Compliance Assurance Monitoring	No	N/A	Units C-1200, C-2300 and C-2400 have an uncontrolled PTE > 100 tpy of NOx and CO but are subject to NSPS JJJJ and per 40 CFR 64.2(b)(1)(i) can take credit for an emissions reductions. These units are therefore not subject to CAM. Units DEHY-803 and DEHY-805 have uncontrolled VOC emissions > 100 tpy. The flash tank vapors are rerouted to the reboilers to be used as fuel and the still vent vapors are sent to a BTEX condenser. Although these TEG units could potentially be subject to CAM, pursuant to 40 CFR 64.1, the reboiler and condenser are considered passive control measures which are process design features. As such, these reductions are not considered to be taken as a result of a control device, but rather as inherent to the dehydration process.
40 CFR 68	Chemical Accident Prevention	Yes	Facility	The facility does have a material above a threshold quantity listed in 40 CFR 68.130; and therefore, is subject to 40 CFR Part 68.
Title IV – Acid Rain 40 CFR 72	Acid Rain	No	N/A	This part establishes the acid rain program. This facility is not an acid rain source. This regulation does not apply.

FEDERAL REGULATIONS CITATION	Title	Applies?	Unit(s) or Facility	JUSTIFICATION:
Title IV – Acid Rain 40 CFR 73	Sulfur Dioxide Allowance Emissions	No	N/A	This regulation establishes sulfur dioxide allowance emissions for certain types of facilities. This facility is not an acid rain source. This regulation does not apply.
Title IV-Acid Rain 40 CFR 75	Continuous Emissions Monitoring	No	N/A	This facility does not produce commercial electricity for sale; therefore, this regulation does not apply.
Title IV – Acid Rain 40 CFR 76	Acid Rain Nitrogen Oxides Emission Reduction Program	No	N/A	This regulation establishes an acid rain nitrogen oxides emission reduction program. This regulation applies to each coal-fired utility unit that is subject to an acid rain emissions limitation or reduction requirement for SO2. This part does not apply because the facility does not operate any coal-fired units [40 CFR Part 76.1].
Title VI – 40 CFR 82	Protection of Stratospheric Ozone	No	N/A	This facility does not operate any equipment that releases CFCs; This regulation does not apply.

Section 14

Operational Plan to Mitigate Emissions

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

☑ **Title V Sources** (20.2.70 NMAC)**:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Emissions During Startups, Shutdowns, and Emergencies** defining the measures to be taken to mitigate source emissions during startups, shutdowns, and emergencies as required by 20.2.70.300.D.5(f) and (g) NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☑ **NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Source Emissions During Malfunction, Startup, or Shutdown** defining the measures to be taken to mitigate source emissions during malfunction, startup, or shutdown as required by 20.2.72.203.A.5 NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☐ **Title V** (20.2.70 NMAC)**, NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has established and implemented a Plan to Minimize Emissions During Routine or Predictable Startup, Shutdown, and Scheduled Maintenance through work practice standards and good air pollution control practices as required by 20.2.7.14.A and B NMAC. This plan shall be kept on site or at the nearest field office to be made available to the Department upon request. This plan should not be submitted with this application.

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

Section 15

Alternative Operating Scenarios

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Alternative Operating Scenarios: Provide all information required by the department to define alternative operating scenarios. This includes process, material and product changes; facility emissions information; air pollution control equipment requirements; any applicable requirements; monitoring, recordkeeping, and reporting requirements; and compliance certification requirements. Please ensure applicable Tables in this application are clearly marked to show alternative operating scenario.

Construction Scenarios: When a permit is modified authorizing new construction to an existing facility, NMED includes a condition to clearly address which permit condition(s) (from the previous permit and the new permit) govern during the interval between the date of issuance of the modification permit and the completion of construction of the modification(s). There are many possible variables that need to be addressed such as: Is simultaneous operation of the old and new units permitted and, if so for example, for how long and under what restraints? In general, these types of requirements will be addressed in Section A100 of the permit, but additional requirements may be added elsewhere. Look in A100 of our NSR and/or TV permit template for sample language dealing with these requirements. Find these permit templates at: https://www.env.nm.gov/aqb/permit/aqb_pol.html. Compliance with standards must be maintained during construction, which should not usually be a problem unless simultaneous operation of old and new equipment is requested.

In this section, under the bolded title "Construction Scenarios", specify any information necessary to write these conditions, such as: conservative-realistic estimated time for completion of construction of the various units, whether simultaneous operation of old and new units is being requested (and, if so, modeled), whether the old units will be removed or decommissioned, any PSD ramifications, any temporary limits requested during phased construction, whether any increase in emissions is being requested as SSM emissions or will instead be handled as a separate Construction Scenario (with corresponding emission limits and conditions, etc.

No alternate operating scenarios are being proposed with this application.

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.

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August 27, 2020

Air Dispersion Modeling Protocol
Crestwood New Mexico Pipeline, LLC
Willow Lake Gas Processing Plant

Purpose of Modeling

Crestwood New Mexico Pipeline LLC (Crestwood) is preparing an initial New Source Review (NSR) application pursuant to 20.2.72.200.A(1) NMAC for its **Willow Lake Gas Processing Plant**. The facility is currently authorized under **GCP-4-5142-M6** and will be transitioning to a NSR. With this transition, Crestwood proposes to add new equipment while modifying some existing sources. The facility will also be major with respect to Title V after the proposed modifications.

As a result of the aforementioned modifications, Crestwood seeks to demonstrate compliance with the New Mexico Ambient Air Quality Standards (NMAAQS) and National Ambient Air Quality Standards (NAAQS) for the following pollutants and averaging periods: **CO** (8-hr and 1-hr); **H_2S** (1-hr); **NO_2** (Annual, 24-hr, 1-hr); **$PM_{2.5}$** (Annual and 24-hr); **PM_{10}** (Annual and 24-hr); and **SO_2** (Annual, 24-hr, 3-hr and 1-hr). Pursuant to Table 6B of the NMED's Modeling Guidelines[1], certain standards are surrogates that demonstrate compliance for others (e.g. 1-hr SO_2 demonstrates compliance for Annual, 24-hr and 3-hr SO_2). Modeling will not be required for the following pollutants: Pb, Reduced S, and Toxic Air Pollutants (TAPs) as the facility is not a source. Ozone (O_3) is normally only modeled for regional compliance demonstrations and does not need to be modeled for NSR air permit applications. The modeling is being submitted to demonstrate compliance with the requirements of an initial NSR application and as such, no modeling waivers are being requested. The facility is located in Air Quality Control Region 155 where the PSD minor source baseline dates have been triggered for NO_2, SO_2, PM_{10} and $PM_{2.5}$.

Facility Location and Description

Crestwood's Willow Lake facility is located outside Malaga in Eddy County New Mexico. The UTM Coordinates of the center point of the facility are in **Zone 13 at 584,515 meters East and 3,562,481 meters North** with WGS 84 datum at an elevation of approximately 3,030 feet above mean sea level.

As permitted, The Willow Lake facility consists of two process units to recover natural gas liquids (NGL): Willow Lake 1 consists of a turbo-expander cryogenic separation system that removes a significant fraction of the C2+ compounds from the cooled gas stream, and Willow Lake 2 consists of a refrigerated Joule-Thompson (RJT) plant that also removes C2+ compounds using a combination of mechanical refrigeration and a Joule-Thompson effect. The NGL streams from these units are routed to pressurized storage tanks prior to truck loading and transport. Willow Lake 1 has a maximum processing capacity of 20 MMSCFD of natural gas. Willow Lake 2 has a maximum processing capacity of 35 MMSCFD of natural gas. The two processing units have separate inlets but share two outlet residue lines.

Willow Lake 1 and Willow Lake 2 (in addition to operating as two processing units), may also operate as a standalone compressor station (i.e., without processing). The proposed project includes the addition of five (5) CAT G3606 compressor engines (units ENG-1 through ENG-5) which will operate as a compressor station within the existing Willow Lake 1 area. The capacity of the existing compressor station TEG dehydrator (Unit D5) will be increased to 65 MMSCFD by replacing one of the three (3) glycol pumps so

[1] New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines (revised June 6, 2019)

that the maximum glycol recirculation rate will be 15 gallons per minute. The project will also include the installation of three (3) 400 barrel atmospheric storage tanks (Units CS-TK through CS-TK3) to store produced water and condensate. Crestwood is proposing to control existing tanks by adding two (2) vapor combustors (Units VC-1 and VC-2), alternatively two (2) VRUs (Units VRU-1 and VRU-2) would be installed. A VRU will be installed to control emissions from the new storage tanks and Willow Lake 1 existing tanks; storage tank emissions during VRU downtime will be directed to a new flare (Unit FL-2). The new flare will also control emissions from new equipment installed as part of this project including compressor blowdowns and upset events. The project will also include the installation of two pig receivers and additional piping and fugitive components associated with the new compressor station. As a conservative representation for the existing storage tanks, Crestwood proposes to model both VRU downtime and controlled emissions from the combustor as a worst case scenario approach. In actuality, either VRUs or combustors will be added, but emissions from both will be modeled to demonstrate compliance with the NAAQS and NMAAQS.

Sources to be Modeled

All sources at the facility are proposed to be modeled as either point sources or capped point sources with the exception of facility-wide fugitive emissions (Unit FUG) and haul roads (Unit HAUL). These point sources include compressor engines, reboilers, heaters, flares, and combustors. Fugitives will be modeled as a volume source with dimensions determined as detailed in Section 5.3.2 of the NMED's modeling guidelines. Haul roads will be modeled as a series of volume sources and will follow Section 5.3.3 of the modeling guidelines.

Model Input Options and Elevation Data

Dispersion modeling for this facility will be performed with the latest version of **AERMOD, v19191**. The model will be used to determine the impacts for all pollutants and will be executed for all applicable averaging periods in regulatory default mode.

The terrain will be incorporated into the modeling analysis through the use of AERMAP with the most recent 1 degree DEM data currently available. A building downwash analysis using the latest version of BPIP will be conducted and incorporated into the modeling analysis to account for potential effluent downwash due to any structures at the facility.

Receptor Grid Description

The facility center will be designated at 584,515 meters East and 3,562,481 meters North in Zone 13 and will serve as the center point for all receptor grids. **Table 1** below describes the receptor grids to be used in this modeling analysis. It is expected that the highest impacts from the source will be at or near the fence line.

Table 1. Receptor Grids

Grid	Start Point (meters from center)	End Point (meters from center)	Receptor spacing (m)
Fence line	N/A	N/A	50 m
Very Fine Grid	0 m	500 m	50 m
Fine Grid	500 m	1,500 m	100 m
Medium Grid	1,500 m	5,000 m	500 m
Coarse Grid	5,000 m	50,000 m	1,000 m

Meteorological Data

The **Carlsbad 2018 meteorological set** provided by the NMED will be used for this modeling analysis. This data set is representative of the area surrounding the facility in Eddy County, New Mexico.

Significance Analysis and Cumulative Impact Analysis (CIA)

The modeled ground-level concentrations will be compared to the corresponding significant impact levels (SILs) to determine whether the modeled ground-level concentrations at any receptor locations are greater than the SIL (i.e., "significant" receptors). If the significance analysis reveals that modeled ground-level concentrations for a particular pollutant and averaging period are greater than the applicable SIL, a Cumulative Impact Analysis (CIA) will be performed at the significant receptors.

If significant, the CIA will be performed including impacts from the facility sources and any surrounding sources within 25 km of the facility, as well as any sources within 50 km of the facility with emissions of 1,000 lb/hr or more. The inclusion of surrounding sources will follow the guidance shown in Table 6C: "Modeling the Design Value Summary (Default Modeling)" from the Air Dispersion Modeling Guidelines.

If applicable, the monitors listed in **Table 2** below will be used for background concentrations as they are nearest to the facility.

Table 2. Background Monitors (if Applicable)

Pollutant	Region	Location	Monitor ID
CO	The Rest of New Mexico	Del Norte High School	350010023
H_2S	N/A – The NMED has no H_2S background monitors		
NO_2	Eastern NM	Outside Carlsbad	5ZR, 350151005
$PM_{2.5}$	Eastern NM	Hobbs-Jefferson	5ZS, 350250008
PM_{10}	Eastern NM	Hobbs-Jefferson	5ZS, 350250008
SO_2	Eastern NM	Amarillo, 24th Ave	483751025

If necessary, an inventory of surrounding sources will be obtained from the NMED. If required, adjustments to surrounding source parameters will be made per the guidance in Section 4.8.1 of the Modeling Guidelines and documented in the modeling report. Surrounding source locations and elevations will be preserved as provided.

PSD Increment Analysis

If the results of the ROI show an exceedance of the significance levels, a PSD increment analysis will be conducted for the appropriate pollutants because the minor source baseline dates have been established in the region. If required, the PSD increment analysis will be conducted including all PSD increment consuming and expanding sources within 25 km of the facility as well as any sources within 50 km of the facility with emissions of 1,000 lb/hr or more per Table 6C of the Modeling Guidelines.

Class I Areas Analysis

The nearest Class I area is **Carlsbad Caverns National Park located 15.9 miles (25.6 km)** from the facility. The Class I Area analysis is applicable as the national park is within the 50 km inclusion zone for PSD minor sources.

The Class I SIL analysis will be performed for the 24-hr and annual PM_{10} and $PM_{2.5}$ averaging periods; annual NO_2 averaging period; and the annual, 24-hr, and 3-hr SO_2 averaging periods. The analysis will include the Willow Lake facility sources and a group of receptors around Carlsbad Caverns National Park. The receptor locations and elevations will be obtained from the most recent version of MergeMaster provided by the NMED. The impacts will be determined at the Class I receptors and will be compared to the Class I area SILs. If impacts at Carlsbad Caverns are greater than the Class I SILs, further Class I modeling will be performed.

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:	Willow Lake Gas Processing Plant (Willow Lake)
2	Name of company:	Crestwood New Mexico Pipeline, LLC (Crestwood)
3	Current Permit number:	GCP-4-5142-M6
4	Name of applicant's modeler:	Michael Celente
5	Phone number of modeler:	(505) 266-6611
6	E-mail of modeler:	mcelente@trinityconsultants.com

16-B: Brief

1	Was a modeling protocol submitted and approved?	Yes☒	No☐
2	Why is the modeling being done?	New Facility	
3	Describe the permit changes relevant to the modeling.		
	The facility is currently authorized under GCP-4-5142-M6. With this modification, Crestwood will be adding additional equipment and transitioning to a minor source NSR. This modeling represents the initial modeling completed for the facility.		
4	What geodetic datum was used in the modeling?	WGS84	
5	How long will the facility be at this location?	> 1 Year	
6	Is the facility a major source with respect to Prevention of Significant Deterioration (PSD)?	Yes☐	No☒
7	Identify the Air Quality Control Region (AQCR) in which the facility is located	155	

8	List the PSD baseline dates for this region (minor or major, as appropriate).		
	NO_2	3/16/1988	
	SO_2	7/28/1978	
	PM_{10}	2/20/1979	
	$PM_{2.5}$	11/13/2013	
9	Provide the name and distance to Class I areas within 50 km of the facility (300 km for PSD permits).		
	Carlsbad Caverns National Park – 15.9 miles (25.6 km)		
10	Is the facility located in a non-attainment area? If so describe below	Yes☐	No☒
	N/A		
11	Describe any special modeling requirements, such as streamline permit requirements.		
	N/A – No special modeling requirements are being requested as part of this modeling.		

16-C: Modeling History of Facility – N/A – Initial Modeling for Facility

1 Describe the modeling history of the facility, including the air permit numbers, the pollutants modeled, the National Ambient Air Quality Standards (NAAQS), New Mexico AAQS (NMAAQS), and PSD increments modeled. (Do not include modeling waivers).

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

16-D: Modeling performed for this application

1 For each pollutant, indicate the modeling performed and submitted with this application.
Choose the most complicated modeling applicable for that pollutant, i.e., culpability analysis assumes ROI and cumulative analysis were also performed.

Pollutant	ROI	Cumulative analysis	Culpability analysis	Waiver approved	Pollutant not emitted or not changed.
CO	☒	☐	☐	☐	☐
NO_2	☐	☒	☐	☐	☐
SO_2	☐	☒	☐	☐	☐

	H_2S	☐	☒	☐	☐	☐
	PM2.5	☐	☒	☐	☐	☐
	PM10	☐	☒	☐	☐	☐
	TSP	☐	☐	☐	☐	☒
	Lead	☐	☐	☐	☐	☒
	Ozone	☐	☐	☐	☐	☒
	State air toxic(s) (20.2.72.402 NMAC)	☐	☐	☐	☐	☒

16-E: New Mexico toxic air pollutants modeling – N/A – No TAP Modeling

1	List any New Mexico toxic air pollutants (NMTAPs) from Tables A and B in 20.2.72.502 NMAC that are modeled for this application.
2	List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required.

Pollutant	Emission Rate (pounds/hour)	Emission Rate Screening Level (pounds/hour)	Stack Height (meters)	Correction Factor	Emission Rate/ Correction Factor

16-F: Modeling options

1	Was the latest version of AERMOD used with regulatory default options? If not explain below.	Yes☒	No☐
	The latest version of AERMOD (v19191) was utilized in regulatory default mode. No justification is required.		

16-G: Surrounding source modeling

1	Date of surrounding source retrieval	August 25th, 2020

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
4,18,10004,10005,10008,10013,10014,10015,10017,10018	These sources are from the Willow Lake Gas Processing Plant. They are included in the facility modeling demonstration and would double counted if they were left in the surrounding sources. They have been removed.
GCP-2 and GCP-5 Sources	These sources were updated pursuant to Section 4.8.1.3 of the NMED's Modeling Guidelines (Revised June 2019). $PM_{2.5}$ emission rates were updated based on the following equation: $PM_{2.5}$ Emission Rate = (95 tpy TSP x 0.1875) = 17.8125 tpy $PM_{2.5}$ = 4.07 lb/hr $PM_{2.5}$ (divided by 8760 hr/yr multiplied by 2000 lb/ton)
O&G High Pressure Flares (Multiple IDs)	These sources were updated to remove $PM_{2.5}$ emissions as it was determined these units were permitted as smokeless flares (also to maintain compliance with 20.2.61 NMAC).
O&G Volume Source PM SSM Emissions (Multiple IDs)	These volume sources were updated to remove $PM_{2.5}$ emissions associated with SSM events at these facilities as it was determined no PM emissions were not authorized under SSM.

16-H: Building and structure downwash

1	How many buildings are present at the facility?	There are two (2) buildings that were included for purposes of downwash at this facility.		
2	How many above ground storage tanks are present at the facility?	There are a total of eight (8) above ground storage tanks at this facility.		
3	Was building downwash modeled for all buildings and tanks? If not explain why below.		Yes☐	No☒
	Tanks were not included. It was assumed that tanks would have a negligible contribution to building downwash based on their locations and parameters.			
4	Building comments	N/A		

16-I: Receptors and modeled property boundary

1	"Restricted Area" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with a steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area. A Restricted Area is required in order to exclude receptors from the facility property. If the facility does not have a Restricted Area, then receptors shall be placed within the property boundaries of the facility. Describe the fence or other physical barrier at the facility that defines the restricted area.			
	The facility is separated into two (2) distinct sites (Willow Lake 1 and Willow Lake 2) separated by a public road. Each portion of the facility is enclosed with fencing. Receptors are included in all areas not surrounding by fencing.			
2	Receptors must be placed along publicly accessible roads in the restricted area. Are there public roads passing through the restricted area? * A public road passes in between the two (2) facilities. Receptors are included on the public road and area in between the facilities that is not enclosed with fencing.		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
Fence Line	Circular	50 m	N/A	N/A	N/A
Very Fine Grid	Circular	50 m	0 m	500 m	N/A
Fine Grid	Circular	100 m	500 m	1,500 m	N/A
Medium Grid	Circular	500 m	1,500 m	5,000 m	N/A
Coarse Grid	Circular	1,000 m	5,000 m	50,000 m	N/A

5	Describe receptor spacing along the fence line. Receptors are spaced 50 m apart on the fence line.
6	Describe the PSD Class I area receptors. Receptors at Carlsbad Caverns National Park were provided by the NMED on August 25th, 2020.

16-J: Sensitive areas

1	Are there schools or hospitals or other sensitive areas near the facility? If so describe below. This information is optional (and purposely undefined) but may help determine issues related to public notice.	Yes☐	No☒
3	The modeling review process may need to be accelerated if there is a public hearing. Are there likely to be public comments opposing the permit application?	Yes☐	No☒

16-K: Modeling Scenarios

1	Identify, define, and describe all modeling scenarios. Examples of modeling scenarios include using different production rates, times of day, times of year, simultaneous or alternate operation of old and new equipment during transition periods, etc. Alternative operating scenarios should correspond to all parts of the Universal Application and should be fully described in Section 15 of the Universal Application (UA3).		
	N/A – No modeling scenarios are being proposed as part of this modeling.		
2	Which scenario produces the highest concentrations? Why?		
	N/A		
3	Were emission factor sets used to limit emission rates or hours of operation? (This question pertains to the "SEASON", "MONTH", "HROFDY" and related factor sets, not to the factors used for calculating the maximum emission rate.)	Yes☐	No☒
4	If so, describe factors for each group of sources. List the sources in each group before the factor table for that group. (Modify or duplicate table as necessary. It's ok to put the table below section 16-K if it makes formatting easier.) Sources: N/A		

5	Hour of Day	Factor	Hour of Day	Factor								
	1		13									
	2		14									
	3		15									
	4		16									
	5		17									
	6		18									
	7		19									
	8		20									
	9		21									
	10		22									
	11		23									
	12		24									
	If hourly, variable emission rates were used that were not described above, describe them below.											
	N/A											

6	Were different emission rates used for short-term and annual modeling? If so describe below.	Yes☐	No☒
	N/A		

16-L: NO_2 Modeling

1	Which types of NO_2 modeling were used? Check all that apply.	
	☒	ARM2
	☐	100% NO_X to NO_2 conversion
	☐	PVMRM
	☐	OLM
	☐	Other:
2	Describe the NO_2 modeling.	
	NO_2 modeling was completed using ARM2 in regulatory default mode. Default ratios were assumed.	
3	Were default NO_2/NO_X ratios (0.5 minimum, 0.9 maximum or equilibrium) used? If not describe and justify the ratios used below.	Yes☒ No☐
	N/A	
4	Describe the design value used for each averaging period modeled.	
	1-hour: High eighth high Annual: One Year Annual Average	

16-M: Particulate Matter Modeling

1	Select the pollutants for which plume depletion modeling was used.	
	☐	PM2.5
	☐	PM10
	☒	None
2	Describe the particle size distributions used. Include the source of information.	
	N/A – No particle size distributions were assumed.	
3	Does the facility emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2? Sources that emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2 are considered to emit significant amounts of precursors and must account for secondary formation of PM2.5.	Yes☒ No☐
4	Was secondary PM modeled for PM2.5?	Yes☐ No☒
5	If MERPs were used to account for secondary PM2.5 fill out the information below. If another method was used describe below. N/A	

NO_X (ton/yr)	SO_2 (ton/yr)	$[PM2.5]_{annual}$	$[PM2.5]_{24\text{-hour}}$

Secondary particulate formation was not investigated as part of this modeling. The EPA document on MERPs Guidance (EPA-454/R-19-003) states thresholds for the use of MERPs which are used in secondary particulate formation analysis. Crestwood is and will remain well below the thresholds for analyzing secondary particulate formation.

16-N: Setback Distances – N/A – No 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 units consume increment for all pollutants at this facility.

Unit ID	NO_2	SO_2	PM10	PM2.5

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

6	Are all the actual installation dates included in Table 2A of the application form, as required? This is necessary to verify the accuracy of PSD increment modeling. If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☒	No☐
	All units consume increment at this facility.		

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)
	WL1-FL	22.56 lb/lbmol	5,884,984	2.09
	WL2-FL	21.23 lb/lbmol	56,050,095	6.61

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☒
	N/A		
2	Describe the determination of sigma-Y and sigma-Z for fugitive sources.		
	The determination of the initial lateral dimension and initial vertical dimension was completed according to the guidance set forth in Section 5.3.2 of the NMED's Air Dispersion Modeling Guidelines (Revised June 2019).		
3	Describe how the volume sources are related to unit numbers. Or say they are the same.		
	Instead of splitting total fugitive emissions among Willow Lake 1 and Willow Lake 2, the total maximum lb/hr emissions from all sources were modeled at each facility as a conservative measure.		
4	Describe any open pits.		
	N/A		
5	Describe emission units included in each open pit.		
	N/A		

16-R: Background Concentrations

1	Were NMED provided background concentrations used? Identify the background station used below. If non-NMED provided background concentrations were used describe the data that was used.	Yes☒	No☐
	CO: Del Norte High School (350010023)		
	NO_2: Outside Carlsbad (350151005)		
	PM2.5: Hobbs-Jefferson (350450019)		
	PM10: Hobbs-Jefferson (350250008)		
	SO_2: Amarillo (483751025)		
	Other:		
	Comments:		
2	Were background concentrations refined to monthly or hourly values? If so describe below.	Yes☐	No☒
	N/A		

16-S: Meteorological Data

1	Was NMED provided meteorological data used? If so select the station used. Carlsbad	Yes☒	No☐
2	If NMED provided meteorological data was not used describe the data set(s) used below. Discuss how missing data were handled, how stability class was determined, and how the data were processed.		
	N/A		

16-T: Terrain

1	Was complex terrain used in the modeling? If not, describe why below.	Yes☐	No☒
	N/A		
2	What was the source of the terrain data?		
	Terrain was incorporated into the modeling analysis through the use of AERMAP with the most recent 1 degree DEM data currently available.		

16-U: Modeling Files

1 Describe the modeling files:

File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
Willow_Lake_NO2	NO2 (1-HR, 24-HR, ANNUAL)	SIA, Cumulative
Willow_Lake_NO2_CIA_Annual	NO2 (ANNUAL)	PSD Class II
Willow_Lake_Class_I_NO2_SIL	NO2 (ANNUAL)	PSD Class I
Willow_Lake_CO_SIL	CO (1-HR, 8-HR)	SIA
Willow_Lake_PM2.5_CIA_ANNUAL	PM2.5 (ANNUAL)	Cumulative, PSD Class II
Willow_Lake_PM2.5_CIA_24HR	PM2.5 (24-HR)	Cumulative, PSD Class II
Willow_Lake_Class_I_PM2.5_SIL	PM2.5 (ANNUAL & 24-HR)	PSD Class I
Willow_Lake_PM10_SIL	PM10 (ANNUAL & 24-HR)	SIA
Willow_Lake_SO2_SIL	SO2 (1-HR, 3-HR, 24-HR, ANNUAL)	SIA, Cumulative
Willow_Lake_SO2_CIA_24HR	SO2 (24 HR)	PSD Class II
Willow_Lake_Class_I_SO2_SIL	SO2 (24HR)	PSD Class I
Willow_Lake_H2S	H2S (1-HR)	SIA, Cumulative

16-V: PSD New or Major Modification Applications – N/A – This facility is a minor source with respect to PSD			
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)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard
CO (8-HR) Significance	94.57	-	-	94.57	500	18.9%
CO (1-HR) Significance	133.88	-	-	133.88	2000	6.7%
PM10 (ANNUAL) Significance	0.54	-	-	0.54	1	54.1%
PM10 (24-HR) Significance	4.07	-	-	4.07	5	81.3%
SO2 (3-HR) Significance	12.96	-	-	12.96	25	51.8%
SO2 (ANNUAL) Significance	0.69	-	-	0.69	1	69.4%
SO2 (1-HR) NAAQS	13.19	-	68.30	81.49	196.4	41.5%
SO2 (24-HR) PSD Class I Significance	0.0091	-	-	0.0091	0.2	4.5%
SO2 (24-HR) PSD Class II	6.40	10.02	-	10.02	91	11.0%
NO2 (ANNUAL) NMAAQS	8.26	-	5.00	13.26	94.0	14.1%
NO2 (1-HR) NAAQS	113.47	-	38.70	152.17	188.03	80.9%
NO2 (ANNUAL) PSD Class I Significance	0.023	-	-	0.023	0.1	23.0%
NO2 (ANNUAL) PSD Class II	8.26	24.99	-	24.99	25	99.97%
PM2.5 (ANNUAL) NAAQS	0.54	2.13	5.90	8.03	12	66.9%
PM2.5 (24-HR) NAAQS	2.57	6.73	15.80	22.53	35	64.4%
PM2.5 (ANNUAL) PSD Class I Significance	0.00030	-	-	0.00030	0.05	0.6%
PM2.5 (ANNUAL) Class II	0.54	1.95	-	1.95	4	48.7%
PM2.5 (24-HR) PSD Class I	0.0074	-	-	0.0074	0.27	2.7%
PM2.5 (24-HR) PSD Class II	4.07	4.27	-	4.27	9	47.4%
H2S (1-HR) NMAAQS	35.62	35.62	-	35.62	139.3	25.6%

16-X: Summary/conclusions

1	A statement that modeling requirements have been satisfied and that the permit can be issued.
	The modeling shows that there are no exceedances of any applicable NAAQS or NMAAQS. 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.

Compliance Test History Table

Unit No.	Test Description	Test Date
C-1100	Tested in accordance with EPA test methods for NO_X and CO as required by GCP-4-VIII(2)(c). VOC emissions are tested every three (3) years or every 8,760 hours pursuant to NSPS JJJJ.	1/29/18
		4/27/18
		7/25/18
		10/26/18
		1/18/19
		4/8/19
		7/8/19
		10/28/19
		1/24/2020
		4/21/2020
		7/1/2020
C-1200	Tested in accordance with EPA test methods for NO_X and CO as required by GCP-4-VIII(2)(c). VOC emissions are tested every three (3) years or every 8,760 hours pursuant to NSPS JJJJ.	1/31/18
		4/27/18
		7/25/18
		10/26/18
		1/18/19
		4/8/19
		7/8/19
		10/28/19
		1/24/2020
		4/22/2020
		7/1/2020
C-2300	Tested in accordance with EPA test methods for NO_X and CO as required by GCP-4-VIII(2)(c). VOC emissions are tested every three (3) years or every 8,760 hours pursuant to NSPS JJJJ.	1/26/18
		4/3/18
		7/30/18
		10/26/18
		1/18/19
		4/9/19
		7/22/19
		10/28/19
		1/24/2020
		4/21/2020
		7/1/2020
C-2400	Tested in accordance with EPA test methods for NO_X and CO as required by GCP-4-VIII(2)(c). VOC emissions are tested every three (3) years or every 8,760 hours pursuant to NSPS JJJJ.	1/26/18
		4/3/18
		7/30/18
		10/26/18
		1/18/19
		4/9/19
		7/22/19
		10/28/19
		1/27/2020
		4/29/2020
		7/1/2020

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 additional relevant information is being reported in this application.

Section 22: Certification

Company Name: Crestwood New Mexico Pipeline LLC

I, Jonathan Smith, 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 27 day of August, 2020, upon my oath or affirmation, before a notary of the State of New Mexico.

*Signature — Date: 8-27-2020

Jonathan Smith — Printed Name

Vice President, G&P Operations — Title

Scribed and sworn before me on this 27 day of August, 2020.

My authorization as a notary of the State of New Mexico expires on the 22nd day of October, 2022.

Notary's Signature — Date: 8.27.20

Christine Montoya
Notary's Printed Name

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

OFFICIAL SEAL
Christine Montoya
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires 10.22.22