NMED AIR QUALITY APPLICATION

TITLE V RENEWAL APPLICATION

El Paso Natural Gas Company, L.L.C.
Washington Ranch Storage Facility

Prepared By:

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May 2019

Project 193201.0067

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May 7, 2013

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

RE: Application for Title V Renewal
El Paso Natural Gas Company LLC – Washington Ranch Storage Facility

Dear Mr. Schooley:

On behalf of El Paso Natural Gas Company LLC, we are submitting an application for a Title V V Renewal for the Washington Ranch Storage Facility. The facility is located approximately 9 miles southwest of Whites City, New Mexico in Eddy County. The facility is currently authorized to operate under NSR Permits 0428-M7 and Title V Operating Permit being updated is P064-R3.

The format and content of this application are consistent with the Bureau's current policy regarding Title V applications. Title V Permit P064-R2 expires on May 08, 2020. This application is being submitted in accordance with 20.2.70.300.B.2 NMAC, requiring a timely application for a Title V renewal be submitted at least 12 months prior to the date of permit expiration.

Enclosed are two hard copies of the application, including an original certification and two discs containing the electronic files. Please feel free to contact either myself at (505) 266-6611 or Zainab Naqvi, Air Permitting and Compliance of El Paso Natural Gas LLC, at (713) 420-1841 if you have any questions regarding this application.

Sincerely,

Adam Erenstein
Manager of Consulting Services

Cc: Zainab Naqvi
Trinity Project File 193201.0067

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. For NOI applications, submit the entire UA1, UA2, and UA3 applications on a single CD (no copies are needed). For NOIs, hard copies of UA1, Tables 2A, 2D & 2F, Section 3 and the signed Certification Page are required.

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.: N/A in the amount of N/A

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

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

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

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

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known (see 1st 3 to 5 #s of permit IDEA ID No.): 220	Updating Permit/NOI #: P064-R3
1	Facility Name: Washington Ranch Storage Facility	Plant primary SIC Code (4 digits): 4922	
		Plant NAIC code (6 digits): 486210	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): Take US-180 W for 5.4 miles from Whites City. Turn right onto Co Rd 418, Washington Ranch Road. Stay on Co Rd 418, Washington Ranch Road for 5.1 miles.		
2	Plant Operator Company Name: El Paso Natural Gas Company LLC	Phone/Fax: 520-663-4200/520-663-4259	

a	Plant Operator Address: 5151 E. Broadway Blvd., Suite 1680, Tucson, AZ 85711	
b	Plant Operator's New Mexico Corporate ID or Tax ID: 46-0809216	
3	Plant Owner(s) name(s): El Paso Natural Gas Company, LLC	Phone/Fax: 520-663-4200 / 520-663-4259
a	Plant Owner(s) Mailing Address(s): 5151 E. Broadway Blvd., Suite 1680, Tucson, AZ 85711	
4	Bill To (Company): El Paso Natural Gas Company, LLC	Phone/Fax: (713) 420-1841
a	Mailing Address: 1001 Louisiana, Suite 1000, Houston, TX 77002	E-mail: Zainab_Naqvi@kindermorgan.com
5	☒ Preparer: Trinity Consultants ☒ Consultant: Adam Erenstein	Phone/Fax: 505-266-6611
a	Mailing Address: 9400 Holly Ave NE Bldg. 3 Suite 300, Albuquerque, NM 87122.	E-mail: aerenstein@trinityconsultants.com
6	Plant Operator Contact: Richard Najera	Phone/Fax: (575) 234-5407
a	Address: 4305 National Park Highway, Carlsbad, NM 88220	E-mail: Richard_Najera@kindermorgan.com
7	Air Permit Contact: Zainab Naqvi	Title: Air Permitting and Compliance
a	E-mail: Zainab_Naqvi@kindermorgan.com	Phone/Fax: (713) 420-1841
b	Mailing Address: 1001 Louisiana, Suite 1000, Houston, TX 77002	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? ☒ Yes ☐ No	1.b If yes to question 1.a, is it currently operating in New Mexico? ☒ Yes ☐ No
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? ☐ Yes ☒ No	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? ☒ Yes ☐ No
3	Is the facility currently shut down? ☐ Yes ☒ No	If yes, give month and year of shut down (MM/YY): N/A
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? ☐ Yes ☒ No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? ☐Yes ☐No ☒ N/A	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☒ Yes ☐ No	If yes, the permit No. is: P-064-R3
7	Has this facility been issued a No Permit Required (NPR)? ☐ Yes ☒ No	If yes, the NPR No. is: N/A
8	Has this facility been issued a Notice of Intent (NOI)? ☐ Yes ☒ No	If yes, the NOI No. is: N/A
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? ☒ Yes ☐ No	If yes, the permit No. is: 0428-M7
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☐ Yes ☒ No	If yes, the register No. is: N/A

Section 1-C: Facility Input Capacity & Production Rate

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: 10.4 MMscf*	Daily: 250 MMscf*	Annually: 92,000 MMscf
b	Proposed	Hourly: 10.4 MMscf*	Daily: 250 MMscf*	Annually: 92,000 MMscf
2	What is the facility's maximum production rate, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: 10.4 MMscf*	Daily: 250 MMscf*	Annually: 92,000 MMscf
b	Proposed	Hourly: 10.4 MMscf	Daily: 250 MMscf	Annually: 92,000 MMscf

*Provided for informational purposes only; Not intended to be an enforceable condition.

Section 1-D: Facility Location Information

1	Section: 34	Range: 24E	Township: 25S	County: Eddy	Elevation (ft): 3,717
2	UTM Zone: ☐ 12 or ☒ 13			Datum: ☐ NAD 27 ☐ NAD 83 ☒ WGS 84	
a	UTM E (in meters, to nearest 10 meters): 548,630 m E			UTM N (in meters, to nearest 10 meters): 3,549,580 m N	
b	**AND** Latitude (deg., min., sec.): 32° 4' 53.846"			Longitude (deg., min., sec.): -104° 29' 3.523"	
3	Name and zip code of nearest New Mexico town: Whites City 88268				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): Take US-180 W for 5.4 miles from Whites City. Turn right onto Co Rd 418, Washington Ranch Road. Stay on Co Rd 418, Washington Ranch Road for 5.1 miles.				
5	The facility is 9.1 miles southwest of Whites City.				
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: N/A - This application is being submitted under 20.2.70 NMAC				
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) N/A – This application is being submitted under 20.2.70 NMAC				
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): 5.5 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: 340 m				
12	Method(s) used to delineate the Restricted Area: Continuous Fencing "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.				
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ☒ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.				
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☒ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility? - 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	($\frac{\text{hours}}{\text{year}}$): 8760		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start: N/A	☐AM ☐PM	End: N/A	☐AM ☐PM		
3	Month and year of anticipated start of construction: N/A – No construction is proposed.					
4	Month and year of anticipated construction completion: N/A – No construction is proposed					
5	Month and year of anticipated startup of new or modified facility: N/A - No construction is proposed					
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: Xcel Energy 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.): Heriberto Carreon (20.2.70.300.D.2 NMAC)	Phone: (806) 354-3108
a	R.O. Title: Director-Operations Division 4	R.O. email: Heriberto_Carreon@kindermorgan.com
b	R. O. Address: 4711 S. Western Amarillo, TX 79109	
2	Alternate Responsible Official: Joseph E McLaughlin (20.2.70.300.D.2 NMAC)	Phone: (713) 369-9847
a	A. R.O. Title: Vice President of Operations	A. R.O. e-mail: Joe_Mclaughlin@kindermorgan.com
b	A. R. O. Address: 1001 Louisiana, Suite 1000, Houston, TX 77002	
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): El Paso Natural Gas Company, LLC was formerly named "El Paso Natural Gas Company" (until 8/6/2012);both names may appear on operating permits, and refer to the same company.	
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.): Kinder Morgan, Inc	
a	Address of Parent Company: 1001 Louisiana Street; Suite 1000, 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 – El Paso Natural Gas Company, L.L.C. has no subsidiaries.	
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: Zainab Naqvi (713) 420-1841 (Air Permit Contact)	

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 23 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 does not need to be 2-hole punched, but **must be double sided**. 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 on compact disk(s) (CD). For 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.

4) If **air dispersion modeling** is required by the application type, include the **NMED Modeling Waiver** **OR** one additional electronic copy of the air dispersion modeling including the input and output files. The dispersion modeling ***summary report only*** should be submitted as hard copy(ies) unless otherwise indicated by the Bureau. The complete dispersion modeling study, including all input/output files, should be submitted electronically as part of the electronic submittal.

5) If 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.

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

1) All required electronic documents shall be submitted in duplicate (2 separate CDs). 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 with the number of additional hard copies corresponding to the number of CD copies required. 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 3 electronic files (2 MSWord docs: Universal Application section 1 and Universal Application section 3-19) and 1 Excel file of the tables (Universal Application section 2) on the CD(s). 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 # (0 for original, 1, 2, etc.; which will help keep track of subsequent partial update(s) to the original submittal. The footer information should not be modified by the applicant.

Table of Contents

Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
1	Compressor Engine	Cooper-Bessemer	12Q155 HC2	48833	4,500 hp	4,500 hp	Unknown 06/1982	N/A 1	20200252	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	2SLB	N/A
2	Compressor Engine	Cooper-Bessemer	12Q155 HC2	48834	4,500 hp	4,500 hp	Unknown 06/1982	N/A 2	20200252	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	2SLB	N/A
3a	Glycol Dehydrator Reboiler	Lakota Eng. Systems	N/A	4150-02	3 MMBtu/hr	3 MMBtu/hr	Unknown 06/1982	N/A 3a	31000228	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
3b	Glycol Dehydrator Regenerator	N/A	N/A	N/A	250 MMscf/d	250 MMscf/d	Unknown N/A	6 3b	31000227	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
4	Gas Heater	Lakota Eng. Systems	N/A	2116-01	6 MMBtu/hr	6 MMBtu/hr	Unknown 06/1982	N/A 4	31000404	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
6	Process Flare	Flare Industries	660	N/A	710.9 lb/hr	710.9 lb/hr	2002 07/2004	N/A 6	30600903	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FUG	Facility-Wide Fugitive Emissions	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
SSM/M1	Startup, Shutdown, & Maintenance/ Malfunction Emissions	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
Pump**	Diesel Water Pump Engine	Cummins	V-378F2	20225928	137 hp	137 hp	Unknown Nov-81	N/A Pump	20200102	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
5**	Auxiliary Engine	Cummins	GTA 1710	41500014	600 hp	600 hp	Unknown Jun-82	N/A 5	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		

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

[2] Specify dates required to determine regulatory applicability.

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

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

**Units 5 and Pump are subject to MACT ZZZZ and are not considered insignificant activities; however the units are not subject to any emission limitations under MACT ZZZZ or permitting under 20.2.72 NMAC.

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

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

Unit Number	Source Description	Manufacturer	Model No.	Max Capacity	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5)	Date of Manufacture /Reconstruction[2]	For Each Piece of Equipment, Check Once
			Serial No.	Capacity Units	Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Installation /Construction[2]	
T-001	Lube Oil Storage Tank	Unknown	N/A	310		Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	IA List Item #5	06/1982	
T-002	Lube Oil Storage Tank	Unknown	N/A	8,820		Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	IA List Item #5	06/1982	
T-003	Ethylene Glycol Storage Tank	Unknown	N/A	8,820		Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	IA List Item #5	06/1982	
T-004	Naphtha 140 Storage Tank	Unknown	N/A	1,500		Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	IA List Item #5	06/1982	
T-005	Triethylene Glycol Storage Tank	Unknown	N/A	8,820		Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	IA List Item #5	06/1982	
T-006	Waste Oil Storage Tank	Unknown	N/A	8,820		Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	IA List Item #5	06/1982	
T-007	Formation Water Storage Tank	Unknown	N/A	42,000		Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	IA List Item #1b	06/1982	
H-1	2” Primary Burner	Unknown	N/A	0.5		Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			1309-441	MMBtu/hr	IA List Item #1b	Unknown	
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ 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
6	Process flare used for controlling emissions from Unit 3b	07/2004	VOC, HAPs	3b	98%	Engineering Estimate

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

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

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

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

Unit No.	NOx		CO		VOC		SOx		TSP[1]		PM_{10}		$PM_{2.5}$		H_2S[2]		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	27.28	119.50	27.28	119.50	19.84	86.91	0.48	2.08	-	-	1.12	4.92	1.12	4.92	-	-	-	-
2	27.28	119.50	27.28	119.50	19.84	86.91	0.48	2.08	-	-	1.12	4.92	1.12	4.92	-	-	-	-
3a	0.32	1.39	0.27	1.17	0.017	0.076	0.045	0.20	-	-	0.024	0.11	0.024	0.11	-	-	-	-
3b	-	-	-	-	20.02	87.68	5.86E-03	0.026	-	-	-	-	-	-	-	-	-	-
4	0.63	2.78	0.53	2.33	0.035	0.15	0.091	0.40	-	-	0.048	0.21	0.048	0.21	-	-	-	-
5[2]	14.19	3.55	1.94	0.48	0.41	0.10	0.052	0.013	-	-	2.68E-04	6.70E-05	2.68E-04	6.70E-05	-	-	-	-
6	6.44E-03	0.028	0.052	0.23	-	-	1.43E-03	6.26E-03	-	-	-	-	-	-	-	-	-	-
Pump[2]	4.25	1.06	0.92	0.23	0.34	0.086	-	-	-	-	0.30	0.075	0.30	0.075	-	-	-	-
FUG	-	-	-	-	*	1.11	-	-	-	-	-	-	-	-	-	-	-	-
Totals	73.96	247.79	58.27	243.43	60.51	263.02	1.15	4.80	-	-	2.62	10.23	2.62	10.23	-	-	-	-

[1]TSP Emission standard was repealed on November 30, 2018.

[3]Units 5 and Pump are subject to MACT ZZZZ and are not considered insignificant activities; however the units are not subject to any emission limitations under MACT ZZZZ or permitting under 20.2.72 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		TSP[1]		PM_{10}		$PM_{2.5}$		H_2S[3]		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	27.28	119.50	27.28	119.50	19.84	86.91	0.48	2.08	-	-	1.12	4.92	1.12	4.92	-	-	-	-
2	27.28	119.50	27.28	119.50	19.84	86.91	0.48	2.08	-	-	1.12	4.92	1.12	4.92	-	-	-	-
3a	0.32	1.39	0.27	1.17	0.017	0.076	0.045	0.20	-	-	0.024	0.105	0.024	0.11	-	-	-	-
3b[2]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	0.63	2.78	0.53	2.33	0.035	0.15	0.091	0.40	-	-	0.048	0.21	0.048	0.21	-	-	-	-
5[3]	14.19	3.55	1.94	0.48	0.41	0.10	0.052	0.013	-	-	2.68E-04	6.70E-05	2.68E-04	6.70E-05	-	-	-	-
6	0.029	0.13	0.24	1.03	5.18	22.71	0.00729	0.032	-	-	-	-	-	-	-	-	-	-
Pump[3]	4.25	1.06	0.92	0.23	0.34	0.086	-	-	-	-	0.30	0.075	0.30	0.075	-	-	-	-
FUG	-	-	-	-	*	1.11	-	-	-	-	-	-	-	-	-	-	-	-
Totals	73.98	247.89	58.45	244.24	45.68	198.05	1.15	4.80	-	-	2.62	10.23	2.62	10.23	-	-	-	-

[1]TSP Emission standard was repealed on November 30, 2018.

[2] Dehydrator regenerator emissions are routed to the process flare (Unit 6) for destruction. Dehydrator flash tank emissions which vent to atmosphere are also assigned to Unit 6. In a controlled scenario, there are no emissions from unit 3b; all emissions from this unit are accounted for under Unit 6 emissions.

[3]Units 5 and Pump are subject to MACT ZZZZ and are not considered insignificant activities; however the units are not subject to any emission limitations under MACT ZZZZ or permitting under 20.2.72 NMAC.

"-" Denotes emissions of this pollutant are not expected.

"*" Denotes an hourly emission rate is not appropriate for this unit.

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 scheduled 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		TSP[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
SSM/M1[3]	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-
Totals																		

[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 TSP unless TSP is set equal to PM10 and PM2.5.

[3] Consideration of SSM emissions according to NMED guidance (Implementation Guidance for Permitting SSM Emissions and Excess Emissions, June 7, 2012) demonstrates that consolidating VOC emissions from SSM and upset/malfunction conditions to a maximum 10 tpy per pollutant would not trigger any additional requirements. Kinder Morgan has requested that both routine and predictable startup and shutdown events and malfunction events be combined with a limit of 10 tpy of VOC.

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		TSP		PM10		PM2.5		□ H_2S or □ Lead	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Totals:																	

Table 2-H: Stack Exit Conditions

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

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft.)
						(acfs)	(dscfs)			
1	1	V	No	42	540	431		N/A	51	3.27
2	2	V	No	42	540	431		N/A	51	3.27
3a	3	V	No	30	600	20		N/A	26	1.00
3b*	3	V	No	*	*	*		*	*	*
4	4	V	No	60	600	41		N/A	13	2.00
6	3b, 6	V	No	25	1832	13		N/A	65.6	0.50
Pump	Pump	V	No	20	895	809		N/A	258	0.50
5	5	V	No	20	600	33		N/A	166	0.50

*Dehydrator regenerator emissions (3b) are routed to the flare (unit 6) for destruction. For convenience, dehydrator flash tank emissions (which vent to atmosphere) are also assigned to unit 6.

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		Acrolein ☒ HAP or ☐TAP		n-Hexane ☒ HAP or ☐TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	1	3.67	16.09	3.22	14.1	0.22	0.98	0.029	0.13								
2	2	3.67	16.09	3.22	14.1	0.22	0.98	0.029	0.13								
3a	3a	5.39E-03	0.024	1.31E-03	5.75E-03	-	-	1.20E-03	5.25E-03								
3b[1]	3b	-	-	-	-	-	-	-	-								
4	4	0.11	0.47	6.34E-03	0.028	-	-	0.011	0.046								
5[2]	5	0.015	0.065	0.011	0.048	1.07E-03	4.70E-03	2.28E-04	1.00E-03								
6	6	0.41	1.79	-	-	-	-	0.23	1.02								
FUG	FUG	*	0.024	-	-	-	-	-	-								
Pump[2]	Pump	3.84E-03	9.61E-04	1.20E-03	2.99E-04	9.38E-05	2.34E-05	-	-								
Totals:		7.89	34.55	6.47	28.33	0.45	1.96	0.30	1.33								

[1]Dehydrator regenerator emissions are routed to the flare (unit 6) for destruction. For convenience, dehydrator flash tank emissions (which vent to atmosphere) are also assigned to unit 6.
"-" Denotes emissions of this pollutant are not expected.
[2]Units 5 and Pump are subject to MACT ZZZZ and are not considered insignificant activities; however the units are not subject to any emission limitations under MACT ZZZZ or permitting under 20.2.72 NMAC.

Table 2-J: Fuel

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

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash
1	Natural Gas	Pipeline quality sweet natural gas	947 Btu/scf	33.3 Mscf	291.4 MMscf	5 gr S/100 scf	Neg.
2	Natural Gas	Pipeline quality sweet natural gas	947 Btu/scf	33.3 Mscf	291.4 MMscf	5 gr S/100 scf	Neg.
3a	Natural Gas	Pipeline quality sweet natural gas	947 Btu/scf	3.2 Mscf	27.8 MMscf	5 gr S/100 scf	Neg.
4	Natural Gas	Pipeline quality sweet natural gas	947 Btu/scf	6.3 Mscf	55.5 MMscf	5 gr S/100 scf	Neg.
6[1]	Natural Gas	Pipeline quality sweet natural gas	947 Btu/scf	100 scf	0.88 MMscf	5 gr S/100 scf	Neg.
Pump	Diesel	Purchased commercial	19,300 Btu/lb	7.4 gal	3700 gal	15 ppm	Neg.
5	Natural Gas	Pipeline quality sweet natural gas	947 Btu/scf	3.67 Mscf	1.84 MMscf	5 gr S/100 scf	Neg.

[1]Unit 6 represents pilot emissions only; the flare also combust condenser off gas from the dehydrator regenerator

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

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

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
N/A - All tanks at the facility are exempt equipment.									

Table 2-L: Tank Data

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

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			
N/A - All tanks at the facility are exempt equipment.													

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)**
Washington Ranch Storage Facility does not process or produce materials.							

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 - There are not CEMs 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 - There are no PEMs 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**									
1	**mass GHG**	16135	0.030	0.30	-	-								16135	
	CO_2e	16135	9.05	7.59	-	-									16151
2	**mass GHG**	16135	0.030	0.30	-	-								16135	
	CO_2e	16135	9.05	7.59	-	-									16151
3a	**mass GHG**	1537	2.89E-03	0.029	-	-								1537	
	CO_2e	1537	0.86	0.72	-	-									1538
3b[6]	**mass GHG**	-	-	-	-	-								-	-
	CO_2e	-	-	-	-	-								-	-
4	**mass GHG**	3073	5.78E-03	0.058	-	-								3073	
	CO_2e	3073	1.72	1.45	-	-									3076
6	**mass GHG**	201	7.4E-06	0.10	-	-								201	
	CO_2e	201	2.20E-03	2.58	-	-									204
FUG[7]	**mass GHG**	0	0	1.11	-	-								1	
	CO_2e	0	0	27.81	-	-									28
SSM/M 1	**mass GHG**	0	0	0	-	-								0	
	CO_2e	0	0	0	-	-									0
Pump	**mass GHG**	3129	0.32	0.16	-	-								3129	
	CO_2e	3129	95.06	4.05	-	-									3228
5	**mass GHG**	102	1.90E-03	1.90E-03	-	-								102	
	CO_2e	102	0.57	0.048	-	-									102
	mass GHG														
	CO_2e														
	mass GHG														
	CO_2e														
	mass GHG														
	CO2e														
Total	**mass GHG**													40313	
	CO_2e														40479

[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.

[6] Dehydrator regenerator emissions are routed to the process flare (Unit 6) for destruction. Dehydrator flash tank emissions which vent to atmosphere are also assigned to Unit 6. In a controlled scenario, there are no emissions from unit 3b; all emissions from "-" Denotes emissions of this pollutant are not expected.

[7] FUG methane emissions conservatively estimated to equal VOC emissions.

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).

Routine or predictable emissions during Startup, Shutdown, and Maintenance (SSM): 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.

The Washington Ranch Storage Facility owned and operated by El Paso Natural Gas Company, LLC. (EPNG), a Kinder Morgan Company, is a natural gas storage facility which compresses and injects natural gas into underground storage wells and withdraws the gas for delivery into the pipeline. The facility is located approximately 9 miles southwest of Whites City, New Mexico in Eddy County.

The facility is currently operating under operating permit: P-064-R3 and NSR Permit: 0428-M7. This application is being submitted pursuant to 20.2.70.300.B(2) NMAC. As required by 20.2.70.300.B(2) NMAC, this application for a Title V renewal is being submitted at least twelve (12) months prior to the expiration of the current permit.

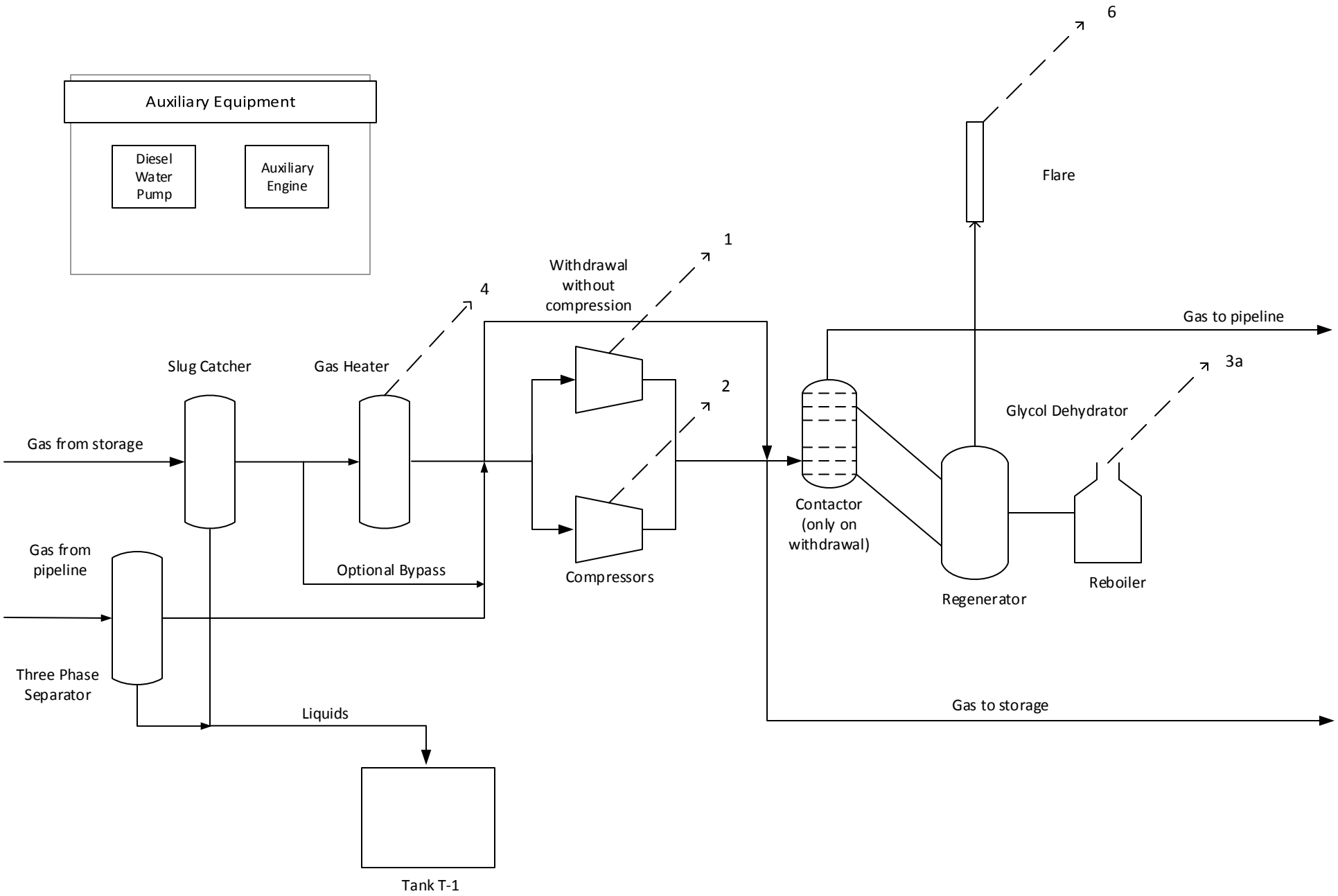
No physical changes or emission changes have been made to Washington Ranch Storage Facility since the previous Title V Renewal except for updating the greenhouse gas emissions with the new global warming potential factors. Additionally, names, addresses, telephone numbers, and other administrative information have been updated where applicable.

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 sheet is attached.



Trinity Consultants

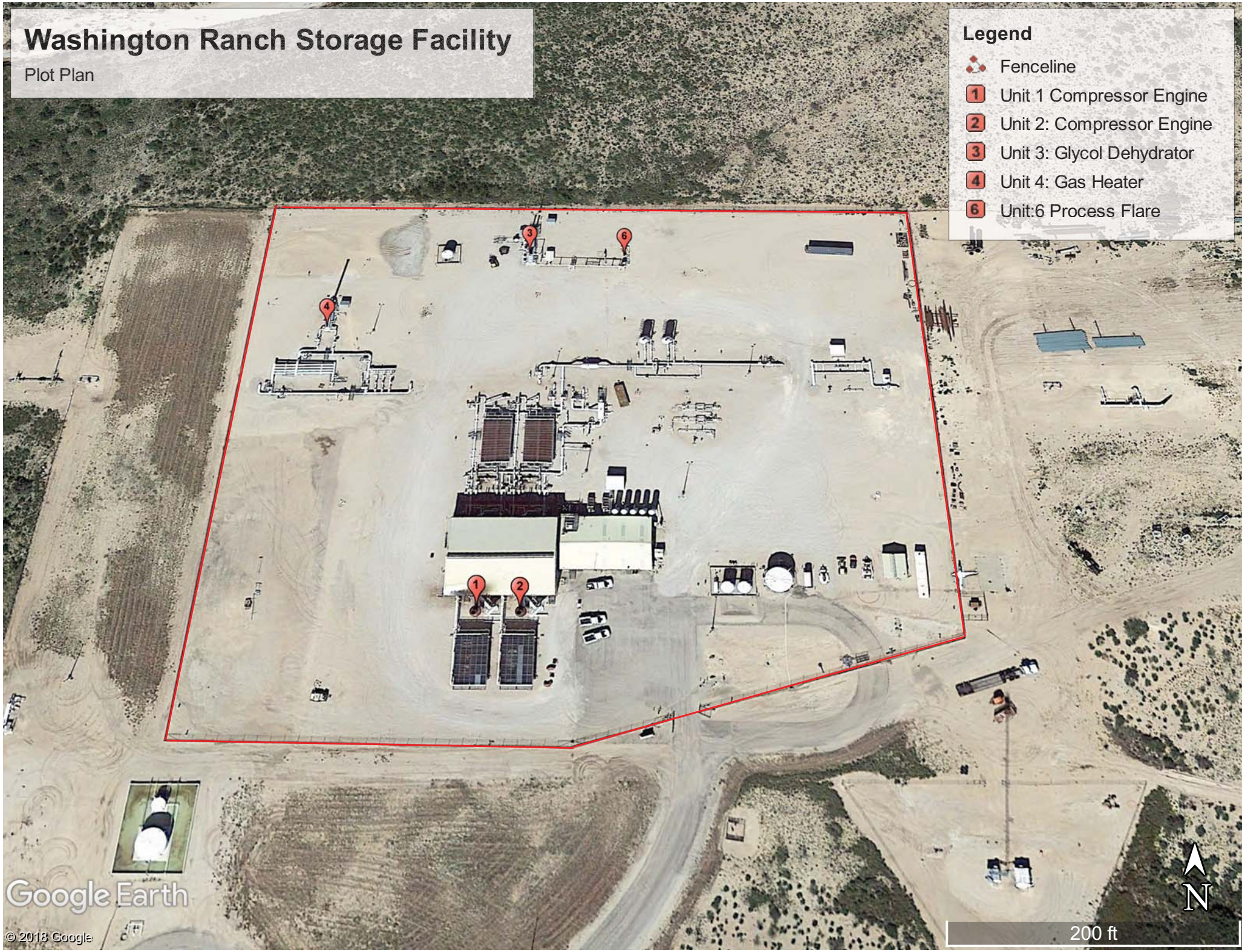
Process Flow Diagram
Kinder Morgan - Washington Ranch Storage Facility

Section 5

Plot Plan Drawn To Scale

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

A plot diagram is attached.


Washington Ranch Storage Facility
Plot Plan
Legend
Fenceline
1 Unit 1 Compressor Engine
2 Unit 2: Compressor Engine
3 Unit 3: Glycol Dehydrator
4 Unit 4: Gas Heater
6 Unit:6 Process Flare
1
2
3
4
6
N
200 ft
Google Earth
© 2018 Google

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.

Emissions are calculated for the following regulated emission sources:

- Two natural gas fueled compressor engines (Units 1 and 2)
- Glycol Dehydrator Reboiler (Unit 3a)
- Glycol Dehydrator Regenerator (Unit 3b)
- Gas Heater (Unit 4)
- Auxiliary Engine (Unit 5)
- Process Flare (Unit 6, which is the control device for Unit 3b)
- Startup, Shutdown, and Maintenance/Malfunction Emissions (Unit SSM/M1)
- Facility-wide Fugitive Emissions (Unit FUG)
- Diesel Water Pump Engine (Unit Pump)

The facility also includes tanks for storage of lubricating oil, used oil, and produced water. All tanks at the facility are considered insignificant actives (see Table 2B for detailed Insignificant Activity information). A diesel water pump engine (Unit Pump) and an auxiliary engine (Unit 5) are subject to MACT ZZZZ, however these emissions are not subject to emission limitations under MACT ZZZZ or permitting under 20.2.72 NMAC. Emission calculation methodologies for all permitted units are the same as represented in previous Title V application except for updating the greenhouse gas emission with the latest Global Warming Potential emission factors.

Units 1 and 2: 4,500 Horsepower Cooper-Bessemer 2-Stroke Lean Burn RICE
Emissions of NO_x and CO were based on design for the 2005 LE conversion and emissions of VOC were based on test data. SO_2 emissions were based on a maximum allowable total sulfur content of 5.0 grains per 100 scf in pipeline quality natural gas, and an assumed 100% conversion of total sulfur to SO_2. PM emissions were based on AP-42 emission factors. All combustion equipment at the facility are fueled with pipeline quality natural gas therefore H_2S emissions are negligible. Greenhouse gas emissions were estimated using emission factors from 40 CFR 98 Subpart C, Tables C-1 and C-2. Test data is submitted with this application to show the engines are in compliance with the permitted limits.

Formaldehyde emissions from the engines were calculated based on emissions testing data obtained by El Paso Natural Gas in 2010 and presented to NMED by El Paso Natural Gas in a September 14, 2010 letter declaring the facility as a major source of HAP emissions. A 25% safety factor was added to the calculated formaldehyde emission rate. The remaining HAP emissions were based on GRI-HAPCalc with a 10% safety factor added. Previous applications utilized GRI-HAPCalc to calculate all HAP emissions from these units; however, testing data indicated that the units had a higher formaldehyde emission rate than that calculated by GRI HAPCalc.

Unit 3a: Glycol Dehydrator Reboiler
Emissions of NO_x, CO, PM, and VOC were based on emission factors from AP-42 Tables 1.4-1 and 1.4-2. SO_2 emissions were based on a maximum allowable total sulfur content of 5.0 grains per 100 scf in pipeline quality natural gas, and an assumed 100% conversion of total sulfur to SO_2. All combustion equipment at the facility are fueled with pipeline quality natural gas therefore H_2S emissions are negligible. Total HAP and formaldehyde emissions were calculated using GRI-HAPCalc with a 25% safety factor added for each pollutant. Greenhouse gas emissions were estimated using emission factors from 40 CFR 98 Subpart C, Tables C-1 and C-2.

Unit 3b: Glycol Dehydrator Regenerator
Emissions from the glycol dehydrator regenerator were calculated using GRI-GLYCalc. It was assumed that the process flare controls dehydrator condenser off-gas VOC and HAP emissions by 98%. A 100% safety factor was added to the controlled dehydrator regenerator emissions. The dehydrator flash tank emissions which are not controlled also have a 100% safety factor added.

Unit 4: Gas Heater
Emissions of NO_x, CO, VOC and PM were based on emission factors from AP-42 Tables 1.4-1 and 1.4-2. SO_2 emissions were based on a maximum allowable total sulfur content of 5.0 grains per 100 scf in pipeline quality natural gas, and an assumed 100% conversion of total sulfur to SO_2. Total HAP and formaldehyde emissions were calculated using GRI-HAPCalc with a 25% safety factor added for each pollutant. Greenhouse gas emissions were estimated using emission factors from 40 CFR 98 Subpart C, Tables C-1 and C-2.

Unit 5: Auxiliary Engine
The auxiliary engine calculations were based on an operation time of hours of 500 hours a year. Emissions of NO_x, CO, VOC, and PM were based on AP-42 emission factors. SO_2 emissions were based on a maximum allowable total sulfur content of 5.0 grains per 100 scf in pipeline quality natural gas, and an assumed 100% conversion of total sulfur to SO_2. HAP emissions were calculated using GRI-HAPCalc. Greenhouse gas emissions were estimated using emission factors from 40 CFR 98 Subpart C, Tables C-1 and C-2.

Unit 6: Process Flare (Control Device for Unit 3b)
Emissions of NO_x and CO are based on the highest emission factor from AP-42 and TNRCC RG-109. Emissions of VOCs and HAPs are based on the VOCs and HAPs resulting from both the glycol dehydrator condenser off gas and the flash tank off gas. SO_2 emissions were calculated using fuel consumption rates and a fuel gas sulfur content of 5 grains/100 scf. It was assumed that 100% of total sulfur is converted to SO_2. Greenhouse gas emissions were estimated using calculation methodology from the API *Compendium of Greenhouse Gas Emissions Estimation Methodologies for the Oil and Natural Gas Industry, 2009*.

Unit FUG: Facility-Wide Fugitive Emissions
Fugitive VOC and HAP emissions were calculated using GRI-HAPCalc with default component counts and EPA average emission factors.

Unit SSM/M1: Startup, Shutdown, and Maintenance/Malfunction Emissions
Consideration of SSM emissions according to NMED guidance (Implementation Guidance for Permitting SSM Emissions and Excess Emissions, June 7, 2012) demonstrates that consolidating VOC emissions from SSM and upset/malfunction conditions to a maximum 10 tpy per pollutant would not trigger any additional requirements. EPNG has requested that both routine and predictable startup and shutdown events and malfunction events be combined with a limit of 10 tpy of VOC. These events include natural gas venting after unit shutdown ("unit blowdown") and natural gas venting scheduled facility shutdowns ("station blowdown").

Unit Pump: Diesel Water Pump Engine
The diesel water pump calculations were based on an operation time of 500 hours a year. Emissions of NO_x, CO, VOC, PM, and HAP were based on AP-42 emission factors. SO_2 emissions were based on a maximum allowable total sulfur content of 5.0 grains per 100 scf in pipeline quality natural gas, and an assumed 100% conversion of total sulfur to SO_2. Greenhouse gas emissions were estimated using emission factors from 40 CFR 98 Subpart C, Tables C-1 and C-2.

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)

El Paso Natural Gas Company, LLC - Washington Ranch Storage Facility

Emissions Summary

Uncontrolled Emissions

Unit	NO_x		CO		VOC		SO_x		TSP		PM_{10}		$PM_{2.5}$		HCOH		Acrolein		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	lb/hr	tpy
1	27.28	119.50	27.28	119.50	19.84	86.91	0.48	2.08	-	-	1.1230	4.9189	1.12	4.92	3.22	14.12	0.22	0.98	0.029	0.13	3.67	16.09
2	27.28	119.50	27.28	119.50	19.84	86.91	0.48	2.08	-	-	1.1230	4.9189	1.12	4.92	3.22	14.12	0.22	0.98	0.029	0.13	3.67	16.09
3a	0.32	1.39	0.27	1.17	0.017	0.076	0.045	0.20	-	-	0.024	0.11	0.024	0.11	1.31E-03	5.75E-03	-	-	1.20E-03	5.25E-03	5.39E-03	0.024
3b[1]	-	-	-	-	20.02	87.68	5.86E-03	0.026	-	-	-	-	-	-	-	-	-	-	0.65	2.86	4.64	20.34
4	0.63	2.78	0.53	2.33	0.035	0.15	0.091	0.40	-	-	0.048	0.21	0.048	0.21	6.34E-03	0.028	-	-	0.011	0.046	0.11	0.47
5	14.19	3.55	1.94	0.48	0.41	0.10	0.052	0.013	-	-	2.68E-04	6.70E-05	2.68E-04	6.70E-05	0.011	0.048	1.07E-03	4.70E-03	0.000	0.001	0.015	0.065
6[2]	6.44E-03	0.028	0.052	0.23	-	-	1.43E-03	6.26E-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pump	4.25	1.06	0.92	0.23	0.34	0.086	-	-	-	-	0.30	0.075	0.30	0.075	1.20E-03	2.99E-04	9.38E-05	2.34E-05	-	-	0.0038	0.0010
FUG	-	-	-		*	1.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*	0.024
SSM/M1	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**73.96**	**247.79**	**58.27**	**243.43**	**60.51**	**273.02**	**1.15**	**4.80**	**0.00**	**0.00**	**2.62**	**10.23**	**2.62**	**10.23**	**6.47**	**28.33**	**0.45**	**1.96**	**0.72**	**3.17**	**12.12**	**53.10**

Controlled Emissions

Unit	NO_x		CO		VOC		SO_x		TSP		PM_{10}		$PM_{2.5}$		HCOH		Acrolein		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	lb/hr	tpy
1	27.28	119.50	27.28	119.50	19.84	86.91	0.48	2.08	-	-	1.1230	4.92	1.12	4.92	3.22	14.12	0.22	0.98	0.029	0.13	3.67	16.09
2	27.28	119.50	27.28	119.50	19.84	86.91	0.48	2.08	-	-	1.1230	4.92	1.12	4.92	3.22	14.12	0.22	0.98	0.029	0.13	3.67	16.09
3a	0.32	1.39	0.27	1.17	0.017	0.076	0.045	0.20	-	-	0.024	0.11	0.024	0.11	1.31E-03	5.75E-03	-	-	1.20E-03	5.25E-03	5.39E-03	0.024
3b[3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	0.63	2.78	0.53	2.33	0.035	0.15	0.091	0.40	-	-	0.048	0.21	0.048	0.21	6.34E-03	0.028	-	-	0.011	0.046	0.11	0.47
5	14.19	3.55	1.94	0.48	0.41	0.10	0.052	0.013	-	-	2.68E-04	6.70E-05	2.68E-04	6.70E-05	0.011	0.048	1.07E-03	4.70E-03	2.28E-04	1.00E-03	0.015	0.065
6	0.029	0.13	0.24	1.03	5.18	22.71	0.0073	0.032	-	-	-	-	-	-	-	-	-	-	0.23	1.02	0.41	1.79
Pump	4.25	1.06	0.92	0.23	0.34	0.086	-	-	-	-	0.30	0.075	0.30	0.075	1.20E-03	2.99E-04	9.38E-05	2.34E-05	-	-	3.84E-03	9.61E-04
FUG	-	-	-	-	*	1.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*	0.024
SSM/M1	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**73.98**	**247.89**	**58.45**	**244.24**	**45.68**	**208.05**	**1.15**	**4.80**	**0.00**	**0.00**	**2.62**	**10.23**	**2.62**	**10.23**	**6.47**	**28.33**	**0.45**	**1.96**	**0.30**	**1.33**	**7.89**	**34.55**

Notes

"*" Denotes an hourly emission limit is not appropriate for this source

"-" Denotes emissions of this pollutant are negligible or not expected

[1] Emissions from the dehydrator still vent are routed to the flare (Unit 6) for destruction under normal operating conditions.

[2] As a conservative measure, uncontrolled flare emissions are represented as pilot-only emissions. Unit 6 routinely flares dehydrator condenser off-gas and does not operate with pilot only.

[3] Dehydrator regenerator emissions are routed to the process flare (Unit 6) for destruction. Dehydrator flash tank emissions which vent to atmosphere are also assigned to Unit 6. In a controlled scenario, there are no emissions from unit 3b; all emissions from this unit are accounted for under Unit 6 emissions.

El Paso Natural Gas Company, LLC - Washington Ranch Storage Facility

Engine Emissions

Emission Unit:	1 & 2		
Source Description:	Natural gas-fired turbocharged reciprocating engines powering natural gas compressors		
Manufacturer:	Cooper-Bessemer		
Model:	12Q155HC2		
Type	Clean-burn engines		
Sea level Hp	4500	hp	
Elevation	3710	msl	
Site HP	4500	hp	No derate taken

Fuel Consumption

Heat Rate	7000	Btu/hp-hr	Engineering estimate
Fuel heat value	947	Btu/scf	LHV
Heat Input	31.5	MMBtu/hr	BTU/hp-hr * hp/ 1,000,000 Btu/MMBtu
Fuel consumption	33.3	Mscf/hr	MMBTU/hr / BTU/scf
Annual fuel usage	291.4	MMscf/yr	Assumes 8760 hrs/yr operation

Emission Calculations

NO_x	**CO**	**VOC**	**SO_2[(1)]**	**PM**		
2.75	2.75				g/hp-hr	Design (2005 LE conversion)
				0.036	lb/MMBtu	AP-42 Table 3.2-1a: (lb/MMscf)*(scf/1020 BTU)
		1.0			g/hp-hr	Test data (assumes VOCs as 10% of THC)
			0.050		gr S/scf	Pipeline specification
		100%			%	Safety factor
		2.0			g/hp-hr	Includes safety factor
27.3	**27.3**	**19.8**	**0.48**	**1.12**	**lb/hr**	
119.5	**119.5**	**86.9**	**2.1**	**4.92**	**tpy**	Assumes 8760 hrs/yr operation

Total HAPS[(2)]	**HCOH**	**Acrolein[(2)]**	**n-Hexane[(2)]**		
	0.26			g/hp-hr	Average of 0 Test data, 3/16/2010
10%	25%	10%	10%	%	Safety factor
	0.33			g/hp-hr	Includes safety factor
3.7	**3.2**	**0.22**	**0.029**	**lb/hr**	
16.1	**14.1**	**0.98**	**0.13**	**tpy**	Assumes 8760 hrs/yr operation

GHG Emission Calculations

CO_2	**N_2O**	**CH_4**		
53.06	1.00E-04	1.00E-03	kg/MMBtu	40 CFR 98, Subpart C, Tables C-1 and C-2
14641376	28	276	kg / yr	
16134.80	0.030	0.30	tons / yr	
1.00	298.000	25.00	GWP	
16134.80	9.05	7.59	tons/yr CO_2e	

Notes

(1) (5 gr S/100scf)*(lb/7000 gr)*(1000*Fuel usage scf/hr)*(64 lb SO_2/32 lb S)

(2) Total HAPs = (Total GRI-HAPCalc HAPs)*(1+10% Safety Factor) - (GRI-HAPCalc HCOH)*(1+10% Safety Factor) + Test data HCOH
Acrolein/Hexane emissions = (Total GRI-HAPCalc HAP)*(1+10% Safety Factor)

El Paso Natural Gas Company, LLC - Washington Ranch Storage Facility

Dehydrator Reboiler Emissions

Emission Unit: 3a
Source Description: Dehydrator reboiler

Fuel Consumption

Input heat rate	3	MMBtu/hr	As permitted (based on engineering estimate)
Fuel heat value	947	Btu/scf	
Fuel usage	3.17	Mscf/hr	Heat Input Rate MMBtu/hr *scf/947 Btu*1000 Mbtu/MMBtu
Fuel usage	27.8	MMscf/yr	Fuel usage Mscf/hr*8760 hrs/yr*MMscf/1000 Mscf

Emission Rates

NO_x	CO	VOC	SO_2[(1)]	PM		
100	84	5.5		7.6	lb/MMscf	AP-42 Tables 1.4-1 and 1.4-2
			0.050		gr S/scf	Pipeline specification
0.32	**0.27**	**0.017**	**0.045**	**0.024**	**lb/hr**	
1.4	**1.2**	**0.076**	**0.20**	**0.11**	**tpy**	(lb/hr)*(8760 hrs/yr)*(ton/2000 lb)

Total HAPS[(2)]	HCOH[(2)]	Acrolein[(2)]	n-Hexane[(2)]	
25%	25%	25%	25%	Safety factor
0.0054	**0.0013**	**-**	**0.0012**	
0.024	**0.0058**	**-**	**0.0053**	(lb/hr)*(8760 hrs/yr)*(ton/2000 lb)

GHG Emission Calculations

CO_2	N_2O	CH_4		
53.06	1.00E-04	1.00E-03	kg/MMBtu	40 CFR 98, Subpart C, Tables C-1 and C-2
1394417	3	26	kg / yr	
1536.6	0.0029	0.029	tons / yr	
1.00	298.00	25.00	GWP	
1536.6	0.86	0.72	tons/yr CO_2e	

Notes

(1) (5 gr S/100scf)*(lb/7000 gr)*(1000*Fuel usage scf/hr)*(64 lb SO_2/32 lb S)
(2) HAP emissions calculated using GRI-HAPCalc with a 25% safety factor added

Site Elevation	3710	ft MSL	
Standard Pressure	29.92	in Hg	
Pressure at Elevation	26.12	in Hg	Hess, Introduction to Theoretical Meteorology, eqn. 6.8
Standard Temperature	528	R	

Exhaust Parameters

Reboiler Stack (3a)

Exhaust temp	600	°F	Engineering estimate	
Stack height	30	ft	As permitted (based on engineering estimate)	
Stack diameter	1.0	ft	As permitted (based on engineering estimate)	
40 CFR 60 Appendix A Method 19	10610	wscf/MMBtu		
Exhaust flow (Vs)	530.5	scfm	Heat input*F factor/60	8.8 scf/sec
Exhaust flow (Va)	1219.6	acfm	Va = Vs*(Ps/Pa)*(Ta/Ts)	20.3 acf/sec
Exhaust velocity	25.9	ft/sec	Exhaust flow acfm /(Pi * (stack diameter/2)^2) * min/60 s	

El Paso Natural Gas Company, LLC - Washington Ranch Storage Facility

Heater Emissions

Emission Unit: 4
Source Description: Gas heater

Fuel Consumption

Input heat rate	6	MMBtu/hr	As permitted (based on engineering estimate)
Fuel heat value	947	Btu/scf	
Fuel usage	6.34	Mscf/hr	Heat Input Rate MMBtu/hr *scf/947 Btu*1000 Mbtu/MMBtu
Fuel usage	55.5	MMscf/yr	Fuel usage Mscf/hr*8760 hrs/yr*MMscf/1000 Mscf

Emission Rates

NO_x	CO	VOC	SO_2[(1)]	PM		
100	84	5.5		7.6	lb/MMscf	AP-42 Tables 1.4-1 and 1.4-2
			0.050		gr S/scf	Pipeline specification
0.63	**0.53**	**0.03**	**0.091**	**0.048**	**lb/hr**	
2.8	**2.3**	**0.15**	**0.40**	**0.21**	**tpy**	(lb/hr)*(8760 hrs/yr)*(ton/2000 lb)

Total HAPS[(2)]	HCOH[(2)]	Acrolein[(2)]	n-Hexane[(2)]		
25%	25%	25%	25%	%	Safety factor
0.11	**0.0063**	**-**	**0.011**	**lb/hr**	
0.47	**0.028**	**-**	**0.046**	**tpy**	(lb/hr)*(8760 hrs/yr)*(ton/2000 lb)

GHG Emission Calculations

CO_2	N_2O	CH_4		
53.06	1.00E-04	1.00E-03	kg/MMBtu	40 CFR 98, Subpart C, Tables C-1 and C-2
2788834	5	53	kg / yr	
3073.29	0.0058	0.058	tons / yr	
1	298	25	Global Warming Potential	
3073.29	1.72	1.45	tons/yr CO_2e	

Notes

(1) (5 gr S/100scf)*(lb/7000 gr)*(1000*Fuel usage scf/hr)*(64 lb SO_2/32 lb S)

(2) HAP emissions calculated using GRI-HAPCalc with a 25% safety factor added

Site Data

Site Elevation	3710	ft MSL	
Standard Pressure	29.92	in Hg	
Pressure at Elevation	26.12	in Hg	Hess, Introduction to Theoretical Meteorology, eqn. 6.8
Standard Temperature	528	R	

Exhaust Parameters

Exhaust temp	600	°F	Engineering estimate
Stack height	60	ft	As permitted (based on engineering estimate)
Stack diameter	2.0	ft	As permitted (based on engineering estimate)
40 CFR 60 Appendix A Method 19	10610	wscf/MMBtu	
Exhaust flow (Vs)	1061.0	scfm	Heat input*F factor/60
Exhaust flow (Va)	2439.2	acfm	Va = Vs*(Ps/Pa)*(Ta/Ts)
Exhaust velocity	12.9	ft/sec	Exhaust flow acfm /(Pi * (stack diameter/2)^2) * min/60 s

El Paso Natural Gas Company, LLC

Washington Ranch storage Facility

Unit: 5
Description: Cummins GTA1710 auxiliary engine

Site Rating:	600	hp	
Fuel Heating Value:	947	Btu/scf, nominal	
Fuel Usage:	104	scm/hr, mfg. data	
Fuel Usage:	3673	scf/hr	Fuel usage (scm/hr) * 35.3147cf/m^3
Fuel Usage:	3.5	MMBtu/hr	Fuel usage (scf/hr) * Heating value (Btu/scf) * 1MMBtu/10^6Btu
Operating hours:	500	hr/yr	

Criteria Pollutant Emission Calculations

	NO_x	CO	VOC	SO_2[1]	PM	Formaldehyde	Acrolein	n-Hexane	Total HAPs		
	4.08	0.56	0.12		7.71E-05					lb/MMBtu	AP-42 Table 3.2-2
				5.00						gr S/100scf	
	14.2	1.9	0.41	0.052	2.7E-04					lb/hr	EF (lb/MMBtu) * Rating (MMBtu)
	3.5	0.48	0.10	0.013	6.7E-05					tons/yr	lb/hr * hr/yr * 1ton/2000lb
						0.048	0.0047	0.0010	0.065	tpy	HAP emissions from GRI-HAPCalc 3.01
Total	14.19	1.94	0.41	0.052	2.68E-04	0.011	1.07E-03	2.28E-04	0.015	lb/hr	
	3.55	0.48	0.10	0.013	6.70E-05	0.048	4.70E-03	1.00E-03	0.065	tons/yr	

Footnotes

[1] SO_2 lb/hr = 5grS/100scf * 1lb/7000gr * Fuel usage (scf/hr) * 64gSO_2/32gS

CO_2	N_2O	CH_4		
53.06	1.00E-04	1.00E-03	kg/MMBtu	40 CFR 98, Subpart C, Tables C-1 and C-2
92273	0.17	1.74	kg / yr	
101.69	0.00019	0.0019	tons / yr	
1	298	25	Global Warming Potential	
101.69	0.057	0.048	tons/yr CO_2e	

El Paso Natural Gas Company, LLC - Washington Ranch Storage Facility

Flare / Dehydrator Still Vent and Flash Tank Off-Gas

Emission Unit: 6
Manufacturer: Flare Industries
Source Description: Flare controlling emissions from the dehydrator condenser (unit 3b)

Flare Pilot Emissions (PER for unit 6)

For calculation purposes only, unit 6 routinely flares dehydrator condenser off-gas and does not operate with pilot only.

Pilot Fuel Data

Pilot fuel flow	44	scf/hr	Design rate
Pilot fuel flow	100	scf/hr	Fuel flow w/safety factor
Fuel heating value	947	Btu/scf	LHV of fuel gas at facility (as permitted)
Heat rate	0.09	MMBtu/hr	scf/hr * BTU/scf * MMBtu/1000000 BTU
Annual fuel usage	0.88	MMscf/yr	scf/hr * 8760 hr/yr * MMscf/1000000 scf

Pilot Emission Rates

	NO_x	CO	VOC*	HAPs*	Units	
Flare - Pilot	0.068	0.37			lb/MMBtu	AP-42 Table 13.5-1
	0.064	0.55			lb/MMBtu	TNRCC RG-109 (low BTU)
	0.0064	0.052	-	-	lb/hr	lb/MMBtu* MMBtu/hr
	0.028	0.23	-	-	tpy	lb/hr * 8760 hr/yr / 2000 lb/ton

* VOC and HAP emissions from the pilot only are assumed to be negligible

Uncontrolled Dehydrator Still Vent Emissions (PER for unit 3b)

For calculation purposes only; condenser off-gas is routed to a flare for destruction and does not vent to atmosphere under normal operating conditions

Emission Rates

	NO_x	CO	VOC	HAPs	CH_4	Units	
Dehy Regenerator	-	-	17.7	4.5	3.8	lb/hr	Hourly Emissions from Dehy Regenerator (GLYCalc)
	-	-	77.4	19.8	16.6	tpy	Annual Emissions from Dehy Regenerator (GLYCalc) (8760 hr/yr)
Dehy Flash Tank	-	-	2.35	0.12	21.6	lb/hr	Hourly Emissions from Dehy Flash (GLYCalc)
	-	-	10.3	0.5	94.6	tpy	Annual Emissions from Dehy Flash (GLYCalc) (8760 hr/yr)
Total Dehy Emissions	-	-	20.0	4.6	25.4	lb/hr	Total; regenerator + flash tank
	-	-	87.7	20.3	111.3	tpy	lb/hr * 8760 hr/yr / 2000 lb/ton

Condenser Off-Gas Composition

Component	MW	Condenser Wet Off-Gas Vol%	MW * vol%	LHV Btu/scf	Btu/scf * vol %	Loading (lb/hr)
Water	18.02	46.90%	8.45	0	0.00	9.12
CO_2	44.01	11.90%	5.24	0	0.00	5.65
Nitrogen	28.01	0.36%	0.10	0	0.00	0.11
Methane	16.04	21.90%	3.51	909.1	199.09	3.8
Ethane	30.07	5.48%	1.65	1617.8	88.66	1.78
Propane	44.10	2.41%	1.06	2315.9	55.81	1.15
I-Butane	58.12	0.60%	0.35	3001	18.10	0.379
N-Butane	58.12	1.34%	0.78	3010.5	40.34	0.84
I-Pentane	72.15	0.48%	0.35	3697.9	17.75	0.374
N-Pentane	72.15	0.52%	0.38	3706.8	19.31	0.406
Cyclopentane	70.14	0.00%	0.00	3512.2	0.00	0
n-Hexane	86.18	0.59%	0.51	4403.9	25.94	0.549
Cyclohexane	86.18	1.34%	1.15	4403.9	59.01	1.22
Other hexanes	86.18	0.45%	0.39	4403.9	19.95	0.422
Heptanes	100.21	1.41%	1.41	5100.3	71.91	1.53
Methylcyclohexane	98.19	0.00%	0.00	4863.7	0.00	0
Benzene	78.11	0.95%	0.74	3591	34.04	0.8
Toluene	92.14	1.66%	1.53	4273.5	70.94	1.66
Ethylbenzene	106.17	0.10%	0.11	4970.6	5.17	0.119
Xylenes	106.17	0.84%	0.89	4957	41.39	0.958
C8+Heavies	106.00	0.83%	0.88	5796.1	47.88	1.52
Total		100%	29.5		815.3	
			(composite MW)		(composite heating value)	
	NMEHC (VOC)					10.52

El Paso Natural Gas Company, LLC - Washington Ranch Storage Facility

Flare / Dehydrator Still Vent and Flash Tank Off-Gas

Emission Unit: 6
Manufacturer: Flare Industries
Source Description: Flare controlling emissions from the dehydrator condenser (unit 3b)

Normal Operation - Flaring Off-Gas from the Glycol Dehydrator Condenser (PTE for unit 6)

Condenser gas volume	410	scf/hr	GRI-GLYCalc (condenser vent gas stream)
MW of flare gas	29	g/mol	Calculated above
Heating value of flare gas	815	Btu/scf	Calculated above
Heat rate	0.33	MMBtu/hr	scf/hr * BTU/scf / 1000000

	NOx	CO	VOC	HAPs	Units	
Flare - Pilot	0.006	0.052			lb/hr	Hourly pilot emissions (calculated above)
	0.028	0.23			tpy	Annual pilot emissions (calculated above)
Flare - Flaring Off-Gas	0.068	0.37			lb/MMBtu	AP-42 Table 13.5-1
	0.064	0.55			lb/MMBtu	TNRCC RG-109 (low BTU)
	0.023	0.18			lb/hr	lb/MMBtu*MMBtu/hr
	0.10	0.80			tpy	lb/hr * 8760 hr/yr / 2000 lb/ton
Dehy Regenerator			11.9	4.1	lb/hr	Hourly Controlled regenerator emissions (GLYCalc)
			52.2	17.9	tpy	Annual controlled Regenerator Emissions(GLYCalc) (8760 hr/yr)
			98.0%	98.0%		Flare destruction efficiency
			100.0%	100.0%		Safety factor
			0.48	0.16		Emissions w/control and safety factor
			2.1	0.7		lb/hr * 8760 hr/yr / 2000 lb/ton
Dehy Flash Tank			2.4	0.1	lb/hr	Hourly Controlled Emissions from Dehy Flash (GLYCalc)
			10.3	0.1	tpy	Annual Controlled Emissions from Dehy Flash (GLYCalc) (8760 hr/yr)
			0.0%	0.0%		Flare destruction efficiency
			100.0%	100.0%		Safety factor
			4.71	0.25	lb/hr	Emissions w/control (none) and safety factor
			20.6	1.1	tpy	lb/hr * 8760 hr/yr / 2000 lb/ton
Total Flare Emissions	**0.029**	**0.24**	**5.2**	**0.41**	**lb/hr**	Total; Routine flaring + pilot
	0.13	**1.0**	**22.7**	**1.8**	**tpy**	lb/hr * 8760 hr/yr / 2000 lb/ton

HAP Speciation

	Regenerator				Flash Tank					
HAP	Uncontrolled Emissions (lb/hr)	Control %	Safety Factor %	Controlled Emissions (lb/hr)	Uncontrolled Emissions (lb/hr)	Control %	Safety Factor %	Controlled Emissions (lb/hr)	Total Emission Rate (lb/hr)	(tpy)
n-Hexane	0.549	98%	100%	0.0220	0.1049	0%	100%	0.2098	0.2318	1.0151
Benzene	0.800	98%	100%	0.0320	0.0062	0%	100%	0.0124	0.0444	0.1945
Toluene	1.657	98%	100%	0.0663	0.009	0%	100%	0.018	0.0843	0.3691
Ethyl Benzene	0.119	98%	100%	0.0048	0.0004	0%	100%	0.0008	0.0056	0.0244
Xylenes	0.958	98%	100%	0.0383	0.0023	0%	100%	0.0046	0.0429	0.1880
Total	4.1			0.16	0.12			0.25	**0.41**	**1.8**

Flare Stack Parameters

1000	°C	Exhaust temperature	Per NMAQB guidelines
20	m/sec	Exhaust velocity	Per NMAQB guidelines
25	ft	Flare height	Engineering design
100	scf/hr	Pilot fuel flow	Design rate + safety factor
410	scf/hr	Flare gas flow	Dehy condenser gas volume
510	scf/hr	Total volume to flare	Pilot fuel flow + total flare gas flow
0.43	MMBtu/hr	Total heat input	Sum of pilot fuel and flare gas heating values
29.47	g/mol	MW	Flare gas MW (calculated above)

Pilot only

16.04	g/mol		
6,629	cal/sec	Heat release (q)	MMBtu/hr * 10^6*252 cal/BTU/3600 sec/hr
5,355	q_n	q_n	$q_n = q(1\text{-}0.048(MW)^{1/2})$
0.0732	m	Effective stack diameter (D)	$D=(10^{-6}q_n)^{1/3}$

Pilot and Flared Gas

29.47	g/mol		
30,028	cal/sec	Heat release (q)	MMBtu/hr * 10^6*252 cal/BTU/3600 sec/hr
22,203	q_n	q_n	$q_n = q(1\text{-}0.048(MW)^{1/2})$
0.1490	m	Effective stack diameter (D)	$D=(10^{-6}q_n)^{1/2}$

El Paso Natural Gas Company, LLC - Washington Ranch Storage Facility

Flare Greenhouse Gas Emissions

CH4 Calculation1 (Eq 4-16)

$$ECH4 = \frac{4.5 \times 10^{6}\ \text{scf gas}}{\text{yr}} \times \frac{0.219\ \text{scf CH4}}{\text{scf gas}} \times \frac{0.005\ \text{scf noncombusted CH4}}{\text{scf CH4 total}} \times \frac{\text{lbmole CH4}}{379.3\ \text{scf CH4}} \times \frac{16\ \text{lb CH4}}{\text{lbmole CH4}} \times \frac{\text{tonne}}{2204.62\ \text{lb}}$$

CH4 = 0.09 tonnes CH4 / yr
CH4 = 0.10 ton CH4 / yr

1 tonne = 1.102311 ton

CO2 Calculation2 (Eq 4-15)

$$CO2 = \frac{4.5 \times 10^{6}\ \text{scf gas}}{\text{yr}} \times \frac{\text{lbmole gas}}{379.3\ \text{scf gas}} \times \left(\frac{0.219\ \text{lbmole CH4}}{\text{lbmole gas}} \times \frac{1\ \text{lbmole C}}{\text{lbmole CH4}} + \frac{0.055\ \text{lbmole C2H6}}{\text{lbmole gas}} \times \frac{2\ \text{lbmole C}}{\text{lbmole C2H6}} + \frac{0.024\ \text{lbmole C3H8}}{\text{lbmole gas}} \times \frac{3\ \text{lbmole C}}{\text{lbmole C3H8}} + \frac{0.019\ \text{lbmole C4H10}}{\text{lbmole gas}} \times \frac{4\ \text{lbmole C}}{\text{lbmole C4H10}} + \frac{0.000\ \ 0.000\ \ 0.000\ \ 0.000}{} + \frac{0.010\ \text{lbmole C5H12}}{\text{lbmole gas}} \times \frac{5\ \text{lbmole C}}{\text{lbmole C5H12}} + \frac{0.024\ \text{lbmole C6H14}}{\text{lbmole gas}} \times \frac{6\ \text{lbmole C}}{\text{lbmole C6H14}} \right) \times \frac{0.98\ \text{lbmole fon}}{\text{lbmole gas}} + \frac{11.900\%\ \text{lbmole CO}}{\text{lbmole gas}} \times \frac{44\ \text{lb CO2}}{\text{lbmole CO}} \times \frac{\text{tonne}}{0\ \ 0\ \ 2204.62}$$

CO2 = 182.69 tonnes CO2 / yr
201.38 ton CO2 / yr

1 tonne = 1.102311 ton

N2O Calculation3 (Eq 4-17)

Click here to view Table 4-11: GHG emission factors for flares

$$EN2O = \frac{4.5 \times 10^{6}\ \text{scf gas}}{\text{yr}} \times \frac{1.5 \times 10^{-6}\ \text{tonnes N2O}}{0\ \ 0\ \ 10^{6}\ \text{scf gas}\ \ 0\ \ 0}$$

EN2O = 6.7E-06 tonnes N2O / yr
7.4E-06 ton N2O / yr

*Calculations from the Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry August 2009

0 1 tonne = 1.102311 ton

TOTAL CO2e

Emission Totals

Emission Type	GHG	CH41	CO2	N2O2	CO2e
	Unit	TPY	TPY	TPY	TPY
Flare	Flare	0.10	201.38	7.39E-06	204.0

1 warming potential of CH4 is 25 times greater than CO2

2 warming potential of N2O is 298 times greater than CO2

El Paso Natural Gas Company, LLC - Washington Ranch Storage Facility

Flare Sulfur Emissions

Emission Unit:	6		
Source Description:	Flare Sulfur emissions		
Fuel gas sulfur content:	5	grains/100 scf	Nominal, sweet gas (from PNM standard contract)
	7.15E-06	lbs sulfur/scf	0.0001429 lb/grain

Flare Pilot

Hourly fuel consumption	100	scf/hr	
Hourly SO_2 emissions	0.0014	lb/hr	Hourly fuel consumption * lbs sulfur/scf * 64 lb SO_2/32 lb S
Annual SO_2 emissions	0.0063	tpy	Hourly SO_2 * 8760 hr/yr / 2000 lb/ton

Condenser Off-Gas

Hourly fuel consumption	410	scf/hr	
Hourly SO_2 emissions	0.0059	lb/hr	Hourly fuel consumption * lbs sulfur/scf * 64 lb SO_2/32 lb S
Annual SO_2 emissions	0.026	tpy	Hourly SO_2 * 8760 hr/yr / 2000 lb/ton

Total Emissions

Hourly SO_2 emissions	0.0073	lb/hr	Pilot + condenser off-gas hourly SO_2 emissions
Annual SO_2 emissions	0.032	tpy	Pilot + condenser off-gas annual SO_2 emissions

Notes

The dehydrator inlet gas analysis indicated that the gas contains no detectable H_2S, and, therefore, no sulfur is present in the dehydrator condenser off gas or flash tank off gas as calculated with GRI-GLYCalc 4.0. However, the sulfur content of this gas was assumed to be the pipeline standard (5 grains sulfur/100 scf) in this calculation, as a conservative measure.

El Paso Natural Gas Company, LLC

Washington Ranch Storage Facility

Unit:	Pump	
Description:	Cummins V-378-F2, Diesel Water Pump Engine	
Engine Rating:	137	hp
Fuel Usage:	7.4	gal/hr, mfg data
Fuel Heating Value:	19,300	Btu/lb, AP-42 Table 3.3-1, footnote c
Fuel Density:	7.1	lb/gal, AP-42 Table 7.1-2
Heat Input Rate:	1.01	MMBtu/hr, Fuel usage (gal/hr) * Fuel density (lb/gal) * Heating value (Btu/lb) * 1MMBtu/10^6Btu
Hours of Operation:	500	hr/yr

Criteria Pollutant Emission Calculations

NO_x	CO	VOC	SO_2	PM^1	Formaldehyde	Acrolein	n-Hexane	Total HAPs		
0.031	0.0067	0.0025		0.0022					lb/hp-hr	AP-42 Table 3.3-1
					1.18E-03	9.25E-05	-	0.0038	lb/MMBtu	AP-42 Table 3.3-2
4.2	0.92	0.34	0.00	0.30	1.20E-03	9.38E-05	-	0.0038	lb/hr	lb/hp-hr * 137hp
1.1	0.23	0.086	0.000	0.075	2.99E-04	2.34E-05	-	0.0010	tons/yr	lb/hr * hr/yr * 1ton/2000lb

Footnotes

[1] AP 42 Table 3.3-1 gives PM-10 emission factor. Assumes TSP = PM10 = PM2.5

GHG calculations		
Total Propane Usage	370.00	gallons/yr
HHV	0.13703	MMBtu/gal
CO_2 Emission Factor	61.71	kg CO_2/MMBtu
CH_4 Emission Factor	0.0032	kg CH_4/MMBtu
NO_2 Emission Factor	0.0063	kg N_2O/ MMBtu
Amount of CO_2	3128.8	kg CO_2/yr
Amount of CH_4	0.162	kg CH_4/yr
Amount N_2O	0.319	kg N_2O/yr
Total CO_2e	3228	CO_2e/yr

GWP[1]	
CO2 (tons/yr)	1
CH4 (tons/yr)	25
N20 (tons/yr)	298

[1]GWP (Global Warming Potential) taken from 40 CFR 98

El Paso Natural Gas Company, LLC - Washington Ranch Storage Facility

Facility Fugitive Emissions

Emission Unit: FUG
Source Description: Facility-wide fugitive emissions

Emissions

VOC	Total HAPs		
0.5561	0.0118	tpy	GRI-HAPCalc 3.01
100%	100%	%	Safety factor
1.1	**0.024**	**tpy**	Requested Emission Rate

Emissions estimated using GRI-HAPCalc with default component counts.

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.

The following information used to determine emissions is included:

- **Units 1 and 2 – Cooper-Bessemer Compressor Engines**
  - Emission test data, 3/16/2010
  - GRI-HAPCalc output
  - AP-42 Table 3.2-1
  - 40 CFR 98 Subpart C Tables C-1 and C-2
- **Unit 3a – Glycol Dehydrator Reboiler**
  - AP-42 Tables 1.4-1 and 1.4-2
  - GRI-HAPCalc output
  - 40 CFR 98 Subpart C Tables C-1 and C-2
- **Unit 3b – Glycol Dehydrator Regenerator**
  - GRI-GLYCalc output
  - Extended contactor inlet gas analysis, dated 10/5/2006
- **Unit 4 – Gas Heater**
  - AP-42 Tables 1.4-1 and 1.4-2
  - GRI-HAPCalc output
  - 40 CFR 98 Subpart C Tables C-1 and C-2
- **Unit 5 – Auxiliary Engine**
  - AP-42 Table 3.2-2
  - GRI-HapCalc 3.01
- **Unit 6 – Process Flare (Control device for Unit 3b)**
  - AP-42 Table 13.5-1
  - TNRCC RG-109
- **Unit FUG – Facility-wide Fugitive Emissions**
  - GRI-HAPCalc output
- **Unit Pump: Diesel Water Pump Engine**
  - AP-42 Tables 3.3-1 and Table 3.3-1

El Paso Natural Gas Company, L.L.C.
a Kinder Morgan company

Engineering and Technical Services
Emissions Testing Group
1001 Louisiana Street
Houston, TX 77002

Emissions Test Report

Two (2) Cooper Bessemer 12Q155HC2 Natural Gas Fired Reciprocating Engines
One (1) Diesel Fire Water Pump

Permit Number: P064-R2
Emissions Testing Group File # 18-194
Test Date: October 23,24, 2018

El Paso Natural Gas Company, L.L.C.
Washington Ranch Storage Facility
Carlsbad, New Mexico

Date:	**November 12, 2018**
Prepared for:	**New Mexico Environment Department (NMED)**
Prepared by:	**Jonathon Schroeder** **Emissions Testing Group** **(713) 420-5789**
Reviewed by:	**Jerry Hughes** **Emissions Testing Group** **(518)-956-0892**

Introduction

The Company's Engineering and Technical Services Emissions Testing Group conducted source emissions testing at the El Paso Natural Gas Company, L.L.C. Washington Ranch Storage Facility in fulfillment of the State of New Mexico Department of Environmental Air Quality Bureau **Title V Operating Permit Number P064-R2**. The purpose of this test is to demonstrate compliance with permitted emission limits for the units listed below

Table 1 and **Table 2** present the emission units and species that were measured during the testing along with applicable permit limits. All testing was conducted in basic accordance with approved Environmental Protection Agency (EPA) test methods as described in 40CFR60, Appendix A, and the test protocol dated September 17, 2018.

Unit Fire Water Pump was tested on **10/22/18**. Unit B-02 was tested **10/23/18**. Unit A-01 was tested on **10/24/18**. Jonathon Schroeder and James Moten conducted the tests.

Table 1: Engine Detail

Unit ID	Engine Manufacture	Model	Serial Number	Manufacture Date	Horse Power	Unit Type
A-01	Cooper Bessemer	12Q155HC2	48833	1990	4500	2SLB
B-02	Cooper Bessemer	Centaur H 50-T5502S	HC91620	1992	4500	2SLB
Fire Water Pump	Cummins	V-378F2	20225928	2002	137	

Table 2: Emission Units and Requirements

Unit Type	Unit ID	Emission Species	Applicable Test Method	Applicable Limits	Permit Basis
Cooper Bessemer 12Q155HC2	A-01 & B-02	NO_X	7E	27.3 lb/hr	**NMED**
		CO	10	27.3 lb/hr	
		VOC	ASTM D6348-03	19.8 lb/hr	
Cummins V378F2	Fire Water Pump Engine	Opacity	9	20%	

Test Summary

The exhaust gases from the units were sampled continuously for three (3) runs at the highest possible operating load. Summaries of results from each unit are presented in **Table 3** and **Table 4**. The three run average below shows that the units tested below the emission limits. Detailed summaries of the unit's results are included in the APPENDIX.

RESULTS

Table 3: Emission Unit & Summary Results for Unit B-02

Emissions Summary For Emissions Test Report - B-02					
Date	**10/23/18**			**Average**	**Permit Limits**
Parameter	**Run 1**	**Run 2**	**Run 3**		
Time	**11:29**	**12:50**	**14:07**		
Speed (RPM)	460	460	460	460	
Horsepower	3,831	3,839	3,852	3,841	
Load (%)	88	88	88	88	
Fuel Flow (SCFH)	25,046	25,050	24,978	25,025	
NO_X					
NO_X (LB/HR)	3.4	3.4	3.8	3.5	**27.3**
CO					
CO (LB/HR)	16.3	16.4	15.7	16.1	**27.3**
VOC (FTIR)					
VOC (LB/HR)	3.5	3.8	3.7	3.7	**19.8**
O_2					
O_2 (% Bias Corrected)	15.22	15.27	15.21	15.23	

Table 4: Emission Unit & Summary Results for Unit A-01

Emissions Summary For Emissions Test Report - A-01					
Date	**10/24/18**			**Average**	**Permit Limits**
Parameter	**Run 1**	**Run 2**	**Run 3**		
Time	**12:56**	**14:18**	**15:34**		
Speed (RPM)	460	460	460	460	
Horsepower	3,728	3,726	3,727	3,727	
Load (%)	86	86	86	86	
Fuel Flow (SCFH)	22,853	22,865	22,900	22,873	
NO_X					
NO_X (LB/HR)	8.8	8.9	8.5	8.7	**27.3**
CO					
CO (LB/HR)	9.7	9.6	9.8	9.7	**27.3**
VOC (FTIR)					
VOC (LB/HR)	1.9	2.1	2.0	2.0	**19.8**
O_2					
O_2 (% Bias Corrected)	14.76	14.74	14.78	14.76	

Unit Data - EPNG Washington Ranch unit 1A				
Station Name	Washington Ranch			
Unit #	1A			
Engine Model	12Q155HC2			
Rated BHP	4,356			
Rated Speed	460			
Number of Cylinders	16			
Cycle	2			
Run Data				
Run #	1	2	3	AVERAGE
Date	3/16/2010	3/16/2010	3/16/2010	
Test Time	2:02 PM	4:01 PM	5:45 PM	
Ambient Conditions				
Bar. Press (" Hg)	26.52	26.48	26.48	26.49
Amb. Temp. (F)	65.60	68.19	60.74	64.84
Relative Humidity (%)	30.70	26.28	30.77	29.25
T_{db} (K)	291.827	293.266	289.127	291.41
X_1	355.443	354.004	358.143	355.86
P_{db}	0.637	0.697	0.537	0.62
Abs Humidity (grains/lb)	32.316	30.283	27.322	29.974
H_{obs}	0.005	0.004	0.004	0.004
Engine Operating Conditions				
Comments				
Stoichiometric A/F Ratio AGA	16.33	16.33	16.33	16.33
NG Density (lbm/scf) AGA	0.045	0.045	0.045	0.045
NG LHV (Btu/scf) AGA	916	916	916	916
NG HHV (Btu/scf) AGA	1016	1016	1016	1016
Suction Pressure (psig)	559.82	562.12	560.90	560.95
Suction Temperature (F)	61.70	61.62	60.72	61.35
Discharge Pressure (psig)	1,826.67	1,832.32	1,841.52	1833.50
Discharge Temperature (F)	93.77	95.62	94.30	94.56
Station Spread (psi)	1266.85	1270.20	1280.62	1272.56
Engine Speed (rpm)	459.74	459.75	459.82	460
Engine Horsepower	3,870	3,938	4,235	4014
Engine Horsepower (Automation BHP)	4,085	4,143	4,375	4201
Torque (%)	88.9%	90.5%	97.3%	92.2%
Load (%)	88.8%	90.4%	97.2%	92.2%
Speed (%)	99.9%	99.9%	100.0%	99.9%
Fuel Pressure - Static (PSIG)	505.20	506.82	502.63	504.88
Fuel Pressure - Diff ("H_2O)	61.33	62.19	70.37	64.63
Fuel Temperaure (^oF)	61.75	62.65	62.61	62.34
Fuel Flow (scfh)	27,974	28,185	29,855	28671
Fuel Flow (scfd)	671,372	676,432	716,518	688107
Fuel Flow (scfm)	466.2	469.7	497.6	477.9
Turbo Speed (RPM)	9782	9888	10410	10026
AMP (psi)	11.68	11.94	13.60	12.41
AMT (F)	94.5	95.0	97.4	95.6
Heat Input (MMBtu/hr)	25.62	25.82	27.35	26.26
Waste Heat (MMbtu/hr)	15.78	15.80	16.57	16.05
Heat Rate (Btu/BHP-hr)	6621	6556	6457	6545
Exhaust Gas Conditions				
CO2 (%V)	3.1	3.1	3.1	3.110
HCHO (ppmvw)	29.2	29.6	28.9	29.269
H_2O (%) - Measured	6.4	6.5	6.3	6.410
Calculated Flows				
Exhaust Flow (dscfm) - Method 19 [CO2 based F-factor]	15576	15669	16681	15975
Exhaust Flow (wscfm)	4921	4958	5252	5044
Exhaust Emissions				
HCHO (ppmvd)	31.23	31.69	30.90	31.27
HCHO (lb/hr)	2.27	2.32	2.41	2.33
HCHO (g/bhp-hr)	0.27	0.27	0.26	0.26
HCHO (lb/MMBTU)	0.09	0.09	0.09	0.09

GRI-HAPCalc ®3.01
Engines Report

Facility ID:	WASHINGTON RANCH	Notes:	1 - Cooper-Bessemer engine
Operation Type:	COMPRESSOR STATION		2 - Cooper Bessemer engine
Facility Name:	WASHINGTON RANCH STORAGE		3 - glycol dehydrator reboiler
User Name:			4 - gas heater
Units of Measure:	U.S. STANDARD		FUG - fugitive emissions

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

Engine Unit

Unit Name: COOPER

Hours of Operation:	8,760	Yearly
Rate Power:	4,500	hp
Fuel Type:	NATURAL GAS	
Engine Type:	2-Stroke, Clean Burn	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	2SCB COOPER	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
Formaldehyde	3.9384	0.09071633 g/bhp-hr	2SCB COOPER
Methanol	0.3139	0.00723090 g/bhp-hr	GRI Field
Acetaldehyde	0.3156	0.00726900 g/bhp-hr	GRI Field
1,3-Butadiene	0.0182	0.00042000 g/bhp-hr	GRI Field
Acrolein	0.8907	0.02051540 g/bhp-hr	GRI Field
Benzene	0.0434	0.00100000 g/bhp-hr	GRI Field
Toluene	0.0391	0.00090000 g/bhp-hr	GRI Field
Xylenes(m,p,o)	0.0178	0.00041000 g/bhp-hr	GRI Field
2,2,4-Trimethylpentane	0.0295	0.00068000 g/bhp-hr	GRI Field
n-Hexane	0.1172	0.00270000 g/bhp-hr	GRI Field
Naphthalene	0.0003	0.00000640 g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0001	0.00000160 g/bhp-hr	GRI Field
Acenaphthylene	0.0000	0.00000040 g/bhp-hr	GRI Field
Acenaphthene	0.0000	0.00000010 g/bhp-hr	GRI Field
Fluorene	0.0000	0.00000020 g/bhp-hr	GRI Field
Anthracene	0.0000	0.00000010 g/bhp-hr	GRI Field
Phenanthrene	0.0000	0.00000070 g/bhp-hr	GRI Field
Fluoranthene	0.0000	0.00000020 g/bhp-hr	GRI Field
Pyrene	0.0000	0.00000030 g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000010 g/bhp-hr	GRI Field
Benzo(e)pyrene	0.0000	0.00000010 g/bhp-hr	GRI Field
Benzo(g,h,i)perylene	0.0000	0.00000010 g/bhp-hr	GRI Field
Total	5.7242		

Criteria Pollutants

CO	27.1465	0.62529156 g/bhp-hr	2SCB COOPER
NOx	113.7323	2.61970850 g/bhp-hr	2SCB COOPER

Other Pollutants

Methane	73.1807	1.68564442 g/bhp-hr	2SCB COOPER
Ethylene	1.8360	0.04228944 g/bhp-hr	2SCB COOPER
Ethane	16.5408	0.38100000 g/bhp-hr	GRI Field
Propane	4.3414	0.10000000 g/bhp-hr	GRI Field
Cyclopentane	0.0156	0.00036000 g/bhp-hr	GRI Field
n-Pentane	0.2605	0.00600000 g/bhp-hr	GRI Field
Methylcyclohexane	0.0695	0.00160000 g/bhp-hr	GRI Field
n-Octane	0.0269	0.00062000 g/bhp-hr	GRI Field
1,2,4-Trimethylbenzene	0.0054	0.00012340 g/bhp-hr	GRI Field
n-Nonane	0.0091	0.00021000 g/bhp-hr	GRI Field

40 CFR Appendix Table_C-1_to_subpart_C_of_part_98 - Default CO2 Emission Factors and High Heat Values for Various Types of Fuel

CFR

Table C-1 to Subpart C of Part 98 - Default CO^2 Emission Factors and High Heat Values for Various Types of Fuel

Default CO^2 Emission Factors and High Heat Values for Various Types of Fuel

Fuel type	Default high heat value	Default CO^2 emission factor
Coal and coke	mmBtu/short ton	kg CO^2/mmBtu
Anthracite	25.09	103.69
Bituminous	24.93	93.28
Subbituminous	17.25	97.17
Lignite	14.21	97.72
Coal Coke	24.80	113.67
Mixed (Commercial sector)	21.39	94.27
Mixed (Industrial coking)	26.28	93.90
Mixed (Industrial sector)	22.35	94.67
Mixed (Electric Power sector)	19.73	95.52

Natural gas	mmBtu/scf	kg CO^2/mmBtu
(Weighted U.S. Average)	1.026×10^{-3}	53.06
Petroleum products - liquid	mmBtu/gallon	kg CO^2/mmBtu
Distillate Fuel Oil No. 1	0.139	73.25
Distillate Fuel Oil No. 2	0.138	73.96
Distillate Fuel Oil No. 4	0.146	75.04
Residual Fuel Oil No. 5	0.140	72.93
Residual Fuel Oil No. 6	0.150	75.10
Used Oil	0.138	74.00
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 CO2/mmBtu.
Petroleum Coke	30.00	102.41.
Petroleum products - gaseous	mmBtu/scf	kg CO2/mmBtu.
Propane Gas	2.516×10^{-3}	61.46.
Other fuels - solid	mmBtu/short ton	kg CO^2/mmBtu
Municipal Solid Waste	9.95 [3]	90.7
Tires	28.00	85.97
Plastics	38.00	75.00
Other fuels - gaseous	mmBtu/scf	kg CO^2/mmBtu
Blast Furnace Gas	0.092×10^{-3}	274.32
Coke Oven Gas	0.599×10^{-3}	46.85
Fuel Gas [4]	1.388×10^{-3}	59.00
Biomass fuels - solid	mmBtu/short ton	kg CO^2/mmBtu
Wood and Wood Residuals (dry basis) [5]	17.48	93.80
Agricultural Byproducts	8.25	118.17
Peat	8.00	111.84

Solid Byproducts	10.39	105.51

Biomass fuels - gaseous	mmBtu/scf	kg CO^2/mmBtu
Landfill Gas	0.485×10^{-3}	52.07
Other Biomass Gases	0.655×10^{-3}	52.07
Biomass Fuels - Liquid	mmBtu/gallon	kg CO^2/mmBtu
Ethanol	0.084	68.44
Biodiesel (100%)	0.128	73.84
Rendered Animal Fat	0.125	71.06
Vegetable Oil	0.120	81.55

[1] The HHV for components of LPG determined at 60 °F and saturation pressure with the exception of ethylene.

[2] Ethylene HHV determined at 41 °F (5 °C) and saturation pressure.

[3] Use of this default HHV is allowed only for: (a) Units that combust MSW, do not generate steam, and are allowed to use Tier 1; (b) units that derive no more than 10 percent of their annual heat input from MSW and/or tires; and (c) small batch incinerators that combust no more than 1,000 tons of MSW per year.

[4] Reporters subject to subpart X of this part that are complying with § 98.243(d) or subpart Y of this part may only use the default HHV and the default CO^2 emission factor for fuel gas combustion under the conditions prescribed in § 98.243(d)(2)(i) and (d)(2)(ii) and § 98.252(a)(1) and (a)(2), respectively. Otherwise, reporters subject to subpart X or subpart Y shall use either Tier 3 (Equation C-5) or Tier 4.

[5] Use the following formula to calculate a wet basis HHV for use in Equation C-1: $HHV^w = ((100 - M)/100)*HHV^d$ where HHV^w = wet basis HHV, M = moisture content (percent) and HHV^d = dry basis HHV from Table C-1.

[78 FR 71950, Nov. 29, 2013, as amended at 81 FR 89252, Dec. 9, 2016]

40 CFR Appendix Table_C-2_to_subpart_C_of_part_98 - Default CH4 and N2O Emission Factors for Various Types of Fuel

CFR

Table C-2 to Subpart C of Part 98 - Default CH^4 and N^2O Emission Factors for Various Types of Fuel

Fuel type	Default CH^4 emission factor (kg CH^4/mmBtu)	Default N^2O emission factor (kg N^2O/mmBtu)
Coal and Coke (All fuel types in Table C-1)	1.1×10^{-02}	1.6×10^{-03}
Natural Gas	1.0×10^{-03}	1.0×10^{-04}
Petroleum Products (All fuel types in Table C-1)	3.0×10^{-03}	6.0×10^{-04}
Fuel Gas	3.0×10^{-03}	6.0×10^{-04}
Other Fuels - Solid	3.2×10^{-02}	4.2×10^{-03}
Blast Furnace Gas	2.2×10^{-05}	1.0×10^{-04}
Coke Oven Gas	4.8×10^{-04}	1.0×10^{-04}
Biomass Fuels - Solid (All fuel types in Table C-1, except wood and wood residuals)	3.2×10^{-02}	4.2×10^{-03}
Wood and wood residuals	7.2×10^{-03}	3.6×10^{-03}

Biomass Fuels - Gaseous (All fuel types in Table C-1)	3.2×10^{-03}	6.3×10^{-04}
Biomass Fuels - Liquid (All fuel types in Table C-1)	1.1×10^{-03}	1.1×10^{-04}

Note: Those employing this table are assumed to fall under the IPCC definitions of the "Energy Industry" or "Manufacturing Industries and Construction". In all fuels except for coal the values for these two categories are identical. For coal combustion, those who fall within the IPCC "Energy Industry" category may employ a value of 1g of CH^4/mmBtu.

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

TABLE 3.2-1 UNCONTROLLED EMISSION FACTORS FOR 2-STROKE LEAN-BURN ENGINES[a]
(SCC 2-02-002-52)

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

Table 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. $CO_2[lb/10^6 \text{ scf}] = (3.67)(CON)(C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, 4.2×10^4 $lb/10^6$ scf.

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

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

Unit Name: REBOILER 3A

Hours of Operation:	8,760	Yearly
Heat Input:	3.00	MMBtu/hr
Fuel Type:	NATURAL GAS	
Device Type:	BOILER	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor		Emission Factor Set
HAPs				
3-Methylcholanthrene	0.0000	0.0000000018	lb/MMBtu	EPA
7,12-Dimethylbenz(a)anthracene	0.0000	0.0000000157	lb/MMBtu	EPA
Formaldehyde	0.0046	0.0003522500	lb/MMBtu	GRI Field
Methanol	0.0057	0.0004333330	lb/MMBtu	GRI Field
Acetaldehyde	0.0038	0.0002909000	lb/MMBtu	GRI Field
1,3-Butadiene	0.0000	0.0000001830	lb/MMBtu	GRI Field
Benzene	0.0001	0.0000062550	lb/MMBtu	GRI Field
Toluene	0.0001	0.0000053870	lb/MMBtu	GRI Field
Ethylbenzene	0.0000	0.0000000720	lb/MMBtu	GRI Field
Xylenes(m,p,o)	0.0000	0.0000010610	lb/MMBtu	GRI Field
2,2,4-Trimethylpentane	0.0004	0.0000323000	lb/MMBtu	GRI Field
n-Hexane	0.0042	0.0003214790	lb/MMBtu	GRI Field
Phenol	0.0000	0.0000000950	lb/MMBtu	GRI Field
Naphthalene	0.0000	0.0000002950	lb/MMBtu	GRI Field
2-Methylnaphthalene	0.0000	0.0000000700	lb/MMBtu	GRI Field
Acenaphthylene	0.0000	0.0000000550	lb/MMBtu	GRI Field
Biphenyl	0.0000	0.0000011500	lb/MMBtu	GRI Field
Acenaphthene	0.0000	0.0000000800	lb/MMBtu	GRI Field
Fluorene	0.0000	0.0000000700	lb/MMBtu	GRI Field
Anthracene	0.0000	0.0000000750	lb/MMBtu	GRI Field
Phenanthrene	0.0000	0.0000000550	lb/MMBtu	GRI Field
Fluoranthene	0.0000	0.0000000800	lb/MMBtu	GRI Field
Pyrene	0.0000	0.0000000750	lb/MMBtu	GRI Field
Benz(a)anthracene	0.0000	0.0000000750	lb/MMBtu	GRI Field
Chrysene	0.0000	0.0000001000	lb/MMBtu	GRI Field
Benzo(a)pyrene	0.0000	0.0000000600	lb/MMBtu	GRI Field
Benzo(b)fluoranthene	0.0000	0.0000001350	lb/MMBtu	GRI Field
Benzo(k)fluoranthene	0.0000	0.0000004400	lb/MMBtu	GRI Field
Benzo(g,h,i)perylene	0.0000	0.0000001500	lb/MMBtu	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.0000001000	lb/MMBtu	GRI Field
Dibenz(a,h)anthracene	0.0000	0.0000000950	lb/MMBtu	GRI Field
Lead	0.0000	0.0000004902	lb/MMBtu	EPA
Total	0.0189			
Criteria Pollutants				
VOC	0.0709	0.0053921569	lb/MMBtu	EPA
PM	0.0979	0.0074509804	lb/MMBtu	EPA
PM, Condensible	0.0734	0.0055882353	lb/MMBtu	EPA
PM, Filterable	0.0245	0.0018627451	lb/MMBtu	EPA

CO	0.4038	0.0307275000	lb/MMBtu	GRI Field
NMHC	0.1121	0.0085294118	lb/MMBtu	EPA
NOx	1.1597	0.0882553330	lb/MMBtu	GRI Field
SO2	0.0077	0.0005880000	lb/MMBtu	EPA

Other Pollutants

Dichlorobenzene	0.0000	0.0000011765	lb/MMBtu	EPA
Methane	0.0773	0.0058790650	lb/MMBtu	GRI Field
Acetylene	0.0701	0.0053314000	lb/MMBtu	GRI Field
Ethylene	0.0069	0.0005264000	lb/MMBtu	GRI Field
Ethane	0.0221	0.0016804650	lb/MMBtu	GRI Field
Propylene	0.0123	0.0009333330	lb/MMBtu	GRI Field
Propane	0.0158	0.0012019050	lb/MMBtu	GRI Field
Butane	0.0182	0.0013866350	lb/MMBtu	GRI Field
Cyclopentane	0.0005	0.0000405000	lb/MMBtu	GRI Field
Pentane	0.0271	0.0020656400	lb/MMBtu	GRI Field
n-Pentane	0.0263	0.0020000000	lb/MMBtu	GRI Field
Cyclohexane	0.0006	0.0000451000	lb/MMBtu	GRI Field
Methylcyclohexane	0.0022	0.0001691000	lb/MMBtu	GRI Field
n-Octane	0.0007	0.0000506000	lb/MMBtu	GRI Field
n-Nonane	0.0001	0.0000050000	lb/MMBtu	GRI Field
CO2	1,545.8824	117.6470588235	lb/MMBtu	EPA

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Washington Ranch Storage Facility
File Name: C:\Program Files\GRI-GLYCalc4\Washington Ranch 2007 Tech Rev.ddf
Date: August 15, 2007

DESCRIPTION:

Description: August 2007 permit revision (flare replacing the thermal oxidizer as a dehydrator control device)

Annual Hours of Operation: 8760.0 hours/yr

WET GAS:

Temperature: 70.00 deg. F
Pressure: 617.00 psig
Wet Gas Water Content: Subsaturated
Specified Wet Gas Water Content: 20.00 lbs. H2O/MMSCF

Component	Conc. (vol %)
Carbon Dioxide	0.6740
Nitrogen	1.4890
Methane	94.6650
Ethane	2.5370
Propane	0.3990
Isobutane	0.0550
n-Butane	0.0820
Isopentane	0.0260
n-Pentane	0.0200
n-Hexane	0.0110
Cyclohexane	0.0050
Other Hexanes	0.0120
Heptanes	0.0120
Benzene	0.0010
Toluene	0.0020
Ethylbenzene	0.0010
Xylenes	0.0010
C8+ Heavies	0.0100

DRY GAS:

Flow Rate: 250.0 MMSCF/day
Water Content: 2.3 lbs. H2O/MMSCF

LEAN GLYCOL:

Glycol Type: TEG
Water Content: 1.5 wt% H2O
Flow Rate: 22.0 gpm

PUMP:

Glycol Pump Type: Electric/Pneumatic

FLASH TANK:

Flash Control: Vented to atmosphere
Temperature: 145.0 deg. F
Pressure: 85.0 psig

REGENERATOR OVERHEADS CONTROL DEVICE:

Control Device: Condenser
Temperature: 170.0 deg. F
Pressure: 12.8 psia

RICH/LEAN ANALYSIS:

Component	Rich Glycol (mg/L)	Lean Glycol (mg/L)
Benzene	81.0	7.00
Toluene	183.0	22.00
Ethylbenzene	14.0	0.00
Xylenes	114.0	10.00

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Washington Ranch Storage Facility
File Name: C:\Program Files\GRI-GLYCalc4\Washington Ranch 2007 Tech Rev.ddf
Date: August 15, 2007

DESCRIPTION:

Description: August 2007 permit revision (flare replacing the thermal oxidizer as a dehydrator control device)

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	3.7956	91.094	16.6247
Ethane	1.7815	42.756	7.8029
Propane	1.1470	27.529	5.0240
Isobutane	0.3789	9.095	1.6598
n-Butane	0.8396	20.151	3.6776
Isopentane	0.3743	8.984	1.6395
n-Pentane	0.4061	9.746	1.7786
n-Hexane	0.5489	13.173	2.4040
Cyclohexane	1.2202	29.285	5.3445
Other Hexanes	0.4217	10.121	1.8470
Heptanes	1.5251	36.602	6.6798
Benzene	0.8004	19.210	3.5058
Toluene	1.6567	39.762	7.2566
Ethylbenzene	0.1190	2.857	0.5213
Xylenes	0.9578	22.987	4.1951
C8+ Heavies	1.5211	36.507	6.6625
Total Emissions	17.4940	419.856	76.6238
Total Hydrocarbon Emissions	17.4940	419.856	76.6238
Total VOC Emissions	11.9169	286.007	52.1962
Total HAP Emissions	4.0828	97.988	17.8828
Total BTEX Emissions	3.5340	84.815	15.4788

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	3.7965	91.116	16.6287
Ethane	1.7828	42.786	7.8085
Propane	1.1500	27.600	5.0369
Isobutane	0.3805	9.133	1.6668
n-Butane	0.8441	20.258	3.6971
Isopentane	0.3781	9.075	1.6562
n-Pentane	0.4110	9.864	1.8003
n-Hexane	0.5625	13.500	2.4638
Cyclohexane	1.2650	30.360	5.5407

Other Hexanes	0.4307	10.337	1.8865
Heptanes	1.6136	38.725	7.0674
Benzene	0.8334	20.002	3.6503
Toluene	1.8139	43.535	7.9451
Ethylbenzene	0.1409	3.381	0.6170
Xylenes	1.1713	28.110	5.1301
C8+ Heavies	6.6673	160.015	29.2028
Total Emissions	23.2416	557.798	101.7982
Total Hydrocarbon Emissions	23.2416	557.798	101.7982
Total VOC Emissions	17.6623	423.896	77.3610
Total HAP Emissions	4.5220	108.528	19.8063
Total BTEX Emissions	3.9595	95.027	17.3425

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	21.6035	518.484	94.6234
Ethane	3.0369	72.886	13.3016
Propane	0.9562	22.949	4.1882
Isobutane	0.2174	5.218	0.9523
n-Butane	0.3752	9.006	1.6436
Isopentane	0.1510	3.624	0.6613
n-Pentane	0.1328	3.188	0.5818
n-Hexane	0.1049	2.518	0.4595
Cyclohexane	0.0588	1.411	0.2575
Other Hexanes	0.1042	2.500	0.4563
Heptanes	0.1531	3.674	0.6705
Benzene	0.0062	0.148	0.0270
Toluene	0.0090	0.216	0.0394
Ethylbenzene	0.0004	0.010	0.0018
Xylenes	0.0023	0.054	0.0099
C8+ Heavies	0.0824	1.978	0.3610
Total Emissions	26.9943	647.863	118.2350
Total Hydrocarbon Emissions	26.9943	647.863	118.2350
Total VOC Emissions	2.3539	56.493	10.3100
Total HAP Emissions	0.1227	2.946	0.5376
Total BTEX Emissions	0.0178	0.428	0.0780

EQUIPMENT REPORTS:

CONDENSER

Condenser Outlet Temperature:	170.00	deg. F
Condenser Pressure:	12.83	psia
Condenser Duty:	1.33e-001	MM BTU/hr
Hydrocarbon Recovery:	0.46	bbls/day
Produced Water:	12.57	bbls/day
VOC Control Efficiency:	32.53	%
HAP Control Efficiency:	9.71	%
BTEX Control Efficiency:	10.75	%

Dissolved Hydrocarbons in Water: 104.24 mg/L

Component	Emitted	Condensed
Water	4.74%	95.26%
Carbon Dioxide	99.78%	0.22%
Nitrogen	99.99%	0.01%
Methane	99.98%	0.02%
Ethane	99.93%	0.07%
Propane	99.74%	0.26%
Isobutane	99.58%	0.42%
n-Butane	99.47%	0.53%
Isopentane	98.99%	1.01%
n-Pentane	98.79%	1.21%
n-Hexane	97.58%	2.42%
Cyclohexane	96.46%	3.54%
Other Hexanes	97.91%	2.09%
Heptanes	94.52%	5.48%
Benzene	96.04%	3.96%
Toluene	91.33%	8.67%
Ethylbenzene	84.49%	15.51%
Xylenes	81.77%	18.23%
C8+ Heavies	22.81%	77.19%

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:	1.51 lbs. H2O/MMSCF
Temperature:	70.0 deg. F
Pressure:	617.0 psig
Dry Gas Flow Rate:	250.0000 MMSCF/day
Glycol Losses with Dry Gas:	0.3788 lb/hr
Wet Gas Water Content:	Subsaturated
Specified Wet Gas Water Content:	20.00 lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	6.85 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	7.57%	92.43%
Carbon Dioxide	99.89%	0.11%
Nitrogen	99.99%	0.01%
Methane	99.99%	0.01%
Ethane	99.98%	0.02%
Propane	99.96%	0.04%
Isobutane	99.93%	0.07%
n-Butane	99.91%	0.09%
Isopentane	99.90%	0.10%
n-Pentane	99.86%	0.14%
n-Hexane	99.74%	0.26%
Cyclohexane	98.85%	1.15%
Other Hexanes	99.81%	0.19%
Heptanes	99.47%	0.53%
Benzene	89.29%	10.71%

Toluene	83.07%	16.93%
Ethylbenzene	74.65%	25.35%
Xylenes	64.49%	35.51%
C8+ Heavies	98.56%	1.44%

FLASH TANK

Flash Control: Vented to atmosphere
Flash Temperature: 145.0 deg. F
Flash Pressure: 85.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.98%	0.02%
Carbon Dioxide	64.79%	35.21%
Nitrogen	14.63%	85.37%
Methane	14.95%	85.05%
Ethane	36.99%	63.01%
Propane	54.60%	45.40%
Isobutane	63.64%	36.36%
n-Butane	69.23%	30.77%
Isopentane	71.61%	28.39%
n-Pentane	75.70%	24.30%
n-Hexane	84.36%	15.64%
Cyclohexane	95.70%	4.30%
Other Hexanes	80.72%	19.28%
Heptanes	91.38%	8.62%
Benzene	99.33%	0.67%
Toluene	99.56%	0.44%
Ethylbenzene	99.74%	0.26%
Xylenes	99.82%	0.18%
C8+ Heavies	98.93%	1.07%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	49.10%	50.90%
Carbon Dioxide	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	0.70%	99.30%
n-Pentane	0.66%	99.34%
n-Hexane	0.59%	99.41%
Cyclohexane	3.34%	96.66%
Other Hexanes	1.24%	98.76%
Heptanes	0.55%	99.45%
Benzene	8.47%	91.53%

Toluene	11.79%	88.21%
Ethylbenzene	10.43%	89.57%
Xylenes	8.60%	91.40%
C8+ Heavies	12.13%	87.87%

STREAM REPORTS:

WET GAS STREAM

Temperature: 70.00 deg. F
Pressure: 631.70 psia
Flow Rate: 1.04e+007 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	4.21e-002	2.08e+002
Carbon Dioxide	6.74e-001	8.15e+003
Nitrogen	1.49e+000	1.15e+004
Methane	9.46e+001	4.17e+005
Ethane	2.54e+000	2.10e+004
Propane	3.99e-001	4.83e+003
Isobutane	5.50e-002	8.78e+002
n-Butane	8.20e-002	1.31e+003
Isopentane	2.60e-002	5.15e+002
n-Pentane	2.00e-002	3.96e+002
n-Hexane	1.10e-002	2.60e+002
Cyclohexane	5.00e-003	1.16e+002
Other Hexanes	1.20e-002	2.84e+002
Heptanes	1.20e-002	3.30e+002
Benzene	3.66e-004	7.84e+000
Toluene	4.25e-004	1.08e+001
Ethylbenzene	1.91e-005	5.57e-001
Xylenes	1.13e-004	3.30e+000
C8+ Heavies	1.00e-002	4.68e+002
Total Components	100.00	4.67e+005

DRY GAS STREAM

Temperature: 70.00 deg. F
Pressure: 631.70 psia
Flow Rate: 1.04e+007 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	3.19e-003	1.58e+001
Carbon Dioxide	6.74e-001	8.14e+003
Nitrogen	1.49e+000	1.15e+004
Methane	9.47e+001	4.17e+005
Ethane	2.54e+000	2.09e+004
Propane	3.99e-001	4.83e+003
Isobutane	5.50e-002	8.77e+002
n-Butane	8.20e-002	1.31e+003

Isopentane	2.60e-002	5.15e+002
n-Pentane	2.00e-002	3.96e+002
n-Hexane	1.10e-002	2.60e+002
Cyclohexane	4.95e-003	1.14e+002
Other Hexanes	1.20e-002	2.84e+002
Heptanes	1.19e-002	3.29e+002
Benzene	3.27e-004	7.00e+000
Toluene	3.54e-004	8.94e+000
Ethylbenzene	1.43e-005	4.16e-001
Xylenes	7.31e-005	2.13e+000
C8+ Heavies	9.86e-003	4.61e+002
Total Components	100.00	4.67e+005

LEAN GLYCOL STREAM

Temperature: 70.00 deg. F
Flow Rate: 2.20e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.85e+001	1.22e+004
Water	1.50e+000	1.86e+002
Carbon Dioxide	7.05e-012	8.74e-010
Nitrogen	6.07e-013	7.52e-011
Methane	6.89e-018	8.53e-016
Ethane	1.84e-008	2.27e-006
Propane	6.92e-010	8.57e-008
Isobutane	1.45e-010	1.79e-008
n-Butane	2.44e-010	3.02e-008
Isopentane	2.15e-005	2.66e-003
n-Pentane	2.21e-005	2.73e-003
n-Hexane	2.71e-005	3.35e-003
Cyclohexane	3.53e-004	4.38e-002
Other Hexanes	4.36e-005	5.40e-003
Heptanes	7.17e-005	8.88e-003
Benzene	6.23e-004	7.71e-002
Toluene	1.96e-003	2.42e-001
Ethylbenzene	1.32e-004	1.64e-002
Xylenes	8.89e-004	1.10e-001
C8+ Heavies	7.43e-003	9.20e-001
Total Components	100.00	1.24e+004

RICH GLYCOL STREAM

Temperature: 70.00 deg. F
Pressure: 631.70 psia
Flow Rate: 2.25e+001 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.65e+001	1.22e+004
Water	2.99e+000	3.78e+002
Carbon Dioxide	6.91e-002	8.74e+000
Nitrogen	5.95e-003	7.51e-001

Methane	2.01e-001	2.54e+001
Ethane	3.81e-002	4.82e+000
Propane	1.67e-002	2.11e+000
Isobutane	4.73e-003	5.98e-001
n-Butane	9.65e-003	1.22e+000
Isopentane	4.21e-003	5.32e-001
n-Pentane	4.32e-003	5.47e-001
n-Hexane	5.31e-003	6.71e-001
Cyclohexane	1.08e-002	1.37e+000
Other Hexanes	4.27e-003	5.40e-001
Heptanes	1.40e-002	1.78e+000
Benzene	7.25e-003	9.17e-001
Toluene	1.63e-002	2.07e+000
Ethylbenzene	1.25e-003	1.58e-001
Xylenes	1.02e-002	1.28e+000
C8+ Heavies	6.07e-002	7.67e+000
Total Components	100.00	1.26e+004

FLASH TANK OFF GAS STREAM

Temperature: 145.00 deg. F
Pressure: 99.70 psia
Flow Rate: 6.02e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	2.45e-001	6.99e-002
Carbon Dioxide	4.41e+000	3.08e+000
Nitrogen	1.44e+000	6.42e-001
Methane	8.49e+001	2.16e+001
Ethane	6.37e+000	3.04e+000
Propane	1.37e+000	9.56e-001
Isobutane	2.36e-001	2.17e-001
n-Butane	4.07e-001	3.75e-001
Isopentane	1.32e-001	1.51e-001
n-Pentane	1.16e-001	1.33e-001
n-Hexane	7.68e-002	1.05e-001
Cyclohexane	4.41e-002	5.88e-002
Other Hexanes	7.62e-002	1.04e-001
Heptanes	9.63e-002	1.53e-001
Benzene	4.98e-003	6.16e-003
Toluene	6.16e-003	8.99e-003
Ethylbenzene	2.40e-004	4.04e-004
Xylenes	1.34e-003	2.26e-003
C8+ Heavies	3.05e-002	8.24e-002
Total Components	100.00	3.08e+001

FLASH TANK GLYCOL STREAM

Temperature: 145.00 deg. F
Flow Rate: 2.24e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)

TEG	9.68e+001	1.22e+004
Water	3.00e+000	3.78e+002
Carbon Dioxide	4.49e-002	5.66e+000
Nitrogen	8.72e-004	1.10e-001
Methane	3.01e-002	3.80e+000
Ethane	1.41e-002	1.78e+000
Propane	9.12e-003	1.15e+000
Isobutane	3.02e-003	3.81e-001
n-Butane	6.69e-003	8.44e-001
Isopentane	3.02e-003	3.81e-001
n-Pentane	3.28e-003	4.14e-001
n-Hexane	4.49e-003	5.66e-001
Cyclohexane	1.04e-002	1.31e+000
Other Hexanes	3.46e-003	4.36e-001
Heptanes	1.29e-002	1.62e+000
Benzene	7.22e-003	9.11e-001
Toluene	1.63e-002	2.06e+000
Ethylbenzene	1.25e-003	1.57e-001
Xylenes	1.02e-002	1.28e+000
C8+ Heavies	6.02e-002	7.59e+000
Total Components	100.00	1.26e+004

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 4.29e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.46e+001	1.93e+002
Carbon Dioxide	1.14e+000	5.66e+000
Nitrogen	3.47e-002	1.10e-001
Methane	2.09e+000	3.80e+000
Ethane	5.24e-001	1.78e+000
Propane	2.31e-001	1.15e+000
Isobutane	5.79e-002	3.81e-001
n-Butane	1.28e-001	8.44e-001
Isopentane	4.64e-002	3.78e-001
n-Pentane	5.04e-002	4.11e-001
n-Hexane	5.77e-002	5.63e-001
Cyclohexane	1.33e-001	1.26e+000
Other Hexanes	4.42e-002	4.31e-001
Heptanes	1.42e-001	1.61e+000
Benzene	9.44e-002	8.33e-001
Toluene	1.74e-001	1.81e+000
Ethylbenzene	1.17e-002	1.41e-001
Xylenes	9.76e-002	1.17e+000
C8+ Heavies	3.46e-001	6.67e+000
Total Components	100.00	2.22e+002

CONDENSER VENT GAS STREAM

Temperature: 170.00 deg. F
Pressure: 12.83 psia

Flow Rate: 4.10e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	4.69e+001	9.12e+000
Carbon Dioxide	1.19e+001	5.65e+000
Nitrogen	3.63e-001	1.10e-001
Methane	2.19e+001	3.80e+000
Ethane	5.48e+000	1.78e+000
Propane	2.41e+000	1.15e+000
Isobutane	6.03e-001	3.79e-001
n-Butane	1.34e+000	8.40e-001
Isopentane	4.80e-001	3.74e-001
n-Pentane	5.21e-001	4.06e-001
n-Hexane	5.89e-001	5.49e-001
Cyclohexane	1.34e+000	1.22e+000
Other Hexanes	4.53e-001	4.22e-001
Heptanes	1.41e+000	1.53e+000
Benzene	9.48e-001	8.00e-001
Toluene	1.66e+000	1.66e+000
Ethylbenzene	1.04e-001	1.19e-001
Xylenes	8.35e-001	9.58e-001
C8+ Heavies	8.26e-001	1.52e+000
Total Components	100.00	3.24e+001

CONDENSER PRODUCED WATER STREAM

Temperature: 170.00 deg. F
Flow Rate: 3.67e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)	(ppm)
Water	1.00e+002	1.83e+002	999835.
Carbon Dioxide	6.12e-003	1.12e-002	61.
Nitrogen	4.31e-006	7.91e-006	0.
Methane	2.56e-004	4.70e-004	3.
Ethane	1.27e-004	2.34e-004	1.
Propane	1.07e-004	1.95e-004	1.
Isobutane	1.82e-005	3.35e-005	0.
n-Butane	5.09e-005	9.33e-005	1.
Isopentane	1.50e-005	2.74e-005	0.
n-Pentane	1.70e-005	3.11e-005	0.
n-Hexane	1.74e-005	3.20e-005	0.
Cyclohexane	1.87e-004	3.43e-004	2.
Other Hexanes	1.11e-005	2.04e-005	0.
Heptanes	2.53e-005	4.65e-005	0.
Benzene	2.74e-003	5.03e-003	27.
Toluene	4.32e-003	7.92e-003	43.
Ethylbenzene	2.18e-004	4.01e-004	2.
Xylenes	2.31e-003	4.24e-003	23.
C8+ Heavies	4.34e-006	7.96e-006	0.
Total Components	100.00	1.83e+002	1000000.

CONDENSER RECOVERED OIL STREAM

Temperature: 170.00 deg. F
Flow Rate: 1.35e-002 gpm

Component	Conc. (wt%)	Loading (lb/hr)
Water	3.42e-002	1.96e-003
Carbon Dioxide	2.37e-002	1.36e-003
Nitrogen	3.84e-005	2.20e-006
Methane	7.93e-003	4.54e-004
Ethane	1.80e-002	1.03e-003
Propane	4.80e-002	2.75e-003
Isobutane	2.72e-002	1.56e-003
n-Butane	7.62e-002	4.37e-003
Isopentane	6.61e-002	3.79e-003
n-Pentane	8.59e-002	4.93e-003
n-Hexane	2.37e-001	1.36e-002
Cyclohexane	7.75e-001	4.44e-002
Other Hexanes	1.57e-001	9.00e-003
Heptanes	1.54e+000	8.84e-002
Benzene	4.88e-001	2.79e-002
Toluene	2.60e+000	1.49e-001
Ethylbenzene	3.74e-001	2.14e-002
Xylenes	3.65e+000	2.09e-001
C8+ Heavies	8.98e+001	5.15e+000
Total Components	100.00	5.73e+000

LABORATORY SERVICE REPORT

REQUESTOR: Ginest, Chad O.
Carlsbad, NM

REPORT DATE: 10/5/2006
REQUEST NO: 2006060776
APPROVED BY: Campbell, Darrell

DISTRIBUTION: Barta, George; Charlet, Larry; Thompson, Glenn; Whitney, Mark; Ryan, Bill

PERFORMED BY: EP-Hockly Gas Lab

Request Description: Washington Ranch Dehy Contactor Inlet and Outlet
Date Received: 6/14/2006
Date Completed: 10/5/2006

Sample No: 1 Sampled By: Lorenzo Hernandez Sample Date: 6/14/2005 10:30:00 AM

Description:
Analysis: WP Gas Analysis, Extended SPL
Purpose: Disposal/Environmental Concerns
Matrix: Gas
Location: EPNG - Midland - Carlsbad - 6595 - 0+0 - Washington Ranch CS - Contactor Inlet

Field Data:

Field Comments: H2S = <0.25 ppm
RSH = 0.5 ppm
H20 = 4 lbs/MMSCF
Glycol circulation Rate 10.5 GPM
Lean Glycol Temperature = 360F Rich Glycol Temperature = Approx 110F
Gas Flow Rate = 51 mmscf/d

Sample No: 2 Sampled By: Lorenzo Hernandez Sample Date: 6/14/2005 10:35:00 AM

Description:
Analysis: WP Gas Analysis, Extended SPL
Purpose: Disposal/Environmental Concerns
Matrix: Gas
Location: EPNG - Midland - Carlsbad - 6595 - 0+0 - Washington Ranch CS - Contactor Outlet

Field Data:

Field Comments: H2S = <0.25 ppm
RSH = 0.5 ppm
H20 = 2 lbs/MMSCF

Data: See attached sheet(s).

Comments:

Request: 2006060776

Sample:	**1**	**2**
Extended Gas Analysis		
Nitrogen (Mol %)	1.489	1.468
Methane (Mol %)	94.665	94.678
Carbon Dioxide (Mol %)	0.674	0.665
Ethane (Mol %)	2.537	2.538
Propane (Mol %)	0.399	0.399
Isobutane (Mol %)	0.055	0.056
n-Butane (Mol %)	0.082	0.082
Isopentane (Mol %)	0.026	0.028
n-Pentane (Mol %)	0.020	0.023
i-Hexane (Mol %)	0.012	0.013
n-Hexane (Mol %)	0.011	0.008
Benzene (Mol %)	0.001	0.002
Cyclohexane (Mol %)	0.005	0.005
i-Heptanes (Mol %)	0.008	0.009
n-Heptane (Mol %)	0.004	0.004
Toluene (Mol %)	0.002	0.003
i-Octanes (Mol %)	0.008	0.013
n-Octane (Mol %)	0.002	0.003
Ethylbenzene (Mol %)	< 0.001	< 0.001
m,o,&p-Xylene (Mol %)	< 0.001	< 0.001
i-Nonanes (Mol %)	< 0.001	0.002
n-Nonane (Mol %)	< 0.001	0.001
i-Decanes (Mol %)	< 0.001	< 0.001
n-Decane (Mol %)	< 0.001	< 0.001
Undecanes (Mol %)	< 0.001	< 0.001
Dodecanes (Mol %)	< 0.001	< 0.001
Tridecanes (Mol %)	< 0.001	< 0.001
Tetradecanes Plus (Mol %)	< 0.001	< 0.001
Gallons per Thousand Cubic Feet		
Nitrogen (GPM)	0.163	0.161
Methane (GPM)	15.995	15.997
Carbon Dioxide (GPM)	0.114	0.112
Ethane (GPM)	0.676	0.677
Propane (GPM)	0.109	0.109
Isobutane (GPM)	0.018	0.018
n-Butane (GPM)	0.026	0.026
Isopentane (GPM)	0.009	0.010
n-Pentane (GPM)	0.007	0.008
i-Hexane (GPM)	0.005	0.005
n-Hexane (GPM)	0.003	0.003
Benzene (GPM)	< 0.001	< 0.001
Cyclohexane (GPM)	0.002	0.002
i-Heptanes (GPM)	0.003	0.004
n-Heptane (GPM)	0.002	0.002
Toluene (GPM)	0.001	0.001
i-Octanes (GPM)	0.005	0.006
n-Octane (GPM)	0.001	0.001
Ethylbenzene (GPM)	< 0.001	< 0.001

Request: 2006060776

Sample:	**1**	**2**
m,o,&p-Xylene (GPM)	< 0.001	< 0.001
i-Nonanes (GPM)	< 0.001	0.001
n-Nonane (GPM)	< 0.001	0.001
i-Decanes (GPM)	< 0.001	< 0.001
n-Decane (GPM)	< 0.001	< 0.001
Undecanes (GPM)	< 0.001	< 0.001
Dodecanes (GPM)	< 0.001	< 0.001
Tridecanes (GPM)	< 0.001	< 0.001
Tetradecanes Plus (GPM)	< 0.001	< 0.001
Natural Gas Mixture Properties, Calculated		
Real Gas Specific Gravity	0.5879	0.5881
Real Gross Heating Value (BTU/SCF60F)	1024.4	1025.4

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

Since flares do not lend themselves to conventional emission testing techniques, only a few attempts have been made to characterize flare emissions. Recent EPA tests using propylene as flare gas indicated that efficiencies of 98 percent can be achieved when burning an offgas with at least 11,200 kJ/m^3 (300 Btu/ft^3). The tests conducted on steam-assisted flares at velocities as low as 39.6 meters per minute (m/min) (130 ft/min) to 1140 m/min (3750 ft/min), and on air-assisted flares at velocities of 180 m/min (617 ft/min) to 3960 m/min (13,087 ft/min) indicated that variations in incoming gas flow rates have no effect on the combustion efficiency. Flare gases with less than 16,770 kJ/m^3 (450 Btu/ft^3) do not smoke.

Table 13.5-1 presents flare emission factors, and Table 13.5-2 presents emission composition data obtained from the EPA tests.[1] Crude propylene was used as flare gas during the tests. Methane was a major fraction of hydrocarbons in the flare emissions, and acetylene was the dominant intermediate hydrocarbon species. Many other reports on flares indicate that acetylene is always formed as a stable intermediate product. The acetylene formed in the combustion reactions may react further with hydrocarbon radicals to form polyacetylenes followed by polycyclic hydrocarbons.[2]

In flaring waste gases containing no nitrogen compounds, NO is formed either by the fixation of atmospheric nitrogen (N) with oxygen (O) or by the reaction between the hydrocarbon radicals present in the combustion products and atmospheric nitrogen, by way of the intermediate stages, HCN, CN, and OCN.[2] Sulfur compounds contained in a flare gas stream are converted to SO_2 when burned. The amount of SO_2 emitted depends directly on the quantity of sulfur in the flared gases.

Table 13.5-1 (English Units). EMISSION FACTORS FOR FLARE OPERATIONS[a]

EMISSION FACTOR RATING: B

Component	Emission Factor ($lb/10^6$ Btu)
Total hydrocarbons[b]	0.14
Carbon monoxide	0.37
Nitrogen oxides	0.068
Soot[c]	0 - 274

[a] Reference 1. Based on tests using crude propylene containing 80% propylene and 20% propane.
[b] Measured as methane equivalent.
[c] Soot in concentration values: nonsmoking flares, 0 micrograms per liter (μg/L); lightly smoking flares, 40 μg/L; average smoking flares, 177 μg/L; and heavily smoking flares, 274 μg/L.

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RG-109 (Draft)

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Flares and Vapor Oxidizers

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Technical Disclaimer

This document is intended as guidance to explain the specific requirements for new source review permitting of flares and vapor oxidizers; it does not supersede or replace any state or federal law, regulation, or rule. References to abatement equipment technologies are not intended to represent minimum or maximum levels of Best Available Control Technology (BACT). Determinations of BACT are made on a case-by-case basis as part of the New Source Review of permit applications. BACT determinations are always subject to adjustment in consideration of specific process requirements, air quality concerns, and recent developments in abatement technology. Additionally, specific health effects concerns may indicate stricter abatement than required by the BACT determination.

The represented calculation methods are intended as an aid in the completion of acceptable submittals; alternate calculation methods may be equally acceptable if they are based upon, and adequately demonstrate, sound engineering assumptions or data.

These guidelines are applicable as of this document's publication date but are subject to revision during the permit application preparation and review period. It is the responsibility of the applicants to remain abreast of any guideline or regulation developments that may affect their industries.

The electronic version of this document may not contain attachments or forms (such as the PI-1, Standard Exemptions, or tables) that can be obtained electronically elsewhere on the TNRCC Web site.

The special conditions included with these guidelines are for purposes of example only. Special conditions included in an actual permit are written by the reviewing engineer to address specific permit requirements and operating conditions.

TABLE OF CONTENTS

Tables

This document provides guidance for two classes of vapor combustion control devices: flares and vapor oxidizers. While there may be some overlap between the two, flares have generally been treated separately by the EPA and the TNRCC, in large part because flares have an open flame and often cannot be sampled, so emissions are estimated based on the results of flare testing performed in the early 1980s. Each of the two classes will be dealt with separately in each of the chapters of this document.

Combustion Control Devices NOT Discussed. This document will not cover permitting of RCRA or BIF units because the requirements for these units often go beyond the requirements for state air permitting. Incinerators used to treat solid wastes are covered in another technical guidance document, *Incinerators*. Guidance for combustion control devices associated with spray paint booths, coatings operations, and semiconductor facilities should be obtained by calling the TNRCC New Source Review Permits Division at (512) 239-1250.

Flares

Flare systems generally are open-flame control devices used for disposing of waste gas streams during both routine process and emergency or upset conditions. In addition to simple, unassisted flares, typical smokeless flare systems include, but are not limited to, the following:

- ***Enclosed Flares/Vapor Combustors.*** Enclosed flares are used in disposing of waste gas streams in instances where a visible flame is unacceptable. Applications include chemical processing, petroleum refining and production, and municipal waste gas treatment. These may be referred to as vapor combustors and can have more than one burner in the stack.

- ***Steam-Assisted Flares***. Steam-assisted flares are used in disposing of low-pressure waste gas streams when steam is available and practical to minimize smoking from the flare. Applications are similar to those of enclosed flares. Flares might also be assisted with natural gas if readily available on site; these flares would undergo a case-by-case review.

- ***Air-Assisted Flares.*** Air-assisted flares are used in disposing of low-pressure waste gas streams when practical or when steam utilities are not available to minimize smoking from the flare. Applications include chemical processing, petroleum refining and production, and pipeline transportation.

- ***Sonic Flares.*** Sonic flares are used in disposing of high-pressure waste gas streams. Applications include gas production, pipeline transportation, and treatment plants.

- ***Multipoint Flare Systems.*** Multipoint flare systems are used in disposing of both high- and low-pressure waste gas streams. Multiple burner tips in conjunction with a staged control system provide for controlled combustion. Applications are similar to those of air-assisted flares.

Vapor Oxidizers

These devices generally do not have an open flame but have an exhaust stack which allows for sampling and monitoring of exhaust emissions. The most common type, thermal, relies on the combustion heat of the waste gas and assist fuel (if required) to oxidize the waste gas air contaminants. Other types include:

- ***Recuperative.*** In this case, the waste gas is directed to a heat exchanger to be preheated by the exhaust gas, to minimize the need for additional assist fuel. Recuperative oxidizers are considered a subset of thermal oxidizers in this document.

- ***Regenerative***. Combustion takes place in a chamber with a heat sink, such as ceramic saddles, which retains the heat of combustion, allowing for combustion of more dilute vapor streams (which have a low heat of combustion) at a lower cost. These units generally have multiple chambers, which allow for the preheat of one chamber by exhaust gases while combustion takes place in another chamber.

- ***Catalytic.*** Combustion takes place over a catalyst that allows for combustion at a lower temperature (in the range of 600 to 800°F as opposed to greater than 1400°F for many thermal oxidizers). Catalytic oxidizers function best with a waste stream with constant flow and composition.

This chapter provides detailed instructions for the calculations necessary to verify BACT and estimate emissions from flares and vapor oxidizers. Flares must be checked to determine whether they will satisfy the flow and thermal requirements of 40 CFR § 60.18, and their emissions are determined by the use of emission factors. Example calculations are provided for these flare calculations.

Oxidizer emissions are determined by using previous sampling results or emission factors from the manufacturer or AP-42. These calculations are very similar to the flare calculations and are only discussed in general terms.

Flares: Introduction

Although emissions from emergency flares are not included in a permit when it is issued, emissions should be estimated for both routine process flares and emergency flares. Sometimes, emissions of routine pilot gas combustion may be included in an issued permit for emergency flares (although not required).

In this section, the *flare* emission factors and destruction efficiencies are presented first. This information is followed by sample *calculations* that demonstrate how to ensure that the requirements of 40 CFR § 60.18 are satisfied and how to estimate emissions from a flare. Flare data in Attachment B (typical refinery flare) will be used as a basis in most of the following calculations. Flare data in Attachment C (acid gas flare) will be used as a basis in the example calculations for SO_2 emissions.

Flare Emission Factors

The usual flare destruction efficiencies and emission factors are provided in Table 4. The high-Btu waste streams referred to in the table have a heating value greater than 1,000 Btu/scf.

Flare Destruction Efficiencies

Claims for destruction efficiencies greater than those listed in Table 4 will be considered on a case-by-case basis. The applicant may make one of the three following demonstrations to justify the higher destruction efficiency: (1) general method, (2) 99.5 percent justification, or (3) flare stack sampling.

Table 4. Flare Factors

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.

Table 3.3-1. EMISSION FACTORS FOR UNCONTROLLED GASOLINE AND DIESEL INDUSTRIAL ENGINES[a]

Pollutant	Gasoline Fuel (SCC 2-02-003-01, 2-03-003-01)		Diesel Fuel (SCC 2-02-001-02, 2-03-001-01)		EMISSION FACTOR RATING
	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	
NO_x 0.011		1.63	0.031	4.41	D
CO	6.96 E-03[d]	0.99[d]	6.68 E-03	0.95	D
SO_x	5.91 E-04	0.084	2.05 E-03	0.29	D
PM-10[b]	7.21 E-04	0.10	2.20 E-03	0.31	D
CO_2[c]	1.08	154	1.15	164	B
Aldehydes 4.85	E-04	0.07	4.63 E-04	0.07	D
TOC					
Exhaust	0.015	2.10	2.47 E-03	0.35	D
Evaporative	6.61 E-04	0.09	0.00	0.00	E
Crankcase	4.85 E-03	0.69	4.41 E-05	0.01	E
Refueling	1.08 E-03	0.15	0.00	0.00	E

[a] References 2,5-6,9-14. When necessary, an average brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr was used to convert from lb/MMBtu to lb/hp-hr. To convert from lb/hp-hr to kg/kw-hr, multiply by 0.608. To convert from lb/MMBtu to ng/J, multiply by 430. SCC = Source Classification Code. TOC = total organic compounds.

[b] PM-10 = particulate matter less than or equal to 10 μm aerodynamic diameter. All particulate is assumed to be ≤ 1 μm in size.

[c] Assumes 99% conversion of carbon in fuel to CO_2 with 87 weight % carbon in diesel, 86 weight % carbon in gasoline, average BSFC of 7,000 Btu/hp-hr, diesel heating value of 19,300 Btu/lb, and gasoline heating value of 20,300 Btu/lb.

[d] Instead of 0.439 lb/hp-hr (power output) and 62.7 lb/mmBtu (fuel input), the correct emissions factors values are 6.96 E-03 lb/hp-hr (power output) and 0.99 lb/mmBtu (fuel input), respectively. This is an editorial correction. March 24, 2009

Table 3.3-2. SPECIATED ORGANIC COMPOUND EMISSION FACTORS FOR UNCONTROLLED DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (Fuel Input) (lb/MMBtu)
Benzene[b]	9.33 E-04
Toluene[b]	4.09 E-04
Xylenes[b]	2.85 E-04
Propylene	2.58 E-03
1,3-Butadiene[b,c]	<3.91 E-05
Formaldehyde[b]	1.18 E-03
Acetaldehyde[b]	7.67 E-04
Acrolein[b]	<9.25 E-05
Polycyclic aromatic hydrocarbons (PAH)	
Naphthalene[b]	8.48 E-05
Acenaphthylene	<5.06 E-06
Acenaphthene	<1.42 E-06
Fluorene	2.92 E-05
Phenanthrene	2.94 E-05
Anthracene	1.87 E-06
Fluoranthene	7.61 E-06
Pyrene	4.78 E-06
Benzo(a)anthracene	1.68 E-06
Chrysene	3.53 E-07
Benzo(b)fluoranthene	<9.91 E-08
Benzo(k)fluoranthene	<1.55 E-07
Benzo(a)pyrene	<1.88 E-07
Indeno(1,2,3-cd)pyrene	<3.75 E-07
Dibenz(a,h)anthracene	<5.83 E-07
Benzo(g,h,l)perylene	<4.89 E-07
TOTAL PAH	1.68 E-04

[a] Based on the uncontrolled levels of 2 diesel engines from References 6-7. Source Classification Codes 2-02-001-02, 2-03-001-01. To convert from lb/MMBtu to ng/J, multiply by 430.
[b] Hazardous air pollutant listed in the *Clean Air Act*.
[c] Based on data from 1 engine.

GRI-HAPCalc ® 3.01
External Combustion Devices Report

Facility ID:	WASHINGTON RANCH	Notes:	1 - Cooper-Bessemer engine
Operation Type:	COMPRESSOR STATION		2 - Cooper Bessemer engine
Facility Name:	WASHINGTON RANCH STORAGE		3 - glycol dehydrator reboiler
User Name:			4 - gas heater
Units of Measure:	U.S. STANDARD		FUG - fugitive emissions

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

External Combustion Devices

Unit Name: HEATER #4

Hours of Operation:	8,760	Yearly
Heat Input:	6.00	MMBtu/hr
Fuel Type:	NATURAL GAS	
Device Type:	HEATER	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
3-Methylcholanthrene	0.0000	0.0000000018 lb/MMBtu	EPA
7,12-Dimethylbenz(a)anthracene	0.0000	0.0000000157 lb/MMBtu	EPA
Formaldehyde	0.0222	0.0008440090 lb/MMBtu	GRI Field
Methanol	0.0253	0.0009636360 lb/MMBtu	GRI Field
Acetaldehyde	0.0194	0.0007375920 lb/MMBtu	GRI Field
1,3-Butadiene	0.0090	0.0003423350 lb/MMBtu	GRI Field
Benzene	0.0197	0.0007480470 lb/MMBtu	GRI Field
Toluene	0.0267	0.0010163310 lb/MMBtu	GRI Field
Ethylbenzene	0.0555	0.0021128220 lb/MMBtu	GRI Field
Xylenes(m,p,o)	0.0347	0.0013205140 lb/MMBtu	GRI Field
2,2,4-Trimethylpentane	0.0747	0.0028417580 lb/MMBtu	GRI Field
n-Hexane	0.0370	0.0014070660 lb/MMBtu	GRI Field
Phenol	0.0000	0.0000001070 lb/MMBtu	GRI Field
Styrene	0.0546	0.0020788960 lb/MMBtu	GRI Field
Naphthalene	0.0000	0.0000005100 lb/MMBtu	GRI Field
2-Methylnaphthalene	0.0000	0.0000001470 lb/MMBtu	GRI Field
Acenaphthylene	0.0000	0.0000000670 lb/MMBtu	GRI Field
Biphenyl	0.0000	0.0000004730 lb/MMBtu	GRI Field
Acenaphthene	0.0000	0.0000000900 lb/MMBtu	GRI Field
Fluorene	0.0000	0.0000000800 lb/MMBtu	GRI Field
Anthracene	0.0000	0.0000000870 lb/MMBtu	GRI Field
Phenanthrene	0.0000	0.0000000600 lb/MMBtu	GRI Field
Fluoranthene	0.0000	0.0000000900 lb/MMBtu	GRI Field
Pyrene	0.0000	0.0000000830 lb/MMBtu	GRI Field

Benz(a)anthracene	0.0000	0.0000000870 lb/MMBtu	GRI Field
Chrysene	0.0000	0.0000001170 lb/MMBtu	GRI Field
Benzo(a)pyrene	0.0000	0.0000000700 lb/MMBtu	GRI Field
Benzo(b)fluoranthene	0.0000	0.0000001500 lb/MMBtu	GRI Field
Benzo(k)fluoranthene	0.0000	0.0000007600 lb/MMBtu	GRI Field
Benzo(g,h,i)perylene	0.0000	0.0000002600 lb/MMBtu	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.0000001200 lb/MMBtu	GRI Field
Dibenz(a,h)anthracene	0.0000	0.0000001030 lb/MMBtu	GRI Field
Lead	0.0000	0.0000004902 lb/MMBtu	EPA
Total	0.3788		

Criteria Pollutants

VOC	0.1417	0.0053921569 lb/MMBtu	EPA
PM	0.1958	0.0074509804 lb/MMBtu	EPA
PM, Condensible	0.1469	0.0055882353 lb/MMBtu	EPA
PM, Filterable	0.0490	0.0018627451 lb/MMBtu	EPA
CO	0.8505	0.0323636360 lb/MMBtu	GRI Field
NMHC	0.2242	0.0085294118 lb/MMBtu	EPA
NOx	2.5496	0.0970167730 lb/MMBtu	GRI Field
SO2	0.0155	0.0005880000 lb/MMBtu	EPA

Other Pollutants

Dichlorobenzene	0.0000	0.0000011765 lb/MMBtu	EPA
Methane	0.2765	0.0105212610 lb/MMBtu	GRI Field
Acetylene	0.3679	0.0140000000 lb/MMBtu	GRI Field
Ethylene	0.0249	0.0009476310 lb/MMBtu	GRI Field
Ethane	0.0691	0.0026312210 lb/MMBtu	GRI Field
Propylene	0.0616	0.0023454550 lb/MMBtu	GRI Field
Propane	0.0281	0.0010686280 lb/MMBtu	GRI Field
Isobutane	0.0385	0.0014640770 lb/MMBtu	GRI Field
Butane	0.0362	0.0013766990 lb/MMBtu	GRI Field
Cyclopentane	0.0297	0.0011304940 lb/MMBtu	GRI Field
Pentane	0.0911	0.0034671850 lb/MMBtu	GRI Field
n-Pentane	0.0374	0.0014221310 lb/MMBtu	GRI Field
Cyclohexane	0.0241	0.0009183830 lb/MMBtu	GRI Field
Methylcyclohexane	0.0578	0.0022011420 lb/MMBtu	GRI Field
n-Octane	0.0750	0.0028538830 lb/MMBtu	GRI Field
1,2,3-Trimethylbenzene	0.0899	0.0034224540 lb/MMBtu	GRI Field
1,2,4-Trimethylbenzene	0.0899	0.0034224540 lb/MMBtu	GRI Field
1,3,5-Trimethylbenzene	0.0899	0.0034224540 lb/MMBtu	GRI Field
n-Nonane	0.0962	0.0036604170 lb/MMBtu	GRI Field
CO2	3,091.7647	117.6470588235 lb/MMBtu	EPA

GRI-HAPCalc ® 3.01
Fugitive Emissions Report

Facility ID:	**WASHINGTON RANCH**	**Notes:**
Operation Type:	**COMPRESSOR STATION**	
Facility Name:	**WASHINGTON RANCH STORAGE**	
User Name:		
Units of Measure:	**U.S. STANDARD**	

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

Fugitive Emissions

Calculation Method: EPA Average Factors

User Inputs

Component	Gas Service	Light Liquid Service	Heavy Liquid Service
Connections:	737	0	0
Flanges	120	0	0
Open-Ended Lines:	14	0	0
Pumps:	0	0	0
Valves:	257	0	0
Others:	30	0	0

Calculated Emissions (ton/yr)

Chemical Name	Emissions
HAPs	
Benzene	0.0037
Toluene	0.0062
Ethylbenzene	0.0003
Xylenes(m,p,o)	0.0016
Total	0.0118
Criteria Pollutants	
NMHC	1.2712
NMEHC	0.5561

GRI-HAPCalc ® 3.01
Engines Report

Facility ID:	**WASHINGTON RANCH**	**Notes:**	**Cummins GTA 1710**
Operation Type:	**COMPRESSOR STATION**		
Facility Name:	**WASHINGTON RANCH STORTAGE**		
User Name:			
Units of Measure:	**U.S. STANDARD**		

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

Engine Unit

Unit Name: 5

Hours of Operation: 500 Yearly

Rate Power: 500 hp

Fuel Type: NATURAL GAS

Engine Type: 4-Stroke, Lean Burn

Emission Factor Set: EPA > FIELD > LITERATURE

Additional EF Set: -NONE-

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
Tetrachloroethane	0.0000	0.00000820 g/bhp-hr	EPA
Formaldehyde	0.0480	0.17425810 g/bhp-hr	EPA
Methanol	0.0023	0.00825090 g/bhp-hr	EPA
Acetaldehyde	0.0076	0.02759090 g/bhp-hr	EPA
1,3-Butadiene	0.0002	0.00088120 g/bhp-hr	EPA
Acrolein	0.0047	0.01696380 g/bhp-hr	EPA
Benzene	0.0004	0.00145220 g/bhp-hr	EPA
Toluene	0.0004	0.00134650 g/bhp-hr	EPA
Ethylbenzene	0.0000	0.00013100 g/bhp-hr	EPA
Xylenes(m,p,o)	0.0002	0.00060730 g/bhp-hr	EPA
2,2,4-Trimethylpentane	0.0002	0.00082510 g/bhp-hr	EPA
n-Hexane	0.0010	0.00366340 g/bhp-hr	EPA
Phenol	0.0000	0.00007920 g/bhp-hr	EPA
Styrene	0.0000	0.00007790 g/bhp-hr	EPA
Naphthalene	0.0001	0.00024550 g/bhp-hr	EPA
2-Methylnaphthalene	0.0000	0.00010960 g/bhp-hr	EPA
Acenaphthylene	0.0000	0.00001830 g/bhp-hr	EPA
Biphenyl	0.0002	0.00069970 g/bhp-hr	EPA
Acenaphthene	0.0000	0.00000410 g/bhp-hr	EPA
Fluorene	0.0000	0.00001870 g/bhp-hr	EPA
Phenanthrene	0.0000	0.00003430 g/bhp-hr	EPA
Ethylene Dibromide	0.0000	0.00014620 g/bhp-hr	EPA
Fluoranthene	0.0000	0.00000370 g/bhp-hr	EPA
Pyrene	0.0000	0.00000450 g/bhp-hr	EPA
Chrysene	0.0000	0.00000230 g/bhp-hr	EPA

Benzo(b)fluoranthene	0.0000	0.00000050	g/bhp-hr	EPA
Benzo(e)pyrene	0.0000	0.00000140	g/bhp-hr	EPA
Benzo(g,h,i)perylene	0.0000	0.00000140	g/bhp-hr	EPA
Vinyl Chloride	0.0000	0.00004920	g/bhp-hr	EPA
Methylene Chloride	0.0000	0.00006600	g/bhp-hr	EPA
1,1-Dichloroethane	0.0000	0.00007790	g/bhp-hr	EPA
1,3-Dichloropropene	0.0000	0.00008710	g/bhp-hr	EPA
Chlorobenzene	0.0000	0.00010030	g/bhp-hr	EPA
Chloroform	0.0000	0.00009410	g/bhp-hr	EPA
1,1,2-Trichloroethane	0.0000	0.00010500	g/bhp-hr	EPA
1,1,2,2-Tetrachloroethane	0.0000	0.00013200	g/bhp-hr	EPA
Carbon Tetrachloride	0.0000	0.00012110	g/bhp-hr	EPA
Total	0.0653			

Criteria Pollutants

PM	0.0091	0.03296090	g/bhp-hr	EPA
CO	0.2881	1.04620860	g/bhp-hr	EPA
NMEHC	0.1072	0.38944040	g/bhp-hr	EPA
NOx	3.7074	13.46539810	g/bhp-hr	EPA
SO2	0.0005	0.00194060	g/bhp-hr	EPA

Other Pollutants

Butryaldehyde	0.0001	0.00033330	g/bhp-hr	EPA
Chloroethane	0.0000	0.00000620	g/bhp-hr	EPA
Methane	1.1359	4.12542830	g/bhp-hr	EPA
Ethane	0.0954	0.34653600	g/bhp-hr	EPA
Propane	0.0381	0.13828440	g/bhp-hr	EPA
Butane	0.0005	0.00178550	g/bhp-hr	EPA
Cyclopentane	0.0002	0.00074920	g/bhp-hr	EPA
n-Pentane	0.0024	0.00858090	g/bhp-hr	EPA
Methylcyclohexane	0.0011	0.00405940	g/bhp-hr	EPA
1,2-Dichloroethane	0.0000	0.00007790	g/bhp-hr	EPA
1,2-Dichloropropane	0.0000	0.00008880	g/bhp-hr	EPA
n-Octane	0.0003	0.00115840	g/bhp-hr	EPA
1,2,3-Trimethylbenzene	0.0000	0.00007590	g/bhp-hr	EPA
1,2,4-Trimethylbenzene	0.0000	0.00004720	g/bhp-hr	EPA
1,3,5-Trimethylbenzene	0.0000	0.00011160	g/bhp-hr	EPA
n-Nonane	0.0001	0.00036300	g/bhp-hr	EPA
CO2	99.9553	363.03769350	g/bhp-hr	EPA

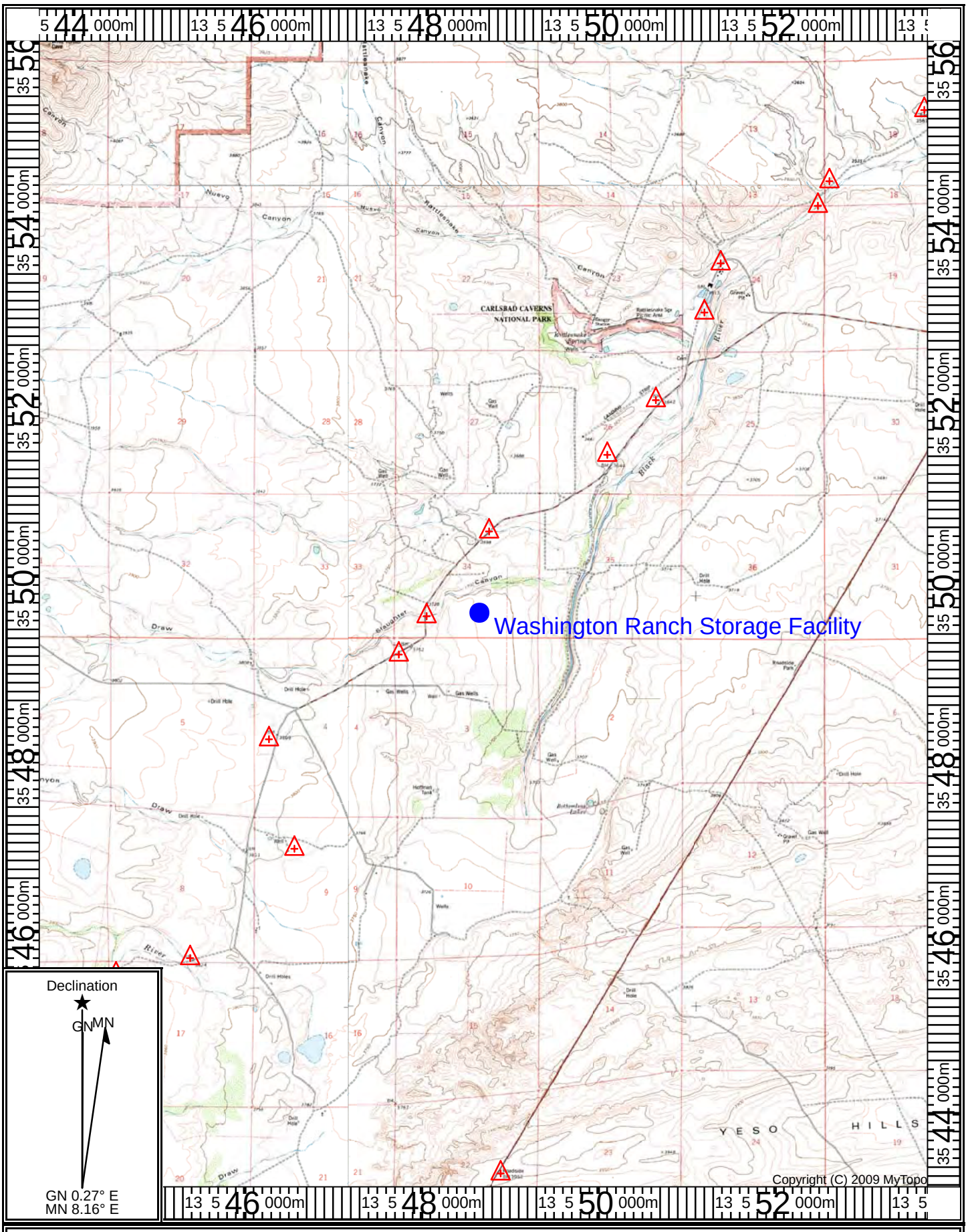
Section 8

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: RATTLESNAKE SPRING
Print Date: 07/30/13

Scale: 1 inch = 4,761 ft.
Map Center: 13 0548666 E 3549599 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.

N/A – This application is being submitted under 20.2.70 NMAC.

Section 10

Written Description of the Routine Operations of the Facility

---

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.

Washington Ranch is a natural gas storage facility which compresses natural gas into underground storage wells and withdraws the gas for delivery into the pipeline. Natural gas is injected or withdrawn from wells using reciprocating gas-fired compressor engines (Units 1 and 2). During natural gas withdrawal operations, the gas is routed through a heater (Unit 4) to prevent hydrate formation then to a triethylene glycol dehydrator (Units 3a and 3b) to remove moisture and hydrocarbons. The process flare (Unit 6) controls emissions from the dehydrator condenser.

Additional sources include a natural gas-fired reciprocating auxiliary engine used up to 500 hours per year (Unit 5), a diesel fire water pump (Unit Pump), facility-wide fugitive emissions (Unit FUG), and emissions from startup, shutdown, and maintenance/malfunction (Unit SSM/M1).

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)**:** Please refer to Table 2-A.

B. Apply the 3 criteria for determining a single source:

SIC Code: Surrounding or associated sources belong to the same 2-digit industrial grouping (2-digit SIC code) as this facility, OR surrounding or associated sources that belong to different 2-digit SIC codes are support facilities for this source.

☒ **Yes** ☐ **No**

Common Ownership or Control: Surrounding or associated sources are under common ownership or control as this source.

☒ **Yes** ☐ **No**

Contiguous or Adjacent: Surrounding or associated sources are contiguous or adjacent with this source.

☒ **Yes** ☐ **No**

C. Make a determination:

☒ The source, as described in this application, constitutes the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes. If in "A" above you evaluated only the source that is the subject of this application, all "**YES**" boxes should be checked. If in "A" above you evaluated other sources as well, you must check **AT LEAST ONE** of the boxes "**NO**" to conclude that the source, as described in the application, is the entire source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes.

☐ The source, as described in this application, **does not** constitute the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes (A permit may be issued for a portion of a source). The entire source consists of the following facilities or emissions sources (list and describe):

Section 12

Section 12.A
PSD Applicability Determination for All Sources

(Submitting under 20.2.72, 20.2.74 NMAC)

A PSD applicability determination for all sources. For sources applying for a significant permit revision, apply the applicable requirements of 20.2.74.AG and 20.2.74.200 NMAC and to determine whether this facility is a major or minor PSD source, and whether this modification is a major or a minor PSD modification. It may be helpful to refer to the procedures for Determining the Net Emissions Change at a Source as specified by Table A-5 (Page A.45) of the EPA New Source Review Workshop Manual to determine if the revision is subject to PSD review.

A. This facility is:

- ☐ **a minor PSD source before and after this modification (if so, delete C and D below).**
- ☐ **a major PSD source before this modification. This modification will make this a PSD minor source.**
- ☐ **an existing PSD Major Source that has never had a major modification requiring a BACT analysis.**
- ☐ **an existing PSD Major Source that has had a major modification requiring a BACT analysis**
- ☐ **a new PSD Major Source after this modification.**

B. **This facility [is or is not] one of the listed 20.2.74.501 Table I – PSD Source Categories. The "project" emissions** for this modification are **[significant or not significant]. [Discuss why.] The "project" emissions listed below [do or do not] only result from changes described in this permit application, thus no emissions from other [revisions or modifications, past or future] to this facility. Also, specifically discuss whether this project results in "de-bottlenecking", or other associated emissions resulting in higher emissions. The project emissions (before netting) for this project are as follows [see Table 2 in 20.2.74.502 NMAC for a complete list of significance levels]:**

a. **NOx: XX.X TPY**
b. **CO: XX.X TPY**
c. **VOC: XX.X TPY**
d. **SOx: XX.X TPY**
e. **TSP (PM): XX.X TPY**
f. **PM10: XX.X TPY**
g. **PM2.5: XX.X TPY**
h. **Fluorides: XX.X TPY**
i. **Lead: XX.X TPY**
j. **Sulfur compounds (listed in Table 2): XX.X TPY**
k. **GHG: XX.X TPY**

C. **Netting [is required, and analysis is attached to this document.] OR [is not required (project is not significant)] OR [Applicant is submitting a PSD Major Modification and chooses not to net.]**

D. **BACT** is **[not required for this modification, as this application is a minor modification.] OR [required, as this application is a major modification. List pollutants subject to BACT review and provide a full top down BACT determination.]**

E. If this is an existing PSD major source, or any facility with emissions greater than 250 TPY (or 100 TPY for 20.2.74.501 Table 1 – PSD Source Categories), determine whether any permit modifications are related, or could be considered a single project with this action, and provide an explanation for your determination whether a PSD modification is triggered.

N/A This Application is being submitted under 20.2.70 NMAC

Section 13

Determination of State & Federal Air Quality Regulations

This section lists each state and federal air quality regulation that may apply to your facility and/or equipment that are stationary sources of regulated air pollutants.

Not all state and federal air quality regulations are included in this list. Go to the Code of Federal Regulations (CFR) or to the Air Quality Bureau's regulation page to see the full set of air quality regulations.

Required Information for Specific Equipment:
For regulations that apply to specific source types, in the 'Justification' column **provide any information needed to determine if the regulation does or does not apply**. **For example**, to determine if emissions standards at 40 CFR 60, Subpart IIII apply to your three identical stationary engines, we need to know the construction date as defined in that regulation; the manufacturer date; the date of reconstruction or modification, if any; if they are or are not fire pump engines; if they are or are not emergency engines as defined in that regulation; their site ratings; and the cylinder displacement.

Required Information for Regulations that Apply to the Entire Facility:
See instructions in the 'Justification' column for the information that is needed to determine if an 'Entire Facility' type of regulation applies (e.g. 20.2.70 or 20.2.73 NMAC).

Regulatory Citations for Regulations That Do Not, but Could Apply:
If there is a state or federal air quality regulation that does not apply, but you have a piece of equipment in a source category for which a regulation has been promulgated, you must **provide the low level regulatory citation showing why your piece of equipment is not subject to or exempt from the regulation. For example** if you have a stationary internal combustion engine that is not subject to 40 CFR 63, Subpart ZZZZ because it is an existing 2 stroke lean burn stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, your citation would be 40 CFR 63.6590(b)(3)(i). **We don't want a discussion of every non-applicable regulation, but if it is possible a regulation could apply, explain why it does not. For example,** if your facility is a power plant, you do not need to include a citation to show that 40 CFR 60, Subpart OOO does not apply to your non-existent rock crusher.

Regulatory Citations for Emission Standards:
For each unit that is subject to an emission standard in a source specific regulation, such as 40 CFR 60, Subpart OOO or 40 CFR 63, Subpart HH, include the low level regulatory citation of that emission standard. Emission standards can be numerical emission limits, work practice standards, or other requirements such as maintenance. **Here are examples:** a glycol dehydrator is subject to the general standards at 63.764C(1)(i) through (iii); an engine is subject to 63.6601, Tables 2a and 2b; a crusher is subject to 60.672(b), Table 3 and all transfer points are subject to 60.672(e)(1)

Federally Enforceable Conditions:
All federal regulations are federally enforceable. All Air Quality Bureau State regulations are federally enforceable except for the following: affirmative defense portions at 20.2.7.6.B, 20.2.7.110(B)(15), 20.2.7.11 through 20.2.7.113, 20.2.7.115, and 20.2.7.116; 20.2.37; 20.2.42; 20.2.43; 20.2.62; 20.2.63; 20.2.86; 20.2.89; and 20.2.90 NMAC. Federally enforceable means that EPA can enforce the regulation as well as the Air Quality Bureau and federally enforceable regulations can count toward determining a facility's potential to emit (PTE) for the Title V, PSD, and nonattainment permit regulations.

INCLUDE ANY OTHER INFORMATION NEEDED TO COMPLETE AN APPLICABILITY DETERMINATION OR THAT IS RELEVENT TO YOUR FACILITY'S NOTICE OF INTENT OR PERMIT.

EPA Applicability Determination Index for 40 CFR 60, 61, 63, etc: http://cfpub.epa.gov/adi/

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

Table for STATE REGULATIONS:

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.1 NMAC	General Provisions	Yes	Facility	General Provisions apply to Notice of Intent, Construction, and Title V permit applications.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	20.2.3 NMAC is a SIP approved regulation that limits the maximum allowable concentration of Total Suspended Particulates, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide. The facility meets maximum allowable concentrations of TSP, 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.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	N/A	This facility does not have existing gas burning equipment 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 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. Washington Ranch is not a natural gas processing plant as defined in 20.2.35.7 NMAC
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	No	N/A	This purpose of this regulation is to minimize emissions from petroleum or natural gas processing facilities. Washington Ranch is not a petroleum processing facility as defined in 20.2.37.7 NMAC.
20.2.38 NMAC	Hydrocarbon Storage Facility	No	N/A	Not applicable as facility is not a “petroleum processing facility” or “petroleum production facility” and does not contain a “tank battery” or a “hydrocarbon storage facility” associated with a “petroleum processing facility” as these terms are understood.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	This regulation establishes sulfur emission standards for sulfur recovery plants which are not part of petroleum or natural gas processing facilities. This regulation does not apply to the facility because Washington Ranch is not have a sulfur recovery plant
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	Units: 1, 2, 3a, 4, 5, 6, & Pump	This regulation establishes controls on smoke and visible emissions from certain sources, including stationary combustion equipment. Facility engines, heaters, and flare are Stationary Combustion Equipment and must comply with this regulation by burning pipeline quality natural gas.
20.2.70 NMAC	Operating Permits	Yes	Facility	This regulation establishes requirements for obtaining an operating permit. Washington Ranch is a Title V major source; therefore, it is subject to this regulation. Washington Ranch is permitted under Title V Permit P064-R3. This application is being submitted under 20.2.70.300.B(2).
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	This regulation establishes a schedule of operating permit emission fees. The facility is subject to 20.2.70 NMAC and is therefore subject to requirements of this regulation.
20.2.72 NMAC	Construction Permits	Yes	Facility	This regulation establishes the requirements for obtaining a construction permit. This facility is subject to 20.2.72 NMAC and is permitted under NSR Permit 0428-M7.

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	Washington Ranch is subject to the emission inventory requirements under 20.2.73.300 NMAC. EPNG inventory information, as well as other facility data gathered by the company's COMET database is based on the North American Energy Standards Board (NAESB) Gas Day as opposed to the facility's calendar day.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	Yes	Facility	This regulation establishes requirements for obtaining a prevention of significant deterioration permit. This facility is not a PSD major source therefore this regulation does not apply.
20.2.75 NMAC	Construction Permit Fees	No	Facility	This regulation establishes a schedule of operating permit emission fees. This facility is subject to 20.2.72 NMAC and is in turn subject to 20.2.75 NMAC. This facility is exempt from annual fees under this part (20.2.75.11.E NMAC) as it is subject to fees under 20.2.71 NMAC. It is, however, subject to any filing fees for NSR revisions.
20.2.77 NMAC	New Source Performance	No	Units subject to 40 CFR 60	This regulation establishes state authority to implement new source performance standards (NSPS) for stationary sources. This is a stationary source which is not subject to the requirements of 40 CFR Part 60 as amended through December 31, 2010. Accordingly, 20.2.77 NMAC does not apply.
20.2.78 NMAC	Emission Standards for HAPS	No (potentially)	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 may emit hazardous air pollutants which are subject to the requirements of 40 CFR Part 61, as amended through December 31, 2010. In the case of asbestos demolition, one NESHAP may apply.
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. Washington Ranch is subject to 20.2.80.109 NMAC as the sources at the facility were constructed after December 31, 1970.
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	Units Subject to 40 CFR 63 Units: 1, 2, 3, 4, 5, & Pump	This regulation established state authority to implement MACT Standards for source categories of HAPs. This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63 as amended through December 31, 2010. The facility is a major source of HAPs subject to MACT Subparts A, HHH, ZZZZ, and DDDDD.

Table for Applicable FEDERAL REGULATIONS:

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 50	NAAQS	Yes	Facility	This regulation defines national ambient air quality standards. The facility meets all applicable national ambient air quality standards for NOx, CO, SO_2, H_2S, PM_{10}, and $PM_{2.5}$ under this regulation.
NSPS 40 CFR 60, Subpart A	General Provisions	No	Units subject to 40 CFR 60	This regulation defines general provisions for relevant standards that have been set under this part. The facility is not subject to this regulation because no NSPS Subparts apply.
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for **Electric Utility Steam Generating Units**	No	N/A	This facility does not have any electric utility steam generating units; therefore, this regulation does not apply.
NSPS 40 CFR60.40b Subpart Db	**Electric Utility Steam Generating Units**	No	N/A	This facility does not have any electric utility steam generating units; therefore this regulation does not apply.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	No	N/A	This facility does not contain small industrial, commercial, or institutional steam generating units; therefore, this regulation does not apply.
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. This regulation is not applicable as no facility petroleum liquid storage vessels commenced construction, reconstruction, or modification after May 18, 1978 and prior to July 23, 1984 and/or which have capacities greater than 40,000 gallons.
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 storage vessels for petroleum liquids for which construction, reconstruction, or modification commenced after July 23, 1984. Not applicable as there are no volatile organic liquid storage vessels which commenced construction, reconstruction, or modification after July 23, 1984.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	No	N/A	This regulation establishes standards of performance for certain stationary gas turbines. There are no stationary gas turbines at Washington Ranch.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	No	N/A	This regulation defines standards of performance for equipment leaks of VOC emissions from onshore natural gas processing plants for which construction, reconstruction, or modification commenced after January 20, 1984, and on or before August 23, 2011. This regulation does not apply as the facility is not a gas plant.
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural Gas Processing**: SO_2 Emissions	No	N/A	This regulation establishes standards of performance for SO_2 emissions from onshore natural gas processing for which construction, reconstruction, or modification of the amine sweetening unit commenced after January 20, 1984 and on or before August 23, 2011. This regulation does not apply as the facility is not a natural gas processing plant.
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	No	N/A	This regulation establishes standards of performance for crude oil and natural gas production, transmission and distribution. The facility does not have any affected units that have been modified or reconstructed on or after August 23, 2011. [40 CFR 60.5360 (Subpart OOOO)]
NSPS 40 CFR Part 60 Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015	No	N/A	The facility was constructed prior to the applicability date of the regulation. No units are subject to this regulation.
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	No	N/A	Not applicable to the stationary compression ignition internal combustion engines at the facility (including Unit Pump) as these engines did not commence construction, modification, or reconstruction after July 11, 2005.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	No	N/A	This regulation establishes standards of performance for stationary spark ignition combustion engines. No facility stationary spark ignition internal combustion engines commenced construction, modification, or reconstruction after June 12, 2006. Accordingly, this regulation does not apply.
NSPS 40 CFR 60 Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units	No	N/A	This regulation establishes standards of performance for Greenhouse gas emissions for electric generating units. This facility does contain any steam generating unit, IGCC, or stationary combustion turbine; therefore, 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	This regulation establishes emission guidelines for greenhouse gas emissions and compliance times for electric utility generating units. This facility does not contain any steam generating units, IGCC, or stationary combustion turbines; therefore, this regulation does not apply.
NSPS 40 CFR 60, Subparts WWW, XXX, Cc, and Cf	Standards of performance for Municipal Solid Waste (MSW) Landfills	No	N/A	This regulation establishes standards of performance for municipal solid waste (MSW) landfills. This facility does not handle solid waste; therefore this regulation does not apply.
NESHAP 40 CFR 61 Subpart A	General Provisions	X (potentially)	Units Subject to 40 CFR 61	This part applies to the owner or operator of any stationary source for which a standard is prescribed under this part. In the case of asbestos demolition, NESHAP 40 CFR 61 Subpart M would apply.
NESHAP 40 CFR 61 Subpart M	National Emission Standard for **Asbestos**	X (potentially)	Facility	Although this subpart does not apply to this facility under normal operating conditions, in the case of asbestos demolition, this subpart would apply.
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 produce or handle mercury; therefore, this regulation does not apply.
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	No	N/A	This regulation establishes national emission standards for equipment leaks (fugitive emission sources). This regulation is not applicable as facility equipment do not operate in VHAP service. (VHAP means a substance regulated under this subpart for which a standard for equipment leaks of the substance has been promulgated. VHAP service means a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight of VHAP.)
MACT 40 CFR 63, Subpart A	General Provisions	Yes	Units Subject to 40 CFR 63 Units 1, 2, 3, 4, 5, & Pump	This regulation defines general provisions for relevant standards that have been set under this part. This regulation is applicable as the engines (Units 1, 2, 5, Pump) are subject to MACT ZZZZ, the dehydrator (Unit 3) is subject to MACT HHH, and process heaters (Units 3a, 4) are subject to MACT DDDDD.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
MACT 40 CFR 63.760 Subpart HH	**Oil and Natural Gas Production Facilities**	No	N/A	This regulation establishes national emission standards for hazardous air pollutants from oil and natural gas production facilities. This facility is not an oil or natural gas production facility, therefore this regulation does not apply.
MACT 40 CFR 63 Subpart HHH	National Emission Standards for Hazardous Air Pollutants from **Natural Gas Transmission and Storage Facilities**	Yes	3 (Dehydrator)	This subpart applies to owners and operators of natural gas transmission and storage facilities that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user (if there is no local distribution company), and that are major sources of hazardous air pollutants (HAP) emissions as defined in §63.1271. This regulation is applicable as this is a natural gas storage facility that is a major source of HAPs. The affected source is the glycol dehydration unit. Pursuant to 40 CFR 63.1274(d)(2), the glycol dehydration unit is exempt from the emission standards of this regulation as its potential to emit benzene is less than 0.9 Mg/yr. Accordingly, there are no applicable emission standards. There are recordkeeping and reporting provisions.
MACT 40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	Yes	3a, 4	Units 3a and 4 are process heaters at a major source of HAPs which are subject to MACT 40 CFR 63 Subpart DDDDD. They are both existing units under the subcategory of "units designed to burn gas 1 fuels" because they only burn natural gas. Pursuant to 40 CFR 63.7495, these existing process heaters must comply with MACT DDDDD no later than January 31, 2016. In addition, pursuant to 40 CFR 63.7545(b), initial notification for these process heaters must be submitted no later than 120 days after January 31, 2013 (May 31, 2013). As existing process heaters in the "units designed to burn gas 1 fuels" subcategory, these units are not subject to emission limits or operating limits under MACT DDDDD. Instead, they are subject to work practice standards specified in MACT DDDDD Table 3.
MACT 40 CFR 63 Subpart UUUUU	National Emission Standards for Hazardous Air Pollutants Coal & Oil Fire Electric Utility Steam Generating Unit	No	N/A	This regulation establishes national emission standard for hazardous air pollutants coal and oil fire electric utility steam generating units. This facility does not contain utility steam generating units; therefore, this regulation does not apply.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	Yes	Units 1, 2, 5, Pump	Facility's stationary RICE (units 1, 2, 5, Pump) are subject to MACT ZZZZ. Units 1 and 2 are existing stationary 2SLB RICE > 500 hp at a major source of HAPs as they were constructed prior to and have not been reconstructed on or after December 19, 2002. Unit 5 is an existing stationary 4SRB RICE equal to 500 hp at a major source of HAPs. The diesel water pump engine, Unit Pump, is an existing CI RICE < 500 hp at a major source of HAPs as it was constructed prior to and has not been reconstructed on or after June 12, 2006. Pursuant to 40 CFR 63.9500(b)(3)(i), Units 1 and 2 do not have any requirements under MACT ZZZZ or 40 CFR 63, Subpart A, including initial notification requirements. Pursuant to 40 CFR 63.9595(a)(1), Unit 5 must comply with the applicable emissions limitations and operating limitations no later than June 15, 2007 and Unit Pump must comply with the applicable emissions limitations and operating limitations.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 64	**Compliance Assurance Monitoring**	No	N/A	This regulation defines compliance assurance monitoring. The regulation does not apply as none of the emissions units have pre-controlled emissions greater than 100 tpy. This regulation is not applicable as facility has no units meeting the criteria of this part; specifically, no emissions units are controlled major sources. Although Washington Ranch Storage Facility is a Title V major source with a part 70 permit, none of the units at this facility use a control device (as defined by the CAM rule) to achieve compliance with emission limits.
40 CFR 68	**Chemical Accident Prevention**	No	N/A	Facility is regulated under DOT Office of Pipeline Safety Regulations (49 CFR 192, 193 and 195); therefore, it is not subject to this regulation. This regulation arises from section 112(r) of the Clean Air Act and establishes thresholds based on inventoried quantities of specific substances in process. As established at 40 CFR 68.3, the term "stationary source" does not apply to the transportation of any regulated substance or any other extremely hazardous substance under the provisions of this part, provided that such transportation is regulated under 49 CFR parts 192, 193, or 195 (DOT Office of Pipeline Safety Regulations).
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No	N/A	This part establishes the acid rain program. This part does not apply because the facility is not covered by this regulation [40 CFR Part 72.6].
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 part does not apply because the facility is not the type covered by this regulation [40 CFR Part 73.2].
Title IV-Acid Rain 40 CFR 75	**Continuous Emissions Monitoring**	No	N/A	This regulation establishes continuous monitoring requirements for certain types of facilities. This regulation does not apply because this facility generates commercial electric power or electric power for sale.
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 SO_2. 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**	Yes	Facility	EPNG owns appliances containing CFCs and is therefore subject to this requirement. However, this requirement imposes no obligations on the facility beyond those imposed on any individual or corporate owner of such appliances, and is mentioned here only in the interest of being thorough. EPNG uses only certified technicians for the maintenance, service, repair and disposal of appliances and maintains the appropriate records for this requirement.
CAA Section 112(r)	**Prevention of Accidental Releases**	No	N/A	Facility is regulated under DOT Office of Pipeline Safety Regulations (49 CFR 192, 193 and 195); therefore, it is not subject to this regulation. This regulation arises from section 112(r) of the Clean Air Act and establishes thresholds based on inventoried quantities of specific substances in process. As established at 40 CFR 68.3, the term "stationary source" does not apply to the transportation of any regulated substance or any other extremely hazardous substance under the provisions of this part, provided that such transportation is regulated under 49 CFR parts 192, 193, or 195 (DOT Office of Pipeline Safety Regulations).

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.

EPNG maintains the required planning and excess emissions mitigation documents at the facility.

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.

The term "alternative operating scenario" is not defined by regulation. EPNG understands this term to apply to a source which may routinely operate with alternative fuels or processes in such a manner as to potentially affect emissions. Based on this understanding, this facility has no alternative operating scenarios.

Units at the facility may be shut down from time to time due to factors including but not limited to market demand, maintenance, malfunctions, and emergency shutdowns. Operating in alternative modes and temporary shutdowns are not alternative operating scenarios as EPNG understands the term.

Section 16

Air Dispersion Modeling

1) Minor Source Construction (20.2.72 NMAC) and Prevention of Significant Deterioration (PSD) (20.2.74 NMAC) ambient impact analysis (modeling): Provide an ambient impact analysis as required at 20.2.72.203.A(4) and/or 20.2.74.303 NMAC and as outlined in the Air Quality Bureau's Dispersion Modeling Guidelines found on the Planning Section's modeling website. If air dispersion modeling has been waived for one or more pollutants, attach the AQB Modeling Section modeling waiver approval documentation.
2) SSM Modeling: Applicants must conduct dispersion modeling for the total short term emissions during routine or predictable startup, shutdown, or maintenance (SSM) using realistic worst case scenarios following guidance from the Air Quality Bureau's dispersion modeling section. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions modeling requirements.
3) Title V (20.2.70 NMAC) ambient impact analysis: Title V applications must specify the construction permit and/or Title V Permit number(s) for which air quality dispersion modeling was last approved. Facilities that have only a Title V permit, such as landfills and air curtain incinerators, are subject to the same modeling required for preconstruction permits required by 20.2.72 and 20.2.74 NMAC.

What is the purpose of this application?	Enter an X for each purpose that applies
New PSD major source or PSD major modification (20.2.74 NMAC). See #1 above.	
New Minor Source or significant permit revision under 20.2.72 NMAC (20.2.72.219.D NMAC). See #1 above. **Note:** Neither modeling nor a modeling waiver is required for VOC emissions.	
Reporting existing pollutants that were not previously reported.	
Reporting existing pollutants where the ambient impact is being addressed for the first time.	
Title V application (new, renewal, significant, or minor modification. 20.2.70 NMAC). See #3 above.	X
Relocation (20.2.72.202.B.4 or 72.202.D.3.c NMAC)	
Minor Source Technical Permit Revision 20.2.72.219.B.1.d.vi NMAC for like-kind unit replacements.	
Other: i.e. SSM modeling. See #2 above.	
This application does not require modeling since this is a No Permit Required (NPR) application.	
This application does not require modeling since this is a Notice of Intent (NOI) application (20.2.73 NMAC).	
This application does not require modeling according to 20.2.70.7.E(11), 20.2.72.203.A(4), 20.2.74.303, 20.2.79.109.D NMAC and in accordance with the Air Quality Bureau's Modeling Guidelines.	

Check each box that applies:

☐ See attached, approved modeling **waiver for all** pollutants from the facility.
☐ See attached, approved modeling **waiver for some** pollutants from the facility.
☐ Attached in Universal Application Form 4 (UA4) is a **modeling report for all** pollutants from the facility.
☐ Attached in UA4 is a **modeling report for some** pollutants from the facility.
☒ No modeling is required.

This application is being submitted under 20.2.70 NMAC; therefore, no modeling is required.

Section 17

Compliance Test History

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

To show compliance with existing NSR permits conditions, you must submit a compliance test history. The table below provides an example.

Compliance Test History Table

Unit No.	Test Description	Test Date*
1	Portable Analyzer for NOx and CO	10/24/2018
2	Portable Analyzer for NOx and CO	10/23/2018
1	EPA reference method for VOC	10/24/18
2	EPA reference method for VOC	10/23/18

*Compliance Test history table only indicates the most recent engine test data.

Section 19

Requirements for Title V Program

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

Who Must Use this Attachment:

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

The facility is a Title V major source as defined at 20.2.70 NMAC

19.1 - 40 CFR 64, Compliance Assurance Monitoring (CAM) (20.2.70.300.D.10.e NMAC)

Any source subject to 40CFR, Part 64 (Compliance Assurance Monitoring) must submit all the information required by section 64.7 with the operating permit application. The applicant must prepare a separate section of the application package for this purpose; if the information is already listed elsewhere in the application package, make reference to that location. Facilities not subject to Part 64 are invited to submit periodic monitoring protocols with the application to help the AQB to comply with 20.2.70 NMAC. Sources subject to 40 CFR Part 64, must submit a statement indicating your source's compliance status with any enhanced monitoring and compliance certification requirements of the federal Act.

Based on information and belief formed after reasonable inquiry, Kinder Morgan states that the facility does not meet the applicability requirements of 40 CFR 64.2. Specifically, no sources at the facility are controlled major sources of regulated pollutants, and enhanced monitoring requirements are not applicable to this facility at this time. Kinder Morgan will submit the necessary statement should the facility or requirements change such that this requirement becomes applicable.

19.2 - Compliance Status (20.2.70.300.D.10.a & 10.b NMAC)

Describe the facility's compliance status with each applicable requirement at the time this permit application is submitted. This statement should include descriptions of or references to all methods used for determining compliance. This statement should include descriptions of monitoring, recordkeeping and reporting requirements and test methods used to determine compliance with all applicable requirements. Refer to Section 2, Tables 2-N and 2-O of the Application Form as necessary. (20.2.70.300.D.11 NMAC) For facilities with existing Title V permits, refer to most recent Compliance Certification for existing requirements. Address new requirements such as CAM, here, including steps being taken to achieve compliance.

As described here and based on information and belief formed after reasonable inquiry, Kinder Morgan believes that Washington Ranch Storage Facility is in compliance with each applicable requirement identified in Section 13 and as discussed here. In the event that Kinder Morgan should discover new information affecting the compliance status of the facility, Kinder Morgan will make appropriate notifications and/or take corrective actions.

Pursuant to Condition A109 of Permit P064R3, Kinder Morgan has certified to compliance with the terms and conditions of that permit. The most recent such certification was submitted by the January 31th deadline. Since that time, Kinder Morgan has continued to be in compliance with applicable requirements as described in Section 13 of this application.

19.3 - Continued Compliance (20.2.70.300.D.10.c NMAC)

Provide a statement that your facility will continue to be in compliance with requirements for which it is in compliance at the time of permit application. This statement must also include a commitment to comply with other applicable requirements as they come into effect during the permit term. This compliance must occur in a timely manner or be consistent with such schedule expressly required by the applicable requirement.

As described in Sections 13 and 19.2 and based on information and belief formed after reasonable inquiry, Kinder Morgan states that Washington Ranch Storage Facility will continue to be operated in compliance with applicable requirements for which it is in compliance as of the date of submittal of this application.

In addition, Kinder Morgan will meet additional applicable requirements that become effective during the permit term in a timely manner or on such a time schedule as expressly required by the applicable requirement. In the event that Kinder Morgan should discover new information affecting the compliance status of the facility, Kinder Morgan will make appropriate notifications and/or take corrective actions as appropriate

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19.4 - Schedule for Submission of Compliance (20.2.70.300.D.10.d NMAC)

You must provide a proposed schedule for submission to the department of compliance certifications during the permit term. This certification must be submitted annually unless the applicable requirement or the department specifies a more frequent period. A sample form for these certifications will be attached to the permit.

Condition A109 of Operating Permit P022-R3 requires EPNG to submit compliance certification reports to the New Mexico Environment Department (NMED) Air Quality Bureau (AQB) and to the EPA no later than January 31st of each year.

19.5 - Stratospheric Ozone and Climate Protection

In addition to completing the four (4) questions below, you must submit a statement indicating your source's compliance status with requirements of Title VI, Section 608 (National Recycling and Emissions Reduction Program) and Section 609 (Servicing of Motor Vehicle Air Conditioners).

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1. Does your facility have any air conditioners or refrigeration equipment that uses CFCs, HCFCs or other ozone-depleting substances? ☒ **Yes** ☐ **No**

2. Does any air conditioner(s) or any piece(s) of refrigeration equipment contain a refrigeration charge greater than 50 lbs? ☐ **Yes** ☒ **No**

   (If the answer is yes, describe the type of equipment and how many units are at the facility.)

3. Do your facility personnel maintain, service, repair, or dispose of any motor vehicle air conditioners (MVACs) or appliances ("appliance" and "MVAC" as defined at 82. 152)? ☐ **Yes** ☒ **No**

4. Cite and describe which Title VI requirements are applicable to your facility (i.e. 40 CFR Part 82, Subpart A through G.)

Based on information and belief formed after reasonable inquiry, Kinder Morgan states that Title VI, Section 608 (National Recycling and Emissions Reduction Program) of the Clean Air Act may apply to this facility, as Kinder Morgan may own CFC-containing refrigeration equipment meeting the criteria of this Section, specifically, 40 CFR 82, Subpart F, which applies to owners of CFC-containing appliances (40 CFR 82.150 (b) and 40 CFR 82.152). EPNG may own appliances affected by this subpart, and abides by this regulation. Kinder Morgan is in compliance with the requirements of this Section.

Kinder Morgan does not service motor vehicle air conditioners at this facility and therefore Section 609 does not apply.

Washington Ranch Storage Facility will continue to be operated in compliance with the requirements of Title VI, Section 608 of the Clean Air Act as they apply to this facility.

19.6 - Compliance Plan and Schedule

Applications for sources, which are not in compliance with all applicable requirements at the time the permit application is submitted to the department, must include a proposed compliance plan as part of the permit application package. This plan shall include the information requested below:

A. Description of Compliance Status: (20.2.70.300.D.11.a NMAC)
A narrative description of your facility's compliance status with respect to all applicable requirements (as defined in 20.2.70 NMAC) at the time this permit application is submitted to the department.

B. Compliance plan: (20.2.70.300.D.11.B NMAC)
A narrative description of the means by which your facility will achieve compliance with applicable requirements with which it is not in compliance at the time you submit your permit application package.

C. Compliance schedule: (20.2.70.300D.11.c NMAC)
A schedule of remedial measures that you plan to take, including an enforceable sequence of actions with milestones, which will lead to compliance with all applicable requirements for your source. This schedule of compliance must be at least as stringent as that contained in any consent decree or administrative order to which your source is subject. The obligations of any consent decree or administrative order are not in any way diminished by the schedule of compliance.

D. Schedule of Certified Progress Reports: (20.2.70.300.D.11.d NMAC)
A proposed schedule for submission to the department of certified progress reports must also be included in the compliance schedule. The proposed schedule must call for these reports to be submitted at least every six (6) months.

E. Acid Rain Sources: (20.2.70.300.D.11.e NMAC)
If your source is an acid rain source as defined by EPA, the following applies to you. For the portion of your acid rain source subject to the acid rain provisions of title IV of the federal Act, the compliance plan must also include any additional requirements under the acid rain provisions of title IV of the federal Act. Some requirements of title IV regarding the schedule and methods the source will use to achieve compliance with the acid rain emissions limitations may supersede the requirements of title V

and 20.2.70 NMAC. You will need to consult with the Air Quality Bureau permitting staff concerning how to properly meet this requirement.

NOTE: The Acid Rain program has additional forms. See http://www.env.nm.gov/aqb/index.html. Sources that are subject to both the Title V and Acid Rain regulations are **encouraged** to submit both applications **simultaneously**.

Based on information and belief formed after reasonable inquiry and as described in Section 19.2, and with this filing, Kinder Morgan states that Washington Ranch Storage Facility is in compliance with applicable requirements. There are no requirements under Section 19.6 as noted above.

19.7 - 112(r) Risk Management Plan (RMP)

Any major sources subject to section 112(r) of the Clean Air Act must list all substances that cause the source to be subject to section 112(r) in the application. The permittee must state when the RMP was submitted to and approved by EPA.

Based on information and belief formed after reasonable inquiry, Kinder Morgan states that Washington Ranch Storage Facility is not subject to 40 CFR 68, Chemical Accident Prevention Provisions.

As per 40 CFR 68.3 (definitions), the term "stationary source" does not apply to transportation of any regulated substance or any other extremely hazardous substance under the provisions of this part, provided that such transportation is regulated under 49 CFR parts 192, 193 or 195 (DOT Office of Pipeline Safety Regulations).

Kinder Morgan's Washington Ranch Storage Facility is regulated under DOT Office of Pipeline Safety Regulations (49 CFR 192, 193 and 195). Therefore, it is not subject to 112(r).

19.8 - Distance to Other States, Bernalillo, Indian Tribes and Pueblos

Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B NMAC)?

(If the answer is yes, state which apply and provide the distances.)

States: Texas, 9km

19.9 - Responsible Official

Provide the Responsible Official as defined in 20.2.70.7.AD NMAC:
Name: Heriberto Carreon
Title: Director-Operations Division 4
Phone: (806) 354-3108
Email: Heriberto_Carreon@kindermorgan.com
Address: 4711 S. Western, Amarillo, TX 79109

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.

EPNG would like to identify the North American Energy Standards Board (NAESB) Day as the basis for records tracking at this facility and other facilities.

The United States uses six different standardized time zones from east to west; the energy industry uses a seventh time zone developed by the NAESB. This Board serves as an industry platform for the development and promotion of industry practices and standards that lead to the seamless marketing of wholesale and retail natural gas and electricity. Since 2003, the NAESB Day has been recognized by its customers, the business community, participants, and federal and state regulatory entities. As such, a NAESB Day is a 24-hour period derived from a uniform time zone that occurs simultaneously nationwide and is the basis of EPNG's COMET data acquisition system "day" data. Unit information defined and stored according to the NAESB Day includes monitored gas flows or volumes, hours of operation, maintenance and repair activities, and routine emissions.

Data obtained from outside agencies (including test reports and summaries) or submitted pursuant to 20.2.7 NMAC reporting requirements is based on the "day" as defined by the local time zone.

Section 22: Certification

Company Name: El Paso Natural Gas Company

I, Heriberta Carreon, 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 29 day of April, 2019, upon my oath or affirmation, before a notary of the State of

Texas.

*Signature

4/29/19
Date

Heriberta Carreon
Printed Name

Operations Director
Title

Scribed and sworn before me on this 29 day of April, 2019.

My authorization as a notary of the State of Texas expires on the

11 day of April, 2022.

Notary's Signature

4-29-19
Date

Julie Myra DeHerrera
Notary's Printed Name

JULIE MYRA DEHERRERA
Notary ID #129782289
My Commission Expires
April 11, 2022

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