NMED AIR QUALITY BUREAU
NSR SIGNIFICANT REVISION APPLICATION

Harvest Four Corners, LLC
Milagro Gas Treating Plant

Prepared By:
Brian Farley – Operations Engineer

Harvest Four Corners, LLC
Milagro Gas Plant
1754 Arroyo Drive
Bloomfield, New Mexico, 87413
(281) 684-9530

Adam Erenstein – Principal Consultant

TRINITY CONSULTANTS
9400 Holly Ave
Building 3, Suite B
Albuquerque, NM 87122
(505) 266-6611

June 2024

Project 233201.0084

Trinity Consultants
Celebrating 50 Years 1974 2024
9400 Holly Ave NE, Bldg 3, Ste B, Albuquerque, NM 87122 / P 505.266.6611 / **trinityconsultants.com**

June 14, 2024

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

RE: Application for Significant Revision to NSR Permit No. 0859-M10
Harvest Four Corners, LLC – Milagro Gas Treating Plant

Permit Programs Manager:

On behalf of Harvest Four Corners, LLC (Harvest), Trinity Consultants is submitting this application for a Significant Revision for NSR Permit No. 0859-M10 for the Milagro Gas Treating Plant, located in San Juan County. Pursuant to 20.2.72.219.D.(1)(a) NMAC, this revision is for the following: the addition of two (2) General Electric 328.65 MMBtu/hr turbines with both a bypass system (units 7A & 7B) and a heat recovery steam generator (HRSG) system (units 7B & 8B); the removal of two (2) Homan/Zurn 190 MMbtu/hr boilers (units 2 & 3) and one (1) Caterpillar C27 1,141 hp emergency generator (unit 31b); and the modification of one (1) Homan/Zurn 190 MMbtu/hr boiler (unit 1) and various exempt storage tanks (units T20 through T23).

The addition of the turbines will cause the removal of the specified boilers and generator, however, Harvest is requesting to operate as currently permitted under NSR Permit No. 0859-M10 and Title V Permit No. P101-R3 until the turbines are installed at the facility. Once installed, the boilers and generator will be removed from the facility.

The format and content of this application are consistent with the Bureau's current policy regarding NSR applications; it is a complete application package using the most current application form. Enclosed is a hard copy of the application, including the original certification. Please feel free to contract me at (505) 266-6611 or by email at AErenstein@trinityconsultants.com if you have any questions regarding this application. Alternatively, you may contact Brian Farley at (281) 684-9530 or by email at Brian.Farley@harvestmidsgream.com.

Sincerely,

Adam Erenstein
Principal Consultant

Trinity Project File 233201.0084

657770

TRINITY CONSULTANTS, INC.
12700 PARK CENTRAL DRIVE STE. 600
DALLAS, TX 75251-1546
(972) 661-8100

JPMorgan
JPMorgan Chase Bank, N.A.
Dallas, Texas
88-88/1113

Fraud Protected by Positive Pay

CHECK DATE May 24, 2024

PAY TO THE ORDER OF

Five Hundred and 00/100 Dollars

New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez
Suite 1
Santa Fe, NM 87505-1816

AMOUNT 500.00

NOT VALID AFTER 90 DAYS

AUTHORIZED SIGNATURE

Details on back.

⑈657770⑈ ⑆111300880⑆ 9319954724⑈

TRINITY CONSULTANTS, INC.

Check Date: 5/24/2024

657770

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
5242332010084NSRAF	5/23/2024	0165957	500.00			500.00
New Mexico Environmental Department		TOTAL	500.00			500.00
CHASE BANK-	13	00006134				

657770

28644699001

Air Permit Application
Compliance History Disclosure Form

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

Permittee/Applicant Company Name		**Expected Application Submittal Date**
Harvest Four Corners, LLC		June 14, 2024
Permittee/Company Contact	**Phone**	**Email**
Brian Farley	(281) 684-9530	Brian.Farley@harvestmidstream.com

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

Mail Application To:		**For Department use only:**
New Mexico Environment Department Air Quality Bureau Permits Section 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico, 87505 Phone: (505) 476-4300 Fax: (505) 476-4375 www.env.nm.gov/aqb		

Universal Air Quality Permit Application

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

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

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

Acknowledgements:

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

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

☒ Check No.: 657770 in the amount of $500

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

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

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

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

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known: 1277	Updating Permit #: 0859-M10
1	Facility Name: Milagro Gas Treating Plant	Plant primary SIC Code (4 digits): 1389	
		Plant NAIC code (6 digits): 211130	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): 1754 Arroyo Drive, Bloomfield, New Mexico 87413		
2	Plant Operator Company Name: Harvest Four Corners, LLC	Phone/Fax: (505) 632-4600 / (505) 632-4782	
a	Plant Operator Address: 1755 Arroyo Drive, Bloomfield, NM 87413		

b	Plant Operator's New Mexico Corporate ID or Tax ID:	
3	Plant Owner(s) name(s): Harvest Four Corners, LLC	Phone/Fax: (505) 632-4600 / (505) 632-4782
a	Plant Owner(s) Mailing Address(s): 1755 Arroyo Drive, Bloomfield, NM 87413	
4	Bill To (Company): Harvest Four Corners, LLC	Phone/Fax: (505) 632-4600 / (505) 632-4782
a	Mailing Address: 1755 Arroyo Drive, Bloomfield, NM 87413	E-mail: N/A
5	☐ Preparer: ☒ Consultant: Adam Erenstein	Phone/Fax: (505) 266-6611
a	Mailing Address: 9400 Holly Ave NE, Albuquerque, NM 87122	E-mail: AErenstein@trinityconsultants.com
6	Plant Operator Contact: Efren Cardenas	Phone/Fax: (970) 385-3824 / (505) 632-4782
a	Address: 1755 Arroyo Drive, Bloomfield, NM 87413	E-mail: ecardenas@harvestmidstream.com
7	Air Permit Contact: Jennifer Deal	Title: Environmental Specialist
a	E-mail: jdeal@harvestmidstream.com	Phone/Fax: (505) 324-5128 / (505) 632-4782
b	Mailing Address: 1755 Arroyo Drive, Bloomfield, NM 87413	
c	The designated Air permit Contact will receive all official correspondence (i.e. letters, permits) from the Air Quality Bureau.	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? ☒ Yes ☐ No	1.b If yes to question 1.a, is it currently operating in New Mexico? ☒ Yes ☐ No
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? ☐ Yes ☒ No	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? ☒ Yes ☐ No
3	Is the facility currently shut down? ☐ Yes ☒ No	If yes, give month and year of shut down (MM/YY): N/A
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? ☐ Yes ☒ No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? ☐ Yes ☐ No ☒ N/A	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☒ Yes ☐ No	If yes, the permit No. is: P101-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: 0859-M10
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: 27 MMSCF @ 10% CO_2 [(a)]	Daily: 645 MMSCF @ 10% CO_2 [(a)]	Annually: 235,425 MMSCF @ 10% CO_2 [(a)]
b	Proposed	Hourly: 27 MMSCF @ 10% CO_2 [(a)]	Daily: 645 MMSCF @ 10% CO_2 [(a)]	Annually: 235,425 MMSCF @ 10% CO_2 [(a)]
2	What is the facility's maximum production rate, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: 27 MMSCF @ 10% CO_2 [(a)]	Daily: 645 MMSCF @ 10% CO_2 [(a)]	Annually: 235,425 MMSCF @ 10% CO_2 [(a)]
b	Proposed	Hourly: 27 MMSCF @ 10% CO_2 [(a)]	Daily: 645 MMSCF @ 10% CO_2 [(a)]	Annually: 235,425 MMSCF @ 10% CO_2 [(a)]

[(a)] The station's capacity is dependent on operating conditions, so actual throughput will vary from the rated capacity.

Section 1-D: Facility Location Information

1	Latitude (decimal degrees): 36.735536	Longitude (decimal degrees): -107.941502	County: San Juan	Elevation (ft): 5,700
2	UTM Zone: ☐ 12 or ☒ 13	Datum: ☐ NAD 83 ☒ WGS 84		
a	UTM E (in meters, to nearest 10 meters): 237,340	UTM N (in meters, to nearest 10 meters): 4,069,570		
3	Name and zip code of nearest New Mexico town: Bloomfield, NM 87413			
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From Bloomfield drive north on Highway 550 to Arizona, turn right and drive 1.9 miles to Arroyo Drive, turn left and drive 0.25 miles to plant (on east side of the road).			
5	The facility is 3 miles northeast of Bloomfield, NM.			
6	Land Status of facility (check one): ☒ Private ☐ Indian/Pueblo ☐ Government ☐ BLM ☐ Forest Service ☐ Military			
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: Bloomfield, Aztec, Navajo Nation, San Juan County			
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/air-quality/modeling-publications/)? ☐ Yes ☒ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: N/A			
9	Name nearest Class I area: Mesa Verde National Park			
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 64.2 km			
11	Distance (meters) from the perimeter of the Area of Operations (AO is defined as the plant site inclusive of all disturbed lands, including mining overburden removal areas) to nearest residence, school or occupied structure: ~1,610 m			
12	Method(s) used to delineate the Restricted Area: Fence "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.			
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ☒ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.			
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☒ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility?			

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

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

Section 1-F: Other Facility Information

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

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

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

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

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

1	Responsible Official (R.O.) (20.2.70.300.D.2 NMAC): Travis Jones		Phone: (713) 289-2630
a	R.O. Title: EH&S Manager	R.O. e-mail: trjones@harvestmidstream.com	
b	R. O. Address: 111 Travis Street, Houston, TX 77002		
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC): Nathan Work		Phone: (505) 215-6107
a	A. R.O. Title: Operations Manager	A. R.O. e-mail: nwork@harvestmidstream.com	
b	A. R. O. Address: 3746 CR 307 Durango, CO 81303		
3	Company's Corporate or Partnership Relationship to any other Air Quality Permittee (List the names of any companies that have operating (20.2.70 NMAC) permits and with whom the applicant for this permit has a corporate or partnership relationship): N/A		
4	Name of Parent Company ("Parent Company" means the primary name of the organization that owns the company to be permitted wholly or in part.): Harvest Midstream Company		
a	Address of Parent Company: 1111 Travis Street, Houston, TX 77002		
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.): N/A		
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: N/A		

7	Affected Programs to include Other States, local air pollution control programs (i.e. Bernalillo) and Indian tribes: Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B)? If yes, state which ones and provide the distances in kilometers: Colorado (29 km), Navajo Nation (5 km), Southern Ute Indian Tribe (29 km), Ute Mountain Ute Tribe (30 km), and Jicarilla Apache Nation (66 km)

Section 1-I – Submittal Requirements

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

Hard Copy Submittal Requirements:

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

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

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

Electronic files sent by (check one):

☐ CD/DVD attached to paper application

☒ Secure electronic transfer. Air Permit Contact Name: Adam Erenstein, Email: AErenstein@trinityconsultants.com,

Phone number: (505) 266-6611.

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

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

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

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

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

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

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

2) The documents should also be submitted in Microsoft Office compatible file format (Word, Excel, etc.) allowing us to access the text and formulas in the documents (copy & paste). Any documents that cannot be submitted in a Microsoft Office compatible format shall be saved as a PDF file from within the electronic document that created the file. If you are unable to provide Microsoft office compatible electronic files or internally generated PDF files of files (items that were not created electronically: i.e. brochures, maps, graphics, etc,), submit these items in hard copy format. We must be able to review the formulas and inputs that calculated the emissions.

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

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

Table of Contents

Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
1	Boiler	Holman/Zurn	22M Keystone	98833	190 MMBtu/hr	190 MMBtu/hr	1973 / 1993	N/A / 1	10200601	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
2	Boiler	Holman/Zurn	22M Keystone	98728	190 MMBtu/hr	190 MMBtu/hr	1973 / 1993	N/A / 2	10200601	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
3	Boiler	Holman/Zurn	22M Keystone	98729	190 MMBtu/hr	190 MMBtu/hr	1973 / 1993	N/A / 3	10200601	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
7A	Turbine	General Electric	PG6541B	296691	328.65 MMBtu/hr	328.65 MMBtu/hr	1995 / TBD	N/A / 7A	20100201	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
7B	Heat Recovery Steam Generator (HRSG)						1995 / TBD	N/A / 7B		☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
8A	Turbine	General Electric	PG6541B	296691	328.65 MMBtu/hr	328.65 MMBtu/hr	1995 / TBD	N/A / 7A	20100201	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
8B	Heat Recovery Steam Generator (HRSG)						1995 / TBD	N/A / 7B		☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
9a	Dehydrator Reboiler (Train 1)	Maloney Crawford	TBD	TBD	3.0 MMBtu/hr	3.0 MMBtu/hr	1980 / 1991	N/A / 9a	31000228	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
9b	TEG Dehydrator Still Vent (Train 1)	Maloney Crawford	TBD	80-1-D-4484-OA	145 MMscfd	145 MMscfd	1980 / 1991	N/A / 9b	31000227	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
10a	Dehydrator Reboiler (Train 2)	Sivalls	TBD	TBD	2.25 MMBtu/hr	2.25 MMBtu/hr	1991 / 1991	N/A / 10a	31000228	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
10b	TEG Dehydrator Still Vent (Train 2)	Sivalls	TBD	27.140	145 MMscfd	145 MMscfd	1991 / 1991	N/A / 10b	31000227	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
11a	Dehydrator Reboiler (Train 3)	Rama Fab	TBD	TBD	3.00 MMBtu/hr	3.00 MMBtu/hr	1976 / 1991	N/A / 11a	31000228	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
11b	TEG Dehydrator Still Vent (Train 3)	Rama Fab	TBD	01798	145 MMscfd	145 MMscfd	1976 / 1991	N/A / 11b	31000227	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
14	TEG Dehydrator Still Vent (Train 4)	Sivalls	TBD	28.454	90 MMscfd	90 MMscfd	1997 / 1997	N/A / 14	31000227	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
15	TEG Dehydrator Still Vent (Train 5)	T.H. Russell	TBD	771-521	120 MMscfd	120 MMscfd	1994 / 1996	N/A / 15	31000227	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
16a	Amine Regenerator Vent (Train 1)	General Welding Works	TBD	73-29	145 MMscfd	145 MMscfd	1974 / 1991	N/A / 16a	31000201	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
16b	Amine Regenerator Vent (Train 2)	Belmas, Inc.	TBD	11396	145 MMscfd	145 MMscfd	1973 / 1991	N/A / 16b	31000201	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
17	Amine Regenerator Vent (Train 3)	Belmas, Inc.	TBD	73-30	145 MMscfd	145 MMscfd	1973 1991	N/A 17	31000201	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
18	Amine Regenerator Vent (Train 4)	Field Erection	TBD	F-1014	90 MMscfd	90 MMscfd	1965 1991	N/A 18	31000201	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
19	Amine Regenerator Vent (Train 5)	Fabwell Corp.	TBD	95-1004-1	120 MMscfd	120 MMscfd	1995 1995	N/A 19	31000201	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
20	Boiler	Rentech	N/A	2015-15	245 MMBtu/hr	245 MMBtu/hr	2015 10/14/2015	N/A 20	10200601	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
31b	Emergency Generator	Caterpillar	C27	TBD	1,141 hp	1,141 hp	2014 2017	N/A 31b	20200102	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
SSM1	Amine Trains & Associated Piping Blowdown SSM	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
SSM2	Dehydrator SSM	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000227	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
F1	Fugitives	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
M1	Malfunctions	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
T33	Produced Water Storage Tank	TBD	TBD	TBD	120 bbl	120 bbl	2006 2006	N/A N/A	31088811	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A

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

[2] Specify dates required to determine regulatory applicability.

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

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

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

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at https://www.env.nm.gov/wp-content/uploads/sites/2/2017/10/InsignificantListTitleV.pdf. TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
21	Warehouse Heater			0.08 / MMBtu/hr	20.2.72.202.B.1 NMAC / IA List Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
22	Warehouse Heater			0.08 / MMBtu/hr	20.2.72.202.B.1 NMAC / IA List Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
23	Maintenance Heater			0.08 / MMBtu/hr	20.2.72.202.B.1 NMAC / IA List Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
24	Maintenance Heater			0.08 / MMBtu/hr	20.2.72.202.B.1 NMAC / IA List Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
25	Maintenance Heater			0.08 / MMBtu/hr	20.2.72.202.B.1 NMAC / IA List Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
26	Maintenance Heater			0.08 / MMBtu/hr	20.2.72.202.B.1 NMAC / IA List Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
27	Laboratory Heater			0.10 / MMBtu/hr	20.2.72.202.B.1 NMAC / IA List Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
28	Office Heater			0.12 / MMBtu/hr	20.2.72.202.B.1 NMAC / IA List Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
29	Water Heater			0.04 / MMBtu/hr	20.2.72.202.B.1 NMAC / IA List Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
30	Slug Catcher Heater			0.012 / MMBtu/hr	20.2.72.202.B.5 NMAC / IA List Item #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T1	Lubrication Oil Storage Tank			2,300 / gal	20.2.72.202.B.2 NMAC / IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T2	Lubrication Oil Storage Tank			2,300 / gal	20.2.72.202.B.2 NMAC / IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T3	Diesel Storage Tank			1,250 / gal	20.2.72.202.B.2 NMAC / IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T4	Diesel Storage Tank			1,175 / gal	20.2.72.202.B.2 NMAC / IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T5	Diesel Storage Tank			500 / gal	20.2.72.202.B.2 NMAC / IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
T6	Solvent Storage Tank			300 gal	20.2.72.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T7	Gasoline Storage Tank			500 gal	20.2.72.202.B.5 NMAC IA List Item #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T8	Used Oil Storage Tank			1,000 gal	20.2.72.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T9	Skimmer Oil Storage Tank			1,000 gal	20.2.72.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T10	Slop Oil Storage Tank			10,500 gal	20.2.72.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T11	Slop Oil Storage Tank			10,500 gal	20.2.72.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T12	Used Oil Storage Tank			4,200 gal	20.2.72.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T13	TEG Storage Tank			4,200 gal	20.2.72.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T14	TEG Storage Tank			4,200 gal	20.2.72.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T15	TEG Storage Tank			4,200 gal	20.2.72.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T16	Ambitrol Mix Storage Tank			4,200 gal	20.2.72.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T17	Amine/H_2O Mix Storage Tank			21,000 gal	20.2.72.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T18	Amine/H_2O Mix Storage Tank			10,500 gal	20.2.72.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T19	Amine Storage Tank			10,500 gal	20.2.72.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T20	Solus AP25 Storage Tank			400 gal	No VOC or HAP emissions N/A		☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced
T21	Solus AP25 Storage Tank			400 gal	No VOC or HAP emissions N/A		☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced
T22	Cortrol OS5300 Storage Tank			400 gal	20.2.72.202.B.5 NMAC N/A		☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced
T23	Steamate HRSG24 Storage Tank			400 gal	20.2.72.202.B.5 NMAC IA List Item #5		☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
T24	Amine/H_2O Mix Storage Tank			4,200 gal	20.2.7.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T25	Condensate Storage Tank			4,200 gal	20.2.7.202.B.5 NMAC IA List Item #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T26	DI H_2O Storage Tank			21,000 gal	No VOC or HAP emissions N/A		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T27	Treated H_2O Storage Tank			21,000 gal	No VOC or HAP emissions N/A		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T28	Treated H_2O Storage Tank			21,000 gal	No VOC or HAP emissions N/A		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T29	Condensate Storage Tank			200 gal	20.2.7.202.B.5 NMAC IA List Item #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T30	Condensate Storage Tank			200 gal	20.2.7.202.B.5 NMAC IA List Item #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T31	Amine/H_2O Mix Storage Tank			16,800 gal	20.2.7.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T32	Amine/H_2O Mix Storage Tank			16,800 gal	20.2.7.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T34	MDEA Storage Tank			5,000 gal	20.2.7.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T35	MDEA Storage Tank			5,000 gal	20.2.7.202.B.2 NMAC IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
30b	Catalytic Heater			12 MBtu/hr	20.2.7.202.B.5 NMAC IA List Item #1.a & #1.b		☑ 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.

0.348060983

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
Catalyst-1	Oxidation Catalyst	TBD	CO	7A, 7B, 8A, 8B	50%	Manufacturer Guarentee
VRU-1	VRU and Condenser for TEG Regenerator Still Vent Regenerator Flask Tank emissions recovered via closed loop system	2/15/2007	VOCs and HAPs	9b, 10b, 11b, 15	100%	Manufacturer Guarentee
VRU-2	VRU and Condenser for TEG Regeenrator Still Vent emissions recovered via closed loop system	2/15/2007	VOCs and Haps	14	100%	Manufacturer Guarentee
LNB-1	Low NO_x Burner and Flue Gas Recirculation (FGR)	TBD	NO_x	1		
LNB-2	Low NO_x burner and Flue Gas Recirculation (FGR)	2015	NO_x	20		
	Amine regenerator flash tank emissions injected into the facility fuel system	2/15/2007	VOCs and Haps	16a, 16b, 17, 18, 19		

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

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

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

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

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	5.45	23.88	11.05	48.42	0.60	2.65	0.092	0.40	0.76	3.31	0.76	3.31	0.76	3.31	-	-	-	-
7A	11.87	51.99	20.71	90.72	0.66	2.91	0.03	0.14	2.17	9.50	2.17	9.50	2.17	9.50	-	-	-	-
7B																		
8A	11.87	51.99	20.71	90.72	0.66	2.91	0.03	0.14	2.17	9.50	2.17	9.50	2.17	9.50	-	-	-	-
8B																		
9a	0.33	1.46	0.28	1.23	0.018	0.080	2.00E-03	8.76E-03	0.025	0.11	0.025	0.11	0.025	0.11	-	-	-	-
9b	-	-	-	-	10.01	43.85	-	-	-	-	-	-	-	-	-	-	-	-
10a	0.25	1.10	0.21	0.92	0.014	0.060	1.50E-03	6.57E-03	0.019	0.083	0.019	0.083	0.019	0.083	-	-	-	-
10b	-	-	-	-	10.01	43.85	-	-	-	-	-	-	-	-	-	-	-	-
11a	0.33	1.46	0.28	1.23	0.018	0.080	2.00E-03	8.76E-03	0.025	0.11	0.025	0.11	0.025	0.11	-	-	-	-
11b	-	-	-	-	6.35	27.82	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	3.64	15.95	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	9.93	43.50	-	-	-	-	-	-	-	-	-	-	-	-
16a[2]	-	-	-	-	23.39	34.00	-	-	-		-	-	-	-	-	-	-	-
16b[2]																		
17[2]																		
18[2]																		
19[2]																		
20	9.80	42.92	20.55	90.00	1.03	4.51	0.16	0.72	2.07	9.06	2.07	9.06	2.07	9.06	-	-	-	-
SSM1	-	-	-	-	*	14.15	-	-	-	-	-	-	-	-	-	-	-	-
SSM2	-	-	-	-	*	5.00	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	2.68	5.33	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	*	10.00	-	-	-	-	-	-	-	-	-	-	-	-
T-33	-	-	-	-	*	1.97	-	-	-	-	-	-	-	-	-	-	-	-
Totals	39.91	174.80	73.80	323.23	69.03	258.60	0.33	1.43	7.23	31.68	7.23	31.68	7.23	31.68	-	-	-	-

" * " indicates lb/hr emission rates are not appropriate for this unit.

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

[2] These amine regenerator vents have a single combined emission limit cap for all five units.

Table 2-E: Requested Allowable Emissions

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

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	5.45	23.88	11.05	48.42	0.60	2.65	0.092	0.40	0.76	3.31	0.76	3.31	0.76	3.31	-	-	-	-
7A	11.87	49.39	10.36	43.09	0.66	2.76	0.035	0.14	2.17	9.03	2.17	9.03	2.17	9.03	-	-	-	-
7B																		
8A	11.28	49.39	9.84	43.09	0.63	2.76	0.033	0.14	2.06	9.03	2.06	9.03	2.06	9.03	-	-	-	-
8B																		
9a	0.33	1.46	0.28	1.23	0.018	0.080	2.00E-03	8.76E-03	0.025	0.11	0.025	0.11	0.025	0.11	-	-	-	-
9b[2]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10a	0.25	1.10	0.21	0.92	0.014	0.060	1.50E-03	6.57E-03	0.019	0.083	0.019	0.083	0.019	0.083	-	-	-	-
10b[2]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11a	0.33	1.46	0.28	1.23	0.018	0.080	2.00E-03	8.76E-03	0.025	0.11	0.025	0.11	0.025	0.11	-	-	-	-
11b[2]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14 [2]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 [2]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16a[3]	-	-	-	-	23.39	34.00	-	-	-		-	-	-	-	-	-	-	-
16b[3]																		
17 [3]																		
183																		
19 [3]																		
20	9.80	42.92	20.55	90.00	1.03	4.51	0.16	0.72	2.07	9.06	2.07	9.06	2.07	9.06	-	-	-	-
SSM1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SSM2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	2.68	5.33	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	*	10.00	-	-	-	-	-	-	-	-	-	-	-	-
T-33	-	-	-	-	*	1.97	-	-	-	-	-	-	-	-	-	-	-	-
Totals	39.32	169.60	52.57	227.97	29.05	64.20	0.33	1.43	7.12	30.73	7.12	30.73	7.12	30.73	-	-	-	-

" * " indicates lb/hr emission rates are not appropriate for this unit.

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

[2] Emissions are associated with SSM2.

[3] These amine regenerator vents have a single combined emission limit cap for all five units.

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

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

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

Unit No.	NOx		CO		VOC		SOx		PM[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
SSM1	-	-	-	-	*	14.15	-	-	-	-	-	-	-	-	-	-	-	-
SSM2	-	-	-	-	*	5.00	-	-	-	-	-	-	-	-	-	-	-	-
Totals	-	-	-	-	-	19.15	-	-	-	-	-	-	-	-	-	-	-	-

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

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

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

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

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

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

Table 2-H: Stack Exit Conditions

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

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
1	1	V	No	45	300	882.40	N/A	N/A	44.94	5.00
7A	7A	V	No	80	950	12,754.87	N/A	N/A	162.40	10.00
7B	7B	V	No	80	361	7,422.01	N/A	N/A	94.50	10.00
8A	8A	V	No	80	950	12,754.87	N/A	N/A	162.40	10.00
8B	8B	V	No	80	361	7,422.01	N/A	N/A	94.50	10.00
9a	9a	V	No	30	650	15.90	N/A	N/A	9.00	1.50
10a	10a	V	No	30	650	15.90	N/A	N/A	9.00	1.50
11a	11a	V	No	30	650	15.90	N/A	N/A	9.00	1.50
20	20	V	No	60	276	1,607.66	N/A	N/A	76.68	5.17

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		Benzene ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Xylene ☑ 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	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	1	0.25	1.12	0.01	0.04	2.84E-04	1.24E-03	4.60E-04	2.01E-03	-	-	0.24	1.07						
7A	7A	0.34	1.40	0.23	0.97	3.94E-03	0.016	0.043	0.18	0.021	0.088	-	-						
7B	7B																		
8A	8A	0.34	1.40	0.23	0.97	3.94E-03	0.016	0.043	0.18	0.021	0.088	-	-						
8B	8B																		
9a	9a	-	-	-	-	-	-	-	-	-	-	-	-						
9b	9b[1]	-	-	-	-	-	-	-	-	-	-	-	-						
10a	10a	-	-	-	-	-	-	-	-	-	-	-	-						
10b	10b[1]	-	-	-	-	-	-	-	-	-	-	-	-						
11a	11a	-	-	-	-	-	-	-	-	-	-	-	-						
11b	11b[1]	-	-	-	-	-	-	-	-	-	-	-	-						
14	14[1]	-	-	-	-	-	-	-	-	-	-	-	-						
15	15[1]	-	-	-	-	-	-	-	-	-	-	-	-						
16a	16a[2]	14.75	18.91	-	-	7.79	10.25	4.73	5.65	1.93	2.20	0.10	0.14						
16b	16b[2]																		
17	17[2]																		
18	18[2]																		
19	19[2]																		
20	20	0.45	1.98	0.02	0.08	5.04E-04	2.21E-03	8.17E-04	3.58E-03	-	-	0.43	1.89						
SSM1	SSM1	*	0.09	-	-	*	8.84E-03	*	3.48E-03	-	-	*	0.06						
SSM2	SSM2	*	2.58	-	-	*	0.36	*	0.22	*	1.77	*	0.07						
N/A	F1	-	-	-	-	-	-	-	-	-	-	-	-						
N/A	M1	*	0.33	-	-	*	0.04	*	0.06	*	0.03	*	0.19						
T-33	T-33	*	0.34	-	-	*	0.05	*	0.07	*	0.05	*	0.17						
Totals:		16.13	28.15	0.49	2.07	7.79	10.74	4.81	6.37	1.97	4.22	0.77	3.59						

[1] Emissions are associated with SSM2.

[2] These amine regenerator vents have a single combined emission limit cap for all five units.

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	Raw/Field Natural Gas	900 Btu/scf	153.31 Mscf/hr	1,343.01 MMscf/yr	Negl.	Negl.
7A	Natural Gas	Raw/Field Natural Gas	900 Btu/scf	365.17 Mscf/hr	3,038.93 MMscf/yr	Negl.	Negl.
7B							
8A	Natural Gas	Raw/Field Natural Gas	900 Btu/scf	365.17 Mscf/hr	3,038.93 MMscf/yr	Negl.	Negl.
8B							
9a	Natural Gas	Raw/Field Natural Gas	900 Btu/scf	3.33 Mscf/hr	29.20 MMscf/yr	Negl.	Negl.
10a	Natural Gas	Raw/Field Natural Gas	900 Btu/scf	2.50 Mscf/hr	21.90 MMscf/yr	Negl.	Negl.
11a	Natural Gas	Raw/Field Natural Gas	900 Btu/scf	3.33 Mscf/hr	29.20 MMscf/yr	Negl.	Negl.
20	Natural Gas	Raw/Field Natural Gas	900 Btu/scf	272.22 Mscf/hr	2,384.67 MMscf/yr	Negl.	Negl.

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)
T33	31088811	Produced H_2O	Produced H_2O	8.34	18.02	Unknown	Unknown	Unknown	Unknown

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			
T33	TBD	Produced H_2O		FX	120		Unknown	N/A	Unknown	N/A	Unknown	630,000	125.00

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

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

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

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

Material Processed				Material Produced			
Description	**Chemical Composition**	**Phase (Gas, Liquid, or Solid)**	**Quantity (specify units)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (specify units)**
Field Gas	C1 - C6+ & Contaminants	Gas	645 MMscfd @ 10% CO_2	Natual Gas	C1 - C6+ & Contaminants	Gas	645 MMscfd @ 10% CO_2
The station capcity is a direct function of available horsepower. The throughput is therefore dependant on atmosphereic temperature and pressure, gas temperature and pressure, relative humidity and gas quality, as other factors. The "throughput" expressed above is a nominal quantity (with a 15 percent safety factor), neither an absolute maximum, nor an average. Actual throughput will vary from the nominal amount.							

Table 2-N: CEM Equipment

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

Stack No.	Pollutant(s)	Manufacturer	Model No.	Serial No.	Sample Frequency	Averaging Time	Range	Sensitivity	Accuracy
N/A - There are no continuous emissions measurement (CEM) equipment at this 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 parametric emissions measurent equipment located at this 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**	78,385.85	0.15	1.48	-	-								-	78,387.47	-
	CO_2e	78,385.85	44.02	36.93	-	-								-	-	78,466.81
7A	**mass GHG**	177,369.43	0.33	3.34	-	-									177,373.11	-
7B	**CO_2e**	177,369.43	99.62	83.57	-	-									-	177,373.11
8A	**mass GHG**	177,369.43	0.33	3.34	-	-									177,373.11	-
8B	**CO_2e**	177,369.43	99.62	83.57	-	-									-	177,373.11
9a	**mass GHG**	1,704.29	3.21E-03	0.032	-	-									1,704.32	-
	CO_2e	1,704.29	0.96	0.80	-	-									-	1,706.05
9b	**mass GHG**	-	-	-	-	-									-	-
	CO_2e	-	-	-	-	-									-	-
10a	**mass GHG**	1,278.22	2.41E-03	0.024	-	-									1,278.24	-
	CO_2e	1,278.22	0.72	0.60	-	-									-	1,279.54
10b	**mass GHG**	-	-	-	-	-									-	-
	CO_2e	-	-	-	-	-									-	-
11a	**mass GHG**	1,704.29	3.21E-03	0.032	-	-									1,704.32	-
	CO_2e	1,704.29	0.96	0.80	-	-									-	1,706.05
11b	**mass GHG**	-	-	-	-	-									-	-
	CO_2e	-	-	-	-	-									-	-
14	**mass GHG**	-	-	-	-	-									-	-
	CO_2e	-	-	-	-	-									-	-
15	**mass GHG**	-	-	-	-	-									-	-
	CO_2e	-	-	-	-	-									-	-
16a **16b** **17**	**mass GHG**	914,631.20	-	546.50	-	-									915,177.70	-
18 **19**	**CO_2e**	914,631.20	-	13,662.48	-	-									-	928,293.68
20	**mass GHG**	139,183.45	0.26	2.62	-	-									139,186.34	-
	CO_2e	139,183.45	78.17	65.58	-	-									-	139,327.20

		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**										
SSM1	**mass GHG**	236.93	-	721.56	-	-									958.49	-
	CO_2e	236.93	-	18,039.06	-	-									-	18,275.99
SSM2	**mass GHG**				-	-									-	-
	CO_2e	-	-	-	-	-									-	-
F1	**mass GHG**				-	-									-	-
	CO_2e	-	-	-	-	-									-	-
M1	**mass GHG**				-	-									-	-
	CO_2e	-	-	-	-	-									-	-
T33	**mass GHG**				-	-									-	-
	CO_2e	-	-	-	-	-									-	-
Total	**mass GHG**	1,491,863.08	1.09	1,278.94	-	-									1,493,143.11	-
	CO_2e	1,491,863.08	324.06	31,973.40	-	-									-	1,524,160.54

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

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

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

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

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

Section 3

Application Summary

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

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

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

Application Summary

Harvest Four Corners, LLC (Harvest) is submitting this application for a significant revision to NSR Permit No. 0859-M10 pursuant to 20.2.72.219.D.(1)(a) NMAC for the Milagro Gas Treating Plant (Milagro). The facility is located in San Juan County, New Mexico. In this application, Harvest is requesting the authorization to do the following:

The following units will be installed at this facility:

- Two (2) General Electric 328.65 MMBtu/hr turbines (units 7A & 8A) with heat recovery steam generator (HRSG) systems (units 7B & 8B)

The following units will be removed from this facility:

- Two (2) Holman/Zurn 190 MMBtu/hr boilers (Units 2 & 3); and
- One (1) Caterpillar C27 1,141 hp emergency generator (Unit 31b)

The following units will be modified at this facility:

- One (1) Homan/Zurn 190 MMBtu/hr boiler (Unit 1); and
- Four (4) various storage tanks (Units T20 through T23) (Exempt pursuant 20.2.72.202.B. NMAC)

The two turbines (units 7A and 8A) and HRSG systems (units 7B and 8B) were previously permitted at Milagro as separate units: two (2) 195 MMBtu/hr heat recovery steam generators (units 5 & 6) and two (2) 380.9 MMbtu/hr turbines (units 7 & 8). These units were removed from the permit under either NSR Permit No 0859-M8 or NSR Permit No 0859-M9, however, the units themselves remained at the facility and were disconnected from operation. Harvest plans to reconnect these units back to the Milagro facility to produce steam for the gas treating plant as well as commercial power for sale. These units will operate at a lower heat rate of 328.65 MMBtu/hr and for 8,322 hr/yr.

Additionally, these units will be updated to control emissions. This action will cause the removal of two boilers (units 2 & 3) and the emergency generator (unit 31b). Harvest is requesting permission to operate the facility as currently permitted under NSR Permit No. 0859-M10 and Title V Permit No. P101-R3 until units 7A through 8B are commissioned. Once commissioned, units 2, 3, and 31b will be retired and removed from the permit.

Process Summary

The primary function of the Milagro Gas Treating Plant is to remove CO_2 and water from raw natural gas and delivery a pipeline quality sales gas to downstream pipelines.

The raw natural gas feeding the plant contains both CO_2 and water exceeding pipeline quality specifications. The gas stream is treated through five process trains. Each process train routes inlet gas through an amine contactor to remove CO_2, followed by a triethylene glycol (TEG) contactor to remove water.

Trains 1-3 are designed for a maximum throughput of 145 MMscfd each. Train 4 is designed for a maximum throughput of 90 MMscfd. Train 5 is designed for a maximum throughput of 120 MMscfd.

Amine is regenerated in the amine regenerators, equipped on all 5 trains using 60 psig steam as a heat medium (Units 16a, 16b, 17, 18, 19). Released CO_2 is routed to atmosphere.

The dehydrator reboilers (Units 9a, 10a, and 11a) for trains 1-3 burn natural gas to provide heat needed to regenerate the TEG while the reboilers associated with trains 4 & 5 utilize 400 psig steam as a heat input. The dehydrators associated with trains 1-3 & 5 are equipped with flash tanks, while train 4 is not. Hydrocarbons from the flash tanks are recycled back into the plant fuel system. Emissions from the five dehydrator still vents are cooled and routed through either of the two vapor recovery units (VRU). The VRUs capture the still vent gas, compress it, and route it back into the plant fuel system. All condensate and produced water that results from cooling the dehydrator vent streams is piped to the condensate storage tanks (T25). From here produced water is separated and stored in the produced water tank (T33).

The facility is built around a 400 psig / 60 psig steam system. Superheated 400 psig steam drives steam turbines throughout the facility, which are coupled to pumps, FD fans, and electricity generators. The 60 psig steam is a byproduct of the 400 psig steam system and is designed to provide process heat to regenerate amine. Today the plant steam is provided by three package boilers; Boiler 1 (Unit 1), Boiler 3 (Unit 3), and Boiler 5 (Unit 20).

The Milagro Plant is also equipped with two General Electric cogeneration turbines. These units are comprised of gas turbines (Units 7A and 8A) and two heat recovery steam generators (HRSGs) (Units 7B and 8B). Both turbines are equipped with dry Lo-NOX combustors and are coupled to 30MW generators. The HRSG units route turbine exhaust through a boiler to recover waste heat generating 400 psig steam, which can be utilized in the gas processing system. This integration of the cogeneration units and the gas treating plant allows for increased efficiency regarding fuel gas utilization.

Startup, Shutdown, and Maintenance (SSM)

SSM emissions associated with the blowdown of processing equipment are captured in unit SSM1. Emissions were calculated from the estimated annual quantity of gas vented and the composition of the gas. A safety factor was included.

SSM emissions from the dehydrator still vents (unit SSM2) can occur during an outage of both vapor recovery units (VRU). Emissions were calculated using GRI-GLYCalc and a safety factor was included.

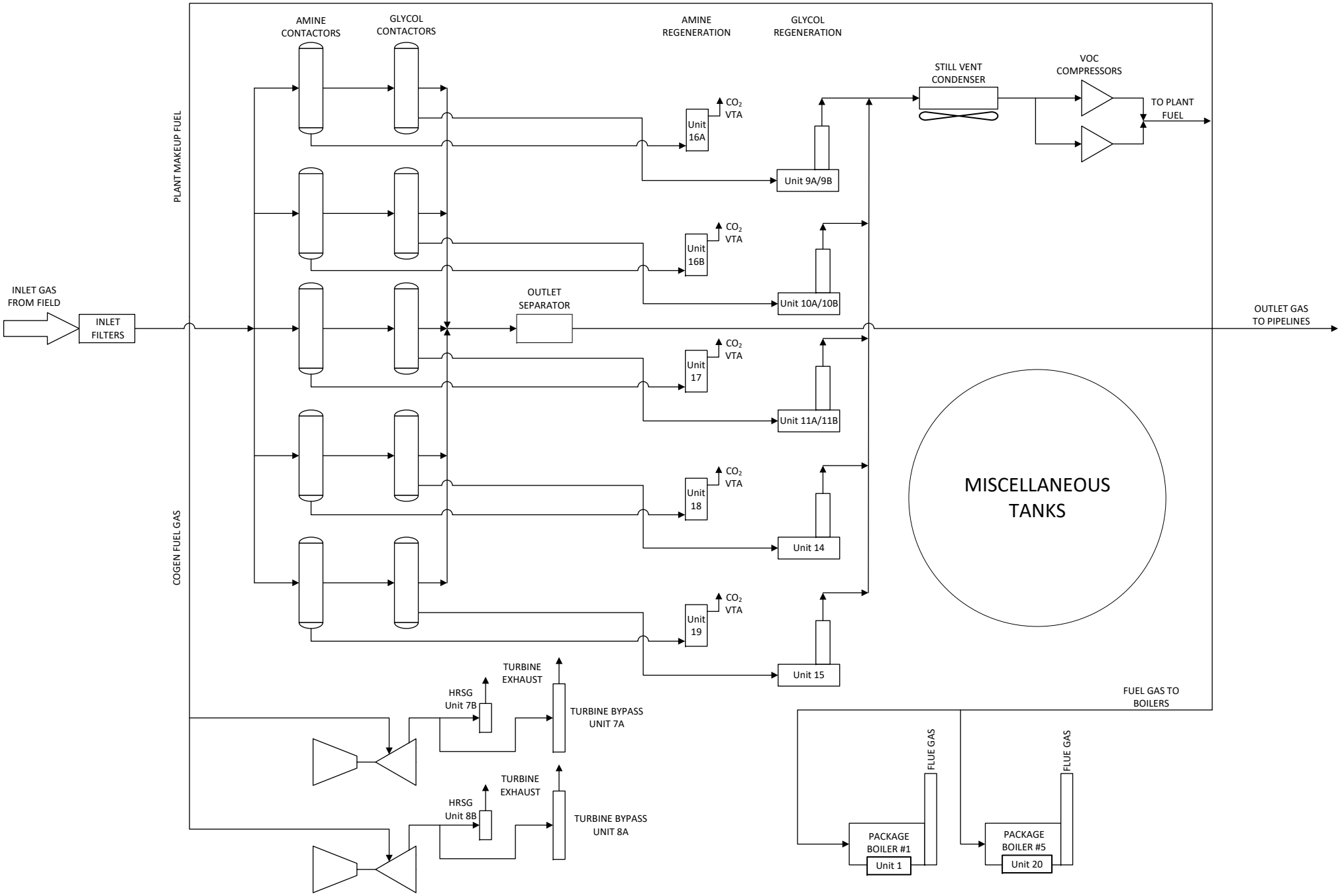
For the boiler, dehydrator reboilers, amine contactors, and fugitive equipment leaks, it is concluded that there are no SSM emissions in excess of those identified for steady-state operation as seen in Section 2, Table 2-E.

Section 4

Process Flow Sheet

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

A process flow diagram is provided on the following page.



HARVEST MIDSTREAM

PROCESS FLOW DIAGRAM

Milagro Gas Treating Plant

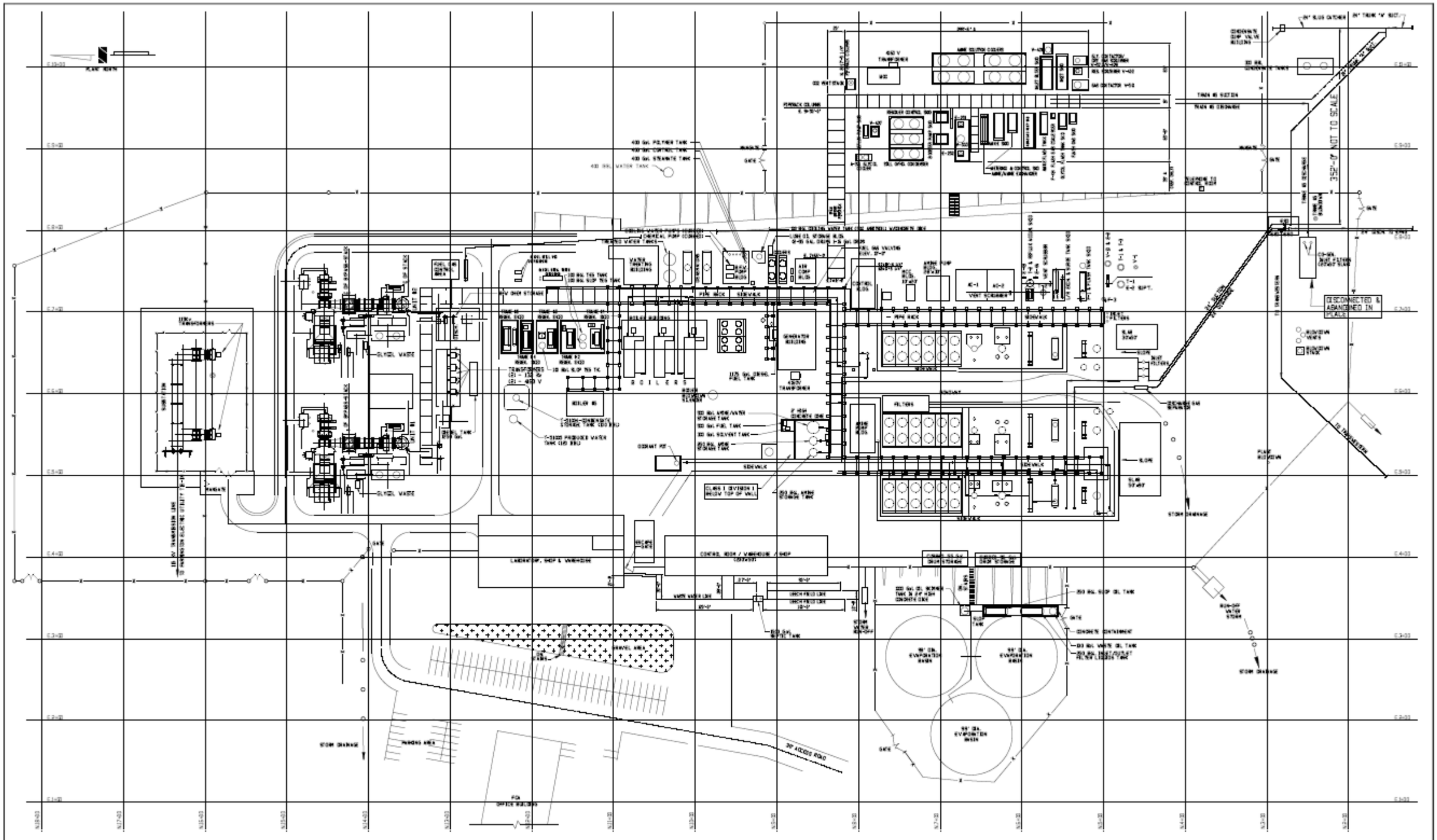
June 2024

Section 5

Plot Plan Drawn to Scale

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

A plot plan is provided on the following page.



NOTES:

REVISED
1/27/2021
DESTROY ALL PREVIOUS REV'S.

DRAWING NO.	TITLE
-	-

REFERENCE DRAWINGS

REV	DRAWN BY	DATE REVISED	CHECKED BY	PROJECT ENG.	APPROVED BY
21	T. GOODSEN	1/27/2021	D.F.	D.J.	M.P.
	REVISED TO REMOVE MEMBRANE UNITS				
20	T. GOODSEN	9/30/2020	D.F.	D.J.	M.P.
	REVISED TO MAKE CORRECTIONS PER COMMENTS FROM D.F.				
19	T. GOODSEN	9/22/2020	D.F.	D.J.	M.P.
	REVISED PER MOC-20-002-IT				
18	T. GOODSEN	7/18/2019			
	REVISED TO ELIMINATE REFERENCES TO CLEAR UP FEE ASSOCIATIONS				
17	P. HENDERSON	1/13/10	PH	J.PRICE	J. PRICE
	ADDED TRUNK A SUG OUTCHER AND CONDENSATE TANKS				

REVISIONS

HARVEST MIDSTREAM

San Juan Basin
1755 Arroyo Drive
Bloomfield, NM 87413

MILAGRO PLANT
PLOT PLAN

SAN JUAN COUNTY — NEW MEXICO

DRAWN BY	PHIL M.
CHECKED BY	JG
PROJECT ENG.	
APPROVED BY	KWD
DATE ISSUED	12/10/90

SCALE: 1" = 50' — AFE#: 901.25

MLG-01-P00001-S01

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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.

This section contains the following calculations for this facility. Supporting documentation for these calculations can be found in Section 7.

Subsection 1 – Emission calculations for units either added or modified with this application.

Boilers (Units 1 & 20)

Nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), and particulate (PM) emissions from the Holman boiler (Unit 1) were calculated using manufacturer's data. Sulfur dioxide (SO_2) and hazardous air pollutant (HAP) emissions were calculated using AP-42 emissions factors.

NO_2, CO, and VOC emissions from the Rentech boiler (Unit 20) were calculated using manufacturer's data. SO_2, PM, and HAP emissions were calculated using AP-42 emissions factors.

Emissions from the boilers were calculated assuming each boiler operates at full capacity for 8,760 hours per year (hr/yr). Units 1 is equipped with a low NO_X burner and flue gas recirculation. Unit 20 is equipped with a low NO_x burner and flue gas recirculation.

The boilers (uncontrolled) startup with less fuel input than during steady-state operation, so emissions will be lower than during steady-state operation. During shutdown, the fuel supply stops quickly, but air flow may not, causing the continued formation of NO_X. Even so, with no fuel, NO_X formation will be less than during steady state operation. Emissions due to scheduled maintenance will be negligible as the units are not in operation.

Turbines (Units 7A, 7B, 8A & 8B)

The uncontrolled NO_X, CO, VOC and PM emissions from the combustion turbines (Units 7 & 8) are taken from the historic manufacturer's data. Uncontrolled SO_2 and HAP emissions are calculated using AP-42 emissions factors. Updated NO_x, CO, VOC, and SO_2 were provided by GE manufacture data which will be used as control values for the turbines. Additionally, an oxidation catalyst with a 50% reduction in CO will also be used in both the bypass stack and HRSG flow path.

Emissions are calculated assuming each turbine operates at full site capacity for 8,322 hours per year (95% operating time). Emissions from the turbines can be sent to two different stacks: the turbine stack itself (Units 7A & 8A) or to the heat recovery steam generator (HRSG) stack (Units 7B & 8B).

CO_2, CH_4 and N_2O emissions are calculated using emission factors from the 40 CFR, Part C, Tables C-1 & C-2 and the turbine HHV design heat rates.

Storage Tanks (Units T20 through T23) (Exempt pursuant to 20.2.72.202.B NMAC)

The following assumptions were made:

- Note that there are no criteria pollutant, GHG or HAP emissions associated with Units T20-T21. See the applicable Material Safety Data Sheets.
- As the vapor pressures of Cortrol OS5300 (Unit T22) and Steammate HRSG24 (T23) are 18 mmHg (0.35 psia), the tanks cannot be exempt pursuant to 20.2.72.202.B.(2) NMAC. However, due to the low VOC content of the mixtures (~25%) as well as for the small storage volume (400 gal), it is assumed these units will not have emissions > 0.5 tpy VOC and will be exempt pursuant to 20.2.72.202.B.(5) NMAC.

Subsection 2 – Emission calculations for all other units at this facility not affected by this application.

Dehydrator Reboilers (Units 9a, 10a & 11a)

NO_X, CO, VOC, SO_2 and PM emissions from the dehydrator reboilers were calculated using AP-42 emission factors. HAP emissions were calculated using GRI-HAPCalc. Emissions were calculated assuming each reboiler operates at full capacity for 8,760 hr/yr. Note that Units 14 & 15 have reboilers but do not burn fuel gas; instead, 400 psig steam is used to regenerate the glycol.

The dehydrator reboilers (uncontrolled) start-up with less fuel input than steady-state operation, so emissions are lower than during steady-state operation. During shutdown, the fuel supply stops quickly, effectively stopping the production of emissions. Emissions due to scheduled maintenance are negligible as the units are not in operation.

The criteria pollutant emission rates for Units 9a, 10a, and 11a were carried forward and not revised.

Dehydrator and Dehydrator Blowdowns (Units 9b, 10b, 11b, 14, and 15)

Emissions from the dehydrator still vents are routed through a VRU to recover the hydrocarbons entrained in the stripped water. These hydrocarbons are then used for fuel within the facility, eliminating the VOC and HAP emissions from the dehydrator still vents. During normally scheduled maintenance, only one VRU is serviced at a time to maintain the uptime of the process. For the purposes of permitting and as a worst-case scenario, it will be assumed that both VRUs will be serviced at once. Thus emissions from the still vents will bypass the VRU and will vent directly to the atmosphere. Note: The gas from the still vents are routed through a condenser before it is sent to the VRU. Also, Units 9b, 10b, 11b & 15 are equipped with flash tanks. Unit 14 is not. The gas from the flash tanks is recovered.

The dehydrator still vent VOC and HAP emissions were calculated using GRI-GLYCalc and the extended gas analysis dated February 2, 2016. In order to identify uncontrolled emissions from the dehydrator still vents, it was assumed the dehydrators operate at design capacity, venting to atmosphere, for 8,760 hr/yr.

Amine Contactors and Blowdowns (Units 16a, 16b, 17, 18, 19)

VOC and HAP emissions from the amine contactors were calculated using results from AMINECalc. Combined VOC emissions from all the amine units were limited to 34.0 tpy (obtained from the current construction permit). Emissions were calculated assuming each amine unit operates at full capacity for 8,760 hr/yr. Representative runs were prepared for each of the amine trains both during normal operation and during the receipt of rich gas during Ignacio plant outages. Normal operations were modeled using an extended gas analysis dated February 2, 2016 (obtained during normal operation). Operations during Ignacio plant outages were modeled using an extended gas analysis dated July 14, 2016 (obtained while Milagro was receiving rich gas during an Ignacio plant outage). These results and a balance of run hours for each operating mode were used to establish the requested pph and tpy emissions caps. To allow for variations in inlet gas composition, safety factors were included.

Flash tanks capture the amine regenerator emissions and they are injected into the facility fuel system.

It is requested SSM emissions from the amine trains and associated piping continue to be permitted under a single facility-wide emissions limit. The VOC emission rates for Units 16a through 19 were carried forward and not revised.

Amine Trains & Associated Piping Blowdown (Unit SSM1)

SSM VOC and HAP emissions from the amine trains and associated piping are the result of blowdowns. The emissions were calculated from the annual quantity of gas vented and the composition of the gas. The annual quantity of gas vented was estimated based on historical operations, both the number of events and the quantity of gas vented during each event as determined by HFC engineering. A safety factor was added because emissions from blowdowns are dependent on the composition of the gas and because the annual quantity of gas vented may vary. The use of the safety factor was also designed to ensure an adequate emissions limit, which includes any emissions from other miscellaneous startup, shutdown and maintenance activities.

Emissions during normal operation were determined using an extended gas analysis dated February 2, 2016 (obtained during normal operation). Emissions associated with Ignacio plant outages were determined using an extended gas analysis dated July 14, 2016 (obtained while Milagro was receiving rich gas during an Ignacio plant outage). It was estimated 73.9 percent of the SSM blow down volume would occur during normal operation and 26.1 percent of the SSM blow down volume would occur while receiving rich gas during Ignacio plant outages.

It is requested SSM emissions from the amine trains and associated piping continue to be permitted under a single facility-wide emissions limit. The VOC emission rate for Unit SSM1 was carried forward and not revised.

Dehydrator Venting during VRU Downtime (Unit SSM2)

SSM VOC and HAP emissions from the dehydrators are associated with VRU downtime. In previous applications, the combined total SSM emissions from all five dehydrators were estimated at a maximum of 5.0 tons per year (tpy) VOC. This application is requesting that the same VOC emission limit. HAP emissions were estimated using the GRI-GLYCalc estimated pounds per hour (pph) HAP emission rates and the number of hours of operation per year required to emit the 5.0 tpy VOC (334 hr/yr).

It is requested SSM emissions from all the dehydrator still vents (Unit SSM2) continue to be permitted under a single facility-wide emissions limit. The VOC emission rate for Unit SSM2 was carried forward and not revised.

Miscellaneous Heaters (Units 21-30) (Exempt pursuant 20.2.72.202.B.(5) NMAC)

NO_X, CO, VOC, SO_2 and PM emissions from the heaters were calculated using AP-42 emission factors. Emissions were calculated assuming each heater operates at full capacity for 8,760 hr/yr. Since the emission rate for each pollutant, from all heaters combined, is less than 0.5 tpy, the heaters are all exempt sources.

Equipment Leaks (Unit F1)

Fugitive organic compound emissions from equipment leaks, valves, flanges, seals, etc., were calculated using a count of the Milagro pipeline components and emission factors from the 1995 Protocol for Equipment Leak Emission Estimates published by the EPA. VOC and HAP emissions were calculated as weight percentages of the total organic compound emissions.

Weight percentages during normal operation were determined using an extended gas analysis dated February 2, 2016 (obtained during normal operation). Weight percentages associated with receiving rich gas during Ignacio plant outages were determined using an extended gas analysis dated July 14, 2016 (obtained while Milagro was receiving rich gas during an Ignacio plant outage). It was assumed normal operation would occur for 6,475 hr/yr and operation during Ignacio plant outages would occur for 2,285 hr/yr. This is the maximum operating time for Ignacio plant outages such that emissions stay at or below the 34.0 tpy VOC cap on amine vent emissions.

Due to the nature of the source, it was estimated that SSM emissions from valves, connectors, seals, etc. are accounted for in the calculations. The VOC emission rate for Unit F1 was carried forward and not revised.

Malfunction (Unit M1)

Malfunction emissions were set at 10.0 tons of VOC per year to account for emissions that may occur during upsets and malfunctions (including, but not limited to, unscheduled blowdowns and relief valve release). The HAP emissions, in turn, were calculated as a weight percentage of the set VOC emission rate. HAP weight percentages during normal operation were determined using an extended gas analysis dated February 2, 2016 (obtained during normal operation). HAP weight percentages associated with Ignacio plant outages were determined using an extended gas analysis dated July 14, 2016 (obtained while Milagro was receiving rich gas during an Ignacio plant outage). For each individual HAP, the highest calculated HAP weight percent (from either the normal operation gas analysis or the Ignacio plant outage gas analysis) was used to determine the emission rate.

Note that these malfunction emissions include the venting of gas only, not combustion emissions. The VOC emission rate for Unit M1 was carried forward and not revised.

Storage Tanks

Where appropriate, working/breathing losses from the storage tanks were calculated using the EPA TANKS 4.0.9d program. The following assumptions were made:

- Residual oil #6 was used to estimate lubrication oil, used oil, skimmer oil and slop oil emissions. As the vapor pressure of residual oil is less than 0.2 pounds per square inch absolute (psia), the tanks containing lubrication oil (Units T1 & T2), used oil (Units T8 & T12), skimmer oil (Unit T9) and slop oil (Units T10 & T11) were assumed to be exempt sources for a construction permit and insignificant sources for a Title V permit.
- Distillate fuel oil #2 was used to estimate diesel fuel emissions. As the vapor pressure of distillate fuel oil #2 is less than 0.2 psia, the tanks containing diesel fuel (Units T3-T5) were assumed to be exempt sources for a construction permit and insignificant sources for a Title V permit;

- Jet kerosene was used to estimate petroleum solvent emissions. As the vapor pressure of jet kerosene is less than 0.2 psia, the tank containing solvent (Unit T6) was assumed to be an exempt source for a construction permit and an insignificant source for a Title V permit;
- Gasoline (RVP 13) was used to estimate gasoline tank (Unit T7) emissions;
- As the vapor pressure of triethylene glycol (TEG) is less than 0.2 psia, the tanks containing TEG (Units T13-T15) were assumed to be exempt sources for a construction permit and insignificant sources for a Title V permit;
- As the vapor pressures of ethylene glycol and propylene glycol are less than 0.2 psia, the tank containing Ambitrol (Unit T16) was assumed to be an exempt source for a construction permit and an insignificant source for a Title V permit. Note that Ambitrol is an inhibited ethylene or propylene glycol coolant containing ethylene or propylene glycol, water, and less than 5% dipotassium hydrogen phosphate;
- As the vapor pressure of methyl diethanolamine (MDEA) is less than 0.2 psia, the tanks containing amine or amine/water (Units T17-T19, T24, T31, T32, T34 & T35) were assumed to be exempt sources for a construction permit and insignificant sources for a Title V permit; and
- The natural gasoline liquid composition identified in HAPCalc 3.0 was used to estimate condensate tank (Units T25, T29 & T30) emissions.

The VOC emission rate for the gasoline storage tank (Unit T7) was calculated at 783.4 pounds per year. As such, the tank is an exempt source for a construction permit and an insignificant source for a Title V permit.

The combined VOC emission rate from the three condensate storage tanks (Units T25, T29 & T30) is 829.4 pounds per year. As such, the tanks are exempt sources for a construction permit and insignificant sources for a Title V permit.

Note that there are no criteria pollutant, GHG or HAP emissions associated with Units T26-T28. See the applicable Material Safety Data Sheets.

VOC, benzene, and n-hexane emissions from the produced water tank (Unit T33) were calculated using emission factors from the CDPHE PS Memo 09-02 (Oil & Gas Produced Water Tank Batteries - Regulatory Definitions & Permitting Guidance). Ethylbenzene, toluene and xylene emissions from the produced water tank were calculated using emission factors from the TCEQ Project 2010-29 (Emission Factor Determination for Produced Water Storage Tanks) report.

Due to the nature of operations, startup and shutdown emissions from the storage tanks were assumed to be accounted for in the calculations described above. Emissions due to maintenance should be negligible. The VOC emission rate for Unit T33 was carried forward and not revised.

Section 6

Subsection 1 – Emission Calculations for Units either Added or Modified with this Application

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For clarity, Subsection 1 contains emission calculations for units that were either added or modified with this application (i.e. Units 1, 7A, 7B, 8A, 8B, 20, and T20 through T23). For all other emission calculations pertinent to the other units at this facility, please refer to Section 6 Subsection 2.

Harvest Four Corners, LLC - Milagro Gas Treating Plant

Emissions Summary

Uncontrolled Emissions																	
		NO_x		CO		VOC		SO_2		PM		PM_{10}		$PM_{2.5}$		H_2S	
Unit ID	Equipment Description	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	Boiler 1	5.45	23.88	11.05	48.42	0.60	2.65	0.092	0.40	0.76	3.31	0.76	3.31	0.76	3.31	-	-
7A[1]	Turbine	11.87	51.99	20.71	90.72	0.66	2.91	0.035	0.14	2.17	9.50	2.17	9.50	2.17	9.50	-	-
7B[1]	Heat Recovery Steam Generator (HRSG)																
8A[1]	Turbine	11.87	51.99	20.71	90.72	0.66	2.91	0.035	0.14	2.17	9.50	2.17	9.50	2.17	9.50	-	-
8B[1]	Heat Recovery Steam Generator (HRSG)																
9a	TEG Reboiler Burner Train 1	0.33	1.46	0.28	1.23	0.018	0.080	2.00E-03	8.76E-03	0.025	0.11	0.025	0.11	0.025	0.11	-	-
9b	TEG Regenerator Still Vent/Flash Tank Train 1	-	-	-	-	10.01	43.85	-	-	-	-	-	-	-	-	-	-
10a	TEG Reboiler Burner Train 2	0.25	1.10	0.21	0.92	0.014	0.060	1.50E-03	6.57E-03	0.019	0.083	0.019	0.083	0.019	0.083	-	-
10b	TEG Regenerator Still Vent/Flash Tank Train 2	-	-	-	-	10.01	43.85	-	-	-	-	-	-	-	-	-	-
11a	TEG Reboiler Burner Train 3	0.33	1.46	0.28	1.23	0.018	0.080	2.00E-03	8.76E-03	0.025	0.11	0.025	0.11	0.025	0.11	-	-
11b	TEG Regenerator Still Vent/Flash Tank Train 3	-	-	-	-	6.35	27.82	-	-	-	-	-	-	-	-	-	-
14	TEG Regenerator Still Vent Train 4 (no flash tank)	-	-	-	-	3.64	15.95	-	-	-	-	-	-	-	-	-	-
15	TEG Regenerator Still Vent/Flash Tank Train 5	-	-	-	-	9.93	43.50	-	-	-	-	-	-	-	-	-	-
16a[2]	Amine Regenerator Vent Train 1																
16b[2]	Amine Regenerator Vent Train 2																
17 [2]	Amine Regenerator Vent Train 3	-	-	-	-	23.39	34.00	-	-	-		-	-	-	-	-	-
18 [2]	Amine Regenerator Vent Train 4																
19 [2]	Amine Regenerator Vent Train 5																
20	Boiler 5	9.80	42.92	20.55	90.00	1.03	4.51	0.16	0.72	2.07	9.06	2.07	9.06	2.07	9.06	-	-
SSM1	Amine Trains & Associated Piping Blowdowns	-	-	-	-	*	14.15	-	-	-	-	-	-	-	-	-	-
SSM2	Dehydrator SSM	-	-	-	-	*	5.00	-	-	-	-	-	-	-	-	-	-
F1	Fugitives	-	-	-	-	2.68	5.33	-	-	-	-	-	-	-	-	-	-
M1	Venting of Gas Due to Malfunction	-	-	-	-	*	10.00	-	-	-	-	-	-	-	-	-	-
T-33	Produced water storage tank	-	-	-	-	*	1.97	-	-	-	-	-	-	-	-	-	-
	Total	**39.91**	**174.80**	**73.80**	**323.23**	**69.03**	**258.60**	**0.33**	**1.43**	**7.23**	**31.68**	**7.23**	**31.68**	**7.23**	**31.68**	**-**	**-**

" - " indicates pollutants are not to be expected.

" * " indicates lb/hr emission rates are not appropriate for this unit.

[1] The turbine and Heat Recovery Steam Generator (HRSG) are connected systems with the same emissions, but with different stacks. Emissions from the turbines can either be sent through the HRSG stack or through a bypass stack on the turbine stack itself.

[2] These amine regenerator vents have a single combined emission limit cap for all five units.

Harvest Four Corners, LLC - Milagro Gas Treating Plant

Emissions Summary

Controlled Emissions																	
		NO_x		CO		VOC		SO_2		PM		PM_{10}		$PM_{2.5}$		H_2S	
Unit ID	Equipment Description	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	Boiler 1	5.45	23.88	11.05	48.42	0.60	2.65	0.092	0.40	0.76	3.31	0.76	3.31	0.76	3.31	-	-
7A[1]	Turbine	11.87	49.39	10.36	43.09	0.66	2.76	0.035	0.14	2.17	9.03	2.17	9.03	2.17	9.03	-	-
7B[1]	Heat Recovery Steam Generator (HRSG)																
8A[1]	Turbine	11.28	49.39	9.84	43.09	0.63	2.76	0.033	0.14	2.06	9.03	2.06	9.03	2.06	9.03	-	-
8B[1]	Heat Recovery Steam Generator (HRSG)																
9a	TEG Reboiler Burner Train 1	0.33	1.46	0.28	1.23	0.018	0.080	2.00E-03	8.76E-03	0.025	0.11	0.025	0.11	0.025	0.11	-	-
9b[2]	TEG Regenerator Still Vent/Flash Tank Train 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10a	TEG Reboiler Burner Train 2	0.25	1.10	0.21	0.92	0.014	0.060	1.50E-03	6.57E-03	0.019	0.083	0.019	0.083	0.019	0.083	-	-
10b[2]	TEG Regenerator Still Vent/Flash Tank Train 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11a	TEG Reboiler Burner Train 3	0.33	1.46	0.28	1.23	0.018	0.080	2.00E-03	8.76E-03	0.025	0.11	0.025	0.11	0.025	0.11	-	-
11b[2]	TEG Regenerator Still Vent/Flash Tank Train 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14 [2]	TEG Regenerator Still Vent Train 4 (no flash tank)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 [2]	TEG Regenerator Still Vent/Flash Tank Train 5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16a[3]	Amine Regenerator Vent Train 1																
16b[3]	Amine Regenerator Vent Train 2																
17 [3]	Amine Regenerator Vent Train 3	-	-	-	-	23.39	34.00	-	-	-		-	-	-	-	-	-
18 [3]	Amine Regenerator Vent Train 4																
19 [3]	Amine Regenerator Vent Train 5																
20	Boiler 5	9.80	42.92	20.55	90.00	1.03	4.51	0.16	0.72	2.07	9.06	2.07	9.06	2.07	9.06	-	-
SSM1	Amine Trains & Associated Piping Blowdowns	-	-	-	-	*	14.15	-	-	-	-	-	-	-	-	-	-
SSM2	Dehydrator SSM	-	-	-	-	*	5.00	-	-	-	-	-	-	-	-	-	-
F1	Fugitives	-	-	-	-	2.68	5.33	-	-	-	-	-	-	-	-	-	-
M1	Venting of Gas Due to Malfunction	-	-	-	-	*	10.00	-	-	-	-	-	-	-	-	-	-
T-33	Produced water storage tank	-	-	-	-	*	1.97	-	-	-	-	-	-	-	-	-	-
	Total	**39.32**	**169.60**	**52.57**	**227.97**	**29.05**	**83.35**	**0.33**	**1.43**	**7.12**	**30.73**	**7.12**	**30.73**	**7.12**	**30.73**	**-**	**-**

Controlled HAP and GHG Emissions																	
		Total HAP		Formaldehyde		Benzene		Toluene		Xylene		n-Hexane		CO_2	N_2O	CH_4	CO_2e
Unit ID	Equipment Description	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	tpy	tpy	tpy	tpy
1	Boiler 1	0.25	1.12	0.010	0.044	2.84E-04	1.24E-03	4.60E-04	2.01E-03	-	-	0.24	1.07	78,385.85	0.15	1.48	78,466.81
7A[1]	Turbine	0.34	1.40	0.23	0.97	3.94E-03	0.016	0.043	0.18	0.021	0.088	-	-	177,369.43	0.33	3.34	177,552.62
7B[1]	Heat Recovery Steam Generator (HRSG)																
8A[1]	Turbine	0.34	1.40	0.23	0.97	3.94E-03	0.016	0.043	0.18	0.021	0.088	-	-	177,369.43	0.33	3.34	177,552.62
8B[1]	Heat Recovery Steam Generator (HRSG)																
9a	TEG Reboiler Burner Train 1	-	-	-	-	-	-	-	-	-	-	-	-	1,704.29	3.21E-03	0.032	1,706.05
9b[2]	TEG Regenerator Still Vent/Flash Tank Train 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10a	TEG Reboiler Burner Train 2	-	-	-	-	-	-	-	-	-	-	-	-	1,278.22	2.41E-03	0.024	1,279.54
10b[2]	TEG Regenerator Still Vent/Flash Tank Train 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11a	TEG Reboiler Burner Train 3	-	-	-	-	-	-	-	-	-	-	-	-	1,704.29	3.21E-03	0.032	1,706.05
11b[2]	TEG Regenerator Still Vent/Flash Tank Train 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14 [2]	TEG Regenerator Still Vent Train 4 (no flash tank)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 [2]	TEG Regenerator Still Vent/Flash Tank Train 5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16a[3]	Amine Regenerator Vent Train 1																
16b[3]	Amine Regenerator Vent Train 2																
17 [3]	Amine Regenerator Vent Train 3	14.75	18.91	-	-	7.79	10.25	4.73	5.65	1.93	2.20	0.099	0.14	914,631.20	-	546.50	928293.675
18 [3]	Amine Regenerator Vent Train 4																
19 [3]	Amine Regenerator Vent Train 5																
20	Boiler 5	0.45	1.98	0.018	0.079	5.04E-04	2.21E-03	8.17E-04	3.58E-03	-	-	0.43	1.89	139,183.45	0.26	2.62	139,327.20
SSM1	Amine Trains & Associated Piping Blowdowns	*	0.089	-	-	*	8.84E-03	*	3.48E-03	-	-	*	0.062	236.93	-	721.56	18,275.99
SSM2	Dehydrator SSM	*	2.58	-	-	*	0.36	*	0.22	*	1.77	*	0.066	1.55	-	4.40	111.64
F1	Fugitives	-	-	-	-	-	-	-	-	-	-	-	-	28.25	-	86.16	2,182.34
M1	Venting of Gas Due to Malfunction	*	0.33	-	-	*	0.038	*	0.059	*	0.034	*	0.19	299.81	-	913.05	23,126.04
T-33	Produced water storage tank	*	0.34	-	-	*	0.053	*	0.068	*	0.045	*	0.17	-	-	-	-
	Total	**16.13**	**28.15**	**0.49**	**2.07**	**7.79**	**10.74**	**4.81**	**6.37**	**1.97**	**4.22**	**0.77**	**3.59**	**1,492,192.68**	**1.09**	**2,282.55**	**1,549,580.56**

" - " indicates pollutants are not to be expected.

" * " indicates lb/hr emission rates are not appropriate for this unit.

[1] The turbine and Heat Recovery Steam Generator (HRSG) are connected systems with the same emissions, but with different stacks. Emissions from the turbines can either be sent through the HRSG stack or through a bypass stack on the turbine stack itself.

[2] These amine regenerator vents have a single combined emission limit cap for all five units.

[3] Emissions are associated with SSM2.

Boiler Exhaust Emissions Calculations

Unit Number: 1
Description: Holman Boiler

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

Fuel Consumption

137.98	MMBtu/hr	Capacity	Mfg. data
153,311	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	
1,208,705	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
1,343.01	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, ppmv	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	30	0.037	5.45	23.88
CO	100	0.075	11.05	48.42
VOC		0.004	0.60	2.65
PM		0.005	0.76	3.31

Emission factors taken from manufacturers data
Emission factors (lb/MMBtu) = ppmv / 10^6 / molar volume * MW (NO_x /CO) * F_d Factor * 20.9 / (20.9 -3%O_2)
Molar Volume (dscf/lb-mol) = 379.5
MW (lb/lb-mol) = 46.01 NO_x & 28.01 CO
F_d (dscf/MMBtu) = 8710 (40 CFR 60 Appendix A Method 19 Table 19-2)
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
A safety factor of 7% was applied to NO_x.
A safety factor of 7% was applied to CO.

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
SO2	0.60	9.20E-02	4.03E-01

Emission factors taken from AP-42, Table 1.4-2, 07/98
Uncontrolled Emission Rates (pph) = lb/MMscf x scf/hr / 1,000,000
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
Benzene	2.06E-06	2.84E-04	1.24E-03
Dichlorobenzene	1.18E-06	1.62E-04	7.11E-04
Formaldehyde	7.35E-05	1.01E-02	4.44E-02
n-Hexane	1.76E-03	2.43E-01	1.07
Napthalene	5.98E-07	8.25E-05	3.61E-04
Polycyclics	8.65E-08	1.19E-05	5.23E-05
Toluene	3.33E-06	4.60E-04	2.01E-03

Emission factors taken from AP-42, Table 1.4-3, 07/98
Emission factors (lb/MMscf) divided by 1,020 (per AP-42) to convert to lb/MMBtu
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

300	°F	Exhaust temperature	Mfg. specification
52,944	acfm	Stack flowrate	Mfg. specification
5.00	ft	Stack exit diameter	Mfg. specification
19.63	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
44.94	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min

Turbine Exhaust Emissions Data and Calculations

Unit Number: 7A, 7B, 8A, 8B
Description: General Electric PG6541B Turbine
Note: Where more than one emissions unit is identified above, this worksheet provides the emission rates and operating parameters for each individual emissions unit.

Fuel Consumption

329	MMBtu/hr	Capacity	Mfg. data
365,168	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,322	hr/yr	Annual operating time	95% of the year
2,735,038	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
3,038.93	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
NOX		11.87	51.99
CO		20.71	90.72
VOC		0.66	2.91
SO2		0.035	0.14
PM10	6.6E-03	2.17	9.50
PM2.5	6.6E-03	2.17	9.50

Uncontrolled lb/hr emission rates taken from data provided by GE on their turbines at 100% load
Uncontrolled tpy emissions are based on 8760 hr/yr.

Pollutants	Emission Factors, lb/MMBtu	Control Efficiency %	Controlled Emission Rates, pph	tpy
NOX			11.87	49.39
CO		50%	10.36	43.09
VOC			0.66	2.76
SO2			0.035	0.14
PM10	6.6E-03		2.17	9.03
PM2.5	6.6E-03		2.17	9.03

Controlled lb/hr emission rates taken from data provided by GE on their turbines at 100% load
Controlled tpy emission rates are based on 8322 hr/yr (operating 95% of the year).
CO emissions were reduced by 50% based on GE control for the turbines.
Emission factors taken from Ap-42, Table 3.1-2a
Controlled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Controlled Emission Rates (tpy) = Controlled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
1,3-Butadiene	4.3E-07	1.41E-04	5.88E-04
Acetaldehyde	4.0E-05	0.013	0.055
Acrolein	6.4E-06	2.10E-03	8.752E-03
Benzene	1.2E-05	3.94E-03	0.016
Ethylbenzene	3.2E-05	0.011	0.044
Formaldehyde	7.1E-04	0.23	0.971
Naphthalene	1.3E-06	4.27E-04	1.778E-03
PAH	2.2E-06	7.23E-04	3.009E-03
Propylene Oxide	2.9E-05	9.531E-03	0.040
Toluene	1.3E-04	0.043	0.178
Xylenes	6.4E-05	0.021	0.088

Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

Bypass Stack:		HRSG Stack:			
950	°F	361	°F	Exhaust temperature	Mfg. specification
765,292	acfm	445,321	acfm	Stack flowrate	Mfg. specification
10.00	ft	10.00	ft	Stack exit diameter	Mfg. specification
78.54	ft^2	78.54	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
162.40	fps	94.50	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
80.00	ft	80.00	ft	Stack height	Mfg. specification

Boiler Exhaust Emissions Calculations

Unit Number: 20
Description: Rentech Boiler

Fuel Consumption

245.00	MMBtu/hr	Capacity	Mfg. data
272,222	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	
2,146,200	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
2,384.67	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
NOX	0.040	9.80	42.92
CO	0.08387	20.55	90.00
VOC	0.0042	1.03	4.51

Emission factors are taken from manufacturers data (with safety factor for NOX)
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
SO2	0.6	1.63E-01	7.15E-01
TSP	7.60	2.07	9.06
PM10	7.60	2.07	9.06
PM2.5	7.60	2.07	9.06

Emission factors taken from AP-42, Table 1.4-2, 07/98
Uncontrolled Emission Rates (pph) = lb/MMscf x scf/hr / 1,000,000
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Controlled Emission Rates, pph	tpy
Benzene	2.06E-06	5.04E-04	2.21E-03
Dichlorobenzene	1.18E-06	2.88E-04	1.26E-03
Formaldehyde	7.35E-05	1.80E-02	7.89E-02
n-Hexane	1.76E-03	4.32E-01	1.89
Napthalene	5.98E-07	1.47E-04	6.42E-04
Polycyclics	8.65E-08	2.12E-05	9.28E-05
Toluene	3.33E-06	8.17E-04	3.58E-03

Emission factors taken from AP-42, Table 1.4-3, 07/98
Emission factors (lb/MMscf) divided by 1,020 (per AP-42) to convert to lb/MMBtu
Controlled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Controlled Emission Rates (tpy) = Controlled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

276.00	°F	Exhaust temperature	Mfg. data
96,460	acfm	Stack flowrate	Mfg. data
5.17	ft	Stack exit diameter	Mfg. data
20.97	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
76.68	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
60.00	ft	Stack height	

Section 6

Subsection 2 – Emission Calculations for All Other Units at this Facility Not Affected by this Application

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For clarity, Subsection 2 contains emission calculations for all other units at this facility that were not affected by this application (i.e. all units except for Units 1, 7A, 7B, 8A, 8B, 20, and T20 through T23). For pertinent calculations relevant to the changes at the facility in this application, please refer to Section 6 Subsection 1.

Dehydrator Reboiler Exhaust Emissions Calculations

Unit Number: 9a & 11a
Description: Reboiler Burner

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

Fuel Consumption

3.00	MMBtu/hr	Capacity	Mfg. data
3,333	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	
26,280	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
29.20	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
NOX	100	3.33E-01	1.46
CO	84	2.80E-01	1.23
VOC	5.5	1.83E-02	8.03E-02
SO2	0.6	2.00E-03	8.76E-03
TSP	7.6	2.53E-02	1.11E-01
PM10	7.6	2.53E-02	1.11E-01
PM2.5	7.6	2.53E-02	1.11E-01
Lead	5.00E-04	1.67E-06	7.30E-06

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2, 07/98
Uncontrolled Emission Rates (pph) = lb/MMscf x (scf/hr / 1,000,000)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

650.00	°F	Exhaust temperature	Previous application
954	cfm	Stack flowrate	Previous application
1.50	ft	Stack diameter	Previous application
1.77	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
9.00	fps	Stack velocity	acfm / ft^2 / 60 sec/min
30.00	ft	Stack height	Previous application

Dehydrator Reboiler Exhaust Emissions Calculations

Unit Number: 10a
Description: Reboiler Burner

Fuel Consumption

2.25	MMBtu/hr	Capacity	Mfg. data
2,500	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	
19,710	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
21.90	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
NOX	100	2.500E-01	1.10
CO	84	2.100E-01	9.20E-01
VOC	5.5	1.38E-02	6.02E-02
SO2	0.6	1.50E-03	6.57E-03
TSP	7.60	1.900E-02	8.32E-02
PM10	7.60	1.90E-02	8.32E-02
PM2.5	7.60	1.90E-02	8.32E-02
Lead	5.00E-04	1.25E-06	5.48E-06

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2, 07/98
Uncontrolled Emission Rates (pph) = lb/MMscf x (scf/hr / 1,000,000)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

650.00	°F	Exhaust temperature	Previous application
954	cfm	Stack flowrate	Previous application
1.50	ft	Stack diameter	Previous application
1.77	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
9.00	fps	Stack velocity	acfm / ft^2 / 60 sec/min
30.00	ft	Stack height	Previous application

Dehy Vent Emissions Calculations

Unit Number: 9b, 10b, 11b, 14, 15
Description: Dehy Still Vents

Operating Time

8760	hr/yr	
145	MMSCFD	Dehy 9b & 10b combined throughputs
145	MMSCFD	Dehy 11b throughput
90	MMSCFD	Dehy 14 throughput
120	MMSCFD	Dehy 15 throughput

Uncontrolled Emission Rates

Pollutants	Uncontrolled Emission Rates					
	9b & 10b Combined Regenerator Vent/Flash Gas Emissions		11b Combined Regenerator Vent/Flash Gas Emissions		14 Regenerator Vent Emissions (no flash tank)	
	pph	tpy	pph	tpy	pph	tpy
Methane	4.8492	21.240	4.5559	19.946	16.7715	73.4692
Ethane	0.9840	4.310	0.9222	4.039	1.0322	4.5211
Propane	0.8647	3.787	0.8283	3.628	0.5400	2.3651
Isobutane	0.3354	1.469	0.3206	1.404	0.1625	0.7118
n-Butane	0.4852	2.125	0.4704	2.060	0.2066	0.9047
Isopentane	0.2047	0.897	0.2142	0.938	0.0830	0.3634
n-Pentane	0.1772	0.776	0.1770	0.775	0.0662	0.2899
n-Hexane	0.1257	0.551	0.1246	0.546	0.0395	0.1729
Cyclohexane	0.3438	1.506	0.3913	1.714	0.1147	0.5022
Other Hexanes	0.2161	0.947	0.1810	0.793	0.0646	0.2830
Heptanes	0.3464	1.517	0.3444	1.508	0.0899	0.3935
Methylcycloheane	0.5011	2.195	0.5307	2.325	0.1830	0.8014
2,2,4-Trimethylpentane	0.0260	0.114	0.0205	0.090	0.0127	0.0556
Benzene	0.9520	4.170	0.1900	0.832	0.1862	0.8156
Toluene	0.3194	1.399	0.6370	2.790	0.1064	0.4662
Ethylbenzene	-	-	0.4573	2.003	0.4688	2.0535
Xylenes	3.6014	15.774	0.5979	2.619	1.2934	5.6651
C8+ Heavies	1.5112	6.619	0.8666	3.796	0.0238	0.1042
VOC	10.0103	43.8451	6.3518	27.8204	3.6413	15.9481
HAP	5.0245	22.0072	2.0273	8.8792	2.1070	9.2289

Emission rates obtained from GLY-Calc report (9/29/16)

Dehy Vent Emissions Calculations

Unit Number: 9b, 10b, 11b, 14, 15
Description: Dehy Still Vents

Pollutants	Uncontrolled Emission Rates			
	15 Combined Regenerator Vent/Flash Gas Emissions		Total	
	pph	tpy	pph	tpy
Methane	4.1563	18.205	30.3329	132.8596
Ethane	0.8252	3.615	3.7636	16.4849
Propane	0.7031	3.080	2.9361	12.8602
Isobutane	0.2715	1.189	1.0900	4.7744
n-Butane	0.3913	1.714	1.5535	6.8039
Isopentane	0.1699	0.744	0.6718	2.9425
n-Pentane	0.1442	0.632	0.5646	2.4727
n-Hexane	0.1035	0.453	0.3933	1.7225
Cyclohexane	0.3159	1.384	1.1657	5.1058
Other Hexanes	0.1633	0.715	0.6250	2.7377
Heptanes	0.2971	1.301	1.0778	4.7202
Methylcycloheane	0.4299	1.883	1.6447	7.2037
2,2,4-Trimethylpentane	0.0178	0.078	0.0770	0.3377
Benzene	0.8123	3.558	2.1405	9.3754
Toluene	0.2721	1.192	1.3349	5.8470
Ethylbenzene	-	-	0.9261	4.0564
Xylenes	5.0893	22.291	10.5820	46.3489
C8+ Heavies	0.7511	3.290	3.1527	13.8087
VOC	9.9323	43.5041	29.9357	131.1177
HAP	6.2950	27.5726	15.4538	67.6879

Emission rates obtained from GLY-Calc report (9/29/16)

Amine Vent Emissions Calculations

Unit Number: 16a, 16b, 17-19
Description: Train 1-5 Amine Vents

Operating Time

34.0	tpy VOC	Allowable annual amine vent emissions	Current NSR permit
50	%	Safety factor	Estimated
1.50	pph VOC	Normal short-term emission rate	See table below
2.25	pph VOC	Normal short-term emission rate w/safety factor	pph x (1 + (% / 100))
15.60	pph VOC	Ignacio plant outage short-term emission rate	See table below
23.39	pph VOC	Ignacio plant outage short-term emission rate w/safety factor	pph x (1 + (% / 100))

2,285 hr/yr

Z = [(A x (2,000 lb/ton)) - (N x (8,760 hr/yr))] / (XH - N)

Z = Maximum Ignacio plant outage operating time (hr/yr)
A = Allowable annual amine vent emissions (tpy)
N = Normal short-term emission rate w/safety factor (pph)
XH = Ignacio plant outage short-term emission rate w/safety factor (pph)

6,475 hr/yr

Minimum normal operating time (hr/yr) = 8,760 hr/yr
- Maximum Ignacio plant outage operating time (hr/yr)

Steady-State Emission Rates

Normal Amine Vent Emissions Calculations (02/02/2016 Plant Inlet Gas Composition)						
Pollutants	Uncontrolled Emission Rates					
	Train 1, pph	Train 2, pph	Train 3, pph	Train 4, pph	Train 5, pph	Total, pph
H2S	0.000	0.000	0.000	0.000	0.000	0.000
CO2	47565.980	47565.980	47565.980	27176.890	38948.590	208823.420
MDEA	0.000	0.000	0.000	0.000	0.000	0.000
H2O	0.000	0.000	0.000	0.000	0.000	0.000
N2	0.015	0.015	0.015	0.005	0.014	0.064
C1	29.313	29.313	29.313	10.300	26.536	124.775
C2	0.545	0.545	0.545	0.190	0.495	2.320
C3	0.121	0.121	0.121	0.041	0.110	0.514
i-C4	0.000	0.000	0.000	0.000	0.000	0.000
n-C4	0.000	0.000	0.000	0.000	0.000	0.000
i-C5	0.000	0.000	0.000	0.000	0.000	0.000
n-C5	0.000	0.000	0.000	0.000	0.000	0.000
Hexanes	0.000	0.000	0.000	0.000	0.000	0.000
Heptanes	0.000	0.000	0.000	0.000	0.000	0.000
Octanes	0.000	0.000	0.000	0.000	0.000	0.000
2,2,4-Trimeth	0.000	0.000	0.000	0.000	0.000	0.000
Benzene	0.151	0.151	0.151	0.056	0.136	0.645
Ethylbenzene	0.048	0.048	0.048	0.017	0.044	0.205
n-Hexane	0.003	0.003	0.003	0.001	0.003	0.013
Toluene	0.028	0.028	0.028	0.012	0.024	0.120
Xylenes	0.000	0.000	0.000	0.000	0.000	0.000
VOC	0.351	0.351	0.351	0.127	0.317	1.497
HAP	0.230	0.230	0.230	0.086	0.207	0.983

Emission rates obtained from AMINECalc results

Amine Vent Emissions Calculations

Unit Number: 16a, 16b, 17-19
Description: Train 1-5 Amine Vents

Ignacio Plant Outage Amine Vent Emissions Calculations (07/14/2016 Plant Inlet Gas Composition)						
Pollutants	Uncontrolled Emission Rates					
	Train 1, pph	Train 2, pph	Train 3, pph	Train 4, pph	Train 5, pph	Total, pph
H2S	0.000	0.000	0.000	0.000	0.000	0.000
CO2	39846.470	39846.470	39846.470	23253.450	32564.800	175357.660
MDEA	0.000	0.000	0.000	0.000	0.000	0.000
H2O	0.000	0.000	0.000	0.000	0.000	0.000
N2	0.012	0.012	0.012	0.005	0.010	0.051
C1	31.518	31.518	31.518	12.146	28.179	134.879
C2	1.237	1.237	1.237	0.473	1.109	5.293
C3	0.420	0.420	0.420	0.158	0.378	1.796
i-C4	0.001	0.001	0.001	0.000	0.001	0.004
n-C4	0.001	0.001	0.001	0.000	0.001	0.004
i-C5	0.001	0.001	0.001	0.000	0.001	0.004
n-C5	0.001	0.001	0.001	0.000	0.001	0.004
Hexanes	0.003	0.003	0.003	0.001	0.003	0.013
Heptanes	0.002	0.002	0.002	0.001	0.001	0.008
Octanes	0.000	0.000	0.000	0.000	0.000	0.000
2,2,4-Trimeth	0.000	0.000	0.000	0.000	0.000	0.000
Benzene	1.665	1.665	1.665	0.646	1.499	7.140
Ethylbenzene	0.000	0.000	0.000	0.000	0.000	0.000
n-Hexane	0.020	0.020	0.020	0.009	0.017	0.086
Toluene	1.068	1.068	1.068	0.483	0.921	4.608
Xylenes	0.447	0.447	0.447	0.202	0.385	1.928
VOC	3.629	3.629	3.629	1.500	3.208	15.595
HAP	3.200	3.200	3.200	1.340	2.822	13.762

Emission rates obtained from AMINECalc results

Pollutants	Uncontrolled Emission Rates		
	Normal, pph	Igancio Outage, pph	Total, tpy
2,2,4-Trimeth	0.00E+00	0.00E+00	0.00E+00
Benzene	6.45E-01	7.140	10.25
Ethylbenzene	2.05E-01	0.00E+00	6.64E-01
n-Hexane	1.30E-02	8.60E-02	1.40E-01
Toluene	1.20E-01	4.608	5.65
Xylenes	0.00E+00	1.928	2.20
Total HAP	9.83E-01	13.762	18.91

Normal and Ignacio plant outage emission rates (pph) obtained from the tables above
Uncontrolled Emission Rates (tpy) = [(Uncontrolled normal emission rates (pph) x Minimum normal operating time (hr/yr))
+ (Uncontrolled Ignacio plant outage emission rates (pph)
x Maximum Ignacio plant outage operating time (hr/yr))]
/ 2,000 lb/ton

Equipment Leaks Emissions Calculations

Unit Number: F1
Description: Valves, Connectors, Seals & Open-Ended Lines (During Normal Operation)

Steady-State Emission Rates

Equipment	Number of Components, # of sources	Emission Factors, kg/hr/source	Emission Factors, lb/hr/source	Uncontrolled TOC Emission Rates, pph	tpy
Valves	3176	0.0045	0.0099	31.44	101.79
Connectors	3517	0.0002	0.0004	1.55	5.01
Pump Seals	118	0.0024	0.0053	0.62	2.02
Compressor Seals	15	0.0088	0.0194	0.29	0.94
Pressure Relief Valves	229	0.0088	0.0194	4.43	14.35
Open-Ended Lines	1264	0.0020	0.0044	5.56	18.01
Total				**43.90**	**142.12**

Number of components are provided by WFC
Emission factors taken from the EPA "1995 Protocol for Equipment Leak Emission Estimates"
Emission factors (lb/hr/source) = Emission factors (kg/hr/source) x 2.2 lb/kg
Uncontrolled TOC Emission Rates (pph) = lb/hr/source x # of sources
Uncontrolled TOC Emission Rates (tpy) = Uncontrolled TOC Emission Rates (pph) x 6,475 hr/yr / 2,000 lb/ton

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of TOC, %	Uncontrolled Emission Rates, pph	tpy
Carbon dioxide	10.5444	44.010				
Hydrogen sulfide	0.0000	34.070				
Nitrogen	0.0980	28.013				
Methane	88.1097	16.043	1413.544	96.991		
Ethane	0.9434	30.070	28.368	1.946		
Propane	0.2067	44.097	9.115	0.625	2.75E-01	8.89E-01
Isobutane	0.0340	58.123	1.976	0.136	5.95E-02	1.93E-01
n-Butane	0.0335	58.123	1.947	0.134	5.86E-02	1.90E-01
Isopentane	0.0108	72.150	0.779	0.053	2.35E-02	7.60E-02
n-Pentane	0.0066	72.150	0.476	0.033	1.43E-02	4.64E-02
Cyclopentane	0.0000	70.134	0.000	0.000	0.00E+00	0.00E+00
n-Hexane	0.0019	86.177	0.164	0.011	4.93E-03	1.60E-02
Cyclohexane	0.0013	84.161	0.109	0.008	3.30E-03	1.07E-02
Other hexanes	0.0041	86.177	0.353	0.024	1.06E-02	3.45E-02
Heptanes	0.0025	100.204	0.251	0.017	7.55E-03	2.44E-02
Methylcyclohexane	0.0014	98.188	0.137	0.009	4.14E-03	1.34E-02
2,2,4-Trimethylpentane	0.0003	114.231	0.034	0.002	1.03E-03	3.34E-03
Benzene	0.0003	78.114	0.023	0.002	7.06E-04	2.29E-03
Toluene	0.0001	92.141	0.009	0.001	2.78E-04	8.99E-04
Ethylbenzene	0.0001	106.167	0.011	0.001	3.20E-04	1.04E-03
Xylenes	0.0000	106.167	0.000	0.000	0.00E+00	0.00E+00
C8+ Heavies	0.0009	114.231	0.103	0.007	3.10E-03	1.00E-02
Total	100.0000		1457.400			
Total VOC				1.063	4.67E-01	1.51

Gas stream composition obtained from Milagro (Plant Inlet) extended gas analysis dated 02/02/2016
Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Weight Percent of TOC (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Uncontrolled Emission Rates (pph) = Total Uncontrolled TOC Emission Rate (pph) x (% / 100)
Uncontrolled Emission Rates (tpy) = Total Uncontrolled TOC Emission Rate (tpy) x (% / 100)

Equipment Leaks Emissions Calculations

Unit Number: F1
Description: Valves, Connectors, Seals & Open-Ended Lines (During Ignacio Plant Outages)

Steady-State Emission Rates

Equipment	Number of Components, # of sources	Emission Factors, kg/hr/source	Emission Factors, lb/hr/source	Uncontrolled TOC Emission Rates, pph	tpy
Valves	3176	0.0045	0.0099	31.44	35.92
Connectors	3517	0.0002	0.0004	1.55	1.77
Pump Seals	118	0.0024	0.0053	0.62	0.71
Compressor Seals	15	0.0088	0.0194	0.29	0.33
Pressure Relief Valves	229	0.0088	0.0194	4.43	5.07
Open-Ended Lines	1264	0.0020	0.0044	5.56	6.35
Total				**43.90**	**50.15**

Number of components are provided by WFC
Emission factors taken from the EPA "1995 Protocol for Equipment Leak Emission Estimates"
Emission factors (lb/hr/source) = Emission factors (kg/hr/source) x 2.2 lb/kg
Uncontrolled TOC Emission Rates (pph) = lb/hr/source x # of sources
Uncontrolled TOC Emission Rates (tpy) = Uncontrolled TOC Emission Rates (pph) x 2,285 hr/yr / 2,000 lb/ton

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of TOC, %	Uncontrolled Emission Rates, pph	tpy
Carbon dioxide	8.8820	44.010				
Hydrogen sulfide	0.0000	34.070				
Nitrogen	0.0720	28.013				
Methane	87.9330	16.043	1410.709	92.057		
Ethane	1.9710	30.070	59.268	3.868		
Propane	0.6540	44.097	28.839	1.882	8.26E-01	9.44E-01
Isobutane	0.1260	58.123	7.323	0.478	2.10E-01	2.40E-01
n-Butane	0.1560	58.123	9.067	0.592	2.60E-01	2.97E-01
Isopentane	0.0600	72.150	4.329	0.282	1.24E-01	1.42E-01
n-Pentane	0.0410	72.150	2.958	0.193	8.47E-02	9.68E-02
Cyclopentane	0.0000	70.134	0.000	0.000	0.00E+00	0.00E+00
n-Hexane	0.0140	86.177	1.206	0.079	3.46E-02	3.95E-02
Cyclohexane	0.0080	84.161	0.673	0.044	1.93E-02	2.20E-02
Other hexanes	0.0300	86.177	2.585	0.169	7.41E-02	8.46E-02
Heptanes	0.0270	100.204	2.706	0.177	7.75E-02	8.85E-02
Methylcyclohexane	0.0000	98.188	0.000	0.000	0.00E+00	0.00E+00
2,2,4-Trimethylpentane	0.0000	114.231	0.000	0.000	0.00E+00	0.00E+00
Benzene	0.0030	78.114	0.234	0.015	6.71E-03	7.67E-03
Toluene	0.0040	92.141	0.369	0.024	1.06E-02	1.21E-02
Ethylbenzene	0.0000	106.167	0.000	0.000	0.00E+00	0.00E+00
Xylenes	0.0020	106.167	0.212	0.014	6.08E-03	6.95E-03
C8+ Heavies	0.0170	114.231	1.942	0.127	5.56E-02	6.36E-02
Total	100.0000		1532.422			
Total VOC				4.075	1.79	2.04

Gas stream composition obtained from Milagro (Plant Inlet) extended gas analysis dated 07/14/2016
Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Weight Percent of TOC (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Uncontrolled Emission Rates (pph) = Total Uncontrolled TOC Emission Rate (pph) x (% / 100)
Uncontrolled Emission Rates (tpy) = Total Uncontrolled TOC Emission Rate (tpy) x (% / 100)

SSM Blowdown Emissions Calculations

Unit Number: SSM1
Description: Treating Trains SSM

Throughput

38,731,000	scf/yr	Annual gas loss	
6,475	hr/yr	Minimum normal operating time	Calculated on Amine Units tab
2,285	hr/yr	Maximum operating time during Ignacio plant outages	Calculated on Amine Units tab
28,626,440	scf/yr	Annual gas loss during normal operations	scf/yr x (hr/yr / 8,760 hr/yr)
10,104,560	scf/yr	Annual gas loss during Ignacio plant outages	scf/yr x (hr/yr / 8,760 hr/yr)

Emission Rates

Pollutants	Emission Factors		Uncontrolled Emission Rates		
	Normal, lb/scf	Igancio Plant Outages, lb/scf	Normal, tpy	Ignacio Plant Outages, tpy	Total, tpy
VOC	4.081E-04	1.644E-03	5.84	8.31	14.15
2,2,4-Trimethylpentane	7.926E-07	0.000E+00	1.13E-02	0.00E+00	1.13E-02
Benzene	6.178E-07	6.178E-06	8.84E-03	3.12E-02	4.01E-02
Ethylbenzene	2.799E-07	0.000E+00	4.01E-03	0.00E+00	4.01E-03
n-Hexane	4.316E-06	3.181E-05	6.18E-02	1.61E-01	2.22E-01
Toluene	2.429E-07	9.717E-06	3.48E-03	4.91E-02	5.26E-02
Xylene	0.000E+00	5.598E-06	0.00E+00	2.83E-02	2.83E-02

Emission factors calculated from gas compositions (see tables below)
Normal and Ignacio Plant Outages Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton
Total Uncontrolled Emission Rates (tpy) = Normal Uncontrolled Emission Rates (tpy)
+ Ignacio Plant Outages Uncontrolled Emission Rates (tpy)

Gas Composition (During Normal Operations)

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	10.5444	44.01	1.223E-02
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.0980	28.01	7.237E-05
Methane	88.1097	16.04	3.726E-02
Ethane	0.9434	30.07	7.479E-04
Propane	0.2067	44.09	2.403E-04
Isobutane	0.0340	58.12	5.210E-05
n-Butane	0.0335	58.12	5.133E-05
Isopentane	0.0108	72.15	2.054E-05
n-Pentane	0.0066	72.15	1.255E-05
Cyclopentane	0.0000	70.14	0.000E+00
n-Hexane	0.0019	86.17	4.316E-06
Cyclohexane	0.0013	84.16	2.884E-06
Other hexanes	0.0041	86.18	9.316E-06
Heptanes	0.0025	100.20	6.604E-06
Methylcyclohexane	0.0014	98.19	3.624E-06
2,2,4-Trimethylpentane	0.0003	100.21	7.926E-07
Benzene	0.0003	78.11	6.178E-07
Toluene	0.0001	92.14	2.429E-07
Ethylbenzene	0.0001	106.17	2.799E-07
Xylenes	0.0000	106.17	0.000E+00
C8+ Heavies	0.0009	110.00	2.610E-06
Total	100.0000		
Total VOC			4.081E-04

Gas stream composition obtained from Milagro (Plant Inlet) extended gas analysis dated 02/02/2016
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.3 scf/lb-mole

SSM Blowdown Emissions Calculations

Unit Number: SSM1
Description: Treating Trains SSM

Gas Composition (During Ignacio Plant Outages)

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	8.8820	44.01	1.031E-02
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.0720	28.01	5.317E-05
Methane	87.9330	16.04	3.719E-02
Ethane	1.9710	30.07	1.563E-03
Propane	0.6540	44.09	7.602E-04
Isobutane	0.1260	58.12	1.931E-04
n-Butane	0.1560	58.12	2.390E-04
Isopentane	0.0600	72.15	1.141E-04
n-Pentane	0.0410	72.15	7.799E-05
Cyclopentane	0.0000	70.14	0.000E+00
n-Hexane	0.0140	86.17	3.181E-05
Cyclohexane	0.0080	84.16	1.775E-05
Other hexanes	0.0300	86.18	6.816E-05
Heptanes	0.0270	100.20	7.133E-05
Methylcyclohexane	0.0000	98.19	0.000E+00
2,2,4-Trimethylpentane	0.0000	100.21	0.000E+00
Benzene	0.0030	78.11	6.178E-06
Toluene	0.0040	92.14	9.717E-06
Ethylbenzene	0.0000	106.17	0.000E+00
Xylenes	0.0020	106.17	5.598E-06
C8+ Heavies	0.0170	110.00	4.930E-05
Total	100.0000		
Total VOC			1.644E-03

Gas stream composition obtained from Milagro (Plant Inlet) extended gas analysis dated 07/14/2016
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.3 scf/lb-mole

Unit Number: SSM2
Description: Dehydator Venting SSM

Throughput

10,211,887	scf/yr	Calculated based on actual scf/yr * (hr/yr / 8760 hr/yr)
334	hr/yr	Hours required to reach 5 tpy VOC
267,793,200	scf/yr	Annual gas loss during normal operations

Component	Units 9b & 10b lb/hr	Unit 11b lb/hr	Unit 14[1] lb/hr	Unit 15 lb/hr	Combined tpy
Methane	4.85	4.56	16.77	4.16	5.07
Ethane	0.98	0.92	1.03	0.83	0.63
Propane	0.86	0.83	0.54	0.70	0.49
Isobutane	0.34	0.32	0.16	0.27	0.18
n-Butane	0.49	0.47	0.21	0.39	0.26
Isopentane	0.20	0.21	0.083	0.17	0.11
n-Pentane	0.18	0.18	0.066	0.14	0.094
n-Hexane	0.13	0.12	0.04	0.10	0.066
Cyclohexane	0.34	0.39	0.11	0.32	0.19
Other Hexanes	0.22	0.18	0.065	0.16	0.10
Heptanes	0.35	0.34	0.090	0.30	0.18
Methylcyclohexane	0.50	0.53	0.18	0.43	0.27
2,2,4-Trimethylpentane	0.026	0.021	0.013	0.018	0.013
Benzene	0.95	0.19	0.19	0.81	0.36
Toluene	0.32	0.64	0.11	0.27	0.22
Ethylbenzene	0	0.46	0.47	0	0.15
Xylenes	3.60	0.60	1.29	5.09	1.77
C8+ Heavies	1.51	0.87	0.024	0.75	0.53
Total VOC Emissions	10.01	6.35	3.64	9.93	5.00
Total HAP Emissions	5.02	2.03	2.11	6.30	2.58

[1] Unit 14 does not have a flash tank and only a regenerator.

Malfunction Emissions Data and Calculations

Unit Number: M1
Description: Malfunctions

Emission Rates

Pollutants	Weight Percents, %	Uncontrolled Emission Rates, tpy
VOC		10.00
2,2,4-Trimethylpentane	4.820E-02	4.82E-03
Benzene	3.757E-01	3.76E-02
Ethylbenzene	1.702E-02	1.70E-03
n-Hexane	1.934E+00	1.93E-01
Toluene	5.909E-01	5.91E-02
Xylene	3.405E-01	3.40E-02

Weight percents calculated from gas compositions (see tables below). For each pollutant, the highest available weight percent was selected (from either normal operation or during Ignacio plant outages)
Uncontrolled Emission Rates (tpy) = VOC Emission Rate (tpy) x (% / 100)

Gas Composition (During Normal Operation)

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent, %
Carbon dioxide	10.5444	44.01		
Hydrogen sulfide	0.0000	34.07		
Nitrogen	0.0980	28.01		
Methane	88.1097	16.04		
Ethane	0.9434	30.07		
Propane	0.2067	44.09	0.0911	1.461E+01
Isobutane	0.0340	58.12	0.0198	3.168E+00
n-Butane	0.0335	58.12	0.0195	3.122E+00
Isopentane	0.0108	72.15	0.0078	1.249E+00
n-Pentane	0.0066	72.15	0.0048	7.635E-01
Cyclopentane	0.0000	70.14	0.0000	0.000E+00
n-Hexane	0.0019	86.17	0.0016	2.625E-01
Cyclohexane	0.0013	84.16	0.0011	1.754E-01
Other hexanes	0.0041	86.18	0.0035	5.665E-01
Heptanes	0.0025	100.20	0.0025	4.017E-01
Methylcyclohexane	0.0014	98.19	0.0014	2.204E-01
2,2,4-Trimethylpentane	0.0003	100.21	0.0003	4.820E-02
Benzene	0.0003	78.11	0.0002	3.757E-02
Toluene	0.0001	92.14	0.0001	1.477E-02
Ethylbenzene	0.0001	106.17	0.0001	1.702E-02
Xylenes	0.0000	106.17	0.0000	0.000E+00
C8+ Heavies	0.0009	110.00	0.0010	1.587E-01
Total	100.0000			
Total VOC			0.1548	

Gas stream composition obtained from Milagro (Plant Inlet) extended gas analysis dated 02/02/2016
Component Weights (lb/lb-mole) = (% / 100) x Molecular Weights (lb/lb-mole)
Weight Percents (%) = 100 x Component Weights (lb/lb-mole) / Total VOC Weight (lb/lb-mole)

Malfunction Emissions Data and Calculations

Unit Number: M1
Description: Malfunctions

Gas Composition (During Ignacio Plant Outages)

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent, %
Carbon dioxide	8.8820	44.01		
Hydrogen sulfide	0.0000	34.07		
Nitrogen	0.0720	28.01		
Methane	87.9330	16.04		
Ethane	1.9710	30.07		
Propane	0.6540	44.09	0.2883	4.623E+01
Isobutane	0.1260	58.12	0.0732	1.174E+01
n-Butane	0.1560	58.12	0.0907	1.454E+01
Isopentane	0.0600	72.15	0.0433	6.941E+00
n-Pentane	0.0410	72.15	0.0296	4.743E+00
Cyclopentane	0.0000	70.14	0.0000	0.000E+00
n-Hexane	0.0140	86.17	0.0121	1.934E+00
Cyclohexane	0.0080	84.16	0.0067	1.080E+00
Other hexanes	0.0300	86.18	0.0259	4.145E+00
Heptanes	0.0270	100.20	0.0271	4.338E+00
Methylcyclohexane	0.0000	98.19	0.0000	0.000E+00
2,2,4-Trimethylpentane	0.0000	100.21	0.0000	0.000E+00
Benzene	0.0030	78.11	0.0023	3.757E-01
Toluene	0.0040	92.14	0.0037	5.909E-01
Ethylbenzene	0.0000	106.17	0.0000	0.000E+00
Xylenes	0.0020	106.17	0.0021	3.405E-01
C8+ Heavies	0.0170	110.00	0.0187	2.998E+00
Total	100.0000			
Total VOC			0.6237	

Gas stream composition obtained from Milagro (Plant Inlet) extended gas analysis dated 07/14/2016
Component Weights (lb/lb-mole) = (% / 100) x Molecular Weights (lb/lb-mole)
Weight Percents (%) = 100 x Component Weights (lb/lb-mole) / Total VOC Weight (lb/lb-mole)

Storage Tank Emissions Calculations

Unit Number: T33
Description: Produced Water Tank

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

Throughput

120	bbl/turnover	Tank capacity	
125	turnover/yr	Turnovers per year	
15,000	bbl/yr	Annual liquid throughput	bbl/turnover x turnover/yr

Emission Rates

Pollutant	Emission Factor, lb/bbl	Uncontrolled, Emission Rate, tpy
VOC	0.262	1.97
Benzene	0.007	5.25E-02
Ethylbenzene	0.0007	5.25E-03
n-Hexane	0.022	1.65E-01
Toluene	0.009	6.75E-02
Xylene	0.006	4.50E-02

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

Heater Exhaust Emissions Calculations

Unit Number: 21-29
Description: Warehouse Heaters (2X), Maintenance Heaters (4X), Lab Heater (1X), Office Heater (1X), and Water Heater (1X)

Note: The fuel consumption and emisson rate data on this worksheet applies to the combination of all heaters listed above

Fuel Consumption

0.74	MMBtu/hr	Capacity	Mfg. data
822.22	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	
6,482.40	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
7.20	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
NOX	100	8.22E-02	3.60E-01
CO	84	6.91E-02	3.03E-01
VOC	5.5	4.52E-03	1.98E-02
SO2	0.6	4.93E-04	2.16E-03
TSP	7.6	6.25E-03	2.74E-02
PM10	7.6	6.25E-03	2.74E-02
PM2.5	7.6	6.25E-03	2.74E-02
Lead	5.00E-04	4.11E-07	1.80E-06

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2, 07/98
Uncontrolled Emission Rates (pph) = lb/MMscf x (scf/hr / 1,000,000)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Heater Exhaust Emissions Calculations

Unit Number: 30
Description: Slug Catcher Heater

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

Fuel Consumption

0.012	MMBtu/hr	Capacity	Mfg. data
13.33	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	
105.12	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
0.12	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
NOX	100	1.33E-03	5.84E-03
CO	84	1.12E-03	4.91E-03
VOC	5.5	7.33E-05	3.21E-04
SO2	0.6	8.00E-06	3.50E-05
TSP	7.6	1.01E-04	4.44E-04
PM10	7.6	1.01E-04	4.44E-04
PM2.5	7.6	1.01E-04	4.44E-04
Lead	5.00E-04	6.67E-09	2.92E-08

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2, 07/98
Uncontrolled Emission Rates (pph) = lb/MMscf x (scf/hr / 1,000,000)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Heater Exhaust Emissions Calculations

Unit Number: 30-b
Description: Slug Catcher Heater

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

Fuel Consumption

0.012	MMBtu/hr	Capacity	Mfg. data
13.33	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	
105.12	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
0.12	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
NOX	100	1.33E-03	5.84E-03
CO	84	1.12E-03	4.91E-03
VOC	5.5	7.33E-05	3.21E-04
SO2	0.6	8.00E-06	3.50E-05
TSP	7.6	1.01E-04	4.44E-04
PM10	7.6	1.01E-04	4.44E-04
PM2.5	7.6	1.01E-04	4.44E-04
Lead	5.00E-04	6.67E-09	2.92E-08

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2, 07/98
Uncontrolled Emission Rates (pph) = lb/MMscf x (scf/hr / 1,000,000)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

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)

Green House Gas Emissions Data and Calculations

Sources	Facility Total Emissions				
	CO2, tpy	CH4, tpy	N2O, tpy	GHG, tpy	CO2e, tpy
Engine & Turbine Exhaust Emissions	354,738.86	6.69E+00	6.69E-01	354,746.21	355,105.23
SSM Emissions	236.93	721.56	--	958.49	18,275.99
Heater & Boiler Exhaust Emissions	217,569.30	4.10	4.10E-01	217,573.81	217,794.01
Dehydrator Emissions	1.55	4.40	--	5.95	111.64
Reboiler Exhaust Emissions	4,686.79	8.83E-02	8.83E-03	4,686.89	4,691.63
Acid Gas Removal Emissions	914,631.20	546.50	--	915,177.70	928,293.68
Equipment Leak Emissions	28.25	86.16	--	114.41	2,182.34
Malfunction Emissions	299.81	913.05	--	1,212.85	23,126.04
Total	1,492,192.68	2,282.55	1.09E+00	1,494,476.32	1,549,580.56

Engine & Turbine Exhaust Emissions

Unit Numbers	Description	Emission Factors			Emission Rates		
		CO2, kg/MMBtu	CH4, kg/MMBtu	N2O, kg/MMBtu	CO2, tpy	CH4, tpy	N2O, tpy
7A & 7B	Turbine	53.06	1.00E-03	1.00E-04	177,369.43	3.34	0.33
8A & 8B	Turbine	53.06	1.00E-03	1.00E-04	177,369.43	3.34	0.33
	Total				354,738.86	6.69	0.67

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

Unit Numbers	Description	Fuel Types	Operating Times, hr/yr	LHV Design Heat Rates, MMBtu/hr	HHV	
					Design Heat Rates, MMBtu/hr	Fuel Usages, MMBtu/yr
7A & 7B	Turbine	Nat. Gas	8,322	328.65	365.17	3,038,917.00
8A & 8B	Turbine	Nat. Gas	8,322	328.65	365.17	3,038,917.00

The fuel type and operating time are provided Harvest Midstream.
HHV Design Heat Rates (MMBtu/hr) = LHV Design Heat Rate (MMBtu/hr) / 0.9 LHV/HHV
HHV Fuel Usages (MMBtu/yr) = HHV Design Heat Rates (MMBtu/hr) x hr/yr

SSM Emissions

Unit Numbers	Description	Total Gas Losses, scf/yr	CO2 Emission Factors, lb/scf	CH4 Emission Factors, lb/scf	Emission Rates	
					CO2, tpy	CH4, tpy
SSM1	SSM	38,731,000	0.0122	0.0373	236.93	721.56

The annual blowdown volume is calculated from data provided by Harvest Midstream.
The CO2 and CH4 emission factors are calculated from the facility extended gas analysis. The values are taken from the gas stream for normal operation (rather than during Igncaio plant outages), since this produces the highest emission rates and since the operating time for Ignacio plant outages is variable and unknown
Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Green House Gas Emissions Data and Calculations

Heater & Boiler Exhaust Emissions

Unit Numbers	Description	Emission Factors			Emission Rates		
		CO2, kg/MMBtu	CH4, kg/MMBtu	N2O, kg/MMBtu	CO2, tpy	CH4, tpy	N2O, tpy
1	Holman Boiler	53.06	1.00E-03	1.00E-04	78,385.85	1.48	1.48E-01
20	Rentech Boiler	53.06	1.00E-03	1.00E-04	139,183.45	2.62	2.62E-01
	Total				217,569.30	4.10	4.10E-01

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

Unit Numbers	Description	Fuel Types	Operating Times, hr/yr	LHV Design Heat Rates, MMBtu/hr	HHV	
					Design Heat Rates, MMBtu/hr	Fuel Usages, MMBtu/yr
1	Holman Boiler	Nat. Gas	8,760	138.0	153.311	1,343,005
20	Rentech Boiler	Nat. Gas	8,760	245.0	272.222	2,384,667

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

Dehydrator Emissions (SSM2)

Unit Numbers	Description	Emission Rates	
		CO2, tpy	CH4, tpy
9b	Dehydrator (145 MMSCFD)	0.00E+00	6.07E-01
10b	Dehydrator (145 MMSCFD)	0.00E+00	6.07E-01
11b	Dehydrator (145 MMSCFD)	1.53	5.70E-01
14	Dehydrator (90 MMSCFD)	0.00E+00	2.10
15	Dehydrator (120 MMSCFD)	1.83E-02	5.20E-01
	Total	1.55	4.40

The emission rates are taken from the GRI-GLYCalc output file

Reboiler Exhaust Emissions

Unit Numbers	Description	Emission Factors			Emission Rates		
		CO2, kg/MMBtu	CH4, kg/MMBtu	N2O, kg/MMBtu	CO2, tpy	CH4, tpy	N2O, tpy
9a	Reboiler (145 MMSCFD)	53.06	1.00E-03	1.00E-04	1704.29	3.21E-02	3.21E-03
10a	Reboiler (145 MMSCFD)	53.06	1.00E-03	1.00E-04	1278.22	2.41E-02	2.41E-03
11a	Reboiler (145 MMSCFD)	53.06	1.00E-03	1.00E-04	1704.29	3.21E-02	3.21E-03
	Total				4686.79	8.83E-02	8.83E-03

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

Unit Numbers	Description	Fuel Types	Operating Times hr/yr	LHV Design Heat Rates, MMBtu/hr	HHV	
					Design Heat Rates, MMBtu/hr	Fuel Usages, MMBtu/yr
9a	Reboiler (145 MMSCFD)	Nat. Gas	8,760	3.0	3.333	29,200
10a	Reboiler (145 MMSCFD)	Nat. Gas	8,760	2.25	2.500	21,900
11a	Reboiler (145 MMSCFD)	Nat. Gas	8,760	3.0	3.333	29,200

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

Green House Gas Emissions Data and Calculations

Acid Gas Removal Emissions

Unit Numbers	Description	Emission Rates	
		CO2, tpy	CH4, tpy
16a	Amine Unit	208,335.50	128.39
16b	Amine Unit	208,335.50	128.39
17	Amine Unit	208,335.50	128.39
18	Amine Unit	119,032.80	45.11
19	Amine Unit	170,591.90	116.23
	Total	914,631.20	546.50

The emission rates are taken from the AmineCalc output files. The rates are taken from the output files for normal operation (rather than during Ignacio plant outages), since this produces the highest emission rates and since the operating time for Ignacio plant outages is variable and unknown

Equipment Leaks Emissions (Normal Operation)

Unit Numbers	Description	Emission Rates	
		CO2, tpy	CH4, tpy
NA	Valves	20.58	62.78
NA	Connectors	3.20	9.77
NA	Open-Ended Lines	2.10	6.40
NA	Pressure Relief Valves	2.37	7.22
	Total	28.25	86.16

A combination of equations W-31 & W-36 (Subpart W) is used to calculate uncombusted CO2 & CH4 emissions

As the NMED requires CO2 & CH4 emissions rather than CO2e emissions, it is not necessary to include the global warming potential from equation W-36

CO2 Emission Rate (tpy) = # x scf/hr/component x (CO2 Content (mole %) / 100) x hr/yr x CO2 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne

CH4 Emission Rate (tpy) = # x scf/hr/component x (CH4 Content (mole %) / 100) x hr/yr x CH4 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne

Unit Numbers	Description	Number of Components, #	Emission Factors, scf/hr /component	CO2 Contents, mole %	CH4 Contents, mole %	Operating Times, hr/yr	CO2 Density, kg/scf	CH4 Density, kg/scf
NA	Valves	3176	0.121	10.54	88.11	8,760	0.0526	0.0192
NA	Connectors	3517	0.017	10.54	88.11	8,760	0.0526	0.0192
NA	Open-Ended Lines	1264	0.031	10.54	88.11	8,760	0.0526	0.0192
NA	Pressure Relief Valves	229	0.193	10.54	88.11	8,760	0.0526	0.0192

The number of sources are calculated based on the number of compressors and dehydrators at the station (see criteria pollutant and HAP equipment leaks calculations)

The emission factors are taken from Subpart W, Table W-1A (Western U.S. - Gas Service)

The facility CO2 and CH4 contents are taken from the facility extended gas analysis

All the operating time is assigned to normal operation (rather than during Ignacio plant outages), since this produces the highest emission rates and since the operating time for Ignacio plant outages is variable and unknown

The CO2 & CH4 densities are taken from Subpart W, Paragraph 98.233(v)

Green House Gas Emissions Data and Calculations

Malfunction Emissions

Unit Number	Description	Emission Rates		
		VOC, tpy	CO2, tpy	CH4, tpy
M1	Malfunctions	10.00	299.81	913.05

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

Unit Number	Description	Total Component Weight, lb/lb-mole	VOC Component Weight, lb/lb-mole	CO2 Weight % of Total, %	CH4 Weight % of Total, %
M1	Malfunctions	19.24	0.15	24.12	73.46

The total & VOC component weights and CO2 & CH4 weight % of totals are calculated from the facility extended gas analysis. The values are taken from the gas stream for normal operation (rather than during Ignacio plant outages), since this produces the highest emission rates and since the operating time for Ignacio plant outages is variable and unknown

Gas Stream Composition (During Normal Operation)

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of Total, %	Emission Factors, lb/scf
Carbon Dioxide	10.5444	44.01	4.64	24.1204	0.0122
Hydrogen Sulfide	0.0000	34.07	0.00	0.0000	0.0000
Nitrogen	0.0980	28.01	0.03	0.1427	0.0001
Methane	88.1097	16.04	14.13	73.4579	0.0373
Ethane	0.9434	30.07	0.28	1.4745	0.0007
Propane	0.2067	44.09	0.09	0.4737	0.0002
IsoButane	0.0340	58.12	0.02	0.1027	0.0001
Normal Butane	0.0335	58.12	0.02	0.1012	0.0001
IsoPentane	0.0108	72.15	0.01	0.0405	0.0000
Normal Pentane	0.0066	72.15	0.00	0.0248	0.0000
Cyclopentane	0.0000	70.14	0.00	0.0000	0.0000
n-Hexane	0.0019	86.17	0.00	0.0085	0.0000
Cyclohexane	0.0013	84.16	0.00	0.0057	0.0000
Other Hexanes	0.0041	86.18	0.00	0.0184	0.0000
Heptanes	0.0025	100.20	0.00	0.0130	0.0000
Methylcyclohexane	0.0014	98.19	0.00	0.0071	0.0000
2,2,4-Trimethylpentane	0.0003	100.21	0.00	0.0016	0.0000
Benzene	0.0003	78.11	0.00	0.0012	0.0000
Toluene	0.0001	92.14	0.00	0.0005	0.0000
Ethylbenzene	0.0001	106.17	0.00	0.0006	0.0000
Xylenes	0.0000	106.17	0.00	0.0000	0.0000
C8+ heavies	0.0009	110.00	0.00	0.0051	0.0000
Total	100.0000		19.24	100.0000	0.0507
VOC			0.15	--	0.0004

Gas stream composition obtained from Milagro (Plant Inlet) extended gas analysis dated 02/02/2016
Component Weights (lb/lb-mole) = [Mole Percents (%) / 100] x Molecular Weights (lb/lb-mole)
Weight Percent of Total (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Emission Factors (lb/scf) = [Mole Percents (%) / 100] x Molecular Weights (lb/lb-mole) / 379.3 scf/lb-mole

Green House Gas Emissions Data and Calculations

Gas Stream Composition (During Ignacio Plant Outages)

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of Total, %	Emission Factors, lb/scf
Carbon Dioxide	8.8820	44.01	3.91	20.3176	0.0103
Hydrogen Sulfide	0.0000	34.07	0.00	0.0000	0.0000
Nitrogen	0.0720	28.01	0.02	0.1048	0.0001
Methane	87.9330	16.04	14.10	73.3106	0.0372
Ethane	1.9710	30.07	0.59	3.0806	0.0016
Propane	0.6540	44.09	0.29	1.4987	0.0008
IsoButane	0.1260	58.12	0.07	0.3806	0.0002
Normal Butane	0.1560	58.12	0.09	0.4713	0.0002
IsoPentane	0.0600	72.15	0.04	0.2250	0.0001
Normal Pentane	0.0410	72.15	0.03	0.1538	0.0001
Cyclopentane	0.0000	70.14	0.00	0.0000	0.0000
n-Hexane	0.0140	86.17	0.01	0.0627	0.0000
Cyclohexane	0.0080	84.16	0.01	0.0350	0.0000
Other Hexanes	0.0300	86.18	0.03	0.1344	0.0001
Heptanes	0.0270	100.20	0.03	0.1406	0.0001
Methylcyclohexane	0.0000	98.19	0.00	0.0000	0.0000
2,2,4-Trimethylpentane	0.0000	100.21	0.00	0.0000	0.0000
Benzene	0.0030	78.11	0.00	0.0122	0.0000
Toluene	0.0040	92.14	0.00	0.0192	0.0000
Ethylbenzene	0.0000	106.17	0.00	0.0000	0.0000
Xylenes	0.0020	106.17	0.00	0.0110	0.0000
C8+ heavies	0.0170	110.00	0.02	0.0972	0.0000
Total	100.0000		19.25	100.0553	0.0508
VOC			0.62	--	0.0016

Gas stream composition obtained from Milagro (Plant Inlet) extended gas analysis dated 07/14/2016
Component Weights (lb/lb-mole) = [Mole Percents (%) / 100] x Molecular Weights (lb/lb-mole)
Weight Percent of Total (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Emission Factors (lb/scf) = [Mole Percents (%) / 100] x Molecular Weights (lb/lb-mole) / 379.3 scf/lb-mole

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.

Subsection 1 – Documentation used to support calculations of units added or modified in this application.

- Current version of AP-42 located online at: US EPA AP-42 Compilation of Air Emissions Factors
- Specific sections used in this application:
  - Section 1.4 – Natural Gas Combustion (Tables 1.4-2 & 1.4-3)
  - Section 3.1 – Stationary Gas Turbines (Tables 3.1-2a & 3.1-3)
- Boiler manufacturer guarantee (unit 1)
- Rentech boiler manufacturer specification sheet (unit 20)
- GE turbine manufacturer specifications and guarantees (units 7A, 7B, 8A & 8B)
- Solus AP25 safety data sheet (units T20 through T21)
- Cortrol OS5300 safety data sheet (unit T22)
- Steamate HRSG24 safety data sheet (unit T23)

Subsection 2 – Documentation used to support calculations for all other units not affected by this application.

- Current version of AP-42 located online at: US EPA AP-42 Compilation of Air Emissions Factors
- Specific sections used in this application:
  - Section 1.4 – Natural Gas Combustion (Tables 1.4-1 through 1.4-3)
  - Section 3.4 – Large Stationary Diesel and All Stationary Dual-fuel Engines (Tables 3.4-1, 3.4-3 & 3.4-4)
- Rentech boiler manufacturer specification sheet (Unit 20)
- GRI-GLYCalc reports dated 9/29/2016 (Units 9b, 10b, 11b, 14 & 15)
- AmineCalc reports dated 2016 (units 16a, 16b, 17, 18 & 19)
- TANKS 4.0.9d reports dated 10/25/2018 (units T7, T25, T29 & T30)
- Questar inlet gas analysis from Milagro Plant Inlet dated 2/10/2016
- SPL inlet gas analysis from Train #2 inlet gas dated 07/21/2016
- Questar inlet gas analysis from Milagro Plant Train 2 Dehy Gas Company dated 2/10/2016
- Questar inlet gas analysis from Milagro Plant Train 3 Dehy Gas Company dated 2/22/2016
- Questar inlet gas analysis from Milagro Plant Train 4 Dehy Gas Company dated 2/10/2016
- Questar inlet gas analysis from Milagro Plant Train 5 Dehy dated 2/10/2016
- EPA Protocol for Equipment Leak Emissions Estimates, 1995 Table 2-4
- CDPHE Memo on "Oil & Gas Produced Water Tank Batteries Regulatory Definitions and Permitting Guidance"
- TCEQ Emission Factor Determination for Produced Water Storage Tanks (August 2010)
- Diethyllaminoethanol material safety data sheet

Section 7

Subsection 1 – Information Used to Determine Emissions for Units Added or Modified with this Application

For clarity, this Subsection 1 contains information used to determine emissions for units that were either added or modified with this application. (i.e. Units 1, 7A, 7B, 8A, 8B, 20, and T20 through T23). For information pertinent to all other units that were not affected by this application, please refer to Subsection 2.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Table 3.1-2a. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM STATIONARY GAS TURBINES

Emission Factors[a] - Uncontrolled				
Pollutant	Natural Gas-Fired Turbines[b]		Distillate Oil-Fired Turbines[d]	
	(lb/MMBtu)[c] (Fuel Input)	Emission Factor Rating	(lb/MMBtu)[e] (Fuel Input)	Emission Factor Rating
CO_2[f]	110	A	157	A
N_2O	0.003[g]	E	ND	NA
Lead	ND	NA	1.4 E-05	C
SO_2	0.94S[h]	B	1.01S[h]	B
Methane	8.6 E-03	C	ND	NA
VOC	2.1 E-03	D	4.1 E-04[j]	E
TOC[k]	1.1 E-02	B	4.0 E-03[l]	C
PM (condensible)	4.7 E-03[l]	C	7.2 E-03[l]	C
PM (filterable)	1.9 E-03[l]	C	4.3 E-03[l]	C
PM (total)	6.6 E-03[l]	C	1.2 E-02[l]	C

[a] Factors are derived from units operating at high loads (≥80 percent load) only. For information on units operating at other loads, consult the background report for this chapter (Reference 16), available at "www.epa.gov/ttn/chief". ND = No Data, NA = Not Applicable.

[b] SCCs for natural gas-fired turbines include 2-01-002-01, 2-02-002-01 & 03, and 2-03-002-02 & 03.

[c] Emission factors based on an average natural gas heating value (HHV) of 1020 Btu/scf at 60°F. To convert from (lb/MMBtu) to ($lb/10^6$ scf), multiply by 1020. Similarly, these emission factors can be converted to other natural gas heating values.

[d] SCCs for distillate oil-fired turbines are 2-01-001-01, 2-02-001-01, 2-02-001-03, and 2-03-001-02.

[e] Emission factors based on an average distillate oil heating value of 139 MMBtu/10^3 gallons. To convert from (lb/MMBtu) to ($lb/10^3$ gallons), multiply by 139.

[f] Based on 99.5% conversion of fuel carbon to CO_2 for natural gas and 99% conversion of fuel carbon to CO_2 for distillate oil. CO_2 (Natural Gas) [lb/MMBtu] = (0.0036 scf/Btu)(%CON)(C)(D), where %CON = weight percent conversion of fuel carbon to CO_2, C = carbon content of fuel by weight, and D = density of fuel. For natural gas, C is assumed at 75%, and D is assumed at 4.1 E+04 $lb/10^6$scf. For distillate oil, CO_2 (Distillate Oil) [lb/MMBtu] = (26.4 gal/MMBtu) (%CON)(C)(D), where C is assumed at 87%, and the D is assumed at 6.9 lb/gallon.

[g] Emission factor is carried over from the previous revision to AP-42 (Supplement B, October 1996) and is based on limited source tests on a single turbine with water-steam injection (Reference 5).

[h] All sulfur in the fuel is assumed to be converted to SO_2. S = percent sulfur in fuel. Example, if sulfur content in the fuel is 3.4 percent, then S = 3.4. If S is not available, use 3.4 E-03 lb/MMBtu for natural gas turbines, and 3.3 E-02 lb/MMBtu for distillate oil turbines (the equations are more accurate).

[j] VOC emissions are assumed equal to the sum of organic emissions.

[k] Pollutant referenced as THC in the gathered emission tests. It is assumed as TOC, because it is based on EPA Test Method 25A.

[l] Emission factors are based on combustion turbines using water-steam injection.

Table 3.1-3. EMISSION FACTORS FOR HAZARDOUS AIR POLLUTANTS FROM NATURAL GAS-FIRED STATIONARY GAS TURBINES[a]

Emission Factors[b] - Uncontrolled		
Pollutant	Emission Factor (lb/MMBtu)[c]	Emission Factor Rating
1,3-Butadiene[d]	< 4.3 E-07	D
Acetaldehyde	4.0 E-05	C
Acrolein	6.4 E-06	C
Benzene[e]	1.2 E-05	A
Ethylbenzene	3.2 E-05	C
Formaldehyde[f]	7.1 E-04	A
Naphthalene	1.3 E-06	C
PAH	2.2 E-06	C
Propylene Oxide[d]	< 2.9 E-05	D
Toluene	1.3 E-04	C
Xylenes	6.4 E-05	C

[a] SCC for natural gas-fired turbines include 2-01-002-01, 2-02-002-01, 2-02-002-03, 2-03-002-02, and 2-03-002-03. Hazardous Air Pollutants as defined in Section 112 (b) of the *Clean Air Act*.

[b] Factors are derived from units operating at high loads (≥80 percent load) only. For information on units operating at other loads, consult the background report for this chapter (Reference 16), available at "www.epa.gov/ttn/chief".

[c] Emission factors based on an average natural gas heating value (HHV) of 1020 Btu/scf at 60°F. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by 1020. These emission factors can be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this heating value.

[d] Compound was not detected. The presented emission value is based on one-half of the detection limit.

[e] Benzene with SCONOX catalyst is 9.1 E-07, rating of D.

[f] Formaldehyde with SCONOX catalyst is 2.0 E-05, rating of D.

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Proposal		Page:	1 of	8
To:	**Harvest Midstream**	Date:	06/07/24	
	Nate Work / Brian Farley	Quote#:	240530R1	
	cc:	CU#:	Harvest Midstream Milagro Boiler 1 Burner	
		Engineer:	Brian Mohart	

Project: Boiler 1 Burner Replacement
Quote #: 240530R1

Item #1 BLR 1 Burner Replacement

Locke AMI will provide all engineering, demo of existing equipment, provide new equipment, installation of new equipment, and commissioning for the following:

- BLR 1 Zeeco Low NOx GB 30 ppm burner
  - Existing gas trains will be reused.
  - Burner selection based on 14% FGR to achieve 30 ppm NOx.
  - One retractable direct spark high energy Class 3 special igniter
  - Physical air flow model – the flow model would determine if modifications to burner/windbox baffles would be required.
  - Two Zeeco Proflame UV scanners with ball swivel mounts. 5 scfm at 5" w.c. above furnace pressure is required for purging/cooling of the scanner.
  - Burner front wall refractory – the existing burner front wall would be demolished and replaced to match the new burner.
  - Gas piping will be reconfigured to connect to the new burner inlet.
  - Ductwork modifications – a new fresh air damper, transition ducts, new rain hood, supports and foundations are included. Damper by Fox Damper with Kinetrol pneumatic actuator. Actuator to fail in position on loss of air or electric signal.
  - Replacement flue gas recirculation ductwork with fabric expansion joint, modulating damper and supports. Damper by Fox Damper with Jflow Controls pneumatic actuator. Actuator to fail in position on loss of air or electric signal.
  - Steam coil air heater (SCAH) package with coil, control valves, temperature transmitters, steam traps, etc. Steam coil by HICO to utilize carbon steel tubing. The coil will be designed to ASME Section VIII-1 and be sized to use 60 psig steam at 340-370 °F with a Maxumim Allowable Working Pressure of 75 psig. The control valve will be Fisher and the temperature transmitter will be Rosemount.
  - Steam piping from a tie-in point near the boiler to the new SCAH and condensate piping out of the SCAH over to a tie-in point near the boiler.
  - BMS / CCS control logic – existing hardware, cabinets, VFD's, etc. will be re-used. Locke AMI will provide new software for the BMS & CCS. The updated system will match the new equipment provided and meet NFPA 85 requirements. A new data file for communication to and remote control thru the DCS is included.

Emissions Guarantee:

Locke AMI can guarantee the following emissions for boiler #1:

MINIMUM GAS PERFORMANCE GUARANTEES FOR BOILER #1	
FUEL DESIGNATION	NATURAL GAS
BOILER, #	#1
NOx, ppmv (lb/mmBtu)	30 (.036)
CO, ppmv (lb/mmBtu)	100 (.073)
GUARANTEED VOC, LB/MMBtu	0.004
GUARANTEED PM, LB/MMBtu	0.005

1. Locke AMI does not guarantee SOx emissions since these are stoichiometrically related to sulfur compounds in the fuels and the equilibrium conditions in the furnace.
2. Locke AMI takes exception to providing NOx emission guarantees for any fuel gas compositions containing ammonia (NH_3) and hydrogen cyanide (HCN).
3. Emissions guarantees stated above encompass measured values rounded to the significant digit provided.
4. The emissions guarantees are for operation at the specific conditions stated.
5. Locke AMI requires Boiler 1 top drum seals to be air-tight.
6. All emissions guarantees are based on 3 mm deposition maximum on all waterwall surfaces. Any further thickness on waterwalls will increase furnace temperatures, thus NOx will increase.
7. Locke AMI has not provided an opacity guarantee.
8. Emissions stated above are applicable for boiler loading from 25% to 100% of MCR, unless noted otherwise above, at steady state conditions.
9. All ppm values stated above (where applicable) are corrected to 3.0% O_2 dry basis.
10. The burner MCR excess air levels stated herein are expected operating levels and may require slight adjustment during commissioning to optimize combustion and achieve performance criteria stated herein (i.e. NOx and/or CO emissions).
11. All emissions provided above are additive to any inlet conditions.
12. The above NOx emission levels are based on the ability of the existing boiler equipment to control excess O_2 levels when firing gas at:
    a. The excess air/O_2 levels stated in the technical section of this proposal from 50% to 100% load.
    b. Excess O_2 levels between those stated in the Technical Section of this proposal and not more than 5% O_2 from 25% to 50% load.

New Design Information

A. Burner Gas Performance Data

BURNER GAS PERFORMANCE DATA FOR BOILER #1	
TYPE OF BURNER	30 PPM GB
FUEL DESIGNATION	NATURAL GAS
TOTAL HEAT INPUT, MMBTU/HR (HHV)	137.98
REGISTER DRAFT LOSS, " W.C.	9.2
FLAME LENGTH, FT	14.9
FLAME WIDTH, FT	4.2
BURNER TURNDOWN	10:1
EXCESS AIR	14%
COMBUSTION AIR TEMPERATURE, °F	100
COMBUSTION AIR FLOW, PPH	114,430
TOTAL FUEL FLOW PER BOILER, PPH	5,974
TOTAL FUEL FLOW PER BOILER, SCFH	131,740
FUEL PRESSURE AVAILABLE AT BURNER, PSIG	15.0
% FGR	14%
FGR FLOW, PPH	16,857

B. Site Data

SITE DATA	
SITE LOCATION	BLOOMFIELD, NM
SITE ELEVATION, FASL	5,700
INSTALLATION OF BOILERS #1	INDOOR
INSTALLATION OF BOILERS #5	OUTDOOR
AMBIENT AIR TEMPERATURE, °F	100
ELECTRICAL SUPPLY POWER (ENCLOSURE)	120VAC, 1PHASE, 60Hz
ELECTRICAL I/O POWER (FIELD DEVICES)	24VDC
ELECTRICAL POWER (MOTORS)	460VAC, 3PHASE, 60Hz
BURNER FRONT AREA CLASSIFICATION	NON-HAZARDOUS
GENERAL AREA CLASSIFICATION	NON-HAZARDOUS
JUNCTION BOX ENCLOSURE RATING	NEMA 4X
INSTRUMENT AIR PRESSURE, PSIG	80

C. Fuel Analysis - Gaseous Fuel Constituents

FUEL ANALYSIS		**% BY VOLUME**
	CONSTITUENT	**NATURAL GAS**
CH4	METHANE	95.00%
C2H6	ETHANE	2.00%
C3H8	PROPANE	2.50%
N2	NITROGEN	0.50%
	SG vs. Air @ STP	0.59
	HHV - Btu/SCF	1,057

- Flame scanner swivel mount for ease of "sighting" of flames, mounted on the burner frontplate

- Gas-electric ignitor, operates only through the cycle to light-off the main fuel, is fixed in the burner and terminates behind the diffuser; retraction mechanisms and associated limit switches are not required, thus minimizing boiler front components and reducing maintenance costs

- Heavy gauge construction of all components for ruggedness and durability during installation and servicing

BURNER DESIGN BASIS & SPECIFICATIONS

A. Burner Design Basis

Boiler Data	
Manufacturer	Rentech
Type	D
Design Steam Flow	186,500 lb/hr
Steam Pressure	400 psig (superheated)
Steam Temperature	575 deg F
Furnace Dimensions:	
Depth	38.33 ft
Width	6.75 ft
Height	11.2 ft
Furnace Operating Pressure including FGR at MCR	20 in wg
Combustion Air Temperature	- 3 to 100 deg F
Flue Gas Temperature	276 deg F
Fuel Data	
Fuel Gas	
Type	Natural
High Heat Value	1,000 Btu/scf (approx.)
Pressure Available	72 psig
Pressure Required at JZHC/Coen interface	30 psig (regulated by others)

Rentech Boiler Systems, Inc.
Abilene Office: 5025A E. Business 20 • Abilene, TX 79601 • Phone: 325-672-3400 • Fax: 325-672-9996
Lincoln Office: 145 North 46th Street • Lincoln, NE 68503 • Phone: 325-672-3400 Fax: 402-474-4243

Burner Management System Design

Insurance Guidelines	NFPA85 for single burner
Type of Operation	Automatic, non-recycling

Miscellaneous Data

Burner Location	Outdoors, Class 1 Division 2 Group D
Plant Elevation	5,700 ft asl
Power Supply Available	120V/1Ph/60Hz
Instrument Air Available	80 psig
Valve Train Construction	NFPA 54
Surface Preparation and Painting	Manufacturer standard
Quality Control	Manufacturer standard

B. Burner Specifications

Number of Burners per Boiler	One (1)
Gas Firing per Burner	
Heat Input	245 mmbtu/hr
Turndown	10 to 1
Pressure at Burner	10 psig
Excess Air at MCR	15%
Recycle Flue Gas Rate at MCR	14%
Draft Loss at MCR	9.1 in wg
Type	ECOjet

C. Gas Electric Ignitor Specifications

Number of Ignitors per Boiler	One (1)
Gas Firing	
Heat Input	1 mmbtu/hr
Pressure at Burner	1 psig (approx)
Type	Class 3

JZHC/COEN'S SCOPE OF SUPPLY

Engineering Services

JZHC/Coen will provide complete engineering and design for all JZHC/Coen furnished equipment and materials specified in Section 3.D., including a comprehensive Instruction Manual complete with

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1- "Z" purge

1- Air conditioning/heating unit with thermostat, as required

1- Internal lamp with manual switch

1- Allen Bradley programmable logic system for burner management system relay and timing logic, consisting of the ControlLogix processor, Ethernet communications, EEPROM memory back up, power supply, and discreet input and output modules

1- Allen Bradley programmable logic system for combustion, FGR and feedwater control, consisting of the ControlLogix processor, Ethernet communications, EEPROM memory back up, power supply, discreet input module and analog input and output modules

1- External watchdog timer

1- Allen Bradley PanelView Plus 1250 Touchscreen Operator Interface

1- Multi-port Ethernet switch

1- Alarm horn

4- Drum level relays

1- "System Reset" pushbutton

1- "Emergency Stop" pushbutton

BURNER PERFORMANCE GUARANTEES

A. The following performance guarantees will be extended **from twenty (20) to one hundred (100) percent of boiler load**, provided that the system is operated at steady state conditions, in accordance with the

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Burner Design Basis and Specifications in Section 2:

- Maximum emission levels on natural gas, with all concentrations corrected to 3% oxygen, on a dry basis:

NOx	35 tons/yr 27 ppm (0.0326 lb/mmbtu)
CO	90 tons/yr 113 ppm (0.0838 lb/mmbtu)
VOC	4.5tons/yr 10 ppm (0.0042 lb/mmbtu)

- The burners will maintain a stable flame with no deleterious impingement over the entire boiler load range

B. All performance specifications stated throughout this proposal are intended to show probable operating results only which cannot be guaranteed except as expressly stated in the guarantee clause 4.A). Packaged boilers shall be designed and operate with the inboard row of furnace tubes forming a gas tight wall baffle to prevent the short circuiting of furnace gases to the boiler gas outlet, for performance guarantees to be in effect. Emission guarantees exclude background emissions present in the ambient air used for combustion.

C. Testing for performance guarantees shall be run within thirty (30) days after the equipment has been installed and operated. Others shall furnish all operating personnel and equipment for such tests. A JZHC/Coen trained service engineer shall fine tune the burner as required and observe the operation of auxiliary equipment to assure that performance guarantees will be met, prior to testing. JZHC/Coen's representative will have access to the records at all times and the tests will be conducted in a manner to ensure that the specified performance conditions are being maintained. JZHC/Coen will be supplied a complete copy of all test results and data.

D. The equipment shall be considered accepted if tests show that the guarantees have been fulfilled, or if others fail to have the equipment tested within the specified period. In case of the failure to meet the guarantees, JZHC/Coen reserves the right to change or replace, on a

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Turbine Emissions provided by GE

Estimated Performance and Emissions

		Design Permitting Case										
		BASE	0.95	0.9	0.85	0.8	0.75	0.7	0.65	0.6	0.55	0.5
Inlet Loss	in H2O	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Exhaust Pressure Loss		13.8	12.4	11.3	10.4	9.7	9.0	8.3	7.7	7.2	6.7	6.3
Ambient Temperature	**°F**	**60.00**	**60.00**	**60.00**	**60.00**	**60.00**	**60.00**	**60.00**	**60.00**	**60.00**	**60.00**	**60.00**
Ambient Relative Humidity	%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
Evap Status		Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Evap Estimated Effectiveness		-	-	-	-	-	-	-	-	-	-	-
Compressor Inlet Tempeature	°F	60.0	60.0	60.0	60.0	62.7	66.6	70.9	74.6	78.0	80.5	82.9
Fuel Type		Cust Gas	Cust Gas	Cust Gas	Cust Gas	Cust Gas	Cust Gas	Cust Gas	Cust Gas	Cust Gas	Cust Gas	Cust Gas
Fuel LHV	BTU/lb	20,611	20,611	20,611	20,611	20,611	20,611	20,611	20,611	20,611	20,611	20,611
Fuel Temperature	°F	100	100	100	100	100	100	100	100	100	100	100
Output	kW	29,757	28,269	26,781	25,293	23,806	22,318	20,830	19,342	17,854	16,366	14,878
Heat Rate (LHV)	BTU/kWh	11,045	11,081	11,235	11,429	11,697	12,032	12,429	12,890	13,422	13,989	14,668
Heat Cons. (LHV)	MMBTU/hr	329	313	301	289	278	269	259	249	240	229	218
Exhaust Flow	x10^3 lb/hr	905	853	815	781	751	719	690	662	635	615	595
Exhaust Temperature	°F	995	1,006	1,015	1,025	1,034	1,051	1,068	1,084	1,099	1,100	1,100
Exhaust MolWt	lb/lbmol	28.51	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.49	28.50	28.51
Exhaust Energy	MMBTU/hr	220	210	203	196	191	186	182	177	173	167	162
Exhaust Conditions												
Ambient Pressure	psia	11.93	11.93	11.93	11.93	11.93	11.93	11.93	11.93	11.93	11.93	11.93
Argon	% vol	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
N2	% vol	75.1%	75.1%	75.1%	75.1%	75.1%	75.1%	75.0%	75.0%	75.0%	75.1%	75.1%
O2	% vol	14.1%	14.0%	13.9%	13.9%	13.9%	13.9%	13.8%	13.8%	13.8%	13.9%	14.0%
CO2	% vol	3.1%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.3%	3.2%	3.2%
H2O	% vol	6.8%	6.9%	6.9%	6.9%	6.9%	7.0%	7.0%	7.0%	7.0%	6.9%	6.9%
Emissions Summary												
NOx @ 15% O2	ppmvd	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
O2 % dry	%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
NOx raw	ppmvd	8.72	8.82	8.87	8.90	8.91	8.98	9.03	9.06	9.08	8.95	8.81
NOx as NO2	lb/hr	11.9	11.3	10.9	10.4	10.1	9.7	9.4	9.0	8.7	8.3	7.9
NOx	lb/Mmbtu-HHV	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033
CO	ppmvd	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	34.0
CO	lb/hr	20.7	19.5	18.6	17.9	17.2	16.4	15.8	15.1	14.5	14.1	18.5
CO	lb/Mmbtu-HHV	0.057	0.056	0.056	0.056	0.056	0.055	0.055	0.055	0.055	0.055	0.076
VOC	ppmvw	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.7
VOC	lb/hr	0.66	0.63	0.60	0.57	0.55	0.53	0.51	0.49	0.47	0.45	0.53
VOC	lb/Mmbtu-HHV	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Sulfur in Fuel	ppmw	1.084	1.084	1.084	1.084	1.084	1.084	1.084	1.084	1.084	1.084	1.084
SO2	ppmvw	0.017	0.017	0.017	0.017	0.017	0.017	0.018	0.018	0.018	0.017	0.017
SO2	lb/hr	0.035	0.033	0.032	0.030	0.029	0.028	0.027	0.026	0.025	0.024	0.023
SO3	ppmvw	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
SO3	lb/hr	0.0022	0.0021	0.0020	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0014

NOOTER ERIKSEN

WE BRING VALUE TO SUSTAINABLE ENERGY

Proposal Number:	23-NEA-0481
For:	Harvest Midstream
Plant Name:	Milagro
Project Name:	CO Emissions Equipment
Submit Date:	April 2, 2024
Revision:	1

1509 Ocello Drive ● Fenton, Missouri 63026 ● Tel. +1.636.651.1000

April 2, 2024

Developed for: Harvest Midstream - Milagro

Proposal No.: 23-NEA-0481 Revison 0

Attention: Brian Farley

Regarding: Nooter/Eriksen Proposal No. 23-NEA-0481

In response to your request for firm pricing for the CO emissions equipment at the Harvest Midstream facility in Bloomfield, NM (original N/E project 948560), Nooter/Eriksen Aftermarket Services is pleased to offer the following proposal. Details of our offer are included in the attached documentation.

Nooter/Eriksen Aftermarket Services is committed to supporting the maintenance and operation of our customer's HRSGs to help achieve the highest level of reliability. With over 50 years of boiler fabrication and installation experience, we have the expertise and technology to provide the aftermarket services tailored to meet the demanding requirements of our customers.

We look forward to working further with you and answering any questions you may have regarding this proposal. You can contact the undersigned at 636-651-1253.

For further information regarding Nooter/Eriksen's experience, please feel free to visit our website at www.ne.com**.**

Best Regards,

Paul Gremaud

Cc: Shaun Siegel – Thermal/Process Specialist

1. Introduction

As part of the process to restart the HRSGs at the Harvest Midstream Milagro facility, overall plant emissions need to be met to avoid major regulatory changes. There are multiple options that would satisfy the regulatory requirements. Currently, N/E is able to offer a CO reduction for the two HRSG's at the site.

2. Scope of Work

This proposal is to provide emissions reduction equipment for the Bypass Stack (Hot CO) and the HRSG (Cold CO) for both HRSGs originally supplied by Nooter/Eriksen under project number 954630. The proposed CO equipment will allow restarting the CTs while still meeting the overall plant emission output requirements. N/E will design and detail the modifications required to the Bypass Stack and the HRSG structure to incorporate the addition of the CO catalyst.

N/E will provide a firm price for the install of the CO catalyst that will be required for the bypass stack and the HRSG as part of a future proposal.

- Scope of Work – CO Reduction Equipment Only
  - Engineering and drafting to modify HRSG and Bypass Stack to accommodate CO frame and modules.
  - CO catalyst and support frame – Cold CO
    - Cold CO will be located between the Evaporator and the Economizer
  - CO catalyst and support frame – Hot CO
    - Hot CO will be located in the new insulated bypass stack just above the existing silencer.

Engineering/Drafting Submittals

- Catalyst and Frame GA Drawings
- Operations and Maintenance Manual

CO Catalysts

Performance used in the evaluation of the emission reduction equipment was taken from the spreadsheet "296691 Milagro Emissions Data_Design Controls Deliverable.xlsx" provided in email by Brian Farley on March 18, 2024.

The duct burners on the HRSGs are assumed to be decommissioned and are not accounted for.

Emissions Reductions due to Cold and Hot CO, per unit, are provided in the table below:

Equipment	Reductions	CO Reduction	Gas Side Pressure Drop
Cold CO	CO	90%	1.1 Inch W.C.
Hot CO	CO	50%	4.0 Inch W.C.

CO Catalyst Life (Cold and Hot)

Earlier of 26,280 operating hours or 39 months from contracted delivery.

3. Technical Clarifications

3.1 All material supplied will be designed and specified according to N/E or subcontractor standards.

3.2 N/E has not included any field or material changes to the HRSG and Bypass Stack support structure or foundation.

4. Schedule

Event	Weeks ARO
Order Received	0
Catalyst Delivery (Cold and Hot)	9 months

5. Pricing

6. Commercial Notes

6.1 Prices are in U.S. Dollars and do not include any taxes, duties, or fees of any type. In addition to the pricing above, N/E will invoice for city and state sales tax for the final contract amount if applicable.

6.2 Prices above are quoted as delivered at place unloaded (DPU) to the Harvest Midstream facility in Bloomfield, New Mexico.

6.3 Quoted prices are valid for 21 days. Price of catalyst is based upon platinum group precious metals costs on the day of the proposal and subject to adjustment for change in the acquisition basis of these metals. A percent of the quoted catalyst price is subject to adjustment per the Platinum NYMEX Troy Ounce price on the date of purchase.

6.4 Terms and Conditions to be mutually agreed on.

6.5 A termination schedule will be provided prior to acceptance of a purchase order.

VEOLIA

SAFETY DATA SHEET
SOLUS AP25

1. Identification

Product identifier	**SOLUS AP25**
Other means of identification	None.
Recommended use	Internal boiler water treatment
Recommended restrictions	None known.

Company/undertaking identification

Veolia WTS USA, Inc.
3600 Horizon Blvd.
Trevose, PA 19053
T 215 355 3300, F 215 953 5524

Emergency telephone

(800) 877 1940

2. Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Skin corrosion/irritation	Category 1A
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	May be corrosive to metals. Causes severe skin burns and eye damage. Causes serious eye damage. May cause respiratory irritation.
Precautionary statement	
Prevention	Keep only in original container. Do not breathe mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear eye protection/face protection.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store in corrosive resistant container with a resistant inner liner.
Disposal	Dispose of contents/container to an approved facility.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Components	CAS #	Percent
Sodium hydroxide	1310-73-2	2.5 - 10

Composition comments Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a physician if symptoms develop or persist.

Skin contact Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Take off contaminated clothing and wash before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion Do not feed anything by mouth to an unconscious or convulsive victim. Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.

General information If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical Corrosive liquid.

Special protective equipment and precautions for firefighters Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers / tanks with water spray.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up Absorb spillage to prevent material damage. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Never return spills to original containers for re-use.

Environmental precautions Avoid discharge into drains, water courses or onto the ground. Water contaminated with this product may be sent to a sanitary sewer treatment facility, or a permitted waste treatment facility, in accordance with any local agreements.

7. Handling and storage

Precautions for safe handling Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Store locked up. Store in a cool, dry place out of direct sunlight. Store in corrosive resistant container with a resistant inner liner. Keep only in the original container. Do not freeze. If frozen, thaw completely and mix thoroughly prior to use.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	PEL	2 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection

Hand protection Wear appropriate chemical resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Glove selection must take into account any solvents and other hazards present.

Other Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. A respiratory protection program that meets OSHA's 29 CFR 1910.34 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance Liquid

Physical state Liquid.

Form Not available.

Color Amber

Odor Slight ammonia odor

Odor threshold Not available.

pH (concentrated product) > 13 Neat

Melting point/freezing point 14 °F (-10 °C)

Initial boiling point and boiling range 219 °F (104 °C)

Flash point Not Applicable

Evaporation rate Slower than Ether

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	18 mmHg
Vapor pressure temp.	70 °F (21 °C)
Vapor density	< 1
Relative density	1.16
Relative density temperature	70 °F (21 °C)
Solubility(ies)	
Solubility (water)	100 %
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	11 mPa.s
Viscosity temperature	70 °F (21 °C)
Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
pH in aqueous solution	> 13 (5% Solution)
Pour point	19 °F (-7 °C)
VOC	0 % ESTIMATED

10. Stability and reactivity

Reactivity	May be corrosive to metals.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Protect from freezing.
Incompatible materials	Strong acids. Metals.
Hazardous decomposition products	Oxides of carbon, nitrogen, phosphorus, and sulphur evolved in fire.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation.

Information on toxicological effects

Acute toxicity May cause respiratory irritation.

Product	Species	Test Results
SOLUS AP25		
Acute		
Dermal		
LD50	Rabbit	> 5000 mg/kg (Calculated according to GHS additivity formula)
Inhalation		
LC50	Rat	> 20 mg/l, 4 Hour (Calculated according to GHS additivity formula)

Product	Species	Test Results
Oral		
LD50	Rat	> 5000 mg/kg (Calculated according to GHS additivity formula)

Components	Species	Test Results
Sodium hydroxide (CAS 1310-73-2)		
Acute		
Dermal		
LD50	Rabbit	1350 mg/kg
Oral		
LD50	Rabbit	> 500 mg/kg

Skin corrosion/irritation Causes severe skin burns.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization This product is not expected to cause respiratory sensitization.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Based on available data, the classification criteria are not met. Aspiration of this product may cause the same corrosiveness/irritation impacts as if it were ingested.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity

Product		Species	Test Results
Aquatic			
Crustacea	LC50	Daphnia magna	2836 mg/l, 48 hour (pH adjusted)
	NOEL	Daphnia magna	625 mg/l, 48 hour (pH adjusted)
Fish	LC50	Fathead Minnow	> 5000 mg/l, 96 hour (pH adjusted)
		Rainbow Trout	> 5000 mg/l, 96 hour (pH adjusted)
	NOEL	Fathead Minnow	5000 mg/l, 96 hour (pH adjusted)
		Rainbow Trout	5000 mg/l, 96 hour (pH adjusted)

Persistence and degradability

Bioaccumulative potential

Mobility in soil No data available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations. Incinerate the material under controlled conditions in an approved incinerator.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1824
UN proper shipping name	Sodium hydroxide solution, RQ(Sodium hydroxide)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Special precautions for user	Not available.
ERG number	154

Some containers may be exempt from Dangerous Goods/Hazmat Transport Regulations, please check BOL for exact container classification.

IATA

UN number	UN1824
UN proper shipping name	SODIUM HYDROXIDE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No
Special precautions for user	Not available.

Some containers may not be approved under IATA, please check BOL for exact container classification.

IMDG

UN number	UN1824
UN proper shipping name	SODIUM HYDROXIDE SOLUTION, RQ(Sodium hydroxide)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Not available.

DOT

IATA; IMDG

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sodium hydroxide (CAS 1310-73-2) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

Classified hazard categories
Corrosive to metal
Skin corrosion or irritation
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Contains component(s) regulated under the Safe Drinking Water Act.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Food and drug administration ALL ingredients in this product are authorized in 21CFR173.310 for use as boiler water additives where the steam may contact food.
The maximum level of Solus AP25 permitted in the boiler water where steam contacts food is 625 ppm.

NSF Registered and/or meets USDA (according to 1998 guidelines):
Registration No. – 152248
Category Code(s):
G5 Cooling and retort water treatment products
G6 Boiler treatment products, steam line products – food contact

US state regulations

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Sodium hydroxide (CAS 1310-73-2)

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 2016 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Developmental toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

No ingredient listed.

16. Other information, including date of preparation or last revision

Issue date	Jan-07-2015
Revision date	Feb-19-2023
Version #	7.1
NFPA ratings	Health: 3 Flammability: 0 Instability: 0
NFPA ratings	
List of abbreviations	CAS: Chemical Abstract Service Registration Number ACGIH: American Conference of Governmental Industrial Hygienists NOEL: No Observed Effect Level STEL: Short Term Exposure Limit LC50: Lethal Concentration, 50% TWA: Time Weighted Average BOD: Biochemical Oxygen Demand COD: Chemical Oxygen Demand TOC: Total Organic Carbon IATA: International Air Transport Association IMDG: International Maritime Dangerous Goods Code LD50: Lethal Dose, 50% TSRN indicates a Trade Secret Registry Number is used in place of the CAS number.
References:	No data available
Disclaimer	The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
Revision information	This document has undergone significant changes and should be reviewed in its entirety.
Prepared by	This SDS has been prepared by Veolia Water Technologies & Solutions' Regulatory Department (1-215-355-3300).

SAFETY DATA SHEET
CORTROL* OS5300

1. Identification

Product identifier **CORTROL OS5300**

Other means of identification None.

Recommended use Organic oxygen scavenger

Recommended restrictions None known.

Company/undertaking identification

SUEZ WTS USA, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355 3300, F 215 953 5524

Emergency telephone

(800) 877 1940

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 3
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Sensitization, skin	Category 1
	Germ cell mutagenicity	Category 2
	Carcinogenicity	Category 2
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation

OSHA defined hazards Not classified.

Label elements

Signal word Warning

Hazard statement Flammable liquid and vapor. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. May cause respiratory irritation. Suspected of causing genetic defects. Suspected of causing cancer.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.

Response	If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Get medical advice/attention. Call a POISON CENTER/doctor if you feel unwell. If skin irritation or rash occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media to extinguish.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Components	CAS #	Percent
N,N Diethylhydroxylamine	3710-84-7	20 - 40
Hydroquinone	123-31-9	1 - 2.5

Composition comments	Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation	Move to fresh air. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. Wash contaminated clothing before reuse. Get medical attention if irritation develops and persists.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Do not induce vomiting. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers / tanks with water spray.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of vapors or mists. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. Prevent entry into waterways, sewer, basements or confined areas.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground. Accidental release of large quantities into the aquatic environment may harm aquatic organisms.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Vapors may form explosive mixtures with air. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Do not smoke. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid breathing mist or vapor. Avoid contact with eyes. Avoid contact with skin. Avoid contact with clothing. Avoid prolonged exposure. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in original tightly closed container. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Refrigeration recommended. Keep in an area equipped with sprinklers. Protect from freezing. If frozen, thaw completely and mix thoroughly prior to use.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Hydroquinone (CAS 123-31-9)	PEL	2 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value
Hydroquinone (CAS 123-31-9)	TWA	1 mg/m3
N,N Diethylhydroxylamine (CAS 3710-84-7)	TWA	2 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Hydroquinone (CAS 123-31-9)	Ceiling	2 mg/m3

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Explosion-proof general and local exhaust ventilation. Eye wash facilities and emergency shower must be available when handling this product. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection

Splash proof chemical goggles.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Glove selection must take into account any solvents and other hazards present.

Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance	
Color	Amber to brown
Physical state	Liquid
Odor	Amine odor
Odor threshold	Not available.
pH (concentrated product)	9.8 Neat
Melting point/freezing point	10 °F (-12 °C)
Initial boiling point and boiling range	212 °F (100 °C)
Flash point	122 °F (50 °C) P-M(CC)
Evaporation rate	Slower than Ether
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	18 mmHg
Vapor pressure temp.	70 °F (21 °C)
Vapor density	> 1
Relative density	1
Relative density temperature	70 °F (21 °C)
Solubility(ies)	
Solubility (water)	100 %
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	10 mPa.s
Viscosity temperature	70 °F (21 °C)
Other information	
Pour point	15 °F (-9 °C)
Specific gravity	1.001
VOC	25 % CALCULATED

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong acids. Strong oxidizing agents.
Hazardous decomposition products	Oxides of carbon and nitrogen evolved in fire.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation. May cause an allergic skin reaction.
Eye contact	Causes serious eye irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.

Information on toxicological effects

Acute toxicity May cause respiratory irritation. May cause an allergic skin reaction.

Product	Species	Test Results
CORTROL OS5300 (CAS Mixture)		
Acute		
Dermal		
LD50	Rabbit	> 5000 mg/kg, (Calculated according to GHS additivity formula)
Inhalation		
LC50	Rat	> 20 mg/l, 4 Hours, (Calculated according to GHS additivity formula)
Oral		
LD50	Rat	> 5000 mg/kg, (Calculated according to GHS additivity formula)

Components	Species	Test Results
Hydroquinone (CAS 123-31-9)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Oral		
LD50	Rat	367 mg/kg
N,N Diethylhydroxylamine (CAS 3710-84-7)		
Acute		
Dermal		
LD50	Rabbit	1300 mg/kg
Inhalation		
LC50	Rat	9.5 mg/L, 4 Hour
Oral		
LD50	Rat	2190 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.

Respiratory or skin sensitization

ACGIH sensitization

HYDROQUINONE (CAS 123-31-9)	Dermal sensitization

Respiratory sensitization	This product is not expected to cause respiratory sensitization.
Skin sensitization	May cause an allergic skin reaction.

Germ cell mutagenicity Suspected of causing genetic defects.

Carcinogenicity Suspected of causing cancer.

ACGIH Carcinogens

Hydroquinone (CAS 123-31-9)	A3 Confirmed animal carcinogen with unknown relevance to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Hydroquinone (CAS 123-31-9)	3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure Not classified.

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

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity

Product		Species	Test Results
CORTROL OS5300 (CAS Mixture)			
	LC50	Fathead Minnow	1.4 mg/L, Static Renewal Bioassay, 96 hour
	NOEL	Fathead Minnow	0.78 mg/L, Static Renewal Bioassay, 96 hour
Aquatic			
Crustacea	LC50	Daphnia magna	6.1 mg/L, Static Renewal Bioassay, 48 hour
	NOEL	Daphnia magna	1.6 mg/L, Static Renewal Bioassay, 48 hour

Persistence and degradability Not available.

Bioaccumulative potential No data available.

Partition coefficient n-octanol / water (log Kow)

Hydroquinone	0.59

Mobility in soil No data available.

Other adverse effects Not available.

Persistence and degradability

- COD (mgO2/g)	706 (calculated data)
- BOD 5 (mgO2/g)	23 (calculated data)
- BOD 28 (mgO2/g)	197 (calculated data)
- Closed Bottle Test (% Degradation in 28 days)	26 (calculated data)
- Zahn-Wellens Test (% Degradation in 28 days)	19 (calculated data)
- TOC (mg C/g)	154 (calculated data)

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code D001: Waste Flammable material with a flash point <140 F
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1993
UN proper shipping name	Flammable liquids, n.o.s. (N,N Diethylhydroxylamine), RQ(Hydroquinone)
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	III
Special precautions for user	Not available.
ERG number	128

Some containers may be exempt from Dangerous Goods/Hazmat Transport Regulations, please check BOL for exact container classification.

IATA

UN number	UN1993
UN proper shipping name	Flammable liquid, n.o.s. (N,N Diethylhydroxylamine)
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	III
Environmental hazards	Yes
Special precautions for user	Not available.

Some containers may not be approved under IATA, please check BOL for exact container classification.

IMDG

UN number	UN1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (N,N Diethylhydroxylamine), RQ(Hydroquinone), MARINE POLLUTANT
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	Not available.
Special precautions for user	Not available.

DOT

IATA; IMDG

Marine pollutant

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Hydroquinone (CAS 123-31-9) Listed.

SARA 304 Emergency release notification

Hydroquinone (CAS 123-31-9) 100 LBS

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
Hydroquinone	123-31-9	100		500	10000

SARA 311/312 Hazardous chemical Yes

Classified hazard categories

Flammable (gases, aerosols, liquids, or solids)
Skin corrosion or irritation
Serious eye damage or eye irritation
Respiratory or skin sensitization
Germ cell mutagenicity
Carcinogenicity
Specific target organ toxicity (single or repeated exposure)

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Hydroquinone	123-31-9	1 - 2.5

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Hydroquinone (CAS 123-31-9)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Food and drug administration All ingredients in this product are authorized in 21 CFR176.170 for use in boilers where the steam will be used for manufacturing paper or paperboard.

US state regulations

US. California Proposition 65

WARNING: This product can expose you to 1,2-dihydroxybenzene, which is known to the State of California to cause cancer, and Toluene, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

1,2-dihydroxybenzene (CAS 120-80-9) Listed: July 15, 2003

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Toluene (CAS 108-88-3) Listed: January 1, 1991

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

No ingredient listed.

16. Other information, including date of preparation or last revision

Issue date	Oct-31-2014
Revision date	Jan-25-2019
Version #	4.0
NFPA ratings	Health: 2 Flammability: 3 Instability: 0
NFPA ratings	
List of abbreviations	CAS: Chemical Abstract Service Registration Number TWA: Time Weighted Average STEL: Short Term Exposure Limit LD50: Lethal Dose, 50% LC50: Lethal Concentration, 50% EC50: Effect Concentration, 50% NOEL: No Observed Effect Level COD: Chemical Oxygen Demand BOD: Biochemical Oxygen Demand TOC: Total Organic Carbon CEN: European Committee for Standardisation IATA: International Air Transport Association IMDG: International Maritime Dangerous Goods Code ACGIH: American Conference of Governmental Industrial Hygienists TSRN indicates a Trade Secret Registry Number is used in place of the CAS number.
References:	No data available
Disclaimer	The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
Revision information	Exposure controls/personal protection: Appropriate engineering controls Transport Information: Material Transportation Information Regulatory information: California Prop 65
Prepared by	This SDS has been prepared by SUEZ Regulatory Department (1-215-355-3300).

SAFETY DATA SHEET
STEAMATE* HRSG24

1. Identification

Product identifier	**STEAMATE HRSG24**
Other means of identification	None.
Recommended use	Steam condensate treatment.
Recommended restrictions	None known.

Company/undertaking identification

SUEZ WTS USA, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355 3300, F 215 953 5524

Emergency telephone

(800) 877 1940

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 4
Health hazards	Skin corrosion/irritation	Category 1B
	Serious eye damage/eye irritation	Category 1
	Reproductive toxicity (fertility)	Category 2
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	Combustible liquid. Causes severe skin burns and eye damage. May cause respiratory irritation. Suspected of damaging fertility.

Precautionary statement

Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from flames and hot surfaces-No smoking. Do not breathe mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse. In case of fire: Use appropriate media to extinguish.
Storage	Keep cool. Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Components	CAS #	Percent
Ethanolamine	141-43-5	10 - 20
Cyclohexylamine	108-91-8	2.5 - 10

Composition comments Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.

General information IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Alcohol resistant foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures. During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers / tanks with water spray.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards Combustible liquid.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up

Use water spray to reduce vapors or divert vapor cloud drift. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Keep away from open flames, hot surfaces and sources of ignition. When using do not smoke. Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store in accordance with local/regional/national/international regulation.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Ethanolamine (CAS 141-43-5)	PEL	6 mg/m3
		3 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Cyclohexylamine (CAS 108-91-8)	TWA	10 ppm
Ethanolamine (CAS 141-43-5)	STEL	6 ppm
	TWA	3 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Cyclohexylamine (CAS 108-91-8)	TWA	40 mg/m3
		10 ppm
Ethanolamine (CAS 141-43-5)	STEL	15 mg/m3
		6 ppm
	TWA	8 mg/m3
		3 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Eye wash facilities and emergency shower must be available when handling this product. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Glove selection must take into account any solvents and other hazards present.

Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Observe any medical surveillance requirements. When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Color	Colorless to yellow
Physical state	Liquid
Odor	Amine odor
Odor threshold	Not available.
pH (concentrated product)	12.5 Neat
pH in aqueous solution	11.7 (5% Solution)
Melting point/freezing point	18 °F (-8 °C)
Initial boiling point and boiling range	Not available.
Flash point	144 °F (62 °C) P-M(CC)
Evaporation rate	Slower than Ether
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	18 mmHg
Vapor pressure temp.	70 °F (21 °C)
Vapor density	< 1
Relative density	1
Relative density temperature	70 °F (21 °C)
Solubility(ies)	
Solubility (water)	100 %
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	18 mPa.s
Viscosity temperature	70 °F (21 °C)
Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Pour point	23 °F (-5 °C)
Specific gravity	1.005
VOC	24 % ESTIMATED

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials. None under normal conditions.
Incompatible materials	Strong acids. Strong oxidizing agents. Aluminum.
Hazardous decomposition products	Oxides of carbon and nitrogen evolved in fire.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation.

Information on toxicological effects

Acute toxicity

Product	Species	Test Results
STEAMATE HRSG24 (CAS Mixture)		
Acute		
Dermal		
LD50	Rabbit	2557 mg/kg, (Calculated according to GHS additivity formula)
Oral		
LD50	Rat	2052 mg/kg, (Calculated according to GHS additivity formula)

Components	Species	Test Results
Cyclohexylamine (CAS 108-91-8)		
Acute		
Dermal		
LD50	Rabbit	277 mg/kg
Oral		
LD50	Rat	156 mg/kg
Ethanolamine (CAS 141-43-5)		
Acute		
Dermal		
LD50	Rabbit	1025 mg/kg
Inhalation		
LC50	Rat	> 1.5 mg/l, 4 Hour
Oral		
LD50	Rat	1720 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Causes severe skin burns.
Serious eye damage/eye irritation	Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization	This product is not expected to cause respiratory sensitization.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

ACGIH Carcinogens

Cyclohexylamine (CAS 108-91-8)	A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity	Suspected of damaging fertility.
Specific target organ toxicity - single exposure	May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Based on available data, the classification criteria are not met.
Chronic effects	May be harmful if absorbed through skin. Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity

Product		Species	Test Results
STEAMATE HRSG24 (CAS Mixture)			
Aquatic			
Crustacea	15% Mortality	Mysid Shrimp	5 mg/L, Static Renewal Bioassay, 96 H, A no effect level cannot be defined.
	ChV	Mysid Shrimp	7.07 mg/L, Chronic Bioassay, 7 D
	IC25	Mysid Shrimp	5.7 mg/L, Chronic Bioassay, 7 D
	LC50	Daphnia magna	12 mg/L, Estimated Acute Toxicity, 48 H, (Estimated)
		Mysid Shrimp	6.3 mg/L, Static Renewal Bioassay, 96 H, A no effect level cannot be defined.
	LOEL	Mysid Shrimp	10 mg/L, Chronic Bioassay, 7 D
	NOEL	Mysid Shrimp	5 mg/L, Chronic Bioassay, 7 D
Fish	ChV	Sheepshead Minnow	7.07 mg/L, Chronic Bioassay, 7 D
	IC25	Sheepshead Minnow	7.3 mg/L, Chronic Bioassay, 7 D
	LC50	Fathead Minnow	13 mg/L, Estimated Acute Toxicity, 96 H, (Estimated)
		Sheepshead Minnow	10 mg/L, Static Renewal Bioassay, 96 H
	LOEL	Sheepshead Minnow	10 mg/L, Chronic Bioassay, 7 D
	NOEL	Sheepshead Minnow	5 mg/L, Chronic Bioassay, 7 D
			5 mg/L, Static Renewal Bioassay, 96 H

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

Cyclohexylamine	1.49
Ethanolamine	-1.31

Bioconcentration factor (BCF)

Ethanolamine	3

Mobility in soil	No data available.
Other adverse effects	Not available.

Persistence and degradability

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.

Hazardous waste code	D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN2735
UN proper shipping name	Amines, liquid, corrosive, n.o.s. (Ethanolamine, CYCLOHEXYLAMINE)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Special precautions for user	Not available.
ERG number	153

Some containers may be exempt from Dangerous Goods/Hazmat Transport Regulations, please check BOL for exact container classification.

IATA

UN number	UN2735
UN proper shipping name	Amines, liquid, corrosive, n.o.s. (Ethanolamine, CYCLOHEXYLAMINE)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	153
Special precautions for user	Not available.

IMDG

UN number	UN2735
UN proper shipping name	AMINES, LIQUID, CORROSIVE, N.O.S. (Ethanolamine, CYCLOHEXYLAMINE)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Not available.

DOT

IATA; IMDG

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Cyclohexylamine (CAS 108-91-8) 10000 LBS

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
Cyclohexylamine	108-91-8	10000	10000		

SARA 311/312 Hazardous chemical Yes

Classified hazard categories
Flammable (gases, aerosols, liquids, or solids)
Skin corrosion or irritation
Serious eye damage or eye irritation
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Aniline (CAS 62-53-3)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Cyclohexylamine (CAS 108-91-8)

Safe Drinking Water Act (SDWA) Not regulated.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

US state regulations

US. California Proposition 65

WARNING: This product can expose you to Aniline, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Aniline (CAS 62-53-3) Listed: January 1, 1990

US - California Proposition 65 - CRT: Listed date/Developmental toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

No ingredient listed.

16. Other information, including date of preparation or last revision

Issue date	Oct-30-2017
Revision date	Apr-03-2019
Version #	2.0
NFPA ratings	Health: 3 Flammability: 2 Instability: 0
NFPA ratings	
List of abbreviations	CAS: Chemical Abstract Service Registration Number TSRN indicates a Trade Secret Registry Number is used in place of the CAS number. ACGIH: American Conference of Governmental Industrial Hygienists NOEL: No Observed Effect Level STEL: Short Term Exposure Limit LC50: Lethal Concentration, 50% LD50: Lethal Dose, 50% TWA: Time Weighted Average BOD: Biochemical Oxygen Demand COD: Chemical Oxygen Demand TOC: Total Organic Carbon IATA: International Air Transport Association IMDG: International Maritime Dangerous Goods Code
References:	No data available
Disclaimer	The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
Revision information	Handling and storage: Precautions for safe handling Exposure controls/personal protection: Eye/face protection Exposure controls/personal protection: Respiratory protection Physical & Chemical Properties: Multiple Properties Stability and reactivity: Hazardous decomposition products Toxicological information: Chronic effects Toxicological information: Skin corrosion/irritation Toxicological information: Skin contact Regulatory information: California Prop 65
Prepared by	This SDS has been prepared by SUEZ Regulatory Department (1-215-355-3300).

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Section 7

Subsection 2 – Information Used to Determine Emissions for All Other Units

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For clarity, this Subsection 2 contains information used to determine emissions for all other units at this facility that were not affected by this application (i.e. all units except for Units 1, 7A, 7B, 8A, 8B, 20, and T20 through T23). For information pertinent to the units added or modified with this application, please refer to Subsection 1.

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.

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

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene[b, c]	2.4E-05	D
56-49-5	3-Methylchloranthrene[b, c]	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene[b,c]	<1.6E-05	E
83-32-9	Acenaphthene[b,c]	<1.8E-06	E
203-96-8	Acenaphthylene[b,c]	<1.8E-06	E
120-12-7	Anthracene[b,c]	<2.4E-06	E
56-55-3	Benz(a)anthracene[b,c]	<1.8E-06	E
71-43-2	Benzene[b]	2.1E-03	B
50-32-8	Benzo(a)pyrene[b,c]	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene[b,c]	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene[b,c]	<1.2E-06	E
205-82-3	Benzo(k)fluoranthene[b,c]	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene[b,c]	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene[b,c]	<1.2E-06	E
25321-22-6	Dichlorobenzene[b]	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene[b,c]	3.0E-06	E
86-73-7	Fluorene[b,c]	2.8E-06	E
50-00-0	Formaldehyde[b]	7.5E-02	B
110-54-3	Hexane[b]	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene[b,c]	<1.8E-06	E
91-20-3	Naphthalene[b]	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene[b,c]	1.7E-05	D

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

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
74-98-6	Propane	1.6E+00	E
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	C

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

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

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

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

Table 3.4-1. GASEOUS EMISSION FACTORS FOR LARGE STATIONARY DIESEL AND ALL STATIONARY DUAL-FUEL ENGINES[a]

Pollutant	Diesel Fuel (SCC 2-02-004-01)			Dual Fuel[b] (SCC 2-02-004-02)		
	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	EMISSION FACTOR RATING	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	EMISSION FACTOR RATING
NO_x						
Uncontrolled	0.024	3.2	B	0.018	2.7	D
Controlled	0.013[c]	1.9[c]	B	ND	ND	NA
CO	5.5 E-03	0.85	C	7.5 E-03	1.16	D
SO_x[d]	8.09 E-03S_1	1.01S_1	B	4.06 E-04S_1 + 9.57 E-03S_2	0.05S_1 + 0.895S_2	B
CO_2[e]	1.16	165	B	0.772	110	B
PM	0.0007[c]	0.1[c]	B	ND	ND	NA
TOC (as CH_4)	7.05 E-04	0.09	C	5.29 E-03	0.8	D
Methane	[f]	[f]	E	3.97 E-03	0.6	E
Nonmethane	[f]	[f]	E	1.32 E-03	0.2[g]	E

[a] Based on uncontrolled levels for each fuel, from References 2,6-7. When necessary, the average heating value of diesel was assumed to be 19,300 Btu/lb with a density of 7.1 lb/gallon. The power output and fuel input values were averaged independently from each other, because of the use of actual brake-specific fuel consumption (BSFC) values for each data point and of the use of data possibly sufficient to calculate only 1 of the 2 emission factors (e. g., enough information to calculate lb/MMBtu, but not lb/hp-hr). Factors are based on averages across all manufacturers and duty cycles. The actual emissions from a particular engine or manufacturer could vary considerably from these levels. 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.

[b] Dual fuel assumes 95% natural gas and 5% diesel fuel.

[c] References 8-26. Controlled NO_x is by ignition timing retard.

[d] Assumes that all sulfur in the fuel is converted to SO_2. S_1 = % sulfur in fuel oil; S_2 = % sulfur in natural gas. For example, if sulfer content is 1.5%, then S = 1.5.

[e] Assumes 100% conversion of carbon in fuel to CO_2 with 87 weight % carbon in diesel, 70 weight % carbon in natural gas, dual-fuel mixture of 5% diesel with 95% natural gas, average BSFC of 7,000 Btu/hp-hr, diesel heating value of 19,300 Btu/lb, and natural gas heating value of 1050 Btu/scf.

[f] Based on data from 1 engine, TOC is by weight 9% methane and 91% nonmethane.

[g] Assumes that nonmethane organic compounds are 25% of TOC emissions from dual-fuel engines. Molecular weight of nonmethane gas stream is assumed to be that of methane.

Table 3.4-3. SPECIATED ORGANIC COMPOUND EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (lb/MMBtu) (fuel input)
Benzene[b]	7.76 E-04
Toluene[b]	2.81 E-04
Xylenes[b]	1.93 E-04
Propylene	2.79 E-03
Formaldehyde[b]	7.89 E-05
Acetaldehyde[b]	2.52 E-05
Acrolein[b]	7.88 E-06

[a]Based on 1 uncontrolled diesel engine from Reference 7. Source Classification Code 2-02-004-01. Not enough information to calculate the output-specific emission factors of lb/hp-hr. To convert from lb/MMBtu to ng/J, multiply by 430.
[b]Hazardous air pollutant listed in the *Clean Air Act*.

Table 3.4-4. PAH EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

PAH	Emission Factor (lb/MMBtu) (fuel input)
Naphthalene[b]	1.30 E-04
Acenaphthylene	9.23 E-06
Acenaphthene	4.68 E-06
Fluorene	1.28 E-05
Phenanthrene	4.08 E-05
Anthracene	1.23 E-06
Fluoranthene	4.03 E-06
Pyrene	3.71 E-06
Benz(a)anthracene	6.22 E-07
Chrysene	1.53 E-06
Benzo(b)fluoranthene	1.11 E-06
Benzo(k)fluoranthene	<2.18 E-07
Benzo(a)pyrene	<2.57 E-07
Indeno(1,2,3-cd)pyrene	<4.14 E-07
Dibenz(a,h)anthracene	<3.46 E-07
Benzo(g,h,l)perylene	<5.56 E-07
TOTAL PAH	<2.12 E-04

[a] Based on 1 uncontrolled diesel engine from Reference 7. Source Classification Code 2-02-004-01. Not enough information to calculate the output-specific emission factors of lb/hp-hr. To convert from lb/MMBtu to ng/J, multiply by 430.

[b] Hazardous air pollutant listed in the *Clean Air Act*.

Williams Milagro Gas Plant
Emissions Data

Fuel Fired		#1 Flash Gas
DESCRIPTION	UNITS	
System Performance		
Steam Flow	Lb/hr	186,500
Steam Pressure	PSIG	400
System Efficiency (HHV)	%	84.16
Total Heat Input (HHV)	MMBtu/Hr	245
Stack Gas Temperature	ºF	276
Stack Gas Flow	Lbs/hr	218,518
Stack Gas Flow	ACFM	70,552
Stack Diameter	in	62
Stack Exit Velocity	Ft/sec	56.1
Furnace Volume	Ft^3	2897.7
Furnace Heat Release Rate	Btu/Hr-Ft3	84,541
Emissions (Based on Low NOx Burner and FGR)		
NOx	Ton/Year	35
	Lbs/MMBtu	0.0326
	PPM (Ref 3% O2)	27
CO	Ton/Year	90
	Lbs/MMBtu	0.0838
	PPM (Ref 3% O2)	113
VOC	Ton/Year	4.5
	Lbs/MMBtu	0.0042
	PPM (Ref 3% O2)	10

Notes:

1. Feedwater temperature to boiler is 230°F.
2. Ambient temperature is 80°F.

Rentech Boiler Systems, Inc.
Abilene Office: 5025 E. Business 20 • Abilene, TX 79601 • Phone: 325-672-3400 • Fax: 325-672-9996
Lincoln Office: 145 North 46th Street • Lincoln, NE 68503 • Phone: 402-474-4242 • Fax: 402-474-4243

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Milagro TEG Dehydrators
File Name: C:\1 - Office\5 - Milagro\Milagro - GRI-GLYCalc - Trains 1-2 VRU Bypass (02-22-2016).ddf
Date: September 29, 2016

DESCRIPTION:

Description: Units 9b & 10b
Capacity: 145 MMSCFD
Train 2 extended gas analysis sampled
02/02/2016

Annual Hours of Operation: 8760.0 hours/yr

WET GAS:

Temperature: 100.00 deg. F
Pressure: 900.00 psig
Wet Gas Water Content: Saturated

Component	Conc. (vol %)
Methane	98.5711
Ethane	1.0740
Propane	0.2370
Isobutane	0.0399
n-Butane	0.0394
Isopentane	0.0127
n-Pentane	0.0079
n-Hexane	0.0025
Cyclohexane	0.0014
Other Hexanes	0.0059
Heptanes	0.0030
Methylcyclohexane	0.0016
2,2,4-Trimethylpentane	0.0005
Benzene	0.0005
Toluene	0.0001
Xylenes	0.0006
C8+ Heavies	0.0019

DRY GAS:

Flow Rate: 145.0 MMSCF/day
Water Content: 7.0 lbs. H2O/MMSCF

LEAN GLYCOL:

Glycol Type: TEG
Water Content: 1.5 wt% H2O
Flow Rate: 33.2 gpm

PUMP:

Glycol Pump Type: Electric/Pneumatic

FLASH TANK:

Flash Control: Recycle/recompression
Temperature: 100.0 deg. F
Pressure: 60.0 psig

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Milagro TEG Dehydrators
File Name: C:\1 - Office\5 - Milagro\Milagro - GRI-GLYCalc - Trains 1-2 VRU Bypass (02-22-2016).ddf
Date: September 29, 2016

DESCRIPTION:

Description: Units 9b & 10b
Capacity: 145 MMSCFD
Train 2 extended gas analysis sampled
02/02/2016

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	4.8492	116.382	21.2397
Ethane	0.9840	23.617	4.3100
Propane	0.8647	20.753	3.7874
Isobutane	0.3354	8.050	1.4691
n-Butane	0.4852	11.644	2.1250
Isopentane	0.2047	4.914	0.8968
n-Pentane	0.1772	4.253	0.7762
n-Hexane	0.1257	3.018	0.5507
Cyclohexane	0.3438	8.251	1.5058
Other Hexanes	0.2161	5.186	0.9465
Heptanes	0.3464	8.313	1.5171
Methylcyclohexane	0.5011	12.027	2.1950
2,2,4-Trimethylpentane	0.0260	0.624	0.1139
Benzene	0.9520	22.847	4.1696
Toluene	0.3194	7.666	1.3990
Xylenes	3.6014	86.433	15.7740
C8+ Heavies	1.5112	36.268	6.6190
Total Emissions	15.8436	380.246	69.3949
Total Hydrocarbon Emissions	15.8436	380.246	69.3949
Total VOC Emissions	10.0103	240.247	43.8451
Total HAP Emissions	5.0245	120.587	22.0071
Total BTEX Emissions	4.8727	116.945	21.3425

FLASH GAS EMISSIONS

Note: Flash Gas Emissions are zero with the Recycle/recompression control option.

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	50.4614	1211.074	221.0210

Ethane	2.6375	63.300	11.5522
Propane	1.0025	24.059	4.3908
Isobutane	0.2390	5.737	1.0470
n-Butane	0.2555	6.132	1.1192
Isopentane	0.0894	2.146	0.3916
n-Pentane	0.0600	1.440	0.2627
n-Hexane	0.0218	0.523	0.0955
Cyclohexane	0.0148	0.355	0.0648
Other Hexanes	0.0508	1.218	0.2224
Heptanes	0.0270	0.649	0.1185
Methylcyclohexane	0.0158	0.379	0.0693
2,2,4-Trimethylpentane	0.0042	0.102	0.0186
Benzene	0.0049	0.117	0.0213
Toluene	0.0010	0.023	0.0042
Xylenes	0.0040	0.095	0.0173
C8+ Heavies	0.0110	0.264	0.0481
Total Emissions	54.9005	1317.613	240.4644
Total Hydrocarbon Emissions	54.9005	1317.613	240.4644
Total VOC Emissions	1.8016	43.239	7.8912
Total HAP Emissions	0.0358	0.860	0.1569
Total BTEX Emissions	0.0098	0.235	0.0429

COMBINED REGENERATOR VENT/FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	4.8492	116.382	21.2397
Ethane	0.9840	23.617	4.3100
Propane	0.8647	20.753	3.7874
Isobutane	0.3354	8.050	1.4691
n-Butane	0.4852	11.644	2.1250
Isopentane	0.2047	4.914	0.8968
n-Pentane	0.1772	4.253	0.7762
n-Hexane	0.1257	3.018	0.5507
Cyclohexane	0.3438	8.251	1.5058
Other Hexanes	0.2161	5.186	0.9465
Heptanes	0.3464	8.313	1.5171
Methylcyclohexane	0.5011	12.027	2.1950
2,2,4-Trimethylpentane	0.0260	0.624	0.1139
Benzene	0.9520	22.847	4.1696
Toluene	0.3194	7.666	1.3990
Xylenes	3.6014	86.433	15.7740
C8+ Heavies	1.5112	36.268	6.6190
Total Emissions	15.8436	380.246	69.3949
Total Hydrocarbon Emissions	15.8436	380.246	69.3949
Total VOC Emissions	10.0103	240.247	43.8451
Total HAP Emissions	5.0245	120.587	22.0071
Total BTEX Emissions	4.8727	116.945	21.3425

COMBINED REGENERATOR VENT/FLASH GAS EMISSION CONTROL REPORT:

Component	Uncontrolled tons/yr	Controlled tons/yr	% Reduction
Methane	242.2607	21.2397	91.23

Ethane	15.8622	4.3100	72.83
Propane	8.1782	3.7874	53.69
Isobutane	2.5162	1.4691	41.61
n-Butane	3.2442	2.1250	34.50
Isopentane	1.2884	0.8968	30.40
n-Pentane	1.0389	0.7762	25.29
n-Hexane	0.6462	0.5507	14.78
Cyclohexane	1.5706	1.5058	4.12
Other Hexanes	1.1689	0.9465	19.02
Heptanes	1.6355	1.5171	7.24
Methylcyclohexane	2.2643	2.1950	3.06
2,2,4-Trimethylpentane	0.1324	0.1139	14.03
Benzene	4.1909	4.1696	0.51
Toluene	1.4032	1.3990	0.30
Xylenes	15.7913	15.7740	0.11
C8+ Heavies	6.6671	6.6190	0.72
Total Emissions	309.8592	69.3949	77.60
Total Hydrocarbon Emissions	309.8592	69.3949	77.60
Total VOC Emissions	51.7363	43.8451	15.25
Total HAP Emissions	22.1641	22.0071	0.71
Total BTEX Emissions	21.3854	21.3425	0.20

EQUIPMENT REPORTS:

ABSORBER

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

Calculated Absorber Stages:	1.25	
Calculated Dry Gas Dew Point:	3.23	lbs. H2O/MMSCF
Temperature:	100.0	deg. F
Pressure:	900.0	psig
Dry Gas Flow Rate:	145.0000	MMSCF/day
Glycol Losses with Dry Gas:	1.5575	lb/hr
Wet Gas Water Content:	Saturated	
Calculated Wet Gas Water Content:	62.46	lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	5.57	gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	5.16%	94.84%
Methane	99.98%	0.02%
Ethane	99.93%	0.07%
Propane	99.89%	0.11%
Isobutane	99.84%	0.16%
n-Butane	99.80%	0.20%
Isopentane	99.80%	0.20%
n-Pentane	99.74%	0.26%
n-Hexane	99.57%	0.43%
Cyclohexane	98.09%	1.91%
Other Hexanes	99.67%	0.33%
Heptanes	99.22%	0.78%

Methylcyclohexane	97.93%	2.07%
2,2,4-Trimethylpentane	99.67%	0.33%
Benzene	84.62%	15.38%
Toluene	78.17%	21.83%
Xylenes	64.46%	35.54%
C8+ Heavies	97.05%	2.95%

FLASH TANK

Flash Control: Recycle/recompression
Flash Temperature: 100.0 deg. F
Flash Pressure: 60.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.99%	0.01%
Methane	8.77%	91.23%
Ethane	27.17%	72.83%
Propane	46.31%	53.69%
Isobutane	58.39%	41.61%
n-Butane	65.50%	34.50%
Isopentane	69.76%	30.24%
n-Pentane	74.84%	25.16%
n-Hexane	85.30%	14.70%
Cyclohexane	96.01%	3.99%
Other Hexanes	81.17%	18.83%
Heptanes	92.79%	7.21%
Methylcyclohexane	97.06%	2.94%
2,2,4-Trimethylpentane	86.18%	13.82%
Benzene	99.52%	0.48%
Toluene	99.72%	0.28%
Xylenes	99.90%	0.10%
C8+ Heavies	99.37%	0.63%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	43.89%	56.11%
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	0.72%	99.28%
n-Pentane	0.67%	99.33%
n-Hexane	0.59%	99.41%
Cyclohexane	3.33%	96.67%
Other Hexanes	1.23%	98.77%
Heptanes	0.54%	99.46%
Methylcyclohexane	4.12%	95.88%
2,2,4-Trimethylpentane	1.74%	98.26%
Benzene	5.02%	94.98%
Toluene	7.92%	92.08%

Xylenes	12.93%	87.07%
C8+ Heavies	12.10%	87.90%

STREAM REPORTS:

WET GAS STREAM

Temperature: 100.00 deg. F
Pressure: 914.70 psia
Flow Rate: 6.05e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.32e-001	3.78e+002
Methane	9.84e+001	2.52e+005
Ethane	1.07e+000	5.14e+003
Propane	2.37e-001	1.66e+003
Isobutane	3.98e-002	3.69e+002
n-Butane	3.93e-002	3.65e+002
Isopentane	1.27e-002	1.46e+002
n-Pentane	7.89e-003	9.08e+001
n-Hexane	2.50e-003	3.43e+001
Cyclohexane	1.40e-003	1.88e+001
Other Hexanes	5.89e-003	8.10e+001
Heptanes	3.00e-003	4.79e+001
Methylcyclohexane	1.60e-003	2.50e+001
2,2,4-Trimethylpentane	4.99e-004	9.10e+000
Benzene	4.99e-004	6.22e+000
Toluene	9.99e-005	1.47e+000
Xylenes	5.99e-004	1.01e+001
C8+ Heavies	1.90e-003	5.15e+001
Total Components	100.00	2.60e+005

DRY GAS STREAM

Temperature: 100.00 deg. F
Pressure: 914.70 psia
Flow Rate: 6.04e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	6.80e-003	1.95e+001
Methane	9.86e+001	2.52e+005
Ethane	1.07e+000	5.14e+003
Propane	2.37e-001	1.66e+003
Isobutane	3.98e-002	3.69e+002
n-Butane	3.93e-002	3.64e+002
Isopentane	1.27e-002	1.46e+002
n-Pentane	7.88e-003	9.05e+001
n-Hexane	2.49e-003	3.42e+001
Cyclohexane	1.37e-003	1.84e+001
Other Hexanes	5.88e-003	8.07e+001
Heptanes	2.98e-003	4.75e+001
Methylcyclohexane	1.57e-003	2.45e+001
2,2,4-Trimethylpentane	4.98e-004	9.07e+000

Benzene	4.23e-004	5.26e+000
Toluene	7.82e-005	1.15e+000
Xylenes	3.87e-004	6.54e+000
C8+ Heavies	1.84e-003	5.00e+001
Total Components	100.00	2.60e+005

LEAN GLYCOL STREAM

Temperature: 100.00 deg. F
Flow Rate: 3.32e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.85e+001	1.84e+004
Water	1.50e+000	2.80e+002
Methane	9.94e-018	1.86e-015
Ethane	9.14e-009	1.71e-006
Propane	4.07e-010	7.60e-008
Isobutane	9.22e-011	1.72e-008
n-Butane	9.83e-011	1.84e-008
Isopentane	7.91e-006	1.48e-003
n-Pentane	6.38e-006	1.19e-003
n-Hexane	3.97e-006	7.41e-004
Cyclohexane	6.34e-005	1.19e-002
Other Hexanes	1.44e-005	2.70e-003
Heptanes	1.00e-005	1.88e-003
Methylcyclohexane	1.15e-004	2.15e-002
2,2,4-Trimethylpentane	2.46e-006	4.60e-004
Benzene	2.69e-004	5.04e-002
Toluene	1.47e-004	2.75e-002
Xylenes	2.86e-003	5.35e-001
C8+ Heavies	1.11e-003	2.08e-001
Total Components	100.00	1.87e+004

RICH GLYCOL STREAM

Temperature: 100.00 deg. F
Pressure: 914.70 psia
Flow Rate: 3.41e+001 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.63e+001	1.84e+004
Water	3.34e+000	6.39e+002
Methane	2.89e-001	5.53e+001
Ethane	1.89e-002	3.62e+000
Propane	9.77e-003	1.87e+000
Isobutane	3.01e-003	5.74e-001
n-Butane	3.87e-003	7.41e-001
Isopentane	1.55e-003	2.96e-001
n-Pentane	1.25e-003	2.38e-001
n-Hexane	7.76e-004	1.48e-001
Cyclohexane	1.94e-003	3.70e-001
Other Hexanes	1.41e-003	2.70e-001
Heptanes	1.96e-003	3.75e-001
Methylcyclohexane	2.82e-003	5.38e-001

Component	Conc. (wt%)	Loading (lb/hr)
2,2,4-Trimethylpentane	1.61e-004	3.07e-002
Benzene	5.27e-003	1.01e+000
Toluene	1.82e-003	3.48e-001
Xylenes	2.17e-002	4.14e+000
C8+ Heavies	9.05e-003	1.73e+000
Total Components	100.00	1.91e+004

FLASH TANK OFF GAS STREAM

Temperature: 100.00 deg. F
Pressure: 74.70 psia
Flow Rate: 1.24e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.76e-002	5.75e-002
Methane	9.62e+001	5.05e+001
Ethane	2.68e+000	2.64e+000
Propane	6.95e-001	1.00e+000
Isobutane	1.26e-001	2.39e-001
n-Butane	1.34e-001	2.56e-001
Isopentane	3.79e-002	8.94e-002
n-Pentane	2.54e-002	6.00e-002
n-Hexane	7.73e-003	2.18e-002
Cyclohexane	5.37e-003	1.48e-002
Other Hexanes	1.80e-002	5.08e-002
Heptanes	8.25e-003	2.70e-002
Methylcyclohexane	4.92e-003	1.58e-002
2,2,4-Trimethylpentane	1.13e-003	4.24e-003
Benzene	1.90e-003	4.87e-003
Toluene	3.21e-004	9.68e-004
Xylenes	1.14e-003	3.96e-003
C8+ Heavies	1.97e-003	1.10e-002
Total Components	100.00	5.50e+001

FLASH TANK GLYCOL STREAM

Temperature: 100.00 deg. F
Flow Rate: 3.39e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.66e+001	1.84e+004
Water	3.35e+000	6.39e+002
Methane	2.54e-002	4.85e+000
Ethane	5.16e-003	9.84e-001
Propane	4.54e-003	8.65e-001
Isobutane	1.76e-003	3.35e-001
n-Butane	2.55e-003	4.85e-001
Isopentane	1.08e-003	2.06e-001
n-Pentane	9.36e-004	1.78e-001
n-Hexane	6.64e-004	1.26e-001
Cyclohexane	1.87e-003	3.56e-001
Other Hexanes	1.15e-003	2.19e-001
Heptanes	1.83e-003	3.48e-001
Methylcyclohexane	2.74e-003	5.23e-001
2,2,4-Trimethylpentane	1.39e-004	2.65e-002

Benzene	5.26e-003	1.00e+000
Toluene	1.82e-003	3.47e-001
Xylenes	2.17e-002	4.14e+000
C8+ Heavies	9.02e-003	1.72e+000
Total Components	100.00	1.91e+004

FLASH GAS EMISSIONS

Control Method: Recycle/recompression
Control Efficiency: 100.00

Note: Flash Gas Emissions are zero with the Recycle/recompression control option.

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 7.72e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.78e+001	3.58e+002
Methane	1.49e+000	4.85e+000
Ethane	1.61e-001	9.84e-001
Propane	9.64e-002	8.65e-001
Isobutane	2.84e-002	3.35e-001
n-Butane	4.10e-002	4.85e-001
Isopentane	1.39e-002	2.05e-001
n-Pentane	1.21e-002	1.77e-001
n-Hexane	7.17e-003	1.26e-001
Cyclohexane	2.01e-002	3.44e-001
Other Hexanes	1.23e-002	2.16e-001
Heptanes	1.70e-002	3.46e-001
Methylcyclohexane	2.51e-002	5.01e-001
2,2,4-Trimethylpentane	1.12e-003	2.60e-002
Benzene	5.99e-002	9.52e-001
Toluene	1.70e-002	3.19e-001
Xylenes	1.67e-001	3.60e+000
C8+ Heavies	4.36e-002	1.51e+000
Total Components	100.00	3.74e+002

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Milagro TEG Dehydrators
File Name: C:\1 - Office\5 - Milagro\Milagro - GRI-GLYCalc - Train 3 VRU Bypass (02-02-2016).ddf
Date: September 29, 2016

DESCRIPTION:

Description: Unit 11b
Capacity: 145 MMSCFD
Train 3 extended gas analysis sampled
02/22/2016

Annual Hours of Operation: 8760.0 hours/yr

WET GAS:

Temperature: 100.00 deg. F
Pressure: 900.00 psig
Wet Gas Water Content: Saturated

Component	Conc. (vol %)
Carbon Dioxide	1.0238
Nitrogen	0.0565
Methane	97.5212
Ethane	1.0498
Propane	0.2335
Isobutane	0.0390
n-Butane	0.0389
Isopentane	0.0135
n-Pentane	0.0080
n-Hexane	0.0025
Cyclohexane	0.0016
Other Hexanes	0.0050
Heptanes	0.0030
Methylcyclohexane	0.0017
2,2,4-Trimethylpentane	0.0004
Benzene	0.0001
Toluene	0.0002
Ethylbenzene	0.0001
Xylenes	0.0001
C8+ Heavies	0.0011

DRY GAS:

Flow Rate: 145.0 MMSCF/day
Water Content: 7.0 lbs. H2O/MMSCF

LEAN GLYCOL:

Glycol Type: TEG
Water Content: 1.5 wt% H2O
Flow Rate: 33.2 gpm

PUMP:

Glycol Pump Type: Electric/Pneumatic

FLASH TANK:

Flash Control: Recycle/recompression
Temperature: 100.0 deg. F
Pressure: 60.0 psig

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Milagro TEG Dehydrators
File Name: C:\1 - Office\5 - Milagro\Milagro - GRI-GLYCalc - Train 3 VRU Bypass (02-02-2016).ddf
Date: September 29, 2016

DESCRIPTION:

Description: Unit 11b
Capacity: 145 MMSCFD
Train 3 extended gas analysis sampled
02/22/2016

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	4.5559	109.342	19.9549
Ethane	0.9222	22.133	4.0392
Propane	0.8283	19.879	3.6280
Isobutane	0.3206	7.695	1.4044
n-Butane	0.4704	11.289	2.0602
Isopentane	0.2142	5.140	0.9380
n-Pentane	0.1770	4.247	0.7751
n-Hexane	0.1246	2.990	0.5456
Cyclohexane	0.3913	9.392	1.7140
Other Hexanes	0.1810	4.345	0.7929
Heptanes	0.3444	8.265	1.5084
Methylcyclohexane	0.5307	12.737	2.3245
2,2,4-Trimethylpentane	0.0205	0.493	0.0900
Benzene	0.1900	4.559	0.8321
Toluene	0.6370	15.287	2.7900
Ethylbenzene	0.4573	10.975	2.0029
Xylenes	0.5979	14.349	2.6186
C8+ Heavies	0.8666	20.798	3.7957
Total Emissions	11.8298	283.915	51.8145
Total Hydrocarbon Emissions	11.8298	283.915	51.8145
Total VOC Emissions	6.3517	152.440	27.8204
Total HAP Emissions	2.0272	48.653	8.8792
Total BTEX Emissions	1.8821	45.170	8.2436

FLASH GAS EMISSIONS

Note: Flash Gas Emissions are zero with the Recycle/recompression control option.

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr

Component	lbs/hr	lbs/day	tons/yr
Methane	50.1772	1204.253	219.7761
Ethane	2.6166	62.800	11.4609
Propane	1.0138	24.332	4.4407
Isobutane	0.2413	5.791	1.0569
n-Butane	0.2616	6.278	1.1458
Isopentane	0.0988	2.370	0.4326
n-Pentane	0.0633	1.518	0.2771
n-Hexane	0.0228	0.548	0.1000
Cyclohexane	0.0178	0.427	0.0780
Other Hexanes	0.0449	1.079	0.1968
Heptanes	0.0284	0.682	0.1245
Methylcyclohexane	0.0177	0.425	0.0775
2,2,4-Trimethylpentane	0.0035	0.085	0.0155
Benzene	0.0010	0.025	0.0045
Toluene	0.0020	0.049	0.0089
Ethylbenzene	0.0008	0.019	0.0035
Xylenes	0.0007	0.017	0.0030
C8+ Heavies	0.0067	0.160	0.0292
Total Emissions	54.6191	1310.858	239.2316
Total Hydrocarbon Emissions	54.6191	1310.858	239.2316
Total VOC Emissions	1.8252	43.806	7.9946
Total HAP Emissions	0.0309	0.742	0.1355
Total BTEX Emissions	0.0046	0.109	0.0200

COMBINED REGENERATOR VENT/FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	4.5559	109.342	19.9549
Ethane	0.9222	22.133	4.0392
Propane	0.8283	19.879	3.6280
Isobutane	0.3206	7.695	1.4044
n-Butane	0.4704	11.289	2.0602
Isopentane	0.2142	5.140	0.9380
n-Pentane	0.1770	4.247	0.7751
n-Hexane	0.1246	2.990	0.5456
Cyclohexane	0.3913	9.392	1.7140
Other Hexanes	0.1810	4.345	0.7929
Heptanes	0.3444	8.265	1.5084
Methylcyclohexane	0.5307	12.737	2.3245
2,2,4-Trimethylpentane	0.0205	0.493	0.0900
Benzene	0.1900	4.559	0.8321
Toluene	0.6370	15.287	2.7900
Ethylbenzene	0.4573	10.975	2.0029
Xylenes	0.5979	14.349	2.6186
C8+ Heavies	0.8666	20.798	3.7957
Total Emissions	11.8298	283.915	51.8145
Total Hydrocarbon Emissions	11.8298	283.915	51.8145
Total VOC Emissions	6.3517	152.440	27.8204
Total HAP Emissions	2.0272	48.653	8.8792
Total BTEX Emissions	1.8821	45.170	8.2436

COMBINED REGENERATOR VENT/FLASH GAS EMISSION CONTROL REPORT:

Component	Uncontrolled	Controlled	% Reduction

	tons/yr	tons/yr	
Methane	239.7311	19.9549	91.68
Ethane	15.5001	4.0392	73.94
Propane	8.0687	3.6280	55.04
Isobutane	2.4613	1.4044	42.94
n-Butane	3.2060	2.0602	35.74
Isopentane	1.3706	0.9380	31.56
n-Pentane	1.0523	0.7751	26.34
n-Hexane	0.6456	0.5456	15.48
Cyclohexane	1.7920	1.7140	4.35
Other Hexanes	0.9897	0.7929	19.89
Heptanes	1.6328	1.5084	7.62
Methylcyclohexane	2.4020	2.3245	3.23
2,2,4-Trimethylpentane	0.1055	0.0900	14.72
Benzene	0.8366	0.8321	0.54
Toluene	2.7989	2.7900	0.32
Ethylbenzene	2.0064	2.0029	0.17
Xylenes	2.6217	2.6186	0.12
C8+ Heavies	3.8249	3.7957	0.76
Total Emissions	291.0461	51.8145	82.20
Total Hydrocarbon Emissions	291.0461	51.8145	82.20
Total VOC Emissions	35.8149	27.8204	22.32
Total HAP Emissions	9.0147	8.8792	1.50
Total BTEX Emissions	8.2636	8.2436	0.24

EQUIPMENT REPORTS:

ABSORBER

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

Calculated Absorber Stages:	1.25	
Calculated Dry Gas Dew Point:	3.24	lbs. H2O/MMSCF
Temperature:	100.0	deg. F
Pressure:	900.0	psig
Dry Gas Flow Rate:	145.0000	MMSCF/day
Glycol Losses with Dry Gas:	1.5781	lb/hr
Wet Gas Water Content:	Saturated	
Calculated Wet Gas Water Content:	62.64	lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	5.55	gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	5.16%	94.84%
Carbon Dioxide	99.70%	0.30%
Nitrogen	99.98%	0.02%
Methane	99.98%	0.02%
Ethane	99.93%	0.07%
Propane	99.89%	0.11%
Isobutane	99.84%	0.16%
n-Butane	99.80%	0.20%
Isopentane	99.80%	0.20%

n-Pentane	99.74%	0.26%
n-Hexane	99.57%	0.43%
Cyclohexane	98.09%	1.91%
Other Hexanes	99.67%	0.33%
Heptanes	99.22%	0.78%
Methylcyclohexane	97.94%	2.06%
2,2,4-Trimethylpentane	99.67%	0.33%
Benzene	84.65%	15.35%
Toluene	78.23%	21.77%
Ethylbenzene	72.91%	27.09%
Xylenes	64.60%	35.40%
C8+ Heavies	97.07%	2.93%

FLASH TANK

Flash Control: Recycle/recompression
Flash Temperature: 100.0 deg. F
Flash Pressure: 60.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.99%	0.01%
Carbon Dioxide	57.33%	42.67%
Nitrogen	8.05%	91.95%
Methane	8.32%	91.68%
Ethane	26.06%	73.94%
Propane	44.96%	55.04%
Isobutane	57.06%	42.94%
n-Butane	64.26%	35.74%
Isopentane	68.60%	31.40%
n-Pentane	73.80%	26.20%
n-Hexane	84.59%	15.41%
Cyclohexane	95.79%	4.21%
Other Hexanes	80.31%	19.69%
Heptanes	92.42%	7.58%
Methylcyclohexane	96.90%	3.10%
2,2,4-Trimethylpentane	85.50%	14.50%
Benzene	99.49%	0.51%
Toluene	99.71%	0.29%
Ethylbenzene	99.85%	0.15%
Xylenes	99.90%	0.10%
C8+ Heavies	99.33%	0.67%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	43.83%	56.17%
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	0.73%	99.27%
n-Pentane	0.68%	99.32%
n-Hexane	0.59%	99.41%
Cyclohexane	3.34%	96.66%
Other Hexanes	1.25%	98.75%
Heptanes	0.54%	99.46%
Methylcyclohexane	4.13%	95.87%
2,2,4-Trimethylpentane	1.75%	98.25%
Benzene	5.03%	94.97%
Toluene	7.93%	92.07%
Ethylbenzene	10.42%	89.58%
Xylenes	12.93%	87.07%
C8+ Heavies	12.10%	87.90%

STREAM REPORTS:

WET GAS STREAM

Temperature: 100.00 deg. F
Pressure: 914.70 psia
Flow Rate: 6.05e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.32e-001	3.79e+002
Carbon Dioxide	1.02e+000	7.18e+003
Nitrogen	5.64e-002	2.52e+002
Methane	9.74e+001	2.49e+005
Ethane	1.05e+000	5.03e+003
Propane	2.33e-001	1.64e+003
Isobutane	3.89e-002	3.61e+002
n-Butane	3.88e-002	3.60e+002
Isopentane	1.35e-002	1.55e+002
n-Pentane	7.99e-003	9.19e+001
n-Hexane	2.50e-003	3.43e+001
Cyclohexane	1.60e-003	2.14e+001
Other Hexanes	4.99e-003	6.86e+001
Heptanes	3.00e-003	4.79e+001
Methylcyclohexane	1.70e-003	2.66e+001
2,2,4-Trimethylpentane	3.99e-004	7.28e+000
Benzene	9.99e-005	1.24e+000
Toluene	2.00e-004	2.93e+000
Ethylbenzene	9.99e-005	1.69e+000
Xylenes	9.99e-005	1.69e+000
C8+ Heavies	1.10e-003	2.98e+001
Total Components	100.00	2.65e+005

DRY GAS STREAM

Temperature: 100.00 deg. F
Pressure: 914.70 psia
Flow Rate: 6.04e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	6.83e-003	1.96e+001
Carbon Dioxide	1.02e+000	7.15e+003
Nitrogen	5.65e-002	2.52e+002
Methane	9.75e+001	2.49e+005
Ethane	1.05e+000	5.02e+003
Propane	2.33e-001	1.64e+003
Isobutane	3.89e-002	3.60e+002
n-Butane	3.88e-002	3.59e+002
Isopentane	1.35e-002	1.55e+002
n-Pentane	7.98e-003	9.17e+001
n-Hexane	2.49e-003	3.42e+001
Cyclohexane	1.57e-003	2.10e+001
Other Hexanes	4.98e-003	6.84e+001
Heptanes	2.98e-003	4.75e+001
Methylcyclohexane	1.67e-003	2.60e+001
2,2,4-Trimethylpentane	3.99e-004	7.25e+000
Benzene	8.47e-005	1.05e+000
Toluene	1.56e-004	2.30e+000
Ethylbenzene	7.29e-005	1.23e+000
Xylenes	6.46e-005	1.09e+000
C8+ Heavies	1.07e-003	2.90e+001
Total Components	100.00	2.64e+005

LEAN GLYCOL STREAM

Temperature: 100.00 deg. F
Flow Rate: 3.32e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.85e+001	1.84e+004
Water	1.50e+000	2.80e+002
Carbon Dioxide	1.13e-011	2.12e-009
Nitrogen	3.28e-014	6.14e-012
Methane	9.84e-018	1.84e-015
Ethane	8.94e-009	1.67e-006
Propane	4.01e-010	7.50e-008
Isobutane	9.02e-011	1.69e-008
n-Butane	9.71e-011	1.82e-008
Isopentane	8.41e-006	1.57e-003
n-Pentane	6.46e-006	1.21e-003
n-Hexane	3.96e-006	7.41e-004
Cyclohexane	7.24e-005	1.35e-002
Other Hexanes	1.22e-005	2.28e-003
Heptanes	1.00e-005	1.87e-003
Methylcyclohexane	1.22e-004	2.28e-002
2,2,4-Trimethylpentane	1.96e-006	3.67e-004
Benzene	5.38e-005	1.01e-002
Toluene	2.93e-004	5.48e-002
Ethylbenzene	2.85e-004	5.32e-002
Xylenes	4.75e-004	8.88e-002
C8+ Heavies	6.38e-004	1.19e-001
Total Components	100.00	1.87e+004

RICH GLYCOL STREAM

Temperature: 100.00 deg. F
Pressure: 914.70 psia
Flow Rate: 3.41e+001 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.62e+001	1.84e+004
Water	3.34e+000	6.40e+002
Carbon Dioxide	1.11e-001	2.12e+001
Nitrogen	3.21e-004	6.14e-002
Methane	2.86e-001	5.47e+001
Ethane	1.85e-002	3.54e+000
Propane	9.63e-003	1.84e+000
Isobutane	2.94e-003	5.62e-001
n-Butane	3.83e-003	7.32e-001
Isopentane	1.64e-003	3.14e-001
n-Pentane	1.26e-003	2.41e-001
n-Hexane	7.74e-004	1.48e-001
Cyclohexane	2.21e-003	4.23e-001
Other Hexanes	1.19e-003	2.28e-001
Heptanes	1.96e-003	3.75e-001
Methylcyclohexane	2.99e-003	5.71e-001
2,2,4-Trimethylpentane	1.28e-004	2.45e-002
Benzene	1.05e-003	2.01e-001
Toluene	3.63e-003	6.94e-001
Ethylbenzene	2.67e-003	5.11e-001
Xylenes	3.59e-003	6.87e-001
C8+ Heavies	5.19e-003	9.93e-001
Total Components	100.00	1.91e+004

FLASH TANK OFF GAS STREAM

Temperature: 100.00 deg. F
Pressure: 74.70 psia
Flow Rate: 1.31e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.79e-002	6.11e-002
Carbon Dioxide	5.94e+000	9.05e+000
Nitrogen	5.82e-002	5.65e-002
Methane	9.04e+001	5.02e+001
Ethane	2.51e+000	2.62e+000
Propane	6.64e-001	1.01e+000
Isobutane	1.20e-001	2.41e-001
n-Butane	1.30e-001	2.62e-001
Isopentane	3.95e-002	9.88e-002
n-Pentane	2.53e-002	6.33e-002
n-Hexane	7.65e-003	2.28e-002
Cyclohexane	6.11e-003	1.78e-002
Other Hexanes	1.51e-002	4.49e-002
Heptanes	8.19e-003	2.84e-002
Methylcyclohexane	5.21e-003	1.77e-002
2,2,4-Trimethylpentane	8.97e-004	3.55e-003

Benzene	3.80e-004	1.03e-003
Toluene	6.41e-004	2.04e-003
Ethylbenzene	2.16e-004	7.92e-004
Xylenes	1.89e-004	6.96e-004
C8+ Heavies	1.13e-003	6.67e-003
Total Components	100.00	6.38e+001

FLASH TANK GLYCOL STREAM

Temperature: 100.00 deg. F
Flow Rate: 3.40e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.65e+001	1.84e+004
Water	3.35e+000	6.40e+002
Carbon Dioxide	6.38e-002	1.22e+001
Nitrogen	2.59e-005	4.94e-003
Methane	2.39e-002	4.56e+000
Ethane	4.84e-003	9.22e-001
Propane	4.34e-003	8.28e-001
Isobutane	1.68e-003	3.21e-001
n-Butane	2.47e-003	4.70e-001
Isopentane	1.13e-003	2.16e-001
n-Pentane	9.34e-004	1.78e-001
n-Hexane	6.57e-004	1.25e-001
Cyclohexane	2.12e-003	4.05e-001
Other Hexanes	9.61e-004	1.83e-001
Heptanes	1.82e-003	3.46e-001
Methylcyclohexane	2.90e-003	5.54e-001
2,2,4-Trimethylpentane	1.10e-004	2.09e-002
Benzene	1.05e-003	2.00e-001
Toluene	3.63e-003	6.92e-001
Ethylbenzene	2.68e-003	5.10e-001
Xylenes	3.60e-003	6.87e-001
C8+ Heavies	5.17e-003	9.86e-001
Total Components	100.00	1.91e+004

FLASH GAS EMISSIONS

Control Method: Recycle/recompression
Control Efficiency: 100.00

Note: Flash Gas Emissions are zero with the Recycle/recompression control option.

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 7.83e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.67e+001	3.59e+002
Carbon Dioxide	1.34e+000	1.22e+001

Nitrogen	8.55e-004	4.94e-003
Methane	1.38e+000	4.56e+000
Ethane	1.49e-001	9.22e-001
Propane	9.11e-002	8.28e-001
Isobutane	2.67e-002	3.21e-001
n-Butane	3.92e-002	4.70e-001
Isopentane	1.44e-002	2.14e-001
n-Pentane	1.19e-002	1.77e-001
n-Hexane	7.01e-003	1.25e-001
Cyclohexane	2.25e-002	3.91e-001
Other Hexanes	1.02e-002	1.81e-001
Heptanes	1.67e-002	3.44e-001
Methylcyclohexane	2.62e-002	5.31e-001
2,2,4-Trimethylpentane	8.72e-004	2.05e-002
Benzene	1.18e-002	1.90e-001
Toluene	3.35e-002	6.37e-001
Ethylbenzene	2.09e-002	4.57e-001
Xylenes	2.73e-002	5.98e-001
C8+ Heavies	2.47e-002	8.67e-001
Total Components	100.00	3.83e+002

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Milagro TEG Dehydrator
File Name: C:\1 - Office\5 - Milagro\Milagro - GRI-GLYCalc - Train 4 VRU Bypass (02-02-2016).ddf
Date: September 29, 2016

DESCRIPTION:

Description: Unit 14
Capacity: 90 MMSCFD
Train 4 extended gas analysis sampled
02/02/2016

Annual Hours of Operation: 8760.0 hours/yr

WET GAS:

Temperature: 100.00 deg. F
Pressure: 900.00 psig
Wet Gas Water Content: Saturated

Component	Conc. (vol %)
Methane	98.6525
Ethane	1.0199
Propane	0.2215
Isobutane	0.0367
n-Butane	0.0357
Isopentane	0.0117
n-Pentane	0.0072
n-Hexane	0.0022
Cyclohexane	0.0015
Other Hexanes	0.0047
Heptanes	0.0024
Methylcyclohexane	0.0019
2,2,4-Trimethylpentane	0.0007
Benzene	0.0003
Toluene	0.0001
Ethylbenzene	0.0003
Xylenes	0.0006
C8+ Heavies	0.0001

DRY GAS:

Flow Rate: 90.0 MMSCF/day
Water Content: 7.0 lbs. H2O/MMSCF

LEAN GLYCOL:

Glycol Type: TEG
Water Content: 1.5 wt% H2O
Flow Rate: 10.4 gpm

PUMP:

Glycol Pump Type: Electric/Pneumatic

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Milagro TEG Dehydrator
File Name: C:\1 - Office\5 - Milagro\Milagro - GRI-GLYCalc - Train 4 VRU Bypass (02-02-2016).ddf
Date: September 29, 2016

DESCRIPTION:

Description: Unit 14
Capacity: 90 MMSCFD
Train 4 extended gas analysis sampled
02/02/2016

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	16.7715	402.516	73.4592
Ethane	1.0322	24.773	4.5211
Propane	0.5400	12.960	2.3651
Isobutane	0.1625	3.900	0.7118
n-Butane	0.2066	4.957	0.9047
Isopentane	0.0830	1.991	0.3634
n-Pentane	0.0662	1.588	0.2899
n-Hexane	0.0395	0.947	0.1729
Cyclohexane	0.1147	2.752	0.5022
Other Hexanes	0.0646	1.551	0.2830
Heptanes	0.0899	2.156	0.3935
Methylcyclohexane	0.1830	4.391	0.8014
2,2,4-Trimethylpentane	0.0127	0.305	0.0556
Benzene	0.1862	4.469	0.8156
Toluene	0.1064	2.554	0.4662
Ethylbenzene	0.4688	11.252	2.0535
Xylenes	1.2934	31.042	5.6651
C8+ Heavies	0.0238	0.571	0.1042
Total Emissions	21.4448	514.676	93.9284
Total Hydrocarbon Emissions	21.4448	514.676	93.9284
Total VOC Emissions	3.6411	87.387	15.9482
Total HAP Emissions	2.1071	50.570	9.2289
Total BTEX Emissions	2.0549	49.318	9.0005

EQUIPMENT REPORTS:

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:	4.72	lbs. H2O/MMSCF
Temperature:	100.0	deg. F
Pressure:	900.0	psig
Dry Gas Flow Rate:	90.0000	MMSCF/day
Glycol Losses with Dry Gas:	0.9645	lb/hr
Wet Gas Water Content:	Saturated	
Calculated Wet Gas Water Content:	62.46	lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	2.88	gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	7.54%	92.46%
Methane	99.99%	0.01%
Ethane	99.97%	0.03%
Propane	99.94%	0.06%
Isobutane	99.92%	0.08%
n-Butane	99.90%	0.10%
Isopentane	99.90%	0.10%
n-Pentane	99.87%	0.13%
n-Hexane	99.79%	0.21%
Cyclohexane	99.08%	0.92%
Other Hexanes	99.84%	0.16%
Heptanes	99.62%	0.38%
Methylcyclohexane	99.01%	0.99%
2,2,4-Trimethylpentane	99.84%	0.16%
Benzene	91.96%	8.04%
Toluene	88.31%	11.69%
Ethylbenzene	85.11%	14.89%
Xylenes	79.45%	20.55%
C8+ Heavies	98.59%	1.41%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	28.83%	71.17%
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	0.50%	99.50%
n-Pentane	0.50%	99.50%
n-Hexane	0.50%	99.50%
Cyclohexane	3.20%	96.80%
Other Hexanes	1.00%	99.00%
Heptanes	0.50%	99.50%
Methylcyclohexane	4.00%	96.00%
2,2,4-Trimethylpentane	1.50%	98.50%
Benzene	5.00%	95.00%
Toluene	7.90%	92.10%
Ethylbenzene	10.41%	89.59%
Xylenes	12.93%	87.07%
C8+ Heavies	12.03%	87.97%

STREAM REPORTS:

WET GAS STREAM

Temperature: 100.00 deg. F
Pressure: 914.70 psia
Flow Rate: 3.76e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.32e-001	2.35e+002
Methane	9.85e+001	1.56e+005
Ethane	1.02e+000	3.03e+003
Propane	2.21e-001	9.65e+002
Isobutane	3.67e-002	2.11e+002
n-Butane	3.57e-002	2.05e+002
Isopentane	1.17e-002	8.34e+001
n-Pentane	7.19e-003	5.13e+001
n-Hexane	2.20e-003	1.87e+001
Cyclohexane	1.50e-003	1.25e+001
Other Hexanes	4.69e-003	4.00e+001
Heptanes	2.40e-003	2.38e+001
Methylcyclohexane	1.90e-003	1.84e+001
2,2,4-Trimethylpentane	6.99e-004	7.90e+000
Benzene	3.00e-004	2.32e+000
Toluene	9.99e-005	9.11e-001
Ethylbenzene	3.00e-004	3.15e+000
Xylenes	5.99e-004	6.30e+000
C8+ Heavies	9.99e-005	1.68e+000
Total Components	100.00	1.61e+005

DRY GAS STREAM

Temperature: 100.00 deg. F
Pressure: 914.70 psia
Flow Rate: 3.75e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.94e-003	1.77e+001
Methane	9.86e+001	1.56e+005
Ethane	1.02e+000	3.03e+003
Propane	2.21e-001	9.65e+002
Isobutane	3.67e-002	2.11e+002
n-Butane	3.57e-002	2.05e+002
Isopentane	1.17e-002	8.34e+001
n-Pentane	7.19e-003	5.13e+001
n-Hexane	2.20e-003	1.87e+001
Cyclohexane	1.49e-003	1.24e+001
Other Hexanes	4.69e-003	4.00e+001
Heptanes	2.39e-003	2.37e+001
Methylcyclohexane	1.88e-003	1.83e+001
2,2,4-Trimethylpentane	6.99e-004	7.89e+000
Benzene	2.76e-004	2.13e+000

Toluene	8.83e-005	8.04e-001
Ethylbenzene	2.55e-004	2.68e+000
Xylenes	4.77e-004	5.00e+000
C8+ Heavies	9.86e-005	1.66e+000
Total Components	100.00	1.61e+005

LEAN GLYCOL STREAM

Temperature: 100.00 deg. F
Flow Rate: 1.04e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.85e+001	5.77e+003
Water	1.50e+000	8.78e+001
Methane	9.62e-018	5.64e-016
Ethane	8.32e-009	4.87e-007
Propane	3.75e-010	2.20e-008
Isobutane	8.33e-011	4.88e-009
n-Butane	8.75e-011	5.12e-009
Isopentane	7.12e-006	4.17e-004
n-Pentane	5.68e-006	3.33e-004
n-Hexane	3.39e-006	1.98e-004
Cyclohexane	6.47e-005	3.79e-003
Other Hexanes	1.11e-005	6.53e-004
Heptanes	7.71e-006	4.52e-004
Methylcyclohexane	1.30e-004	7.62e-003
2,2,4-Trimethylpentane	3.30e-006	1.93e-004
Benzene	1.67e-004	9.80e-003
Toluene	1.56e-004	9.13e-003
Ethylbenzene	9.31e-004	5.45e-002
Xylenes	3.28e-003	1.92e-001
C8+ Heavies	5.56e-005	3.25e-003
Total Components	100.00	5.86e+003

RICH GLYCOL STREAM

Temperature: 100.00 deg. F
Pressure: 914.70 psia
Flow Rate: 1.09e+001 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.46e+001	5.76e+003
Water	5.00e+000	3.05e+002
Methane	2.75e-001	1.68e+001
Ethane	1.69e-002	1.03e+000
Propane	8.87e-003	5.40e-001
Isobutane	2.67e-003	1.63e-001
n-Butane	3.39e-003	2.07e-001
Isopentane	1.37e-003	8.34e-002
n-Pentane	1.09e-003	6.65e-002
n-Hexane	6.51e-004	3.97e-002
Cyclohexane	1.94e-003	1.18e-001
Other Hexanes	1.07e-003	6.53e-002
Heptanes	1.48e-003	9.03e-002

Methylcyclohexane	3.13e-003	1.91e-001
2,2,4-Trimethylpentane	2.12e-004	1.29e-002
Benzene	3.22e-003	1.96e-001
Toluene	1.90e-003	1.16e-001
Ethylbenzene	8.59e-003	5.23e-001
Xylenes	2.44e-002	1.49e+000
C8+ Heavies	4.44e-004	2.70e-002
Total Components	100.00	6.09e+003

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 5.00e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.14e+001	2.17e+002
Methane	7.94e+000	1.68e+001
Ethane	2.61e-001	1.03e+000
Propane	9.30e-002	5.40e-001
Isobutane	2.12e-002	1.63e-001
n-Butane	2.70e-002	2.07e-001
Isopentane	8.73e-003	8.30e-002
n-Pentane	6.97e-003	6.62e-002
n-Hexane	3.48e-003	3.95e-002
Cyclohexane	1.03e-002	1.15e-001
Other Hexanes	5.69e-003	6.46e-002
Heptanes	6.81e-003	8.99e-002
Methylcyclohexane	1.42e-002	1.83e-001
2,2,4-Trimethylpentane	8.44e-004	1.27e-002
Benzene	1.81e-002	1.86e-001
Toluene	8.77e-003	1.06e-001
Ethylbenzene	3.35e-002	4.69e-001
Xylenes	9.25e-002	1.29e+000
C8+ Heavies	1.06e-003	2.38e-002
Total Components	100.00	2.38e+002

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Milagro TEG Dehydrator
File Name: C:\1 - Office\5 - Milagro\Milagro - GRI-GLYCalc - Train 5 VRU Bypass (02-02-2016).ddf
Date: September 29, 2016

DESCRIPTION:

Description: Unit 15
Capacity: 120 MMSCFD
Train 5 extended gas analysis sampled
02/02/2016

Annual Hours of Operation: 8760.0 hours/yr

WET GAS:

Temperature: 100.00 deg. F
Pressure: 900.00 psig
Wet Gas Water Content: Saturated

Component	Conc. (vol %)
Carbon Dioxide	0.0140
Methane	98.5999
Ethane	1.0496
Propane	0.2251
Isobutane	0.0377
n-Butane	0.0371
Isopentane	0.0123
n-Pentane	0.0075
n-Hexane	0.0024
Cyclohexane	0.0015
Other Hexanes	0.0052
Heptanes	0.0030
Methylcyclohexane	0.0016
2,2,4-Trimethylpentane	0.0004
Benzene	0.0005
Toluene	0.0001
Xylenes	0.0010
C8+ Heavies	0.0011

DRY GAS:

Flow Rate: 120.0 MMSCF/day
Water Content: 7.0 lbs. H2O/MMSCF

LEAN GLYCOL:

Glycol Type: TEG
Water Content: 1.5 wt% H2O
Flow Rate: 28.4 gpm

PUMP:

Glycol Pump Type: Electric/Pneumatic

FLASH TANK:

Flash Control: Recycle/recompression
Temperature: 100.0 deg. F
Pressure: 60.0 psig

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Milagro TEG Dehydrator
File Name: C:\1 - Office\5 - Milagro\Milagro - GRI-GLYCalc - Train 5 VRU Bypass (02-02-2016).ddf
Date: September 29, 2016

DESCRIPTION:

Description: Unit 15
Capacity: 120 MMSCFD
Train 5 extended gas analysis sampled
02/02/2016

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	4.1563	99.752	18.2048
Ethane	0.8252	19.806	3.6146
Propane	0.7031	16.875	3.0797
Isobutane	0.2715	6.516	1.1891
n-Butane	0.3913	9.392	1.7140
Isopentane	0.1699	4.078	0.7443
n-Pentane	0.1442	3.460	0.6315
n-Hexane	0.1035	2.484	0.4533
Cyclohexane	0.3159	7.583	1.3838
Other Hexanes	0.1633	3.919	0.7153
Heptanes	0.2971	7.130	1.3012
Methylcyclohexane	0.4299	10.317	1.8828
2,2,4-Trimethylpentane	0.0178	0.428	0.0782
Benzene	0.8123	19.496	3.5581
Toluene	0.2721	6.531	1.1918
Xylenes	5.0893	122.143	22.2912
C8+ Heavies	0.7511	18.026	3.2898
Total Emissions	14.9140	357.937	65.3235
Total Hydrocarbon Emissions	14.9140	357.937	65.3235
Total VOC Emissions	9.9324	238.379	43.5041
Total HAP Emissions	6.2951	151.082	27.5725
Total BTEX Emissions	6.1738	148.170	27.0411

FLASH GAS EMISSIONS

Note: Flash Gas Emissions are zero with the Recycle/recompression control option.

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	43.2470	1037.928	189.4218

Ethane	2.2083	53.000	9.6725
Propane	0.8155	19.572	3.5719
Isobutane	0.1935	4.643	0.8474
n-Butane	0.2061	4.946	0.9027
Isopentane	0.0742	1.780	0.3249
n-Pentane	0.0488	1.171	0.2136
n-Hexane	0.0179	0.430	0.0785
Cyclohexane	0.0135	0.325	0.0593
Other Hexanes	0.0383	0.920	0.1678
Heptanes	0.0232	0.556	0.1014
Methylcyclohexane	0.0135	0.325	0.0592
2,2,4-Trimethylpentane	0.0029	0.070	0.0127
Benzene	0.0042	0.100	0.0182
Toluene	0.0008	0.020	0.0036
Xylenes	0.0056	0.134	0.0245
C8+ Heavies	0.0054	0.130	0.0238
Total Emissions	46.9187	1126.048	205.5038
Total Hydrocarbon Emissions	46.9187	1126.048	205.5038
Total VOC Emissions	1.4634	35.121	6.4096
Total HAP Emissions	0.0314	0.753	0.1375
Total BTEX Emissions	0.0106	0.254	0.0463

COMBINED REGENERATOR VENT/FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	4.1563	99.752	18.2048
Ethane	0.8252	19.806	3.6146
Propane	0.7031	16.875	3.0797
Isobutane	0.2715	6.516	1.1891
n-Butane	0.3913	9.392	1.7140
Isopentane	0.1699	4.078	0.7443
n-Pentane	0.1442	3.460	0.6315
n-Hexane	0.1035	2.484	0.4533
Cyclohexane	0.3159	7.583	1.3838
Other Hexanes	0.1633	3.919	0.7153
Heptanes	0.2971	7.130	1.3012
Methylcyclohexane	0.4299	10.317	1.8828
2,2,4-Trimethylpentane	0.0178	0.428	0.0782
Benzene	0.8123	19.496	3.5581
Toluene	0.2721	6.531	1.1918
Xylenes	5.0893	122.143	22.2912
C8+ Heavies	0.7511	18.026	3.2898
Total Emissions	14.9140	357.937	65.3235
Total Hydrocarbon Emissions	14.9140	357.937	65.3235
Total VOC Emissions	9.9324	238.379	43.5041
Total HAP Emissions	6.2951	151.082	27.5725
Total BTEX Emissions	6.1738	148.170	27.0411

COMBINED REGENERATOR VENT/FLASH GAS EMISSION CONTROL REPORT:

Component	Uncontrolled tons/yr	Controlled tons/yr	% Reduction
Methane	207.6266	18.2048	91.23

Ethane	13.2870	3.6146	72.80
Propane	6.6516	3.0797	53.70
Isobutane	2.0365	1.1891	41.61
n-Butane	2.6167	1.7140	34.50
Isopentane	1.0692	0.7443	30.39
n-Pentane	0.8451	0.6315	25.28
n-Hexane	0.5318	0.4533	14.76
Cyclohexane	1.4432	1.3838	4.11
Other Hexanes	0.8831	0.7153	19.01
Heptanes	1.4026	1.3012	7.23
Methylcyclohexane	1.9420	1.8828	3.05
2,2,4-Trimethylpentane	0.0909	0.0782	14.00
Benzene	3.5762	3.5581	0.51
Toluene	1.1954	1.1918	0.30
Xylenes	22.3157	22.2912	0.11
C8+ Heavies	3.3136	3.2898	0.72
Total Emissions	270.8273	65.3235	75.88
Total Hydrocarbon Emissions	270.8273	65.3235	75.88
Total VOC Emissions	49.9137	43.5041	12.84
Total HAP Emissions	27.7100	27.5725	0.50
Total BTEX Emissions	27.0873	27.0411	0.17

EQUIPMENT REPORTS:

ABSORBER

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

Calculated Absorber Stages:	1.25	
Calculated Dry Gas Dew Point:	3.18	lbs. H2O/MMSCF
Temperature:	100.0	deg. F
Pressure:	900.0	psig
Dry Gas Flow Rate:	120.0000	MMSCF/day
Glycol Losses with Dry Gas:	1.2874	lb/hr
Wet Gas Water Content:	Saturated	
Calculated Wet Gas Water Content:	62.46	lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	5.75	gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	5.08%	94.92%
Carbon Dioxide	99.69%	0.31%
Methane	99.98%	0.02%
Ethane	99.93%	0.07%
Propane	99.88%	0.12%
Isobutane	99.84%	0.16%
n-Butane	99.79%	0.21%
Isopentane	99.79%	0.21%
n-Pentane	99.73%	0.27%
n-Hexane	99.55%	0.45%
Cyclohexane	98.02%	1.98%
Other Hexanes	99.66%	0.34%

Heptanes	99.19%	0.81%
Methylcyclohexane	97.86%	2.14%
2,2,4-Trimethylpentane	99.66%	0.34%
Benzene	84.14%	15.86%
Toluene	77.53%	22.47%
Xylenes	63.59%	36.41%
C8+ Heavies	96.94%	3.06%

FLASH TANK

Flash Control: Recycle/recompression
Flash Temperature: 100.0 deg. F
Flash Pressure: 60.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.99%	0.01%
Carbon Dioxide	58.70%	41.30%
Methane	8.77%	91.23%
Ethane	27.20%	72.80%
Propane	46.30%	53.70%
Isobutane	58.39%	41.61%
n-Butane	65.50%	34.50%
Isopentane	69.77%	30.23%
n-Pentane	74.85%	25.15%
n-Hexane	85.31%	14.69%
Cyclohexane	96.02%	3.98%
Other Hexanes	81.18%	18.82%
Heptanes	92.81%	7.19%
Methylcyclohexane	97.07%	2.93%
2,2,4-Trimethylpentane	86.21%	13.79%
Benzene	99.52%	0.48%
Toluene	99.72%	0.28%
Xylenes	99.90%	0.10%
C8+ Heavies	99.37%	0.63%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	44.69%	55.31%
Carbon Dioxide	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	0.72%	99.28%
n-Pentane	0.67%	99.33%
n-Hexane	0.59%	99.41%
Cyclohexane	3.33%	96.67%
Other Hexanes	1.23%	98.77%
Heptanes	0.54%	99.46%
Methylcyclohexane	4.12%	95.88%
2,2,4-Trimethylpentane	1.74%	98.26%

Benzene	5.02%	94.98%
Toluene	7.92%	92.08%
Xylenes	12.93%	87.07%
C8+ Heavies	12.10%	87.90%

STREAM REPORTS:

WET GAS STREAM

Temperature: 100.00 deg. F
Pressure: 914.70 psia
Flow Rate: 5.01e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.32e-001	3.13e+002
Carbon Dioxide	1.40e-002	8.12e+001
Methane	9.85e+001	2.08e+005
Ethane	1.05e+000	4.16e+003
Propane	2.25e-001	1.31e+003
Isobutane	3.77e-002	2.89e+002
n-Butane	3.71e-002	2.84e+002
Isopentane	1.23e-002	1.17e+002
n-Pentane	7.49e-003	7.13e+001
n-Hexane	2.40e-003	2.73e+001
Cyclohexane	1.50e-003	1.66e+001
Other Hexanes	5.19e-003	5.91e+001
Heptanes	3.00e-003	3.96e+001
Methylcyclohexane	1.60e-003	2.07e+001
2,2,4-Trimethylpentane	3.99e-004	6.02e+000
Benzene	4.99e-004	5.15e+000
Toluene	9.99e-005	1.21e+000
Xylenes	9.99e-004	1.40e+001
C8+ Heavies	1.10e-003	2.47e+001
Total Components	100.00	2.15e+005

DRY GAS STREAM

Temperature: 100.00 deg. F
Pressure: 914.70 psia
Flow Rate: 5.00e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	6.70e-003	1.59e+001
Carbon Dioxide	1.40e-002	8.10e+001
Methane	9.86e+001	2.08e+005
Ethane	1.05e+000	4.16e+003
Propane	2.25e-001	1.31e+003
Isobutane	3.76e-002	2.88e+002
n-Butane	3.70e-002	2.84e+002
Isopentane	1.23e-002	1.17e+002
n-Pentane	7.48e-003	7.11e+001
n-Hexane	2.39e-003	2.71e+001

Cyclohexane	1.47e-003	1.63e+001
Other Hexanes	5.18e-003	5.89e+001
Heptanes	2.98e-003	3.93e+001
Methylcyclohexane	1.57e-003	2.03e+001
2,2,4-Trimethylpentane	3.99e-004	6.00e+000
Benzene	4.21e-004	4.33e+000
Toluene	7.75e-005	9.42e-001
Xylenes	6.36e-004	8.90e+000
C8+ Heavies	1.07e-003	2.39e+001
Total Components	100.00	2.15e+005

LEAN GLYCOL STREAM

Temperature: 100.00 deg. F
Flow Rate: 2.84e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.85e+001	1.57e+004
Water	1.50e+000	2.40e+002
Carbon Dioxide	1.56e-013	2.49e-011
Methane	9.96e-018	1.59e-015
Ethane	8.95e-009	1.43e-006
Propane	3.87e-010	6.18e-008
Isobutane	8.72e-011	1.39e-008
n-Butane	9.27e-011	1.48e-008
Isopentane	7.67e-006	1.23e-003
n-Pentane	6.06e-006	9.70e-004
n-Hexane	3.82e-006	6.10e-004
Cyclohexane	6.81e-005	1.09e-002
Other Hexanes	1.27e-005	2.04e-003
Heptanes	1.01e-005	1.61e-003
Methylcyclohexane	1.16e-004	1.85e-002
2,2,4-Trimethylpentane	1.98e-006	3.16e-004
Benzene	2.69e-004	4.30e-002
Toluene	1.46e-004	2.34e-002
Xylenes	4.73e-003	7.56e-001
C8+ Heavies	6.47e-004	1.03e-001
Total Components	100.00	1.60e+004

RICH GLYCOL STREAM

Temperature: 100.00 deg. F
Pressure: 914.70 psia
Flow Rate: 2.91e+001 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.63e+001	1.57e+004
Water	3.28e+000	5.37e+002
Carbon Dioxide	1.52e-003	2.49e-001
Methane	2.90e-001	4.74e+001
Ethane	1.86e-002	3.03e+000
Propane	9.29e-003	1.52e+000
Isobutane	2.84e-003	4.65e-001
n-Butane	3.65e-003	5.97e-001
Isopentane	1.50e-003	2.45e-001

n-Pentane	1.19e-003	1.94e-001
n-Hexane	7.47e-004	1.22e-001
Cyclohexane	2.08e-003	3.40e-001
Other Hexanes	1.25e-003	2.04e-001
Heptanes	1.97e-003	3.22e-001
Methylcyclohexane	2.83e-003	4.62e-001
2,2,4-Trimethylpentane	1.29e-004	2.11e-002
Benzene	5.26e-003	8.59e-001
Toluene	1.81e-003	2.96e-001
Xylenes	3.58e-002	5.85e+000
C8+ Heavies	5.26e-003	8.60e-001
Total Components	100.00	1.63e+004

FLASH TANK OFF GAS STREAM

Temperature: 100.00 deg. F
Pressure: 74.70 psia
Flow Rate: 1.06e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.59e-002	4.84e-002
Carbon Dioxide	8.32e-002	1.03e-001
Methane	9.62e+001	4.32e+001
Ethane	2.62e+000	2.21e+000
Propane	6.60e-001	8.15e-001
Isobutane	1.19e-001	1.93e-001
n-Butane	1.27e-001	2.06e-001
Isopentane	3.67e-002	7.42e-002
n-Pentane	2.41e-002	4.88e-002
n-Hexane	7.42e-003	1.79e-002
Cyclohexane	5.74e-003	1.35e-002
Other Hexanes	1.59e-002	3.83e-002
Heptanes	8.24e-003	2.32e-002
Methylcyclohexane	4.91e-003	1.35e-002
2,2,4-Trimethylpentane	9.07e-004	2.91e-003
Benzene	1.90e-003	4.15e-003
Toluene	3.19e-004	8.24e-004
Xylenes	1.88e-003	5.59e-003
C8+ Heavies	1.14e-003	5.43e-003
Total Components	100.00	4.71e+001

FLASH TANK GLYCOL STREAM

Temperature: 100.00 deg. F
Flow Rate: 2.90e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.66e+001	1.57e+004
Water	3.29e+000	5.37e+002
Carbon Dioxide	8.96e-004	1.46e-001
Methane	2.55e-002	4.16e+000
Ethane	5.06e-003	8.25e-001
Propane	4.31e-003	7.03e-001
Isobutane	1.67e-003	2.71e-001
n-Butane	2.40e-003	3.91e-001

Isopentane	1.05e-003	1.71e-001
n-Pentane	8.91e-004	1.45e-001
n-Hexane	6.39e-004	1.04e-001
Cyclohexane	2.01e-003	3.27e-001
Other Hexanes	1.01e-003	1.65e-001
Heptanes	1.83e-003	2.99e-001
Methylcyclohexane	2.75e-003	4.48e-001
2,2,4-Trimethylpentane	1.11e-004	1.82e-002
Benzene	5.25e-003	8.55e-001
Toluene	1.81e-003	2.96e-001
Xylenes	3.59e-002	5.84e+000
C8+ Heavies	5.24e-003	8.54e-001
Total Components	100.00	1.63e+004

FLASH GAS EMISSIONS

Control Method: Recycle/recompression
Control Efficiency: 100.00

Note: Flash Gas Emissions are zero with the Recycle/recompression control option.

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 6.41e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.76e+001	2.97e+002
Carbon Dioxide	1.96e-002	1.46e-001
Methane	1.53e+000	4.16e+000
Ethane	1.63e-001	8.25e-001
Propane	9.44e-002	7.03e-001
Isobutane	2.77e-002	2.71e-001
n-Butane	3.99e-002	3.91e-001
Isopentane	1.40e-002	1.70e-001
n-Pentane	1.18e-002	1.44e-001
n-Hexane	7.11e-003	1.03e-001
Cyclohexane	2.22e-002	3.16e-001
Other Hexanes	1.12e-002	1.63e-001
Heptanes	1.76e-002	2.97e-001
Methylcyclohexane	2.59e-002	4.30e-001
2,2,4-Trimethylpentane	9.25e-004	1.78e-002
Benzene	6.16e-002	8.12e-001
Toluene	1.75e-002	2.72e-001
Xylenes	2.84e-001	5.09e+000
C8+ Heavies	2.61e-002	7.51e-001
Total Components	100.00	3.12e+002

Project Name:	Milagro train 1 PTE calcs to compare to xhaul VOC increase Milagro AMINECalc considering 2/2/16 plant inlet gas analysis Train 1 using parameters from July 2016 analysis with 2/2/16 plant inlet gas & PTE (145 mmcfd & 1600 gpm)
Model:	Gas Model
Amine:	MDEA

Lean Amine Pressure:	907.000	[psia]
Lean Amine Temperature:	124.000	[F]
Lean Amine Flowrate:	1600.000	[gal/min]
Lean Amine Weight:	50.000	[%]
H2S Loading:	0.000	[mol/mol]
CO2 Loading:	0.023	[mol/mol]
Emission Control Efficiency	100.000	
Operating Hours/Day:	24	[hours/day]
Operating Days/Year:	365	[days/year]
Gas Feed Pressure:	908.000	[psia]
Gas Feed Temperature:	96.000	[F]
Gas Feed Flowrate:	145.000	[MMSCFD]
Number of Trays in Column:	15	
Flash Tank Pressure:	74.000	[psia]

H2S	0.00000	[%]
CO2	10.54440	[%]
MDEA	0.00000	[%]
H2O	0.00000	[%]
N2	0.09800	[%]
O2	0.00000	[%]
C1	88.10970	[%]
C2	0.94340	[%]
C3	0.20670	[%]
i-C4	0.03400	[%]
n-C4	0.03350	[%]
i-C5	0.01080	[%]
n-C5	0.00660	[%]
Hexanes	0.00540	[%]
Heptanes	0.00390	[%]
Octanes	0.00090	[%]
Nonanes	0.00000	[%]
C10+	0.00000	[%]
MeSH	0.00000	[%]
EtSH	0.00000	[%]
Benzene	0.00030	[%]
Toluene	0.00010	[%]
Ethylbenzene	0.00010	[%]
Xylenes	0.00000	[%]
n-C6	0.00190	[%]
224Trimeth	0.00030	[%]

Page 2---------- AMINECalc Stream Results

Stream 1 Gas Feed to Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.105440	73880.470	323591.000
MDEA	0.000000	0.000	0.001
H2O	0.000000	0.000	0.000
N2	0.000980	437.067	1914.322
C1	0.881100	225043.100	985672.100
C2	0.009430	4516.331	19781.190
C3	0.002070	1451.129	6355.836
i-C4	0.000340	314.623	1378.027
n-C4	0.000330	309.996	1357.761
i-C5	0.000110	124.057	543.362
n-C5	0.000070	75.813	332.055
Hexanes	0.000050	74.088	324.498
Heptanes	0.000040	62.217	272.507
Octanes	0.000010	16.368	71.689
Benzene	0.000000	3.731	16.340

Toluene	0.000000	1.467	6.425
Ethylbenzene	0.000000	1.690	7.403
n-C6	0.000020	26.068	114.175
224Trimeth	0.000000	5.456	23.897
Total:	1.000000	306343.700	1341763.000
Pressure	908.000 [psia]		
Temperature	96.000 [F]		

Page 3---------- AMINECalc Stream Results

Stream 2 Rich Amine From Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.041710	51284.110	224620.600
MDEA	0.125910	419211.500	1836115.000
H2O	0.831500	418574.000	1833323.000
N2	0.000000	0.382	1.673
C1	0.000860	387.575	1697.551
C2	0.000010	7.470	32.716
C3	0.000000	1.976	8.654
i-C4	0.000000	0.040	0.177
n-C4	0.000000	0.040	0.174
i-C5	0.000000	0.023	0.099
n-C5	0.000000	0.014	0.061
Hexanes	0.000000	0.027	0.117
Heptanes	0.000000	0.016	0.071
Octanes	0.000000	0.003	0.012
Benzene	0.000000	0.207	0.905
Toluene	0.000000	0.047	0.207
Ethylbenzene	0.000000	0.071	0.311
n-C6	0.000000	0.042	0.183
224Trimeth	0.000000	0.001	0.007
Total:	1.000000	889467.500	3895802.000
Pressure	908.000 [psia]		
Temperature	152.991 [F]		

Page 4---------- AMINECalc Stream Results

Stream 3 Flash Gas Vent Flow from Flash Tank

	----- Controlled -----		----- Uncontrolled -----	
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]
H2S	0.000	0.000	0.000	0.000
CO2	157.315	689.030	157.315	689.030
MDEA	0.000	0.000	0.033	0.144
H2O	0.000	0.000	23.167	101.469
N2	0.000	0.000	0.367	1.607
C1	0.000	0.000	358.271	1569.201
C2	0.000	0.000	6.925	30.330
C3	0.000	0.000	1.855	8.126
i-C4	0.000	0.000	0.040	0.176
n-C4	0.000	0.000	0.040	0.173
i-C5	0.000	0.000	0.023	0.099
n-C5	0.000	0.000	0.014	0.061
Hexanes	0.000	0.000	0.026	0.115
Heptanes	0.000	0.000	0.016	0.069
Octanes	0.000	0.000	0.003	0.012
Benzene	0.000	0.000	0.056	0.245
Toluene	0.000	0.000	0.019	0.084
Ethylbenzene	0.000	0.000	0.023	0.101
n-C6	0.000	0.000	0.039	0.171
224Trimeth	0.000	0.000	0.001	0.007

Total:	157.315	689.030	548.232	2401.218

Pressure	74.000	[psia]
Temperature	152.991	[F]

Page 5---------- AMINECalc Stream Results

Stream 4 Rich Amine Feed to Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.041620	51126.770	223931.400
MDEA	0.126040	419211.400	1836115.000
H2O	0.832280	418550.900	1833222.000
N2	0.000000	0.015	0.066
C1	0.000070	29.313	128.387
C2	0.000000	0.545	2.388
C3	0.000000	0.121	0.528
i-C4	0.000000	0.000	0.001
n-C4	0.000000	0.000	0.001
i-C5	0.000000	0.000	0.001
n-C5	0.000000	0.000	0.000
Hexanes	0.000000	0.000	0.002
Heptanes	0.000000	0.000	0.001
Octanes	0.000000	0.000	0.000
Benzene	0.000000	0.151	0.660
Toluene	0.000000	0.028	0.123
Ethylbenzene	0.000000	0.048	0.209
n-C6	0.000000	0.003	0.012
224Trimeth	0.000000	0.000	0.000
Total:	1.000000	888919.300	3893400.000

Pressure	74.000	[psia]
Temperature	152.991	[F]

Page 6---------- AMINECalc Stream Results

Stream 5 Acid Gas Flow from Regenerator

	----- Controlled -----		----- Uncontrolled -----	
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]
H2S	0.000	0.000	0.000	0.000
CO2	47565.980	208335.500	47565.980	208335.500
MDEA	0.000	0.000	0.000	0.000
H2O	0.000	0.000	0.000	0.000
N2	0.000	0.000	0.015	0.066
C1	0.000	0.000	29.313	128.387
C2	0.000	0.000	0.545	2.388
C3	0.000	0.000	0.121	0.528
i-C4	0.000	0.000	0.000	0.001
n-C4	0.000	0.000	0.000	0.001
i-C5	0.000	0.000	0.000	0.001
n-C5	0.000	0.000	0.000	0.000
Hexanes	0.000	0.000	0.000	0.002
Heptanes	0.000	0.000	0.000	0.001
Octanes	0.000	0.000	0.000	0.000
Benzene	0.000	0.000	0.151	0.660
Toluene	0.000	0.000	0.028	0.123
Ethylbenzene	0.000	0.000	0.048	0.209
n-C6	0.000	0.000	0.003	0.012
224Trimeth	0.000	0.000	0.000	0.000
Total:	47565.980	208335.500	47596.210	208467.800

Pressure	N/A	[psia]

Temperature	N/A	[F]

Page 7---------- AMINECalc Stream Results

Stream 6 Lean Amine from Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.003010	3560.788	15595.990
MDEA	0.130940	419212.100	1836118.000
H2O	0.866050	419212.100	1836118.000
N2	0.000000	0.000	0.000
C1	0.000000	0.000	0.000
C2	0.000000	0.000	0.000
C3	0.000000	0.000	0.000
i-C4	0.000000	0.000	0.000
n-C4	0.000000	0.000	0.000
i-C5	0.000000	0.000	0.000
n-C5	0.000000	0.000	0.000
Hexanes	0.000000	0.000	0.000
Heptanes	0.000000	0.000	0.000
Octanes	0.000000	0.000	0.000
Benzene	0.000000	0.000	0.000
Toluene	0.000000	0.000	0.000
Ethylbenzene	0.000000	0.000	0.000
n-C6	0.000000	0.000	0.000
224Trimeth	0.000000	0.000	0.000
Total:	1.000000	841985.000	3687832.000

Pressure	907.000	[psia]
Temperature	124.000	[F]

Page 8---------- AMINECalc Stream Results

Stream 7 Sweet Gas Flow from Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.040030	26158.460	114572.100
MDEA	0.000000	0.496	2.174
H2O	0.002380	637.927	2794.074
N2	0.001050	436.685	1912.647
C1	0.943170	224655.200	983973.200
C2	0.010100	4508.855	19748.450
C3	0.002210	1449.151	6347.173
i-C4	0.000360	314.582	1377.847
n-C4	0.000360	309.956	1357.585
i-C5	0.000120	124.034	543.262
n-C5	0.000070	75.799	331.993
Hexanes	0.000060	74.061	324.382
Heptanes	0.000040	62.201	272.436
Octanes	0.000010	16.365	71.677
Benzene	0.000000	3.524	15.437
Toluene	0.000000	1.420	6.218
Ethylbenzene	0.000000	1.619	7.092
n-C6	0.000020	26.026	113.993
224Trimeth	0.000000	5.454	23.890
Total:	1.000000	258861.800	1133796.000

Pressure	907.000	[psia]
Temperature	126.034	[F]

Project Name: Milagro trains 1,2,3 PTE calcs for xhaul VOC increase
Milagro AMINECalc considering-xhaul blend
Trains 1,2,3 using parameters from July 2016 analysis
with 07-14-16 xhaul blend @ PTE (145 mmcfd & 1600 gpm)

Model:	Gas Model	
Amine:	MDEA	
Lean Amine Pressure:	907.000	[psia]
Lean Amine Temperature:	124.000	[F]
Lean Amine Flowrate:	1600.000	[gal/min]
Lean Amine Weight:	50.000	[%]
H2S Loading:	0.000	[mol/mol]
CO2 Loading:	0.023	[mol/mol]
Emission Control Efficiency	100.000	
Operating Hours/Day:	24	[hours/day]
Operating Days/Year:	365	[days/year]
Gas Feed Pressure:	908.000	[psia]
Gas Feed Temperature:	96.000	[F]
Gas Feed Flowrate:	145.000	[MMSCFD]
Number of Trays in Column:	15	
Flash Tank Pressure:	74.000	[psia]
H2S	0.00000	[%]
CO2	8.88200	[%]
MDEA	0.00000	[%]
H2O	0.00000	[%]
N2	0.07200	[%]
O2	0.00000	[%]
C1	87.93300	[%]
C2	1.97100	[%]
C3	0.65400	[%]
i-C4	0.12600	[%]
n-C4	0.15600	[%]
i-C5	0.06000	[%]
n-C5	0.04100	[%]
Hexanes	0.03000	[%]
Heptanes	0.03500	[%]
Octanes	0.01700	[%]
Nonanes	0.00000	[%]
C10+	0.00000	[%]
MeSH	0.00000	[%]
EtSH	0.00000	[%]
Benzene	0.00300	[%]
Toluene	0.00400	[%]
Ethylbenzene	0.00000	[%]
Xylenes	0.00200	[%]
n-C6	0.01400	[%]
224Trimeth	0.00000	[%]

Page 2---------- AMINECalc Stream Results

Stream 1 Gas Feed to Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.088820	62232.690	272574.500
MDEA	0.000000	0.000	0.001
H2O	0.000000	0.000	0.000
N2	0.000720	321.111	1406.441
C1	0.879330	224591.800	983695.300
C2	0.019710	9435.751	41327.890
C3	0.006540	4591.380	20109.900
i-C4	0.001260	1165.957	5106.804
n-C4	0.001560	1443.566	6322.711
i-C5	0.000600	689.208	3018.678
n-C5	0.000410	470.959	2062.763
Hexanes	0.000300	411.599	1802.772
Heptanes	0.000350	558.359	2445.573
Octanes	0.000170	309.167	1354.128
Benzene	0.000030	37.308	163.408

Toluene	0.000040	58.677	257.002
Xylenes	0.000020	33.805	148.063
n-C6	0.000140	192.079	841.294
Total:	1.000000	306543.400	1342637.000
Pressure	908.000 [psia]		
Temperature	96.000 [F]		

Stream 2 Rich Amine From Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.035600	43495.990	190509.200
MDEA	0.126710	419211.600	1836115.000
H2O	0.836780	418571.200	1833311.000
N2	0.000000	0.283	1.238
C1	0.000890	394.650	1728.536
C2	0.000020	15.993	70.046
C3	0.000010	6.450	28.248
i-C4	0.000000	0.142	0.623
n-C4	0.000000	0.176	0.771
i-C5	0.000000	0.120	0.526
n-C5	0.000000	0.082	0.359
Hexanes	0.000000	0.156	0.681
Heptanes	0.000000	0.136	0.596
Octanes	0.000000	0.054	0.237
Benzene	0.000000	2.219	9.721
Toluene	0.000000	1.793	7.855
Xylenes	0.000000	0.826	3.618
n-C6	0.000000	0.293	1.282
Total:	1.000000	881702.100	3861790.000
Pressure	908.000 [psia]		
Temperature	147.627 [F]		

Page 3---------- AMINECalc Stream Results

Stream 3 Flash Gas Vent Flow from Flash Tank

	----- Controlled -----		----- Uncontrolled -----	
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]
H2S	0.000	0.000	0.000	0.000
CO2	88.703	388.513	88.703	388.513
MDEA	0.000	0.000	0.026	0.112
H2O	0.000	0.000	19.521	85.502
N2	0.000	0.000	0.271	1.187
C1	0.000	0.000	363.145	1590.547
C2	0.000	0.000	14.756	64.629
C3	0.000	0.000	6.030	26.411
i-C4	0.000	0.000	0.141	0.618
n-C4	0.000	0.000	0.175	0.766
i-C5	0.000	0.000	0.119	0.521
n-C5	0.000	0.000	0.081	0.356
Hexanes	0.000	0.000	0.153	0.669
Heptanes	0.000	0.000	0.135	0.590
Octanes	0.000	0.000	0.054	0.235
Benzene	0.000	0.000	0.554	2.426
Toluene	0.000	0.000	0.726	3.179
Xylenes	0.000	0.000	0.379	1.662
n-C6	0.000	0.000	0.273	1.194
Total:	88.703	388.513	495.241	2169.118
Pressure	74.000 [psia]			
Temperature	147.627 [F]			

Stream 4 Rich Amine Feed to Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.035560	43407.260	190120.600
MDEA	0.126830	419211.500	1836115.000
H2O	0.837530	418551.700	1833225.000
N2	0.000000	0.012	0.052
C1	0.000070	31.518	138.045
C2	0.000000	1.237	5.419
C3	0.000000	0.420	1.839
i-C4	0.000000	0.001	0.003
n-C4	0.000000	0.001	0.004
i-C5	0.000000	0.001	0.004
n-C5	0.000000	0.001	0.003
Hexanes	0.000000	0.003	0.012
Heptanes	0.000000	0.002	0.007
Octanes	0.000000	0.000	0.002
Benzene	0.000000	1.665	7.295
Toluene	0.000000	1.068	4.677
Xylenes	0.000000	0.447	1.957
n-C6	0.000000	0.020	0.088
Total:	1.000000	881206.900	3859621.000

Pressure	74.000	[psia]
Temperature	147.627	[F]

Stream 5 Acid Gas Flow from Regenerator

	----- Controlled -----		----- Uncontrolled -----	
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]
H2S	0.000	0.000	0.000	0.000
CO2	39846.470	174524.600	39846.470	174524.600
MDEA	0.000	0.000	0.000	0.000
H2O	0.000	0.000	0.000	0.000
N2	0.000	0.000	0.012	0.052
C1	0.000	0.000	31.518	138.045
C2	0.000	0.000	1.237	5.419
C3	0.000	0.000	0.420	1.839
i-C4	0.000	0.000	0.001	0.003
n-C4	0.000	0.000	0.001	0.004
i-C5	0.000	0.000	0.001	0.004
n-C5	0.000	0.000	0.001	0.003
Hexanes	0.000	0.000	0.003	0.012
Heptanes	0.000	0.000	0.002	0.007
Octanes	0.000	0.000	0.000	0.002
Benzene	0.000	0.000	1.665	7.295
Toluene	0.000	0.000	1.068	4.677
Xylenes	0.000	0.000	0.447	1.957
n-C6	0.000	0.000	0.020	0.088
Total:	39846.470	174524.600	39882.870	174684.000

Pressure	N/A	[psia]
Temperature	N/A	[F]

Stream 6 Lean Amine from Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.003010	3560.788	15595.990

MDEA	0.130940	419212.100	1836118.000
H2O	0.866050	419212.100	1836118.000
N2	0.000000	0.000	0.000
C1	0.000000	0.000	0.000
C2	0.000000	0.000	0.000
C3	0.000000	0.000	0.000
i-C4	0.000000	0.000	0.000
n-C4	0.000000	0.000	0.000
i-C5	0.000000	0.000	0.000
n-C5	0.000000	0.000	0.000
Hexanes	0.000000	0.000	0.000
Heptanes	0.000000	0.000	0.000
Octanes	0.000000	0.000	0.000
Benzene	0.000000	0.000	0.000
Toluene	0.000000	0.000	0.000
Xylenes	0.000000	0.000	0.000
n-C6	0.000000	0.000	0.000
Total:	1.000000	841985.000	3687832.000

Pressure	907.000	[psia]
Temperature	124.000	[F]

Page 5---------- AMINECalc Stream Results

Stream 7 Sweet Gas Flow from Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.033720	22297.980	97663.510
MDEA	0.000000	0.497	2.175
H2O	0.002370	640.839	2806.825
N2	0.000760	320.828	1405.202
C1	0.930210	224197.000	981966.300
C2	0.020850	9419.754	41257.820
C3	0.006920	4584.928	20081.640
i-C4	0.001340	1165.814	5106.179
n-C4	0.001650	1443.389	6321.937
i-C5	0.000640	689.087	3018.150
n-C5	0.000430	470.876	2062.403
Hexanes	0.000320	411.443	1802.090
Heptanes	0.000370	558.223	2444.976
Octanes	0.000180	309.113	1353.891
Benzene	0.000030	35.089	153.687
Toluene	0.000040	56.884	249.147
Xylenes	0.000020	32.979	144.444
n-C6	0.000150	191.787	840.011
Total:	1.000000	266826.500	1168680.000

Pressure	907.000	[psia]
Temperature	125.725	[F]

Project Name: Milagro train 4 PTE calcs to compare to xhaul VOC increase
Milagro AMINECalc considering 2/2/16 plant inlet gas analysis
Train 4 using parameters from July 2016 analysis
with 2/2/16 plant inlet gas & PTE (90 mmcfd & 700 gpm)

Model:	Gas Model	
Amine:	MDEA	
Lean Amine Pressure:	907.000	[psia]
Lean Amine Temperature:	124.000	[F]
Lean Amine Flowrate:	700.000	[gal/min]
Lean Amine Weight:	50.000	[%]
H2S Loading:	0.000	[mol/mol]
CO2 Loading:	0.023	[mol/mol]
Emission Control Efficiency	100.000	
Operating Hours/Day:	24	[hours/day]
Operating Days/Year:	365	[days/year]
Gas Feed Pressure:	908.000	[psia]
Gas Feed Temperature:	96.000	[F]
Gas Feed Flowrate:	90.000	[MMSCFD]
Number of Trays in Column:	15	
Flash Tank Pressure:	74.000	[psia]
H2S	0.00000	[%]
CO2	10.54440	[%]
MDEA	0.00000	[%]
H2O	0.00000	[%]
N2	0.09800	[%]
O2	0.00000	[%]
C1	88.10970	[%]
C2	0.94340	[%]
C3	0.20670	[%]
i-C4	0.03400	[%]
n-C4	0.03350	[%]
i-C5	0.01080	[%]
n-C5	0.00660	[%]
Hexanes	0.00540	[%]
Heptanes	0.00390	[%]
Octanes	0.00090	[%]
Nonanes	0.00000	[%]
C10+	0.00000	[%]
MeSH	0.00000	[%]
EtSH	0.00000	[%]
Benzene	0.00030	[%]
Toluene	0.00010	[%]
Ethylbenzene	0.00010	[%]
Xylenes	0.00000	[%]
n-C6	0.00190	[%]
224Trimeth	0.00030	[%]

Page 2---------- AMINECalc Stream Results

Stream 1 Gas Feed to Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.105440	45856.840	200849.600
MDEA	0.000000	0.000	0.000
H2O	0.000000	0.000	0.000
N2	0.000980	271.283	1188.200
C1	0.881100	139681.900	611796.500
C2	0.009430	2803.240	12277.980
C3	0.002070	900.701	3945.001
i-C4	0.000340	195.283	855.326
n-C4	0.000330	192.412	842.748
i-C5	0.000110	77.001	337.260
n-C5	0.000070	47.056	206.102
Hexanes	0.000050	45.986	201.413
Heptanes	0.000040	38.618	169.142
Octanes	0.000010	10.159	44.496
Benzene	0.000000	2.316	10.142

Toluene	0.000000	0.911	3.988
Ethylbenzene	0.000000	1.049	4.595
n-C6	0.000020	16.180	70.868
224Trimeth	0.000000	3.386	14.832
Total:	1.000000	190144.300	832818.100
Pressure	908.000 [psia]		
Temperature	96.000 [F]		

Page 3---------- AMINECalc Stream Results

Stream 2 Rich Amine From Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.053140	28910.790	126627.100
MDEA	0.124490	183404.400	803297.600
H2O	0.821520	182992.000	801491.500
N2	0.000000	0.166	0.726
C1	0.000840	165.729	725.881
C2	0.000010	3.182	13.936
C3	0.000000	0.835	3.656
i-C4	0.000000	0.019	0.083
n-C4	0.000000	0.019	0.082
i-C5	0.000000	0.011	0.046
n-C5	0.000000	0.006	0.029
Hexanes	0.000000	0.011	0.049
Heptanes	0.000000	0.007	0.033
Octanes	0.000000	0.001	0.004
Benzene	0.000000	0.083	0.365
Toluene	0.000000	0.022	0.097
Ethylbenzene	0.000000	0.028	0.122
n-C6	0.000000	0.019	0.085
224Trimeth	0.000000	0.001	0.003
Total:	1.000000	395477.300	1732161.000
Pressure	908.000 [psia]		
Temperature	158.429 [F]		

Page 4---------- AMINECalc Stream Results

Stream 3 Flash Gas Vent Flow from Flash Tank

	----- Controlled -----		----- Uncontrolled -----	
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]
H2S	0.000	0.000	0.000	0.000
CO2	176.036	771.023	176.036	771.023
MDEA	0.000	0.000	0.021	0.093
H2O	0.000	0.000	13.965	61.167
N2	0.000	0.000	0.160	0.702
C1	0.000	0.000	155.437	680.801
C2	0.000	0.000	2.992	13.104
C3	0.000	0.000	0.793	3.476
i-C4	0.000	0.000	0.019	0.082
n-C4	0.000	0.000	0.018	0.080
i-C5	0.000	0.000	0.011	0.046
n-C5	0.000	0.000	0.006	0.029
Hexanes	0.000	0.000	0.011	0.047
Heptanes	0.000	0.000	0.007	0.032
Octanes	0.000	0.000	0.001	0.004
Benzene	0.000	0.000	0.027	0.118
Toluene	0.000	0.000	0.010	0.042
Ethylbenzene	0.000	0.000	0.011	0.047
n-C6	0.000	0.000	0.018	0.080
224Trimeth	0.000	0.000	0.001	0.003

Total:	176.036	771.023	349.544	1530.979

Pressure	74.000	[psia]
Temperature	158.429	[F]

Page 5---------- AMINECalc Stream Results

Stream 4 Rich Amine Feed to Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.052880	28734.740	125856.000
MDEA	0.124640	183404.400	803297.500
H2O	0.822430	182978.100	801430.300
N2	0.000000	0.005	0.024
C1	0.000050	10.300	45.111
C2	0.000000	0.190	0.832
C3	0.000000	0.041	0.181
i-C4	0.000000	0.000	0.000
n-C4	0.000000	0.000	0.000
i-C5	0.000000	0.000	0.000
n-C5	0.000000	0.000	0.000
Hexanes	0.000000	0.000	0.001
Heptanes	0.000000	0.000	0.000
Octanes	0.000000	0.000	0.000
Benzene	0.000000	0.056	0.247
Toluene	0.000000	0.012	0.054
Ethylbenzene	0.000000	0.017	0.075
n-C6	0.000000	0.001	0.006
224Trimeth	0.000000	0.000	0.000
Total:	1.000000	395127.800	1730630.000

Pressure	74.000	[psia]
Temperature	158.429	[F]

Page 6---------- AMINECalc Stream Results

Stream 5 Acid Gas Flow from Regenerator

	----- Controlled -----		----- Uncontrolled -----	
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]
H2S	0.000	0.000	0.000	0.000
CO2	27176.890	119032.800	27176.890	119032.800
MDEA	0.000	0.000	0.000	0.000
H2O	0.000	0.000	0.000	0.000
N2	0.000	0.000	0.005	0.024
C1	0.000	0.000	10.300	45.111
C2	0.000	0.000	0.190	0.832
C3	0.000	0.000	0.041	0.181
i-C4	0.000	0.000	0.000	0.000
n-C4	0.000	0.000	0.000	0.000
i-C5	0.000	0.000	0.000	0.000
n-C5	0.000	0.000	0.000	0.000
Hexanes	0.000	0.000	0.000	0.001
Heptanes	0.000	0.000	0.000	0.000
Octanes	0.000	0.000	0.000	0.000
Benzene	0.000	0.000	0.056	0.247
Toluene	0.000	0.000	0.012	0.054
Ethylbenzene	0.000	0.000	0.017	0.075
n-C6	0.000	0.000	0.001	0.006
224Trimeth	0.000	0.000	0.000	0.000
Total:	27176.890	119032.800	27187.510	119079.300

Pressure	N/A	[psia]

Temperature	N/A	[F]

Page 7---------- AMINECalc Stream Results

Stream 6 Lean Amine from Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.003010	1557.845	6823.244
MDEA	0.130940	183405.300	803301.600
H2O	0.866050	183405.300	803301.600
N2	0.000000	0.000	0.000
C1	0.000000	0.000	0.000
C2	0.000000	0.000	0.000
C3	0.000000	0.000	0.000
i-C4	0.000000	0.000	0.000
n-C4	0.000000	0.000	0.000
i-C5	0.000000	0.000	0.000
n-C5	0.000000	0.000	0.000
Hexanes	0.000000	0.000	0.000
Heptanes	0.000000	0.000	0.000
Octanes	0.000000	0.000	0.000
Benzene	0.000000	0.000	0.000
Toluene	0.000000	0.000	0.000
Ethylbenzene	0.000000	0.000	0.000
n-C6	0.000000	0.000	0.000
224Trimeth	0.000000	0.000	0.000
Total:	1.000000	368368.400	1613426.000

Pressure	907.000	[psia]
Temperature	124.000	[F]

Page 8---------- AMINECalc Stream Results

Stream 7 Sweet Gas Flow from Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.045350	18507.680	81062.240
MDEA	0.000000	0.328	1.435
H2O	0.002470	412.690	1807.553
N2	0.001040	271.116	1187.467
C1	0.937850	139515.400	611067.200
C2	0.010040	2800.042	12263.980
C3	0.002200	899.861	3941.324
i-C4	0.000360	195.264	855.239
n-C4	0.000360	192.392	842.663
i-C5	0.000120	76.990	337.211
n-C5	0.000070	47.050	206.074
Hexanes	0.000060	45.974	201.364
Heptanes	0.000040	38.610	169.108
Octanes	0.000010	10.158	44.492
Benzene	0.000000	2.232	9.778
Toluene	0.000000	0.888	3.891
Ethylbenzene	0.000000	1.021	4.472
n-C6	0.000020	16.161	70.782
224Trimeth	0.000000	3.386	14.829
Total:	1.000000	163037.300	714091.100

Pressure	907.000	[psia]
Temperature	127.439	[F]

Project Name: Milagro train 4 PTE calcs for xhaul VOC increase
Milagro AMINECalc considering-xhaul blend
Train 4 using parameters from July 2016 analysis
with 07-14-16 xhaul blend @ PTE (90 mmcfd & 700 gpm)

Model:	Gas Model	
Amine:	MDEA	
Lean Amine Pressure:	907.000	[psia]
Lean Amine Temperature:	124.000	[F]
Lean Amine Flowrate:	700.000	[gal/min]
Lean Amine Weight:	50.000	[%]
H2S Loading:	0.000	[mol/mol]
CO2 Loading:	0.023	[mol/mol]
Emission Control Efficiency	100.000	
Operating Hours/Day:	24	[hours/day]
Operating Days/Year:	365	[days/year]
Gas Feed Pressure:	908.000	[psia]
Gas Feed Temperature:	96.000	[F]
Gas Feed Flowrate:	90.000	[MMSCFD]
Number of Trays in Column:	15	
Flash Tank Pressure:	74.000	[psia]
H2S	0.00000	[%]
CO2	8.88200	[%]
MDEA	0.00000	[%]
H2O	0.00000	[%]
N2	0.07200	[%]
O2	0.00000	[%]
C1	87.93300	[%]
C2	1.97100	[%]
C3	0.65400	[%]
i-C4	0.12600	[%]
n-C4	0.15600	[%]
i-C5	0.06000	[%]
n-C5	0.04100	[%]
Hexanes	0.03000	[%]
Heptanes	0.03500	[%]
Octanes	0.01700	[%]
Nonanes	0.00000	[%]
C10+	0.00000	[%]
MeSH	0.00000	[%]
EtSH	0.00000	[%]
Benzene	0.00300	[%]
Toluene	0.00400	[%]
Ethylbenzene	0.00000	[%]
Xylenes	0.00200	[%]
n-C6	0.01400	[%]
224Trimeth	0.00000	[%]

Page 2---------- AMINECalc Stream Results

Stream 1 Gas Feed to Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.088820	38627.190	169184.200
MDEA	0.000000	0.000	0.000
H2O	0.000000	0.000	0.000
N2	0.000720	199.310	872.963
C1	0.879330	139401.800	610569.500
C2	0.019710	5856.673	25651.790
C3	0.006540	2849.822	12482.010
i-C4	0.001260	723.697	3169.741
n-C4	0.001560	896.006	3924.441
i-C5	0.000600	427.784	1873.662
n-C5	0.000410	292.319	1280.336
Hexanes	0.000300	255.475	1118.962
Heptanes	0.000350	346.568	1517.942
Octanes	0.000170	191.897	840.494
Benzene	0.000030	23.157	101.425

Toluene	0.000040	36.420	159.518
Xylenes	0.000020	20.982	91.901
n-C6	0.000140	119.222	522.183
Total:	1.000000	190268.300	833361.100
Pressure	908.000 [psia]		
Temperature	96.000 [F]		

Stream 2 Rich Amine From Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.046110	24901.710	109067.600
MDEA	0.125410	183404.700	803299.000
H2O	0.827600	182994.100	801500.600
N2	0.000000	0.122	0.537
C1	0.000860	168.591	738.417
C2	0.000020	6.800	29.782
C3	0.000010	2.723	11.926
i-C4	0.000000	0.066	0.288
n-C4	0.000000	0.081	0.356
i-C5	0.000000	0.055	0.243
n-C5	0.000000	0.038	0.165
Hexanes	0.000000	0.064	0.282
Heptanes	0.000000	0.063	0.276
Octanes	0.000000	0.022	0.098
Benzene	0.000000	0.896	3.926
Toluene	0.000000	0.829	3.633
Xylenes	0.000000	0.382	1.673
n-C6	0.000000	0.135	0.592
Total:	1.000000	391481.400	1714659.000
Pressure	908.000 [psia]		
Temperature	152.604 [F]		

Page 3---------- AMINECalc Stream Results

Stream 3 Flash Gas Vent Flow from Flash Tank

	----- Controlled -----		----- Uncontrolled -----	
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]
H2S	0.000	0.000	0.000	0.000
CO2	90.396	395.928	90.396	395.928
MDEA	0.000	0.000	0.015	0.065
H2O	0.000	0.000	10.578	46.332
N2	0.000	0.000	0.118	0.516
C1	0.000	0.000	156.450	685.238
C2	0.000	0.000	6.327	27.713
C3	0.000	0.000	2.565	11.232
i-C4	0.000	0.000	0.065	0.285
n-C4	0.000	0.000	0.081	0.354
i-C5	0.000	0.000	0.055	0.240
n-C5	0.000	0.000	0.038	0.164
Hexanes	0.000	0.000	0.063	0.278
Heptanes	0.000	0.000	0.062	0.272
Octanes	0.000	0.000	0.022	0.097
Benzene	0.000	0.000	0.251	1.098
Toluene	0.000	0.000	0.346	1.516
Xylenes	0.000	0.000	0.180	0.790
n-C6	0.000	0.000	0.126	0.553
Total:	90.396	395.928	267.738	1172.673
Pressure	74.000 [psia]			
Temperature	152.604 [F]			

Stream 4 Rich Amine Feed to Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.045990	24811.300	108671.600
MDEA	0.125540	183404.700	803299.000
H2O	0.828410	182983.500	801454.200
N2	0.000000	0.005	0.020
C1	0.000060	12.146	53.199
C2	0.000000	0.473	2.070
C3	0.000000	0.158	0.693
i-C4	0.000000	0.000	0.001
n-C4	0.000000	0.000	0.002
i-C5	0.000000	0.000	0.002
n-C5	0.000000	0.000	0.001
Hexanes	0.000000	0.001	0.004
Heptanes	0.000000	0.001	0.003
Octanes	0.000000	0.000	0.001
Benzene	0.000000	0.646	2.828
Toluene	0.000000	0.483	2.118
Xylenes	0.000000	0.202	0.883
n-C6	0.000000	0.009	0.039
Total:	1.000000	391213.700	1713487.000

Pressure	74.000	[psia]
Temperature	152.604	[F]

Page 4---------- AMINECalc Stream Results

Stream 5 Acid Gas Flow from Regenerator

	----- Controlled -----		----- Uncontrolled -----	
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]
H2S	0.000	0.000	0.000	0.000
CO2	23253.450	101848.400	23253.450	101848.400
MDEA	0.000	0.000	0.000	0.000
H2O	0.000	0.000	0.000	0.000
N2	0.000	0.000	0.005	0.020
C1	0.000	0.000	12.146	53.199
C2	0.000	0.000	0.473	2.070
C3	0.000	0.000	0.158	0.693
i-C4	0.000	0.000	0.000	0.001
n-C4	0.000	0.000	0.000	0.002
i-C5	0.000	0.000	0.000	0.002
n-C5	0.000	0.000	0.000	0.001
Hexanes	0.000	0.000	0.001	0.004
Heptanes	0.000	0.000	0.001	0.003
Octanes	0.000	0.000	0.000	0.001
Benzene	0.000	0.000	0.646	2.828
Toluene	0.000	0.000	0.483	2.118
Xylenes	0.000	0.000	0.202	0.883
n-C6	0.000	0.000	0.009	0.039
Total:	23253.450	101848.400	23267.580	101910.300

Pressure	N/A	[psia]
Temperature	N/A	[F]

Stream 6 Lean Amine from Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.003010	1557.845	6823.244

MDEA	0.130940	183405.300	803301.600
H2O	0.866050	183405.300	803301.600
N2	0.000000	0.000	0.000
C1	0.000000	0.000	0.000
C2	0.000000	0.000	0.000
C3	0.000000	0.000	0.000
i-C4	0.000000	0.000	0.000
n-C4	0.000000	0.000	0.000
i-C5	0.000000	0.000	0.000
n-C5	0.000000	0.000	0.000
Hexanes	0.000000	0.000	0.000
Heptanes	0.000000	0.000	0.000
Octanes	0.000000	0.000	0.000
Benzene	0.000000	0.000	0.000
Toluene	0.000000	0.000	0.000
Xylenes	0.000000	0.000	0.000
n-C6	0.000000	0.000	0.000
Total:	1.000000	368368.400	1613426.000

Pressure	907.000	[psia]
Temperature	124.000	[F]

Page 5---------- AMINECalc Stream Results

Stream 7 Sweet Gas Flow from Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.037090	15284.980	66947.060
MDEA	0.000000	0.324	1.418
H2O	0.002440	410.944	1799.904
N2	0.000760	199.187	872.425
C1	0.926890	139232.900	609829.700
C2	0.020780	5849.860	25621.950
C3	0.006900	2847.092	12470.050
i-C4	0.001330	723.630	3169.446
n-C4	0.001650	895.923	3924.075
i-C5	0.000630	427.728	1873.415
n-C5	0.000430	292.281	1280.166
Hexanes	0.000320	255.410	1118.677
Heptanes	0.000370	346.504	1517.663
Octanes	0.000180	191.874	840.394
Benzene	0.000030	22.260	97.499
Toluene	0.000040	35.591	155.885
Xylenes	0.000020	20.600	90.228
n-C6	0.000150	119.086	521.590
Total:	1.000000	167156.200	732131.500

Pressure	907.000	[psia]
Temperature	126.879	[F]

Project Name:	Milagro train 5 PTE calcs to compare to xhaul VOC increase Milagro AMINECalc considering 2/2/16 plant inlet gas analysis Train 5 using parameters from July 2016 analysis with 2/2/16 plant inlet gas & PTE (120 mmcfd & 1400 gpm)	
Model:	Gas Model	
Amine:	MDEA	
Lean Amine Pressure:	907.000	[psia]
Lean Amine Temperature:	124.000	[F]
Lean Amine Flowrate:	1400.000	[gal/min]
Lean Amine Weight:	50.000	[%]
H2S Loading:	0.000	[mol/mol]
CO2 Loading:	0.023	[mol/mol]
Emission Control Efficiency	100.000	
Operating Hours/Day:	24	[hours/day]
Operating Days/Year:	365	[days/year]
Gas Feed Pressure:	908.000	[psia]
Gas Feed Temperature:	96.000	[F]
Gas Feed Flowrate:	120.000	[MMSCFD]
Number of Trays in Column:	15	
Flash Tank Pressure:	74.000	[psia]
H2S	0.00000	[%]
CO2	10.54440	[%]
MDEA	0.00000	[%]
H2O	0.00000	[%]
N2	0.09800	[%]
O2	0.00000	[%]
C1	88.10970	[%]
C2	0.94340	[%]
C3	0.20670	[%]
i-C4	0.03400	[%]
n-C4	0.03350	[%]
i-C5	0.01080	[%]
n-C5	0.00660	[%]
Hexanes	0.00540	[%]
Heptanes	0.00390	[%]
Octanes	0.00090	[%]
Nonanes	0.00000	[%]
C10+	0.00000	[%]
MeSH	0.00000	[%]
EtSH	0.00000	[%]
Benzene	0.00030	[%]
Toluene	0.00010	[%]
Ethylbenzene	0.00010	[%]
Xylenes	0.00000	[%]
n-C6	0.00190	[%]
224Trimeth	0.00030	[%]

Page 2---------- AMINECalc Stream Results

Stream 1 Gas Feed to Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.105440	61142.460	267799.400
MDEA	0.000000	0.000	0.001
H2O	0.000000	0.000	0.000
N2	0.000980	361.711	1584.267
C1	0.881100	186242.600	815728.600
C2	0.009430	3737.653	16370.640
C3	0.002070	1200.934	5260.002
i-C4	0.000340	260.378	1140.435
n-C4	0.000330	256.549	1123.665
i-C5	0.000110	102.668	449.679
n-C5	0.000070	62.742	274.804
Hexanes	0.000050	61.314	268.550
Heptanes	0.000040	51.490	225.522
Octanes	0.000010	13.546	59.329
Benzene	0.000000	3.088	13.523

Toluene	0.000000	1.214	5.317
Ethylbenzene	0.000000	1.399	6.127
n-C6	0.000020	21.573	94.490
224Trimeth	0.000000	4.515	19.776
Total:	1.000000	253525.800	1110424.000
Pressure	908.000 [psia]		
Temperature	96.000 [F]		

Page 3---------- AMINECalc Stream Results

Stream 2 Rich Amine From Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.039300	42175.750	184726.600
MDEA	0.126220	366810.100	1606601.000
H2O	0.833600	366284.100	1604297.000
N2	0.000000	0.335	1.467
C1	0.000870	341.257	1494.678
C2	0.000010	6.585	28.841
C3	0.000000	1.746	7.646
i-C4	0.000000	0.035	0.152
n-C4	0.000000	0.034	0.150
i-C5	0.000000	0.020	0.086
n-C5	0.000000	0.012	0.053
Hexanes	0.000000	0.024	0.104
Heptanes	0.000000	0.014	0.061
Octanes	0.000000	0.002	0.011
Benzene	0.000000	0.185	0.809
Toluene	0.000000	0.041	0.179
Ethylbenzene	0.000000	0.064	0.280
n-C6	0.000000	0.036	0.158
224Trimeth	0.000000	0.001	0.006
Total:	1.000000	775620.400	3397160.000
Pressure	908.000 [psia]		
Temperature	151.413 [F]		

Page 4---------- AMINECalc Stream Results

Stream 3 Flash Gas Vent Flow from Flash Tank

	----- Controlled -----		----- Uncontrolled -----	
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]
H2S	0.000	0.000	0.000	0.000
CO2	111.438	488.089	111.438	488.089
MDEA	0.000	0.000	0.026	0.116
H2O	0.000	0.000	19.038	83.384
N2	0.000	0.000	0.321	1.408
C1	0.000	0.000	314.731	1378.496
C2	0.000	0.000	6.091	26.677
C3	0.000	0.000	1.636	7.165
i-C4	0.000	0.000	0.035	0.151
n-C4	0.000	0.000	0.034	0.149
i-C5	0.000	0.000	0.019	0.085
n-C5	0.000	0.000	0.012	0.052
Hexanes	0.000	0.000	0.023	0.101
Heptanes	0.000	0.000	0.014	0.060
Octanes	0.000	0.000	0.002	0.011
Benzene	0.000	0.000	0.048	0.212
Toluene	0.000	0.000	0.016	0.072
Ethylbenzene	0.000	0.000	0.020	0.088
n-C6	0.000	0.000	0.034	0.147
224Trimeth	0.000	0.000	0.001	0.006

Total:	111.438	488.089	453.539	1986.466

Pressure	74.000	[psia]
Temperature	151.413	[F]

Page 5---------- AMINECalc Stream Results

Stream 4 Rich Amine Feed to Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.039230	42064.280	184238.400
MDEA	0.126340	366810.100	1606601.000
H2O	0.834360	366265.100	1604214.000
N2	0.000000	0.014	0.060
C1	0.000070	26.536	116.227
C2	0.000000	0.495	2.166
C3	0.000000	0.110	0.482
i-C4	0.000000	0.000	0.001
n-C4	0.000000	0.000	0.001
i-C5	0.000000	0.000	0.001
n-C5	0.000000	0.000	0.000
Hexanes	0.000000	0.000	0.002
Heptanes	0.000000	0.000	0.001
Octanes	0.000000	0.000	0.000
Benzene	0.000000	0.136	0.597
Toluene	0.000000	0.024	0.107
Ethylbenzene	0.000000	0.044	0.192
n-C6	0.000000	0.003	0.011
224Trimeth	0.000000	0.000	0.000
Total:	1.000000	775166.800	3395173.000

Pressure	74.000	[psia]
Temperature	151.413	[F]

Page 6---------- AMINECalc Stream Results

Stream 5 Acid Gas Flow from Regenerator

	----- Controlled -----		----- Uncontrolled -----	
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]
H2S	0.000	0.000	0.000	0.000
CO2	38948.590	170591.900	38948.590	170591.900
MDEA	0.000	0.000	0.000	0.000
H2O	0.000	0.000	0.000	0.000
N2	0.000	0.000	0.014	0.060
C1	0.000	0.000	26.536	116.227
C2	0.000	0.000	0.495	2.166
C3	0.000	0.000	0.110	0.482
i-C4	0.000	0.000	0.000	0.001
n-C4	0.000	0.000	0.000	0.001
i-C5	0.000	0.000	0.000	0.001
n-C5	0.000	0.000	0.000	0.000
Hexanes	0.000	0.000	0.000	0.002
Heptanes	0.000	0.000	0.000	0.001
Octanes	0.000	0.000	0.000	0.000
Benzene	0.000	0.000	0.136	0.597
Toluene	0.000	0.000	0.024	0.107
Ethylbenzene	0.000	0.000	0.044	0.192
n-C6	0.000	0.000	0.003	0.011
224Trimeth	0.000	0.000	0.000	0.000
Total:	38948.590	170591.900	38975.960	170711.800

Pressure	N/A	[psia]

Temperature	N/A	[F]

Page 7---------- AMINECalc Stream Results

Stream 6 Lean Amine from Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.003010	3115.689	13646.490
MDEA	0.130940	366810.600	1606603.000
H2O	0.866050	366810.600	1606603.000
N2	0.000000	0.000	0.000
C1	0.000000	0.000	0.000
C2	0.000000	0.000	0.000
C3	0.000000	0.000	0.000
i-C4	0.000000	0.000	0.000
n-C4	0.000000	0.000	0.000
i-C5	0.000000	0.000	0.000
n-C5	0.000000	0.000	0.000
Hexanes	0.000000	0.000	0.000
Heptanes	0.000000	0.000	0.000
Octanes	0.000000	0.000	0.000
Benzene	0.000000	0.000	0.000
Toluene	0.000000	0.000	0.000
Ethylbenzene	0.000000	0.000	0.000
n-C6	0.000000	0.000	0.000
224Trimeth	0.000000	0.000	0.000
Total:	1.000000	736736.900	3226853.000

Pressure	907.000	[psia]
Temperature	124.000	[F]

Page 8---------- AMINECalc Stream Results

Stream 7 Sweet Gas Flow from Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.040810	22083.090	96722.280
MDEA	0.000000	0.409	1.790
H2O	0.002380	526.410	2305.635
N2	0.001050	361.376	1582.798
C1	0.942420	185901.200	814233.200
C2	0.010090	3731.065	16341.790
C3	0.002210	1199.187	5252.352
i-C4	0.000360	260.343	1140.282
n-C4	0.000360	256.514	1123.513
i-C5	0.000120	102.648	449.592
n-C5	0.000070	62.730	274.751
Hexanes	0.000060	61.290	268.447
Heptanes	0.000040	51.476	225.462
Octanes	0.000010	13.543	59.319
Benzene	0.000000	2.903	12.714
Toluene	0.000000	1.173	5.139
Ethylbenzene	0.000000	1.335	5.847
n-C6	0.000020	21.537	94.332
224Trimeth	0.000000	4.514	19.771
Total:	1.000000	214642.700	940119.000

Pressure	907.000	[psia]
Temperature	125.878	[F]

Project Name:	Milagro train 5 PTE calcs for xhaul VOC increase Milagro AMINECalc considering-xhaul blend Train 5 using parameters from July 2016 analysis with 07-14-16 xhaul blend @ PTE (120 mmcfd & 1400 gpm)	
Model:	Gas Model	
Amine:	MDEA	
Lean Amine Pressure:	907.000	[psia]
Lean Amine Temperature:	124.000	[F]
Lean Amine Flowrate:	1400.000	[gal/min]
Lean Amine Weight:	50.000	[%]
H2S Loading:	0.000	[mol/mol]
CO2 Loading:	0.023	[mol/mol]
Emission Control Efficiency	100.000	
Operating Hours/Day:	24	[hours/day]
Operating Days/Year:	365	[days/year]
Gas Feed Pressure:	908.000	[psia]
Gas Feed Temperature:	96.000	[F]
Gas Feed Flowrate:	120.000	[MMSCFD]
Number of Trays in Column:	15	
Flash Tank Pressure:	74.000	[psia]
H2S	0.00000	[%]
CO2	8.88200	[%]
MDEA	0.00000	[%]
H2O	0.00000	[%]
N2	0.07200	[%]
O2	0.00000	[%]
C1	87.93300	[%]
C2	1.97100	[%]
C3	0.65400	[%]
i-C4	0.12600	[%]
n-C4	0.15600	[%]
i-C5	0.06000	[%]
n-C5	0.04100	[%]
Hexanes	0.03000	[%]
Heptanes	0.03500	[%]
Octanes	0.01700	[%]
Nonanes	0.00000	[%]
C10+	0.00000	[%]
MeSH	0.00000	[%]
EtSH	0.00000	[%]
Benzene	0.00300	[%]
Toluene	0.00400	[%]
Ethylbenzene	0.00000	[%]
Xylenes	0.00200	[%]
n-C6	0.01400	[%]
224Trimeth	0.00000	[%]

Page 2---------- AMINECalc Stream Results

Stream 1 Gas Feed to Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.088820	51502.910	225578.900
MDEA	0.000000	0.000	0.001
H2O	0.000000	0.000	0.000
N2	0.000720	265.747	1163.951
C1	0.879330	185869.100	814092.700
C2	0.019710	7808.897	34202.390
C3	0.006540	3799.763	16642.680
i-C4	0.001260	964.930	4226.321
n-C4	0.001560	1194.675	5232.588
i-C5	0.000600	570.379	2498.216
n-C5	0.000410	389.759	1707.114
Hexanes	0.000300	340.633	1491.949
Heptanes	0.000350	462.091	2023.922
Octanes	0.000170	255.862	1120.658
Benzene	0.000030	30.876	135.234

Toluene	0.000040	48.560	212.691
Xylenes	0.000020	27.976	122.535
n-C6	0.000140	158.962	696.243
Total:	1.000000	253691.100	1111148.000

Pressure	908.000	[psia]
Temperature	96.000	[F]

Stream 2 Rich Amine From Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.033500	35744.510	156558.300
MDEA	0.126980	366810.200	1606601.000
H2O	0.838600	366281.400	1604285.000
N2	0.000000	0.248	1.086
C1	0.000890	347.519	1522.110
C2	0.000020	14.103	61.770
C3	0.000010	5.698	24.955
i-C4	0.000000	0.123	0.537
n-C4	0.000000	0.152	0.665
i-C5	0.000000	0.104	0.453
n-C5	0.000000	0.071	0.310
Hexanes	0.000000	0.138	0.605
Heptanes	0.000000	0.117	0.515
Octanes	0.000000	0.048	0.211
Benzene	0.000000	1.983	8.687
Toluene	0.000000	1.547	6.778
Xylenes	0.000000	0.713	3.122
n-C6	0.000000	0.253	1.107
Total:	1.000000	769208.900	3369078.000

Pressure	908.000	[psia]
Temperature	146.164	[F]

Page 3---------- AMINECalc Stream Results

Stream 3 Flash Gas Vent Flow from Flash Tank

	----- Controlled -----		----- Uncontrolled -----	
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]
H2S	0.000	0.000	0.000	0.000
CO2	63.995	280.294	63.995	280.294
MDEA	0.000	0.000	0.021	0.093
H2O	0.000	0.000	16.294	71.365
N2	0.000	0.000	0.238	1.041
C1	0.000	0.000	319.350	1398.727
C2	0.000	0.000	12.994	56.914
C3	0.000	0.000	5.320	23.301
i-C4	0.000	0.000	0.122	0.534
n-C4	0.000	0.000	0.151	0.661
i-C5	0.000	0.000	0.103	0.450
n-C5	0.000	0.000	0.070	0.308
Hexanes	0.000	0.000	0.136	0.594
Heptanes	0.000	0.000	0.116	0.508
Octanes	0.000	0.000	0.048	0.209
Benzene	0.000	0.000	0.484	2.121
Toluene	0.000	0.000	0.627	2.745
Xylenes	0.000	0.000	0.328	1.435
n-C6	0.000	0.000	0.235	1.031
Total:	63.995	280.294	420.630	1842.328

Pressure	74.000	[psia]
Temperature	146.164	[F]

Stream 4 Rich Amine Feed to Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.033480	35680.490	156277.900
MDEA	0.127100	366810.100	1606601.000
H2O	0.839350	366265.100	1604214.000
N2	0.000000	0.010	0.045
C1	0.000070	28.179	123.423
C2	0.000000	1.109	4.859
C3	0.000000	0.378	1.655
i-C4	0.000000	0.001	0.003
n-C4	0.000000	0.001	0.004
i-C5	0.000000	0.001	0.003
n-C5	0.000000	0.001	0.002
Hexanes	0.000000	0.003	0.011
Heptanes	0.000000	0.001	0.006
Octanes	0.000000	0.000	0.002
Benzene	0.000000	1.499	6.566
Toluene	0.000000	0.921	4.033
Xylenes	0.000000	0.385	1.688
n-C6	0.000000	0.017	0.076
Total:	1.000000	768788.200	3367235.000

Pressure	74.000	[psia]
Temperature	146.164	[F]

Page 4---------- AMINECalc Stream Results

Stream 5 Acid Gas Flow from Regenerator

	----- Controlled -----		----- Uncontrolled -----	
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]
H2S	0.000	0.000	0.000	0.000
CO2	32564.800	142631.400	32564.800	142631.400
MDEA	0.000	0.000	0.000	0.000
H2O	0.000	0.000	0.000	0.000
N2	0.000	0.000	0.010	0.045
C1	0.000	0.000	28.179	123.423
C2	0.000	0.000	1.109	4.859
C3	0.000	0.000	0.378	1.655
i-C4	0.000	0.000	0.001	0.003
n-C4	0.000	0.000	0.001	0.004
i-C5	0.000	0.000	0.001	0.003
n-C5	0.000	0.000	0.001	0.002
Hexanes	0.000	0.000	0.003	0.011
Heptanes	0.000	0.000	0.001	0.006
Octanes	0.000	0.000	0.000	0.002
Benzene	0.000	0.000	1.499	6.566
Toluene	0.000	0.000	0.921	4.033
Xylenes	0.000	0.000	0.385	1.688
n-C6	0.000	0.000	0.017	0.076
Total:	32564.800	142631.400	32597.310	142773.800

Pressure	N/A	[psia]
Temperature	N/A	[F]

Stream 6 Lean Amine from Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.003010	3115.689	13646.490

MDEA	0.130940	366810.600	1606603.000
H2O	0.866050	366810.600	1606603.000
N2	0.000000	0.000	0.000
C1	0.000000	0.000	0.000
C2	0.000000	0.000	0.000
C3	0.000000	0.000	0.000
i-C4	0.000000	0.000	0.000
n-C4	0.000000	0.000	0.000
i-C5	0.000000	0.000	0.000
n-C5	0.000000	0.000	0.000
Hexanes	0.000000	0.000	0.000
Heptanes	0.000000	0.000	0.000
Octanes	0.000000	0.000	0.000
Benzene	0.000000	0.000	0.000
Toluene	0.000000	0.000	0.000
Xylenes	0.000000	0.000	0.000
n-C6	0.000000	0.000	0.000
Total:	1.000000	736736.900	3226853.000

Pressure	907.000	[psia]
Temperature	124.000	[F]

Page 5---------- AMINECalc Stream Results

Stream 7 Sweet Gas Flow from Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.034470	18874.450	82668.690
MDEA	0.000000	0.409	1.793
H2O	0.002360	529.167	2317.713
N2	0.000760	265.499	1162.864
C1	0.929490	185521.500	812570.200
C2	0.020840	7794.791	34140.600
C3	0.006920	3794.063	16617.710
i-C4	0.001330	964.807	4225.782
n-C4	0.001650	1194.523	5231.920
i-C5	0.000640	570.275	2497.761
n-C5	0.000430	389.688	1706.803
Hexanes	0.000320	340.495	1491.344
Heptanes	0.000370	461.973	2023.407
Octanes	0.000180	255.814	1120.446
Benzene	0.000030	28.893	126.547
Toluene	0.000040	47.013	205.914
Xylenes	0.000020	27.264	119.414
n-C6	0.000150	158.710	695.137
Total:	1.000000	221219.300	968924.100

Pressure	907.000	[psia]
Temperature	125.602	[F]

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

Identification

User Identification:	Milagro T7 (Gasoline)
City:	Bloomfield
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Horizontal Tank
Description:	500 Gallon Gasoline Storage Tank

Tank Dimensions

Shell Length (ft):	6.00
Diameter (ft):	4.00
Volume (gallons):	500.00
Turnovers:	24.00
Net Throughput(gal/yr):	12,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Light
Shell Condition	Good

Breather Vent Settings

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

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

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

Milagro T7 (Gasoline) - Horizontal Tank
Bloomfield, New Mexico

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

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

Milagro T7 (Gasoline) - Horizontal Tank
Bloomfield, New Mexico

Annual Emission Calcaulations

Standing Losses (lb):	648.5898
Vapor Space Volume (cu ft):	48.0243
Vapor Density (lb/cu ft):	0.0838
Vapor Space Expansion Factor:	0.7975
Vented Vapor Saturation Factor:	0.5534
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	48.0243
Tank Diameter (ft):	4.0000
Effective Diameter (ft):	5.5293
Vapor Space Outage (ft):	2.0000
Tank Shell Length (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0838
Vapor Molecular Weight (lb/lb-mole):	62.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.6119
Daily Avg. Liquid Surface Temp. (deg. R):	524.6094
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.0642
Tank Paint Solar Absorptance (Shell):	0.5400
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.7975
Daily Vapor Temperature Range (deg. R):	46.7976
Daily Vapor Pressure Range (psia):	3.2750
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.6119
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	6.1130
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	9.3880
Daily Avg. Liquid Surface Temp. (deg R):	524.6094
Daily Min. Liquid Surface Temp. (deg R):	512.9100
Daily Max. Liquid Surface Temp. (deg R):	536.3088
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.5534
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	7.6119
Vapor Space Outage (ft):	2.0000
Working Losses (lb):	134.8393
Vapor Molecular Weight (lb/lb-mole):	62.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.6119
Annual Net Throughput (gal/yr.):	12,000.0000

Annual Turnovers:	24.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	4.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	783.4290

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

Emissions Report for: Annual

Milagro T7 (Gasoline) - Horizontal Tank
Bloomfield, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 13)	134.84	648.59	783.43

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

Identification

User Identification:	Milagro T25 (Condensate)
City:	Bloomfield
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	4,200 Gallon Condensate Storage Tank

Tank Dimensions

Shell Height (ft):	15.00
Diameter (ft):	7.00
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	4,030.00
Turnovers:	380.40
Net Throughput(gal/yr):	1,533,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

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

Roof Characteristics

Type:	Dome
Height (ft)	0.00
Radius (ft) (Dome Roof)	7.00

Breather Vent Settings

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

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

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

Milagro T25 (Condensate) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Condensate	All	64.94	53.24	76.64	58.39	0.8976	0.6679	1.1903	51.3065			21.26	
Benzene						1.3372	0.9653	1.8208	78.1100	0.0012	0.0008	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Ethylbenzene						0.1286	0.0854	0.1894	106.1700	0.0002	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						2.1727	1.6003	2.9030	86.1700	0.0844	0.0846	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						41.6075	33.9758	50.4378	58.1230	0.0153	0.2931	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.2522	8.5746	14.3915	72.1500	0.0972	0.5049	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Toluene						0.3844	0.2666	0.5435	92.1300	0.0013	0.0002	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Water						0.3148	0.2107	0.4610	18.0150	0.7999	0.1163	18.02	Option 1: VP60 = .263 VP70 = .3679
Xylenes (mixed isomers)						0.1073	0.0710	0.1586	106.1700	0.0005	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

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

Milagro T25 (Condensate) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Annual Emission Calcaulations

Standing Losses (lb):	90.4695
Vapor Space Volume (cu ft):	326.3538
Vapor Density (lb/cu ft):	0.0082
Vapor Space Expansion Factor:	0.1303
Vented Vapor Saturation Factor:	0.7125
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	326.3538
Tank Diameter (ft):	7.0000
Vapor Space Outage (ft):	8.4801
Tank Shell Height (ft):	15.0000
Average Liquid Height (ft):	7.0000
Roof Outage (ft):	0.4801
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.4801
Dome Radius (ft):	7.0000
Shell Radius (ft):	3.5000
Vapor Density	
Vapor Density (lb/cu ft):	0.0082
Vapor Molecular Weight (lb/lb-mole):	51.3065
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.8976
Daily Avg. Liquid Surface Temp. (deg. R):	524.6094
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.0642
Tank Paint Solar Absorptance (Shell):	0.5400
Tank Paint Solar Absorptance (Roof):	0.5400
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1303
Daily Vapor Temperature Range (deg. R):	46.7976
Daily Vapor Pressure Range (psia):	0.5224
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.8976
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.6679
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	1.1903
Daily Avg. Liquid Surface Temp. (deg R):	524.6094
Daily Min. Liquid Surface Temp. (deg R):	512.9100
Daily Max. Liquid Surface Temp. (deg R):	536.3088
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.7125
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.8976
Vapor Space Outage (ft):	8.4801

Working Losses (lb):	412.7246
Vapor Molecular Weight (lb/lb-mole):	51.3065
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.8976
Annual Net Throughput (gal/yr.):	1,533,000.0000
Annual Turnovers:	380.4000
Turnover Factor:	0.2455
Maximum Liquid Volume (gal):	4,030.0000
Maximum Liquid Height (ft):	14.0000
Tank Diameter (ft):	7.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	503.1941

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

Emissions Report for: Annual

Milagro T25 (Condensate) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	412.72	90.47	503.19
Water	47.99	10.52	58.51
Isobutane	120.98	26.52	147.50
Isopentane	208.40	45.68	254.08
Hexane (-n)	34.92	7.66	42.58
Benzene	0.32	0.07	0.39
Ethylbenzene	0.00	0.00	0.01
Toluene	0.10	0.02	0.12
Xylenes (mixed isomers)	0.01	0.00	0.01

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

Identification

User Identification:	Milagro T29 & T30 (Condensate)
City:	Bloomfield
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	200 Gallon Condensate Storage Tank

Tank Dimensions

Shell Height (ft):	5.00
Diameter (ft):	2.60
Liquid Height (ft) :	4.50
Avg. Liquid Height (ft):	2.25
Volume (gallons):	180.00
Turnovers:	2.00
Net Throughput(gal/yr):	360.00
Is Tank Heated (y/n):	N

Paint Characteristics

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

Roof Characteristics

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

Breather Vent Settings

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

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

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

Milagro T29 & T30 (Condensate) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Condensate	All	64.94	53.24	76.64	58.39	7.4178	5.7833	9.3492	67.1136			57.60	
Benzene						1.3372	0.9653	1.8208	78.1100	0.0056	0.0009	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Ethylbenzene						0.1286	0.0854	0.1894	106.1700	0.0009	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						2.1727	1.6003	2.9030	86.1700	0.3795	0.0954	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						41.6075	33.9758	50.4378	58.1230	0.0686	0.3305	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.2522	8.5746	14.3915	72.1500	0.4373	0.5693	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Toluene						0.3844	0.2666	0.5435	92.1300	0.0059	0.0003	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Water						0.3148	0.2107	0.4610	18.0150	0.1000	0.0036	18.02	Option 1: VP60 = .263 VP70 = .3679
Xylenes (mixed isomers)						0.1073	0.0710	0.1586	106.1700	0.0022	0.0000	106.17	Option 2: A=7.009, B=1462.266, C=215.11

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

Milagro T29 & T30 (Condensate) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Annual Emission Calcaulations

Standing Losses (lb):	188.8159
Vapor Space Volume (cu ft):	14.7443
Vapor Density (lb/cu ft):	0.0884
Vapor Space Expansion Factor:	0.8299
Vented Vapor Saturation Factor:	0.4781
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	14.7443
Tank Diameter (ft):	2.6000
Vapor Space Outage (ft):	2.7771
Tank Shell Height (ft):	5.0000
Average Liquid Height (ft):	2.2500
Roof Outage (ft):	0.0271
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0271
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	1.3000
Vapor Density	
Vapor Density (lb/cu ft):	0.0884
Vapor Molecular Weight (lb/lb-mole):	67.1136
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.4178
Daily Avg. Liquid Surface Temp. (deg. R):	524.6094
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.0642
Tank Paint Solar Absorptance (Shell):	0.5400
Tank Paint Solar Absorptance (Roof):	0.5400
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.8299
Daily Vapor Temperature Range (deg. R):	46.7976
Daily Vapor Pressure Range (psia):	3.5659
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.4178
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	5.7833
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	9.3492
Daily Avg. Liquid Surface Temp. (deg R):	524.6094
Daily Min. Liquid Surface Temp. (deg R):	512.9100
Daily Max. Liquid Surface Temp. (deg R):	536.3088
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.4781
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	7.4178

Vapor Space Outage (ft):	2.7771
Working Losses (lb):	4.2672
Vapor Molecular Weight (lb/lb-mole):	67.1136
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.4178
Annual Net Throughput (gal/yr.):	360.0000
Annual Turnovers:	2.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	180.0000
Maximum Liquid Height (ft):	4.5000
Tank Diameter (ft):	2.6000
Working Loss Product Factor:	1.0000
Total Losses (lb):	193.0831

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

Emissions Report for: Annual

Milagro T29 & T30 (Condensate) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	4.27	188.82	193.08
Water	0.02	0.69	0.70
Isobutane	1.41	62.40	63.81
Isopentane	2.43	107.49	109.92
Hexane (-n)	0.41	18.01	18.42
Benzene	0.00	0.16	0.17
Ethylbenzene	0.00	0.00	0.00
Toluene	0.00	0.05	0.05
Xylenes (mixed isomers)	0.00	0.01	0.01

QUESTAR APPLIED TECHNOLOGY

1210 D. Street, Rock Springs, Wyoming 82901

(307) 352-7292

Description:	Milagro Plant Inlet	Company:	Williams
Field:	Farmington	Data File:	001312.D
Meter Number:		G.C. Method:	GAS EXTENDED.M
Analysis Date/Time:	2/10/2016, 15:04:59	GPA Method	GPA 2286
Date Sampled:	2/2/2016	Sampled By:	JS
Sample Temperature:	58	Analyst Initials:	KDS
Sample Pressure:	890		

Component	Mol%	Wt%	LV%
Methane	88.1097	73.4607	87.4033
Ethane	0.9434	1.4743	1.4806
Propane	0.2067	0.4736	0.3335
Isobutane	0.0340	0.1026	0.0651
n-Butane	0.0332	0.1004	0.0614
Neopentane	0.0003	0.0013	0.0008
Isopentane	0.0108	0.0406	0.0232
n-Pentane	0.0066	0.0246	0.0139
2,2-Dimethylbutane	0.0004	0.0018	0.0010
2,3-Dimethylbutane	0.0005	0.0022	0.0012
2-Methylpentane	0.0020	0.0089	0.0049
3-Methylpentane	0.0012	0.0055	0.0029
n-Hexane	0.0019	0.0086	0.0046
Heptanes	0.0059	0.0294	0.0143
Octanes	0.0009	0.0056	0.0028
Nonanes	0.0001	0.0005	0.0002
Decanes plus	0.0000	0.0000	0.0000
Nitrogen	0.0980	0.1427	0.0629
Carbon Dioxide	10.5444	24.1167	10.5234
Oxygen	0.0000	0.0000	0.0000
Hydrogen Sulfide	0.0000	0.0000	0.0000
Total	100.0000	100.0000	100.0000

Calculated Global Properties		**Units**
Gross BTU/Real CF	919.6	BTU/SCF at 60°F and14.73 psia
Sat.Gross BTU/Real CF	904.8	BTU/SCF at 60°F and14.73 psia
Gas Compressibility (Z)	0.9977	
Specific Gravity	0.6659	air=1
Avg Molecular Weight	19.242	gm/mole
Propane GPM	0.056649	gal/MCF
Butane GPM	0.021538	gal/MCF
Gasoline GPM	0.010917	gal/MCF
26# Gasoline GPM	0.021357	gal/MCF
Total GPM	2.1472	gal/MCF
Base Mol%	99.646	%v/v

H2SLength of Stain Tube	N/A	ppm

Component	Mol%	Wt%	LV%
Benzene	0.0003	0.0012	0.0005
Toluene	0.0001	0.0006	0.0002
Ethylbenzene	0.0001	0.0005	0.0002
M&P Xylene	0.0000	0.0000	0.0000
O-Xylene	0.0000	0.0000	0.0000
2,2,4-Trimethylpentane	0.0003	0.0019	0.0010
Cyclopentane	0.0000	0.0000	0.0000
Cyclohexane	0.0013	0.0055	0.0025
Methylcyclohexane	0.0014	0.0070	0.0032

Description: Milagro Plant Inlet

GRI GlyCalc Information

Component	Mol%	Wt%	LV%
Carbon Dioxide	10.5444	24.1167	10.5234
Hydrogen Sulfide	0.0000	0.0000	0.0000
Nitrogen	0.0980	0.1427	0.0629
Methane	88.1097	73.4607	87.4033
Ethane	0.9434	1.4743	1.4806
Propane	0.2067	0.4736	0.3335
Isobutane	0.0340	0.1026	0.0651
n-Butane	0.0335	0.1017	0.0622
Isopentane	0.0108	0.0406	0.0232
n-Pentane	0.0066	0.0246	0.0139
Cyclopentane	0.0000	0.0000	0.0000
n-Hexane	0.0019	0.0086	0.0046
Cyclohexane	0.0013	0.0055	0.0025
Other Hexanes	0.0041	0.0184	0.0100
Heptanes	0.0025	0.0132	0.0069
Methylcyclohexane	0.0014	0.0070	0.0032
2,2,4 Trimethylpentane	0.0003	0.0019	0.0010
Benzene	0.0003	0.0012	0.0005
Toluene	0.0001	0.0006	0.0002
Ethylbenzene	0.0001	0.0005	0.0002
Xylenes	0.0000	0.0000	0.0000
C8+ Heavies	0.0009	0.0056	0.0028
Subtotal	100.0000	100.0000	100.0000
Oxygen	0.0000	0.0000	0.0000
Total	100.0000	100.0000	100.0000

Carencro Laboratory
4790 NE Evangeline Thruway
Carencro, LA 70520
Phone 337-896-3055

Certificate of Analysis

Number: 2030-16070167-001A

July 21, 2016

Williams Field Services
Williams Field Services
c/o Alpha Bioscience Company
2030 Afton Place
Farmington, NM 87401

Field:	Milagro Gas Plant	Sampled By:	BD-Gas Analysis
Station Name:	Train #2 Inlet Gas	Sample Of:	Gas Spot
Station Location:	San Juan Co, NM	Sample Date:	07/14/2016 10:25
Sample Point:		Sample Conditions:	921 psig, @ 83.7 °F
Analyzed:	07/20/2016 08:35:09 by CC123	Method:	GPA 2286
		Cylinder No:	4088

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.73 psia		
Nitrogen	0.072	0.105		GPM TOTAL C2+	0.879
Carbon Dioxide	8.882	20.305		GPM TOTAL C3+	0.351
Methane	87.933	73.279		GPM TOTAL iC5+	0.081
Ethane	1.971	3.079	0.528		
Propane	0.654	1.498	0.180		
Iso-butane	0.126	0.380	0.041		
n-Butane	0.156	0.471	0.049		
Iso-pentane	0.060	0.225	0.022		
n-Pentane	0.041	0.154	0.015		
Hexanes Plus	0.105	0.504	0.044		
	100.000	100.000	0.879		

Physical Properties	**Total**	**C6+**
Relative Density Real Gas	0.6661	3.1901
Calculated Molecular Weight	19.25	92.39
Compressibility Factor	0.9975	
GPA 2172-09 Calculation:		
Calculated Gross BTU per ft³ @ 14.73 psia & 60°F		
Real Gas Dry BTU	963	4984
Water Sat. Gas Base BTU	946	4897

Comments: H2O Mol% : 1.740 ; Wt% : 1.630

Patti L. Pettro

Hydrocarbon Laboratory Manager

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

Carencro Laboratory
4790 NE Evangeline Thruway
Carencro, LA 70520
Phone 337-896-3055

Certificate of Analysis

Number: 2030-16070167-001A

July 21, 2016

Williams Field Services
Williams Field Services
c/o Alpha Bioscience Company
2030 Afton Place
Farmington, NM 87401

Field:	Milagro Gas Plant	Sampled By:	BD-Gas Analysis
Station Name:	Train #2 Inlet Gas	Sample Of:	Gas Spot
Station Location:	San Juan Co, NM	Sample Date:	07/14/2016 10:25
Sample Point:		Sample Conditions:	921 psig, @ 83.7 °F
Analyzed:	07/20/2016 08:35:09 by CC123	Method:	GPA 2286
		Cylinder No:	4088

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.73 psia		
Nitrogen	0.072	0.105		GPM TOTAL C2+	0.879
Carbon Dioxide	8.882	20.305		GPM TOTAL C3+	0.351
Methane	87.933	73.279		GPM TOTAL iC5+	0.081
Ethane	1.971	3.079	0.528		
Propane	0.654	1.498	0.180		
Iso-Butane	0.126	0.380	0.041		
n-Butane	0.156	0.471	0.049		
Iso-Pentane	0.060	0.225	0.022		
n-Pentane	0.041	0.154	0.015		
Hexanes	0.044	0.181	0.017		
Heptanes Plus	0.061	0.323	0.027		
	100.000	100.000	0.879		

Physical Properties	Total	C7+
Relative Density Real Gas	0.6661	3.3589
Calculated Molecular Weight	19.25	97.28
Compressibility Factor	0.9975	
GPA 2172-09 Calculation:		
Calculated Gross BTU per ft³ @ 14.73 psia & 60°F		
Real Gas Dry BTU	963	5179
Water Sat. Gas Base BTU	946	5089

Comments: H2O Mol% : 1.740 ; Wt% : 1.630

Patti L. Pettro

Hydrocarbon Laboratory Manager

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

Carencro Laboratory
4790 NE Evangeline Thruway
Carencro, LA 70520
Phone 337-896-3055

Certificate of Analysis

Number: 2030-16070167-001A

July 21, 2016

Williams Field Services
Williams Field Services
c/o Alpha Bioscience Company
2030 Afton Place
Farmington, NM 87401

Field:	Milagro Gas Plant	Sampled By:	BD-Gas Analysis
Station Name:	Train #2 Inlet Gas	Sample Of:	Gas Spot
Station Location:	San Juan Co, NM	Sample Date:	07/14/2016 10:25
Sample Point:		Sample Conditions:	921 psig, @ 83.7 °F
Analyzed:	07/20/2016 08:35:09 by CC123	Method:	GPA 2286
		Cylinder No:	4088

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.73 psia		
Nitrogen	0.072	0.105		GPM TOTAL C2+	0.879
Carbon Dioxide	8.882	20.305			
Methane	87.933	73.279			
Ethane	1.971	3.079	0.528		
Propane	0.654	1.498	0.180		
Iso-Butane	0.126	0.380	0.041		
n-Butane	0.156	0.471	0.049		
Iso-Pentane	0.060	0.225	0.022		
n-Pentane	0.041	0.154	0.015		
i-Hexanes	0.030	0.120	0.011		
n-Hexane	0.014	0.061	0.006		
Benzene	0.003	0.012	0.001		
Cyclohexane	0.008	0.034	0.003		
i-Heptanes	0.022	0.101	0.009		
n-Heptane	0.005	0.027	0.002		
Toluene	0.004	0.021	0.001		
i-Octanes	0.015	0.089	0.007		
n-Octane	0.002	0.010	0.001		
Ethylbenzene	NIL	0.001	NIL		
Xylenes	0.002	0.009	0.001		
i-Nonanes	NIL	0.010	0.001		
n-Nonane	NIL	0.003	NIL		
Decane Plus	NIL	0.006	0.001		
	100.000	100.000	0.879		

Calculated Physical Properties	Total	C10+
Calculated Molecular Weight	19.25	146.84
GPA 2172-09 Calculation:		
Calculated Gross BTU per ft³ @ 14.73 psia & 60°F		
Real Gas Dry BTU	962.5	7918.5
Water Sat. Gas Base BTU	945.7	7780.7
Relative Density Real Gas	0.6661	5.0625
Compressibility Factor	0.9975	

Patti L. Pettro

Hydrocarbon Laboratory Manager

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

QUESTAR APPLIED TECHNOLOGY

1210 D. Street, Rock Springs, Wyoming 82901

(307) 352-7292

Description:	Milagro Plant Train 2 Dehy Gas	Company:	Williams
Field:	Farmington	Data File:	001309.D
Meter Number:		G.C. Method:	GAS EXTENDED.M
Analysis Date/Time:	2/10/2016, 12:57:23	GPA Method	GPA 2286
Date Sampled:	2/2/2016	Sampled By:	JS
Sample Temperature:	85	Analyst Initials:	KDS
Sample Pressure:	887		

Component	Mol%	Wt%	LV%
Methane	98.5711	96.9013	97.6953
Ethane	1.0740	1.9790	1.6841
Propane	0.2370	0.6403	0.3820
Isobutane	0.0399	0.1422	0.0764
n-Butane	0.0388	0.1380	0.0715
Neopentane	0.0006	0.0027	0.0014
Isopentane	0.0127	0.0560	0.0271
n-Pentane	0.0079	0.0350	0.0168
2,2-Dimethylbutane	0.0007	0.0039	0.0018
2,3-Dimethylbutane	0.0009	0.0046	0.0021
2-Methylpentane	0.0026	0.0136	0.0062
3-Methylpentane	0.0017	0.0091	0.0041
n-Hexane	0.0025	0.0133	0.0061
Heptanes	0.0071	0.0424	0.0176
Octanes	0.0011	0.0075	0.0032
Nonanes	0.0009	0.0065	0.0024
Decanes plus	0.0005	0.0046	0.0019
Nitrogen	0.0000	0.0000	0.0000
Carbon Dioxide	0.0000	0.0000	0.0000
Oxygen	0.0000	0.0000	0.0000
Hydrogen Sulfide	0.0000	0.0000	0.0000
Total	100.0000	100.0000	100.0000

Calculated Global Properties		**Units**
Gross BTU/Real CF	1029.4	BTU/SCF at 60°F and14.73 psia
Sat.Gross BTU/Real CF	1012.7	BTU/SCF at 60°F and14.73 psia
Gas Compressibility (Z)	0.9979	
Specific Gravity	0.5647	air=1
Avg Molecular Weight	16.319	gm/mole
Propane GPM	0.064953	gal/MCF
Butane GPM	0.025224	gal/MCF
Gasoline GPM	0.013646	gal/MCF
26# Gasoline GPM	0.026378	gal/MCF
Total GPM	0.391898	gal/MCF
Base Mol%	100.088	%v/v

H2SLength of Stain Tube	N/A	ppm

Component	Mol%	Wt%	LV%
Benzene	0.0005	0.0017	0.0006
Toluene	0.0001	0.0007	0.0003
Ethylbenzene	0.0000	0.0000	0.0000
M&P Xylene	0.0002	0.0013	0.0004
O-Xylene	0.0004	0.0020	0.0006
2,2,4-Trimethylpentane	0.0005	0.0026	0.0010
Cyclopentane	0.0000	0.0000	0.0000
Cyclohexane	0.0014	0.0074	0.0029
Methylcyclohexane	0.0016	0.0092	0.0035

Description: Milagro Plant Train 2 Dehy Gas

GRI GlyCalc Information

Component	Mol%	Wt%	LV%
Carbon Dioxide	0.0000	0.0000	0.0000
Hydrogen Sulfide	0.0000	0.0000	0.0000
Nitrogen	0.0000	0.0000	0.0000
Methane	98.5711	96.9013	97.6953
Ethane	1.0740	1.9790	1.6841
Propane	0.2370	0.6403	0.3820
Isobutane	0.0399	0.1422	0.0764
n-Butane	0.0394	0.1407	0.0729
Isopentane	0.0127	0.0560	0.0271
n-Pentane	0.0079	0.0350	0.0168
Cyclopentane	0.0000	0.0000	0.0000
n-Hexane	0.0025	0.0133	0.0061
Cyclohexane	0.0014	0.0074	0.0029
Other Hexanes	0.0059	0.0312	0.0142
Heptanes	0.0030	0.0208	0.0093
Methylcyclohexane	0.0016	0.0092	0.0035
2,2,4 Trimethylpentane	0.0005	0.0026	0.0010
Benzene	0.0005	0.0017	0.0006
Toluene	0.0001	0.0007	0.0003
Ethylbenzene	0.0000	0.0000	0.0000
Xylenes	0.0006	0.0033	0.0010
C8+ Heavies	0.0019	0.0153	0.0065
Subtotal	100.0000	100.0000	100.0000
Oxygen	0.0000	0.0000	0.0000
Total	100.0000	100.0000	100.0000

QUESTAR APPLIED TECHNOLOGY

1210 D. Street, Rock Springs, Wyoming 82901

(307) 352-7292

Description:	Milagro Plant Train 3 Dehy Gas	Company:	Williams
Field:	Farmington	Data File:	001383.D
Meter Number:		G.C. Method:	GAS EXTENDED.M
Analysis Date/Time:	02-Mar-16, 15:40:23	GPA Method	GPA 2286
Date Sampled:	2/22/2016	Sampled By:	JS
Sample Temperature:	80	Analyst Initials:	BRS
Sample Pressure:	871		

Component	Mol%	Wt%	LV%
Methane	97.5212	94.2149	96.6878
Ethane	1.0498	1.9010	1.6467
Propane	0.2335	0.6200	0.3765
Isobutane	0.0390	0.1366	0.0747
n-Butane	0.0389	0.1360	0.0717
Neopentane	0.0004	0.0015	0.0008
Isopentane	0.0131	0.0568	0.0280
n-Pentane	0.0080	0.0347	0.0169
2,2-Dimethylbutane	0.0004	0.0023	0.0011
2,3-Dimethylbutane	0.0006	0.0031	0.0014
2-Methylpentane	0.0025	0.0131	0.0061
3-Methylpentane	0.0015	0.0079	0.0036
n-Hexane	0.0025	0.0127	0.0059
Heptanes	0.0070	0.0414	0.0175
Octanes	0.0009	0.0067	0.0028
Nonanes	0.0003	0.0020	0.0007
Decanes plus	0.0001	0.0006	0.0003
Nitrogen	0.0565	0.0953	0.0362
Carbon Dioxide	1.0238	2.7134	1.0213
Oxygen	N/D	N/D	N/D
Hydrogen Sulfide	N/D	N/D	N/D
Total	100.0000	100.0000	100.0000

Calculated Global Properties		**Units**
Gross BTU/Real CF	1018.1	BTU/SCF at 60°F and14.73 psia
Sat.Gross BTU/Real CF	1001.6	BTU/SCF at 60°F and14.73 psia
Gas Compressibility (Z)	0.9979	
Specific Gravity	0.5747	air=1
Avg Molecular Weight	16.606	gm/mole
Propane GPM	0.063994	gal/MCF
Butane GPM	0.024962	gal/MCF
Gasoline GPM	0.013249	gal/MCF
26# Gasoline GPM	0.025599	gal/MCF
Total GPM	0.563776	gal/MCF
Base Mol%	101.06	%v/v

H2S detection limit 100 ppm (+/-)

Component	Mol%	Wt%	LV%
Benzene	0.0001	0.0005	0.0002
Toluene	0.0002	0.0009	0.0003
Ethylbenzene	0.0001	0.0006	0.0002
M&P Xylene	0.0000	0.0000	0.0000
O-Xylene	0.0001	0.0006	0.0002
2,2,4-Trimethylpentane	0.0004	0.0029	0.0013
Cyclopentane	0.0000	0.0000	0.0000
Cyclohexane	0.0016	0.0080	0.0031
Methylcyclohexane	0.0017	0.0103	0.0041

Description: Milagro Plant Train 3 Dehy Gas

GRI GlyCalc Information

Component	Mol%	Wt%	LV%
Carbon Dioxide	1.0238	2.7134	1.0213
Hydrogen Sulfide	N/D	N/D	N/D
Nitrogen	0.0565	0.0953	0.0362
Methane	97.5212	94.2149	96.6878
Ethane	1.0498	1.9010	1.6467
Propane	0.2335	0.6200	0.3765
Isobutane	0.0390	0.1366	0.0747
n-Butane	0.0389	0.1360	0.0717
Isopentane	0.0135	0.0583	0.0288
n-Pentane	0.0080	0.0347	0.0169
Cyclopentane	0.0000	0.0000	0.0000
n-Hexane	0.0025	0.0127	0.0059
Cyclohexane	0.0016	0.0080	0.0031
Other Hexanes	0.0050	0.0264	0.0122
Heptanes	0.0030	0.0188	0.0085
Methylcyclohexane	0.0017	0.0103	0.0041
2,2,4 Trimethylpentane	0.0004	0.0029	0.0013
Benzene	0.0001	0.0005	0.0002
Toluene	0.0002	0.0009	0.0003
Ethylbenzene	0.0001	0.0006	0.0002
Xylenes	0.0001	0.0006	0.0002
C8+ Heavies	0.0011	0.0081	0.0034
Subtotal	100.0000	100.0000	100.0000
Oxygen	N/D	N/D	N/D
Total	100.0000	100.0000	100.0000

QUESTAR APPLIED TECHNOLOGY

1210 D. Street, Rock Springs, Wyoming 82901

(307) 352-7292

Description:	Milagro Plant Train 4 Dehy Gas	Company:	Williams
Field:	Farmington	Data File:	001311.D
Meter Number:		G.C. Method:	GAS EXTENDED.M
Analysis Date/Time:	02/10/2016, 14:21:15	GPA Method	GPA 2286
Date Sampled:	2/2/2016	Sampled By:	JS
Sample Temperature:	81	Analyst Initials:	KDS
Sample Pressure:	872		

Component	Mol%	Wt%	LV%
Methane	98.6525	97.0917	97.8290
Ethane	1.0199	1.8815	1.6002
Propane	0.2215	0.5993	0.3574
Isobutane	0.0367	0.1307	0.0702
n-Butane	0.0354	0.1261	0.0653
Neopentane	0.0003	0.0015	0.0008
Isopentane	0.0117	0.0520	0.0252
n-Pentane	0.0072	0.0318	0.0152
2,2-Dimethylbutane	0.0004	0.0024	0.0011
2,3-Dimethylbutane	0.0006	0.0032	0.0014
2-Methylpentane	0.0023	0.0122	0.0056
3-Methylpentane	0.0014	0.0076	0.0034
n-Hexane	0.0022	0.0119	0.0054
Heptanes	0.0069	0.0409	0.0168
Octanes	0.0010	0.0072	0.0030
Nonanes	0.0000	0.0000	0.0000
Decanes plus	0.0000	0.0000	0.0000
Nitrogen	0.0000	0.0000	0.0000
Carbon Dioxide	0.0000	0.0000	0.0000
Oxygen	0.0000	0.0000	0.0000
Hydrogen Sulfide	0.0000	0.0000	0.0000
Total	100.0000	100.0000	100.0000

Calculated Global Properties		Units
Gross BTU/Real CF	1028.4	BTU/SCF at 60°F and14.73 psia
Sat.Gross BTU/Real CF	1011.7	BTU/SCF at 60°F and14.73 psia
Gas Compressibility (Z)	0.9979	
Specific Gravity	0.5641	air=1
Avg Molecular Weight	16.301	gm/mole
Propane GPM	0.060705	gal/MCF
Butane GPM	0.023111	gal/MCF
Gasoline GPM	0.012169	gal/MCF
26# Gasoline GPM	0.0233	gal/MCF
Total GPM	0.368907	gal/MCF
Base Mol%	99.751	%v/v

H2SLength of Stain Tube	N/A	ppm

Component	Mol%	Wt%	LV%
Benzene	0.0003	0.0013	0.0004
Toluene	0.0001	0.0007	0.0003
Ethylbenzene	0.0003	-0.0002	-0.0001
M&P Xylene	0.0003	-0.0002	-0.0001
O-Xylene	0.0003	-0.0002	-0.0001
2,2,4-Trimethylpentane	0.0007	0.0026	0.0011
Cyclopentane	0.0000	0.0000	0.0000
Cyclohexane	0.0015	0.0076	0.0029
Methylcyclohexane	0.0019	0.0096	0.0037

Description: Milagro Plant Train 4 Dehy Gas

GRI GlyCalc Information

Component	Mol%	Wt%	LV%
Carbon Dioxide	0.0000	0.0000	0.0000
Hydrogen Sulfide	0.0000	0.0000	0.0000
Nitrogen	0.0000	0.0000	0.0000
Methane	98.6525	97.0917	97.8290
Ethane	1.0199	1.8815	1.6002
Propane	0.2215	0.5993	0.3574
Isobutane	0.0367	0.1307	0.0702
n-Butane	0.0357	0.1276	0.0661
Isopentane	0.0117	0.0520	0.0252
n-Pentane	0.0072	0.0318	0.0152
Cyclopentane	0.0000	0.0000	0.0000
n-Hexane	0.0022	0.0119	0.0054
Cyclohexane	0.0015	0.0076	0.0029
Other Hexanes	0.0047	0.0254	0.0115
Heptanes	0.0024	0.0191	0.0084
Methylcyclohexane	0.0019	0.0096	0.0037
2,2,4 Trimethylpentane	0.0007	0.0026	0.0011
Benzene	0.0003	0.0013	0.0004
Toluene	0.0001	0.0007	0.0003
Ethylbenzene	0.0003	-0.0002	-0.0001
Xylenes	0.0006	-0.0004	-0.0002
C8+ Heavies	0.0001	0.0078	0.0033
Subtotal	100.0000	100.0000	100.0000
Oxygen	0.0000	0.0000	0.0000
Total	100.0000	100.0000	100.0000

QUESTAR APPLIED TECHNOLOGY

1210 D. Street, Rock Springs, Wyoming 82901

(307) 352-7292

Description:	Milagro Plant Train 5 Dehy	Company:	Williams
Field:	Farmington	Data File:	001310.D
Meter Number:		G.C. Method:	GAS EXTENDED.M
Analysis Date/Time:	2/10/2016, 13:39:56	GPA Method	GPA 2286
Date Sampled:	2/2/2016	Sampled By:	JS
Sample Temperature:	72	Analyst Initials:	KDS
Sample Pressure:	877		

Component	Mol%	Wt%	LV%
Methane	98.5999	96.9671	97.7524
Ethane	1.0496	1.9348	1.6463
Propane	0.2251	0.6084	0.3629
Isobutane	0.0377	0.1344	0.0722
n-Butane	0.0367	0.1307	0.0677
Neopentane	0.0004	0.0020	0.0010
Isopentane	0.0123	0.0542	0.0263
n-Pentane	0.0075	0.0332	0.0159
2,2-Dimethylbutane	0.0005	0.0029	0.0013
2,3-Dimethylbutane	0.0007	0.0037	0.0017
2-Methylpentane	0.0024	0.0129	0.0059
3-Methylpentane	0.0016	0.0083	0.0037
n-Hexane	0.0024	0.0127	0.0058
Heptanes	0.0071	0.0427	0.0175
Octanes	0.0011	0.0078	0.0033
Nonanes	0.0010	0.0065	0.0022
Decanes plus	0.0000	0.0000	0.0000
Nitrogen	0.0000	0.0000	0.0000
Carbon Dioxide	0.0140	0.0377	0.0139
Oxygen	0.0000	0.0000	0.0000
Hydrogen Sulfide	0.0000	0.0000	0.0000
Total	100.0000	100.0000	100.0000

Calculated Global Properties		**Units**
Gross BTU/Real CF	1028.7	BTU/SCF at 60°F and14.73 psia
Sat.Gross BTU/Real CF	1012	BTU/SCF at 60°F and14.73 psia
Gas Compressibility (Z)	0.9979	
Specific Gravity	0.5645	air=1
Avg Molecular Weight	16.313	gm/mole
Propane GPM	0.061692	gal/MCF
Butane GPM	0.023846	gal/MCF
Gasoline GPM	0.012858	gal/MCF
26# Gasoline GPM	0.024398	gal/MCF
Total GPM	0.382051	gal/MCF
Base Mol%	99.759	%v/v

H2SLength of Stain Tube	N/A	ppm

Component	Mol%	Wt%	LV%
Benzene	0.0005	0.0024	0.0008
Toluene	0.0001	0.0008	0.0003
Ethylbenzene	0.0000	0.0000	0.0000
M&P Xylene	0.0001	0.0008	0.0003
O-Xylene	0.0009	0.0057	0.0019
2,2,4-Trimethylpentane	0.0004	0.0028	0.0012
Cyclopentane	0.0000	0.0000	0.0000
Cyclohexane	0.0015	0.0077	0.0030
Methylcyclohexane	0.0016	0.0098	0.0038

Description: Milagro Plant Train 5 Dehy

GRI GlyCalc Information

Component	Mol%	Wt%	LV%
Carbon Dioxide	0.0140	0.0377	0.0139
Hydrogen Sulfide	0.0000	0.0000	0.0000
Nitrogen	0.0000	0.0000	0.0000
Methane	98.5999	96.9671	97.7524
Ethane	1.0496	1.9348	1.6463
Propane	0.2251	0.6084	0.3629
Isobutane	0.0377	0.1344	0.0722
n-Butane	0.0371	0.1327	0.0687
Isopentane	0.0123	0.0542	0.0263
n-Pentane	0.0075	0.0332	0.0159
Cyclopentane	0.0000	0.0000	0.0000
n-Hexane	0.0024	0.0127	0.0058
Cyclohexane	0.0015	0.0077	0.0030
Other Hexanes	0.0052	0.0278	0.0126
Heptanes	0.0030	0.0192	0.0084
Methylcyclohexane	0.0016	0.0098	0.0038
2,2,4 Trimethylpentane	0.0004	0.0028	0.0012
Benzene	0.0005	0.0024	0.0008
Toluene	0.0001	0.0008	0.0003
Ethylbenzene	0.0000	0.0000	0.0000
Xylenes	0.0010	0.0065	0.0022
C8+ Heavies	0.0011	0.0078	0.0033
Subtotal	100.0000	100.0000	100.0000
Oxygen	0.0000	0.0000	0.0000
Total	100.0000	100.0000	100.0000

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

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

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

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

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

PS Memo 09-02

To: **Stationary Sources Program, Local Agencies, and Regulated Community**

From: **Chris Laplante and Roland C. Hea, Colorado Air Pollution Control Division**

Date: **February 8, 2010**

Subject: **Oil & Gas Produced Water Tank Batteries**
Regulatory Definitions and Permitting Guidance

This guidance document is intended to answer frequently asked questions concerning oil and gas industry produced water tank batteries. This document does not address any other equipment types that may be part of a common facility with a tank battery. Nothing in this guidance should be construed regarding Air Pollution Control Division (Division) permitting of evaporation ponds or water treatment facilities. Please consult with the Division for information regarding the permitting of evaporation ponds or water treatment facilities.

Revision History

October 1, 2009	Initial issuance.
February 8, 2010	First revision. This guidance document replaces the October 1, 2009 version. Revised language to clarify APEN fee structure, definition of modification, APEN submittals, and produced water exemption.

Topic **Page**

3. EMISSION FACTORS AND SITE SPECIFIC SAMPLING Q&A

3.1. ***What are the State approved default emission factors for produced water tanks?***

County	Produced Water Tank Default Emission Factors[1] (lb/bbl)[2]		
	VOC	Benzene	n-Hexane
Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, & Weld	0.262	0.007	0.022
Garfield, Mesa, Rio Blanco, & Moffat	0.178	0.004	0.010
Remainder of Colorado[3]	0.262	0.007	0.022

[1] Testing may be performed at any site to determine site-specific emissions factors. These default emission factors may be revised by the Division in the future, pending approved data and testing results.

[2] Units of lb/bbl means pounds of emissions per barrel of produced water throughput

[3] For counties not listed in this table, use the emissions factors listed as a conservative measure or perform testing to determine a site-specific emission factor

3.2. ***What type of emissions are included in the produced water tank state default emission factors?***

State default emission factors for produced water tanks include flash, working, and breathing losses.

3.3. ***Are there limits as to when produced water tank state default emission factors may be used?***

State default emission factors may be used at all oil and gas industry tank batteries. The Division intends to work with industry to refine emission factors and may develop separate emission factors for E&P and non-E&P sites.

3.4. ***When are site-specific emission factors required for tank batteries?***

Site-specific emission factors may be developed and used on a voluntary basis for any tank battery. The Division reserves the authority to require site-specific emission factors at any time. Site-specific emission factors may only be applied at the tank battery for which they were developed, unless otherwise approved by the Division.

3.5. ***How is a site-specific emission factor developed?***

A site-specific emission factor for tank batteries is developed by performing a Division approved stack test. A test protocol must be submitted and approved by the Division prior to performing the test. Once a test protocol has been approved by the Division, subsequent testing may be performed following the approved protocol without submittal to the Division.

The Division must be notified of the site specific testing at least 30-days prior to the actual test date.

Emission Factor Determination for Produced Water Storage Tanks

TCEQ Project 2010-29

Prepared for:
Texas Commission on Environmental Quality
Austin, Texas

Prepared by:
ENVIRON International Corporation
Novato, California

Date:
August 2010

ENVIRON Project Number:
06-17477T

Executive Summary

The overall purpose of this Study is to evaluate volatile organic compounds (VOC), speciated VOC and hazardous air pollutant (HAP) emissions from produced water and/or saltwater storage tanks servicing oil and gas wells and to develop appropriate VOC and HAP emission factors. The emission factors are to be used for emission inventory development purposes.

The primary source of information for this study was testing conducted by the Texas Commission on Environmental Quality (TCEQ) under Work Order 522-7-84005-FY10-25, *Upstream Oil & Gas Tank Measurements*, TCEQ Project 2010-39. As part of this referenced testing project, pressurized produced water samples were taken at seven different tank batteries located in Johnson, Wise and Tarrant Counties, Texas (all part of the Eastern Barnett Shale region) and analyzed for flash gas volume and composition. The sample collection and analysis conducted as part of TCEQ Project 2010-39 was done according to strict sampling and quality assurance procedures. In addition to TCEQ Project 2010-39 data, a thorough review of publically-available information sources identified a limited amount of data on produced water emissions. This was supplemented by data provided by two natural gas producers and one petroleum engineering services company. Other than TCEQ Project 2010-39 data, however, it could not be confirmed that any of the data had undergone a rigorous quality assurance process and therefore is considered secondary data, used to support conclusions drawn using the primary data but not used directly in deriving the produced water emission factors.

Emissions from produced water storage tanks consist of flash emissions, working losses and breathing losses. Flash emissions are determined using flash gas analysis. Working and breathing losses are estimated using EPA TANKS 4.09d software. Using this approach and the assumptions detailed within this report, it is determined that working and breathing losses associated with primary data source sites are very small compared to flash emissions and can be ignored without affecting the overall emission factor determination.

Table ES-1 presents the recommended emission factors for VOC and four HAPs – benzene, toluene, ethylbenzene and xylenes – derived from the primary data source sites. For comparative purposes, average emissions from Texas and non-Texas secondary sites are also presented in Table ES-1.

Table ES-1. Recommended Emission Factors and Comparative Data

Pollutant	Average Produced Water Emission Factor by Data Set (lb/bbl)		
	Recommended Emission Factor	Secondary Data – Texas	Secondary Data – Non-Texas
VOC	0.01	0.012	0.18
Benzene	0.0001	0.0012	0.004
Toluene	0.0003	0.0012	0.009
Ethylbenzene	0.000006	0.0001	0.0007
Xylenes	0.00006	0.0003	0.006

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

GLOBAL WARMING POTENTIALS

[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Carbon dioxide	124-38-9	CO_2	1
Methane	74-82-8	CH_4	[a]25
Nitrous oxide	10024-97-2	N_2O	[a]298
HFC-23	75-46-7	CHF_3	[a]14,800
HFC-32	75-10-5	CH_2F_2	[a]675
HFC-41	593-53-3	CH_3F	[a]92
HFC-125	354-33-6	C_2HF_5	[a]3,500
HFC-134	359-35-3	$C_2H_2F_4$	[a]1,100
HFC-134a	811-97-2	CH_2FCF_3	[a]1,430
HFC-143	430-66-0	$C_2H_3F_3$	[a]353
HFC-143a	420-46-2	$C_2H_3F_3$	[a]4,470
HFC-152	624-72-6	CH_2FCH_2F	53
HFC-152a	75-37-6	CH_3CHF_2	[a]124
HFC-161	353-36-6	CH_3CH_2F	12
HFC-227ea	431-89-0	C_3HF_7	[a]3,220
HFC-236cb	677-56-5	$CH_2FCF_2CF_3$	1,340
HFC-236ea	431-63-0	CHF_2CHFCF_3	1,370
HFC-236fa	690-39-1	$C_3H_2F_6$	[a]9,810
HFC-245ca	679-86-7	$C_3H_3F_5$	[a]693
HFC-245fa	460-73-1	$CHF_2CH_2CF_3$	1,030
HFC-365mfc	406-58-6	$CH_3CF_2CH_2CF_3$	794
HFC-43-10mee	138495-42-8	$CF_3CFHCFHCF_2CF_3$	[a]1,640
Sulfur hexafluoride	2551-62-4	SF_6	[a]22,800
Trifluoromethyl sulphur pentafluoride	373-80-8	SF_5CF_3	17,700
Nitrogen trifluoride	7783-54-2	NF_3	17,200
PFC-14 (Perfluoromethane)	75-73-0	CF_4	[a]7,390
PFC-116 (Perfluoroethane)	76-16-4	C_2F_6	[a]12,200
PFC-218 (Perfluoropropane)	76-19-7	C_3F_8	[a]8,830
Perfluorocyclopropane	931-91-9	$C\text{-}C_3F_6$	17,340
PFC-3-1-10 (Perfluorobutane)	355-25-9	C_4F_{10}	[a]8,860
PFC-318 (Perfluorocyclobutane)	115-25-3	$C\text{-}C_4F_8$	[a]10,300
PFC-4-1-12 (Perfluoropentane)	678-26-2	C_5F_{12}	[a]9,160
PFC-5-1-14 (Perfluorohexane, FC-72)	355-42-0	C_6F_{14}	[a]9,300
PFC-9-1-18	306-94-5	$C_{10}F_{18}$	7,500
HCFE-235da2 (Isoflurane)	26675-46-7	$CHF_2OCHClCF_3$	350
HFE-43-10pccc (H-Galden 1040x, HG-11)	E1730133	$CHF_2OCF_2OC_2F_4OCHF_2$	1,870

HFE-125	3822-68-2	CHF_2OCF_3	14,900
HFE-134 (HG-00)	1691-17-4	CHF_2OCHF_2	6,320
HFE-143a	421-14-7	CH_3OCF_3	756
HFE-227ea	2356-62-9	$CF_3CHFOCF_3$	1,540
HFE-236ca12 (HG-10)	78522-47-1	$CHF_2OCF_2OCHF_2$	2,800
HFE-236ea2 (Desflurane)	57041-67-5	$CHF_2OCHFCF_3$	989
HFE-236fa	20193-67-3	$CF_3CH_2OCF_3$	487
HFE-245cb2	22410-44-2	$CH_3OCF_2CF_3$	708
HFE-245fa1	84011-15-4	$CHF_2CH_2OCF_3$	286
HFE-245fa2	1885-48-9	$CHF_2OCH_2CF_3$	659
HFE-254cb2	425-88-7	$CH_3OCF_2CHF_2$	359
HFE-263fb2	460-43-5	$CF_3CH_2OCH_3$	11
HFE-329mcc2	134769-21-4	$CF_3CF_2OCF_2CHF_2$	919
HFE-338mcf2	156053-88-2	$CF_3CF_2OCH_2CF_3$	552
HFE-338pcc13 (HG-01)	188690-78-0	$CHF_2OCF_2CF_2OCHF_2$	1,500
HFE-347mcc3 (HFE-7000)	375-03-1	$CH_3OCF_2CF_2CF_3$	575
HFE-347mcf2	171182-95-9	$CF_3CF_2OCH_2CHF_2$	374
HFE-347pcf2	406-78-0	$CHF_2CF_2OCH_2CF_3$	580
HFE-356mec3	382-34-3	$CH_3OCF_2CHFCF_3$	101
HFE-356pcc3	160620-20-2	$CH_3OCF_2CF_2CHF_2$	110
HFE-356pcf2	50807-77-7	$CHF_2CH_2OCF_2CHF_2$	265
HFE-356pcf3	35042-99-0	$CHF_2OCH_2CF_2CHF_2$	502
HFE-365mcf3	378-16-5	$CF_3CF_2CH_2OCH_3$	11
HFE-374pc2	512-51-6	$CH_3CH_2OCF_2CHF_2$	557
HFE-449s1 (HFE-7100)	163702-07-6	$C_4F_9OCH_3$	297
Chemical blend	163702-08-7	$(CF_3)_2CFCF_2OCH_3$	
HFE-569sf2 (HFE-7200)	163702-05-4	$C_4F_9OC_2H_5$	59
Chemical blend	163702-06-5	$(CF_3)_2CFCF_2OC_2H_5$	
Sevoflurane (HFE-347mmz1)	28523-86-6	$CH_2FOCH(CF_3)_2$	345
HFE-356mm1	13171-18-1	$(CF_3)_2CHOCH_3$	27
HFE-338mmz1	26103-08-2	$CHF_2OCH(CF_3)_2$	380
(Octafluorotetramethy-lene) hydroxymethyl group	NA	$X\text{-}(CF_2)_4CH(OH)\text{-}X$	73
HFE-347mmy1	22052-84-2	$CH_3OCF(CF_3)_2$	343
Bis(trifluoromethyl)-methanol	920-66-1	$(CF_3)_2CHOH$	195
2,2,3,3,3-pentafluoropropanol	422-05-9	$CF_3CF_2CH_2OH$	42
PFPMIE (HT-70)	NA	$CF_3OCF(CF_3)CF_2OCF_2OCF_3$	10,300

[a]The GWP for this compound is different than the GWP in the version of Table A-1 to subpart A of part 98 published on October 30, 2009.

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

DEFAULT CO_2 EMISSION FACTORS AND HIGH HEAT VALUES FOR VARIOUS TYPES OF FUEL

Fuel type	Default high heat value	Default CO_2 emission factor
Coal and coke	mmBtu/short ton	kg CO_2/mmBtu
Anthracite	25.09	103.69
Bituminous	24.93	93.28
Subbituminous	17.25	97.17
Lignite	14.21	97.72
Coal Coke	24.80	113.67
Mixed (Commercial sector)	21.39	94.27
Mixed (Industrial coking)	26.28	93.90
Mixed (Industrial sector)	22.35	94.67
Mixed (Electric Power sector)	19.73	95.52
Natural gas	mmBtu/scf	kg CO_2/mmBtu
(Weighted U.S. Average)	1.026×10^{-3}	53.06
Petroleum products	mmBtu/gallon	kg CO_2/mmBtu
Distillate Fuel Oil No. 1	0.139	73.25
Distillate Fuel Oil No. 2	0.138	73.96
Distillate Fuel Oil No. 4	0.146	75.04
Residual Fuel Oil No. 5	0.140	72.93
Residual Fuel Oil No. 6	0.150	75.10
Used Oil	0.138	74.00
Kerosene	0.135	75.20
Liquefied petroleum gases (LPG)[1]	0.092	61.71
Propane[1]	0.091	62.87
Propylene[2]	0.091	67.77
Ethane[1]	0.068	59.60
Ethanol	0.084	68.44
Ethylene[2]	0.058	65.96
Isobutane[1]	0.099	64.94
Isobutylene[1]	0.103	68.86
Butane[1]	0.103	64.77
Butylene[1]	0.105	68.72
Naphtha (<401 deg F)	0.125	68.02
Natural Gasoline	0.110	66.88
Other Oil (>401 deg F)	0.139	76.22
Pentanes Plus	0.110	70.02

Petrochemical Feedstocks	0.125	71.02
Petroleum Coke	0.143	102.41
Special Naphtha	0.125	72.34
Unfinished Oils	0.139	74.54
Heavy Gas Oils	0.148	74.92
Lubricants	0.144	74.27
Motor Gasoline	0.125	70.22
Aviation Gasoline	0.120	69.25
Kerosene-Type Jet Fuel	0.135	72.22
Asphalt and Road Oil	0.158	75.36
Crude Oil	0.138	74.54
Other fuels—solid	mmBtu/short ton	kg CO_2/mmBtu
Municipal Solid Waste	9.95[3]	90.7
Tires	28.00	85.97
Plastics	38.00	75.00
Petroleum Coke	30.00	102.41
Other fuels—gaseous	mmBtu/scf	kg CO_2/mmBtu
Blast Furnace Gas	0.092×10^{-3}	274.32
Coke Oven Gas	0.599×10^{-3}	46.85
Propane Gas	2.516×10^{-3}	61.46
Fuel Gas[4]	1.388×10^{-3}	59.00
Biomass fuels—solid	mmBtu/short ton	kg CO_2/mmBtu
Wood and Wood Residuals (dry basis)[5]	17.48	93.80
Agricultural Byproducts	8.25	118.17
Peat	8.00	111.84
Solid Byproducts	10.39	105.51
Biomass fuels—gaseous	mmBtu/scf	kg CO_2/mmBtu
Landfill Gas	0.485×10^{-3}	52.07
Other Biomass Gases	0.655×10^{-3}	52.07
Biomass Fuels—Liquid	mmBtu/gallon	kg CO_2/mmBtu
Ethanol	0.084	68.44
Biodiesel (100%)	0.128	73.84
Rendered Animal Fat	0.125	71.06
Vegetable Oil	0.120	81.55

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

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

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

[4]Reporters subject to subpart X of this part that are complying with §98.243(d) or subpart Y of this part may only use the default HHV and the default CO_2 emission factor for fuel gas combustion under the conditions prescribed in §98.243(d)(2)(i) and (d)(2)(ii) and §98.252(a)(1) and (a)(2), respectively. Otherwise, reporters subject to subpart X or subpart Y shall use either Tier 3 (Equation C-5) or Tier 4.

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

[78 FR 71950, Nov. 29, 2013]

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

Fuel type	Default CH_4 emission factor (kg CH_4/mmBtu)	Default N_2O emission factor (kg N_2O/mmBtu)
Coal and Coke (All fuel types in Table C-1)	1.1×10^{-02}	1.6×10^{-03}
Natural Gas	1.0×10^{-03}	1.0×10^{-04}
Petroleum (All fuel types in Table C-1)	3.0×10^{-03}	6.0×10^{-04}
Fuel Gas	3.0×10^{-03}	6.0×10^{-04}
Municipal Solid Waste	3.2×10^{-02}	4.2×10^{-03}
Tires	3.2×10^{-02}	4.2×10^{-03}
Blast Furnace Gas	2.2×10^{-05}	1.0×10^{-04}
Coke Oven Gas	4.8×10^{-04}	1.0×10^{-04}
Biomass Fuels—Solid (All fuel types in Table C-1, except wood and wood residuals)	3.2×10^{-02}	4.2×10^{-03}
Wood and wood residuals	7.2×10^{-03}	3.6×10^{-03}
Biomass Fuels—Gaseous (All fuel types in Table C-1)	3.2×10^{-03}	6.3×10^{-04}
Biomass Fuels—Liquid (All fuel types in Table C-1)	1.1×10^{-03}	1.1×10^{-04}

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

Table W-1A of Subpart W of Part 98—Default Whole Gas Emission Factors for Onshore Petroleum and Natural Gas Production

Onshore petroleum and natural gas production	Emission factor (scf/hour/ component)
Eastern U.S.	
Population Emission Factors—All Components, Gas Service[1]	
Valve	0.027
Connector	0.003
Open-ended Line	0.061
Pressure Relief Valve	0.040
Low Continuous Bleed Pneumatic Device Vents[2]	1.39
High Continuous Bleed Pneumatic Device Vents[2]	37.3
Intermittent Bleed Pneumatic Device Vents[2]	13.5
Pneumatic Pumps[3]	13.3
Population Emission Factors—All Components, Light Crude Service[4]	
Valve	0.05
Flange	0.003
Connector	0.007
Open-ended Line	0.05
Pump	0.01
Other[5]	0.30
Population Emission Factors—All Components, Heavy Crude Service[6]	
Valve	0.0005
Flange	0.0009
Connector (other)	0.0003
Open-ended Line	0.006
Other[5]	0.003
Western U.S.	
Population Emission Factors—All Components, Gas Service[1]	
Valve	0.121
Connector	0.017
Open-ended Line	0.031
Pressure Relief Valve	0.193
Low Continuous Bleed Pneumatic Device Vents[2]	1.39
High Continuous Bleed Pneumatic Device Vents[2]	37.3
Intermittent Bleed Pneumatic Device Vents[2]	13.5
Pneumatic Pumps[3]	13.3
Population Emission Factors—All Components, Light Crude Service[4]	
Valve	0.05
Flange	0.003

Connector (other)	0.007
Open-ended Line	0.05
Pump	0.01
Other[5]	0.30
Population Emission Factors—All Components, Heavy Crude Service[6]	
Valve	0.0005
Flange	0.0009
Connector (other)	0.0003
Open-ended Line	0.006
Other[5]	0.003

[1]For multi-phase flow that includes gas, use the gas service emissions factors.

[2]Emission Factor is in units of “scf/hour/device.”

[3]Emission Factor is in units of “scf/hour/pump.”

[4]Hydrocarbon liquids greater than or equal to 20°API are considered “light crude.”

[5]“Others” category includes instruments, loading arms, pressure relief valves, stuffing boxes, compressor seals, dump lever arms, and vents.

[6]Hydrocarbon liquids less than 20°API are considered “heavy crude.”

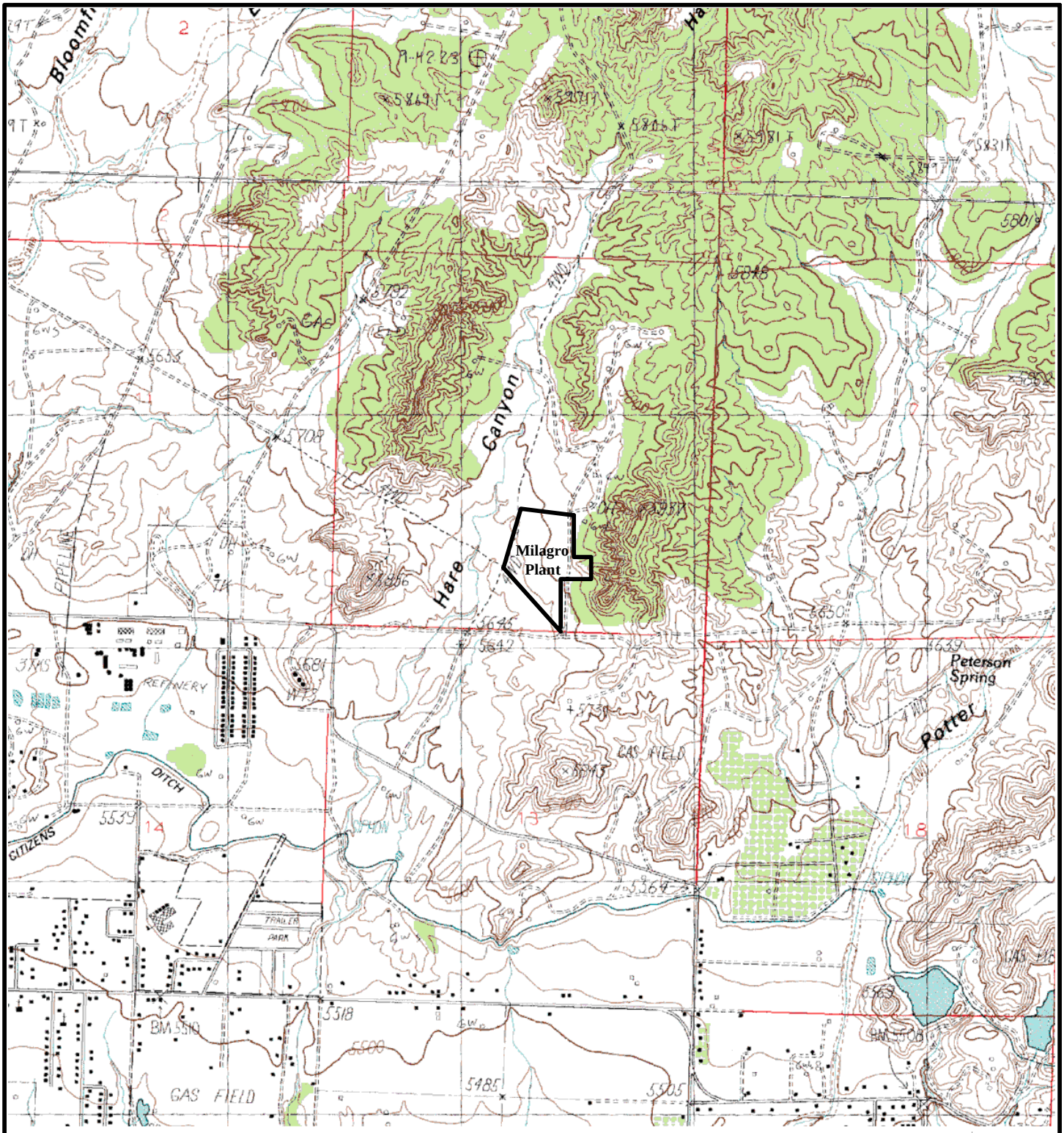
Section 8

Map(s)

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

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

A map is provided on the following page.



Source: USGS Aztec and Bloomfield, NM Quadrangles

HARVEST MIDSTREAM

Figure 1 Site Vicinity / Topographic Map

Milagro Plant

Section 12, Township 29N Range 11W

San Juan County, New Mexico

Section 9

Proof of Public Notice

(for NSR applications submitting under 20.2.72 or 20.2.74 NMAC)

(This proof is required by: 20.2.72.203.A.14 NMAC "Documentary Proof of applicant's public notice")

☑ **I have read the AQB "Guidelines for Public Notification for Air Quality Permit Applications"**
This document provides detailed instructions about public notice requirements for various permitting actions. It also provides public notice examples and certification forms. Material mistakes in the public notice will require a re-notice before issuance of the permit.

Unless otherwise allowed elsewhere in this document, the following items document proof of the applicant's Public Notification. Please include this page in your proof of public notice submittal with checkmarks indicating which documents are being submitted with the application.

New Permit and **Significant Permit Revision** public notices must include all items in this list.

Technical Revision public notices require only items 1, 5, 9, and 10.

Per the Guidelines for Public Notification document mentioned above, include:

1. ☑ A copy of the certified letter receipts with post marks (20.2.72.203.B NMAC)
2. ☑ A list of the places where the public notice has been posted in at least four publicly accessible and conspicuous places, including the proposed or existing facility entrance. (e.g: post office, library, grocery, etc.)
3. ☑ A copy of the property tax record (20.2.72.203.B NMAC).
4. ☑ A sample of the letters sent to the owners of record.
5. ☑ A sample of the letters sent to counties, municipalities, and Indian tribes.
6. ☑ A sample of the public notice posted and a verification of the local postings.
7. ☑ A table of the noticed citizens, counties, municipalities and tribes and to whom the notices were sent in each group.
8. ☑ A copy of the public service announcement (PSA) sent to a local radio station and documentary proof of submittal.
9. ☑ A copy of the classified or legal ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
10. ☑ A copy of the display ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
11. ☑ A map with a graphic scale showing the facility boundary and the surrounding area in which owners of record were notified by mail. This is necessary for verification that the correct facility boundary was used in determining distance for notifying land owners of record.


U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only
For delivery information, visit our website
OFFICIAL
Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage
$0.00
US POSTAGE
5/30/2024
062S12395454
B7113
000030583
7014 2870 0001 4722 6384
Sent To
Street & Apt. No., or PO Box No.
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CITY OF FARMINGTON
800 MUNICIPAL DRIVE
FARMINGTON, NM 87401
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B7113
000030582
7014 2870 0001 4722 6575
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Street & Apt. No. or PO Box No.
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TRANSWESTER N PIPELINE COMPANY
ATTN KE A
2424 RIDGE RD
ROCKWALL, TX 75087
PS Form 3800, July 2014


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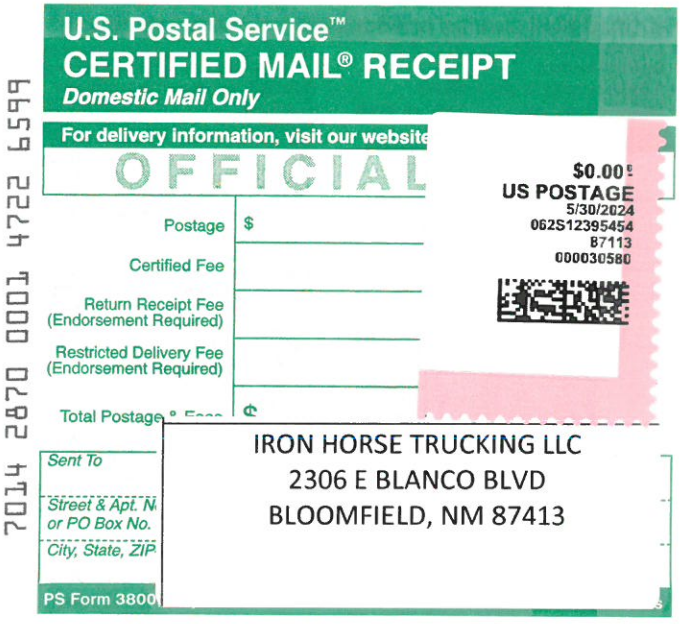
CHARLES GLEN PETERSON
1670 SOLANA
LOS ALAMOS, NM 87544
PS Form 380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2306 E BLANCO BLVD
BLOOMFIELD, NM 87413
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FARMINGTON, NM 87401
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BLOOMFIELD - CITY MANAGER
915 N. 1ST STREET
BLOOMFILED, NM 87413
PS Form 3800


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201 W. CHACO ST.
AZTEC, NM 87410
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7014 2870 0001 4722 6193
Sent To
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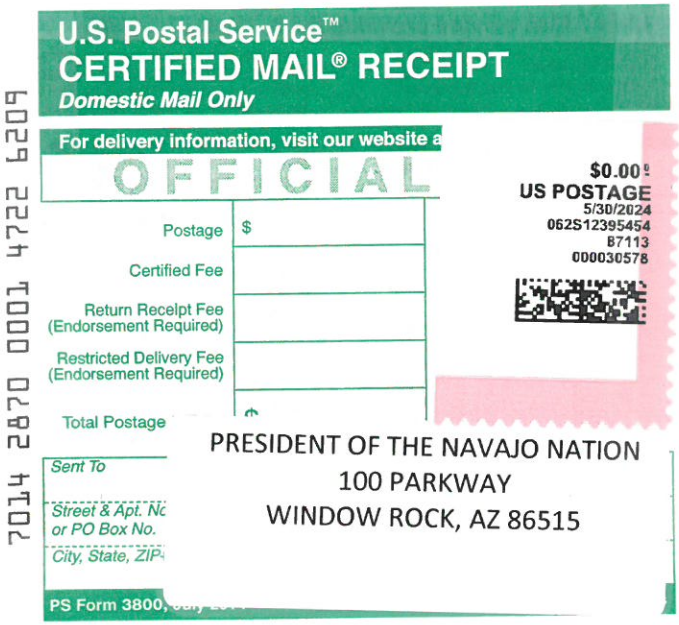
or PO Box No.
City, State, ZIP+
SAN JUAN COUNTY - COUNTY MANAGER
100 S. OLIVER DR.
AZTEC, NM 87410
PS Form 3800,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US POSTAGE
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062S12395454
87113
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7014 2870 0001 4722 6209
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Street & Apt. No.
or PO Box No.
City, State, ZIP+
PRESIDENT OF THE NAVAJO NATION
100 PARKWAY
WINDOW ROCK, AZ 86515
PS Form 3800,

Table of Posted Notice Locations

Name	Address	City	State	Zip Code
FACILITY ENTRANCE	1754 ARROYO DRIVE	BLOOMFIELD	NM	87413
UNITED STATES POSTAL SERVICE	1108 W BROADWAY AVE	BLOOMFIELD	NM	87413
CITY OF BLOOMFIELD COURTHOUSE	711 RUTH LN	BLOOMFIELD	NM	87413
BLOOMFIELD CITY PUBLIC LIBRARY	333 S 1ST ST	BLOOMFIELD	NM	87413

Table of Noticed Citizens

Name	Address	City	State	Zip Code
CITY OF FARMINGTON	800 MUNICIPAL DRIVE	FARMINGTON	NM	87401
TRANSWESTER N PIPELINE COMPANY ATTN KE A	2424 RIDGE RD	ROCKWALL	TX	75087
CHARLES GLEN PETERSON	1670 SOLANA	LOS ALAMOS	NM	87544
IRON HORSE TRUCKING LLC	2306 E BLANCO BLVD	BLOOMFIELD	NM	87413

Table of Noticed Municipalities

Name	Address	City	State	Zip Code
FARMINGTON - CITY MANAGER	800 MUNICIPAL DRIVE	FARMINGTON	NM	87401
BLOOMFIELD - CITY MANAGER	915 N. 1ST STREET	BLOOMFILED	NM	87413
AZTEC - CITY MANAGER	201 W. CHACO ST.	AZTEC	NM	87410

Table of Noticed Counties

Name	Address	City	State	Zip Code
SAN JUAN COUNTY - COUNTY MANAGER	100 S. OLIVER DR.	AZTEC	NM	87410

Table of Noticed Tribes

Name	Address	City	State	Zip Code
PRESIDENT OF THE NAVAJO NATION	100 PARKWAY	WINDOW ROCK	AZ	86515

May 30, 2024

CERTIFIED MAIL 7014 2870 0001 4722 6384
RETURN RECEIPT REQUESTED *(certified mail is required, **return receipt is optional**)*

Dear **Neighbor,**
Harvest Four Corners, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the **modification** of its **gas treating plant** facility. The expected date of application submittal to the Air Quality Bureau is **May 3, 2024.**

The exact location for the proposed facility known as, **Milagro Gas Treating Plant**, is at **1754 Arroyo Drive, Bloomfield, NM 87413.** The approximate location of this facility is **2.3** miles **east-northeast** of **Bloomfield, NM** in **San Juan** county.

The proposed **modification** consists of: the installation of two (2) 380.9 MMBtu/hr turbines with both a bypass system (units 7A & 8A) and a HRSG system (units 7B & 8B); the removal of two (2) 190 MMBtu/hr boilers (units 2 & 3) and one (1) 1140 hp emergency generator (unit 31B); and the modification of one (1) 190 MMBtu/hr boiler (unit 1) and one (1) 245 MMBtu/hr boiler (unit 20).

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

Pollutant:	Pounds per hour	Tons per year
PM_{10}	8	35
$PM_{2.5}$	8	35
Sulfur Dioxide (SO_2)	1	2
Nitrogen Oxides (NO_x)	43	186
Carbon Monoxide (CO)	59	249
Volatile Organic Compounds (VOC)	32	92
Total sum of all Hazardous Air Pollutants (HAPs)	18	29
Hydrogen Sulfide (H_2S)	N/A	N/A
Green House Gas Emissions as Total CO_2e	N/A	1,790,469

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

The owner and/or operator of the Facility is:
Harvest Four Corners, LLC,
1755 Arroyo Drive
Bloomfield, NM 87413

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

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

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

Attención
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Sincerely,
Harvest Four Corners, LLC,
1755 Arroyo Drive
Bloomfield, NM 87413

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

May 30, 2024

CERTIFIED MAIL 7014 2870 0001 4722 6605
RETURN RECEIPT REQUESTED *(certified mail is required, **return receipt is optional**)*

Dear **Municipal Official,**
Harvest Four Corners, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the **modification** of its **gas treating plant** facility. The expected date of application submittal to the Air Quality Bureau is **May 3, 2024.**

The exact location for the proposed facility known as, **Milagro Gas Treating Plant**, is at **1754 Arroyo Drive, Bloomfield, NM 87413.** The approximate location of this facility is **2.3** miles **east-northeast** of **Bloomfield, NM** in **San Juan** county.

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Volatile Organic Compounds (VOC)	32	92
Total sum of all Hazardous Air Pollutants (HAPs)	18	29
Hydrogen Sulfide (H_2S)	N/A	N/A
Green House Gas Emissions as Total CO_2e	N/A	1,790,469

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General Posting of Notices – Certification

I, Brian Farley, the undersigned, certify that on **4/30/2024,** posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in the **City of Bloomfield** of **San Juan** County, State of New Mexico on the following dates:

1. Facility entrance, Milagro Gas Plant, 1754 Arroyo Drive, Bloomfield, NM 87413 4/30/2024
2. Public board, United States Postal Service, 1108 W Broadway Ave, Bloomfield, NM 87413 4/30/2024
3. Public board, City of Bloomfield Courthouse, 711 Ruth Ln, Bloomfield, NM 87413 4/30/2024
4. Public board, Bloomfield City Public Library, 333 S 1st St, Bloomfield, NM 87413 4/30/2024

Signed this 30 day of April, 2024

Signature

4/30/24
Date

Brian Farley
Printed Name

Operations Engineer
Title

e contact
Wagoner
hoo.com
book:
Scouts Pack

Debe tener 5 aňos o más para participar

Las reuniónes son los martes- 6pm-7pm en
1105 North 1st St, Bloomfield, NM



Si tiene preguntas, póngase en contacto con
Cynthia Wagoner

Correo electronico: Cwagoner522@yahoo.com

Más information en Facebook
Bloomfield NM Cub Scouts Pack 324

PAINT THE TOWN TEAL
for Sexual Assault Awareness Month

Let's show support for survivors in our community by joining together to end the cycle of violence by painting a teal ribbon on your storefront window for the whole month of April.

IF YOUR BUSINESS IS INTERESTED PLEASE CALL: 505-325-2805
WE ARE KINDLY ASKING THAT YOUR BUSINESS DONATES $50
AND SASNWNM WILL PROUDLY PROVIDE THE
WINDOW PAINT & PAINT THE RIBBON FOR YOU.

5K – 10K – 1 Mile Stroller Roll
Saturday, April 6, 2024 • 10am
Locke Street Eats
Downtown Farmington
Details & Registration on-line at: www.runningguru.com - search SASS
Proceeds benefit Sexual Assault Services of Northwest New Mexico

SPONSORED BY: Sexual Assault Services · KSJE · Leavitt Group · Kysar Leavitt Insurance Agency · City of Farmin · Merrion Oil & Gas · Brown's Shoe Fit Co. · Coalition to Stop Violence Against Native Women · PBSCO · Locke Street Eats · Horace Nissan · Basin Health Companies · 97.9 93.3 KISS Country · San Juan County New Mexico · Just Click printing.com · Basin Surveying, Inc. · Garrison Graphics

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ICE

pply to the New Mexico Environment Department
gas processing facility known as the **Kutz Canyon**
the Air Quality Bureau is on or near May 8, 2019.
07° 57' 41.9", approximately 2.1 miles east of the
ast of Bloomfield in San Juan County.
ural gas, with one area of the plant (Kutz I) using a
cryogenic process.
the NMAQB by the facility's previous owner. In
th a reboiler, the application proposed removal or
ding four reciprocating internal combustion engines
ne glycol (EG) natural gas dehydration unit with a
drocarbon (condensate) storage tank equipped with a
rmit application was filed with the NMAQB prior to
ir San Juan Basin midstream facilities to the parent
mit on September 20, 2018, just days prior to the
equiring the removal and/or decommissioning of the
er permit issuance. The permit condition does allow
ded. (The mole sieve natural gas dehydrator and
it.)
utz I plant equipment and operations and wishes to
shut down, removed or decommissioned; and have
permit does not result in ambient air quality impacts.
hydrator and associated regeneration reboiler in the

nant will be as follows in pound per hour (pph) and
f the Department's review:

Pounds per hour	Tons per year
279	1,158
231	909
205	852
1.2	1.7
4.9	17.9
4.9	17.9
9.9	45.7
n/a	335,788

will continue to be midnight to midnight (24 hours a

ew Mexico 87413
of this facility, and you want your comments to be
your comments in writing to this address: Permit
r Quality Bureau; 525 Camino de los Marquez, Suite
224-7009;
Other comments and questions may be submitted

cility name, or send a copy of this notice along with
epartment may have not yet received the permit
Once the Department has completed its preliminary
ment's notice will be published in the legal section of

nento del Medio Ambiente de Nuevo México, acerca
ea. Si usted desea información en español, por favor

09-05-19 12:41 RCVD

This board is only for non-profit postings
and will be removed in 12 weeks.

TICE

ittal to the New Mexico Environment Department for
ssing plan known as **San Juan Gas Plant.** The
Bureau is **December 15, 2023.**

Plant, is at latitude **36.73251°** and longitude -
miles **northeast** of **Bloomfield** in **San Juan** County.

nes.

ntaminant will be as follows in pound per hour
ng the course of the Department's review:

Pounds per hour	Tons per year
5	20
5	19
5	19
5	21
485	953
97	230
16	78
2	12
n/a	301,000

y will be 24 hours a day, 7 days a week and a

avis Street; Houston, TX 77002**

n of this facility, and you want your comments to
t your comments in writing to this address:
ent; Air Quality Bureau; 525 Camino de los
mments and questions may be submitted

cility name, or send a copy of this notice along
epartment may have not yet received the
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the Department's notice will be published in
ion.

co del Medio Ambiente de Nuevo México,
ta área. Si usted desea información en
72-8373.

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BlueCross BlueShield of New Mexico
ENTENNIALCARE

We want to hear from our members!

We invite you to take part in the Member Advisory Board.
This is a meeting for Blue Cross Community Centennial members.
We would like your feedback about the services we provide.
Thursday, April 11, 2024 from 12:00 - 2:00 p.m.
San Juan College, Lecture Hall
4601 College Blvd., Farmington, NM 87402
Join by phone (toll-free): 1-872-242-7669 Conference ID: 430 428 54#
Join by MS Teams App: Meeting link will be emailed upon request

Reserve your spot by calling or emailing today!
RSVP by: Monday, April 8, 2024
Contact: Christine Rocha
Phone: 1-866-825-6034
Email: bcbs_ab@bcbsnm.com

Doors open and call-in begins at 11:45 a.m.

For more inf
call Member
1-866-689-1
A $25 gift c
for Blue Cr
Centennia
parent/gu
who atten
Condition

Refreshmen
attending in
Child care is

Blue Cross and Blue Shield of New Mexico complies with applicable federal civil rights laws and does not discriminat
national origin, age, disability, or sex.
ATENCIÓN: Si habla español, tiene a su disposición servicios gratuitos de asistencia lingüística Llame al 1-855-710-6
Díí baa akó nínízin: Díí saad bee yáníłti'go Diné Bizaad, saad bee áká'ánída'áwo'dęę', t'áá jiik'eh, éí ná hóló, koj[' hódíl
Such services are funded in part with the State of New Mexico.

BlueCross BlueShield of New Mexico
ENTENNIALCARE

¡Queremos escuchar a nuestros asegurados!

Le invitamos a participar en la Junta asesora de asegurados.
Esta reunión es para los asegurados de Blue Cross and Blue Shield of New Mexico.
Queremos escuchar sus opiniones sobre los servicios que proporcionamos.
Jueves, 11 de abril de 2024 de 12:00 - 2:00 p.m.
San Juan College, Sala de Conferencias
4601 College Blvd., Farmington, NM 87402
Unirse por telefono: 1-872-242-7669 Conference ID: 430 428 54#
Unirse por web: Enlace de reunion web se manda por correo electronico

¡Reserve su lugar llamando o enviando un correo electrónico hoy mismo!
Responda antes de: Lunes, 8 de abril de 2024
Nombre: Christine Rocha
Teléfono: 1-866-825-6034
Correo electrónico: bcbs_ab@bcbsnm.com

Las puertas se abren y el inicio de sesion/llamada comienza a las 11:45 a.m.

Para obte
para obte
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Cliente a

Los ase
Commu
o tutor
asistar
tarjeta
Aplica

Se ser
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de gua

Blue Cross and Blue Shield of New Mexico cumple con las leyes federales de derechos civiles aplicables y
nacionalidad, edad, discapacidad o sexo.
ATTENTION: If you speak English, language assistance services, free of charge, are available to you. Call 1-8
Díí baa akó nínízin: Díí saad bee yáníłti'go Diné Bizaad, saad bee áká'ánída'áwo'dęę', t'áá jiik'eh, éí ná hóló,
Esos servicios reciben financiamiento parcial del estado de New Mexico.

Children, Youth & Families Department
STATE OF NEW MEXICO

Free Event!
AWARENESS MONTH
April 27, 2024
am -2:00 pm
us for a fun
event!

STAND UP FOR CHILDREN

AZTEC MUSEUM PIONEER VILLAGE

Celebrating 60 years of preserving history - 1964 to 2024
125 N. Main Ave, Aztec, NM 87410 505-334-9829 www.aztecmuseum.org

SURVIVOR VOICES:
Stories of Navajo Descendants of the Long Walk

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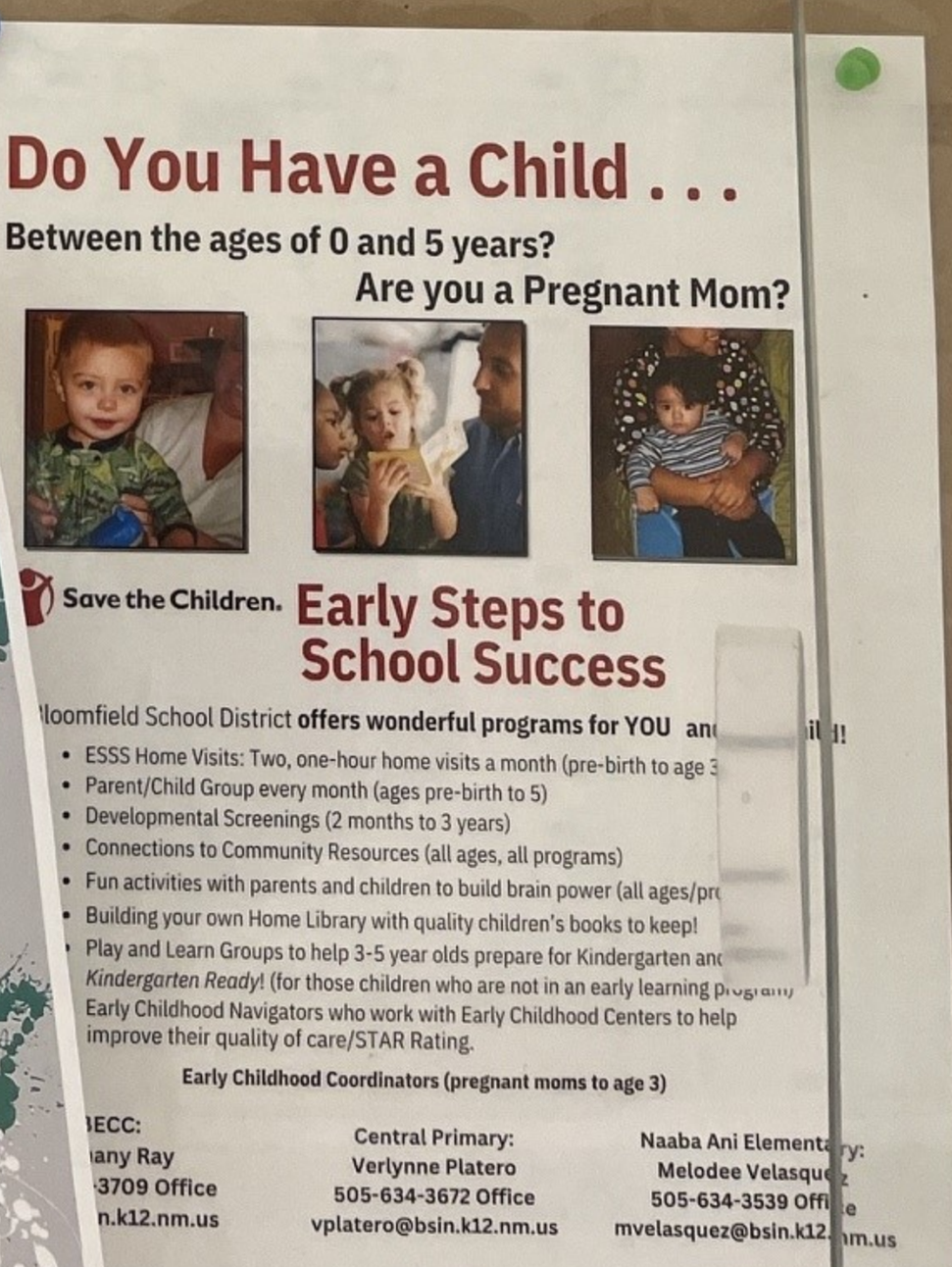

Apr 30, 2024 at 8:08:03 AM
1755 CR-4935
Bloomfield NM 87413
United States

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Pollutant:	Pounds per hour	Tons per year
PM_{10}	8	35
$PM_{2.5}$	8	35
Sulfur Dioxide (SO_2)	1	2
Nitrogen Oxides (NO_x)	43	186
Carbon Monoxide (CO)	59	249
Volatile Organic Compounds (VOC)	32	92
Total sum of all Hazardous Air Pollutants (HAPs)	18	29
Hydrogen Sulfide (H_2S)	N/A	N/A
Green House Gas Emissions as Total CO_2e	N/A	1,790,469

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

The owner and/or operator of the Facility is:
Harvest Four Corners, LLC,
1755 Arroyo Drive
Bloomfield, NM 87413

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

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

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

Submittal of Public Service Announcement – Certification

I, Daniel Dolce, the undersigned, certify that on **May 30, 2024**, submitted a public service announcement to **iHeart Media Farmington** that serves the City\Town\Village of **Bloomfield**, **San Juan** County, New Mexico, in which the source is or is proposed to be located and that **iHeart Media Farmington DID NOT RESPOND.**

Signed this 30 day of May, 2024,

Daniel Dolce
Signature

5/30/24
Date

Daniel Dolce
Printed Name

Consultant - Trinity Consultants
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

PSA REQUEST

Please provide the information below to submit your Public Service Announcement.

Get Started With iHeartMedia Farmington
  To purchase or learn about advertising with iHeartMedia, call us at 1-844-AD-HELP-5 (1-844-234-3575)

Form Wrapper

Trinity Consultants

Daniel

Dolce

Consultant

(505) 818-8761

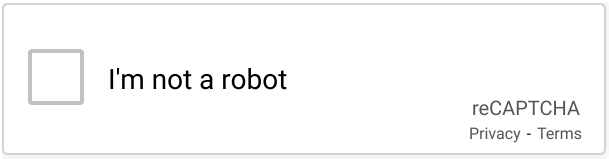
daniel.dolce@trintiyconsultants.com

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

The public service announcement request must contain the following information about the facility or proposed facility (20.2.72.203.D NMAC).

1. The name: Milagro Gas Treating Plant, location: 1754 Arroyo Drive, Bloomfield, NM 87413. and type of business: Gas Plant.
2. The name and principal owner or operator: Harvest Four Corners, LLC – owner and operator.
3. The type of process or change for which the permit is sought: NSR Significant Revision – authorize the installation of two (2) 380.9 MMBtu/hr turbines with both a bypass system (units 7A & 8A) and a HRSG system (units 7B & 8B); the removal of two (2) 190 MMBtu/hr boilers (units 2 & 3) and one (1) 1140 hp emergency generator (unit 31B); and the modification of one (1) 190 MMBtu/hr boiler (unit 1) and one (1) 245 MMBtu/hr boiler (unit 20).
4. Locations where the notices have been posted in Loving, NM 88256: (1) Milagro Gas Treating Plant facility entrance; (2) United States Postal Service, 1109 W Broadway Ave,

☑ I acknowledge that this is a business request



SEND

iHeartMedia Farmington
Phone: (tel:+)
200 E. Broadway Ave Farmington NM 87401

LocaliQ
Texas/New Mexico
GANNETT

PO Box 631667 Cincinnati, OH 45263-1667

AFFIDAVIT OF PUBLICATION

Trinity Consultants, Inc.
Trinity Consultants, Inc.
9400 Holly Ave. Building 3, Suite 300
Albuquerque NM 87122

STATE OF WISCONSIN, COUNTY OF BROWN

The Farmington Daily Times, a daily newspaper published in the city of Farmington, San Juan County, State of New Mexico, and personal knowledge of the facts herein state and that the notice hereto annexed was Published in said newspapers in the issue:

05/07/2024

and that the fees charged are legal.
Sworn to and subscribed before on 05/07/2024

Legal Clerk

Notary, State of WI, County of Brown

1-7-25

My commission expires

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KATHLEEN ALLEN
Notary Public
State of Wisconsin

NOTICE OF AIR QUALITY PERMIT APPLICATION

Harvest Four Corners, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the **modification** of its **gas treating plant** facility. The expected date of application submittal to the Air Quality Bureau is **May 3, 2024.**

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PM 2.5	8	35
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General information about air quality and the permitting process, and links to the regulations can be found at the Air Quality Bureau's website: www.env.nm.gov/air-quality/permitting-section-home-page/. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC.

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#10144804, Daily Times, May 7, 2024

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Texas/New Mexico
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PO Box 631667 Cincinnati, OH 45263-1667

AFFIDAVIT OF PUBLICATION

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Legal Clerk

Notary, State of WI, County of Brown

1-7-25

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Publication Cost:	$798.50	
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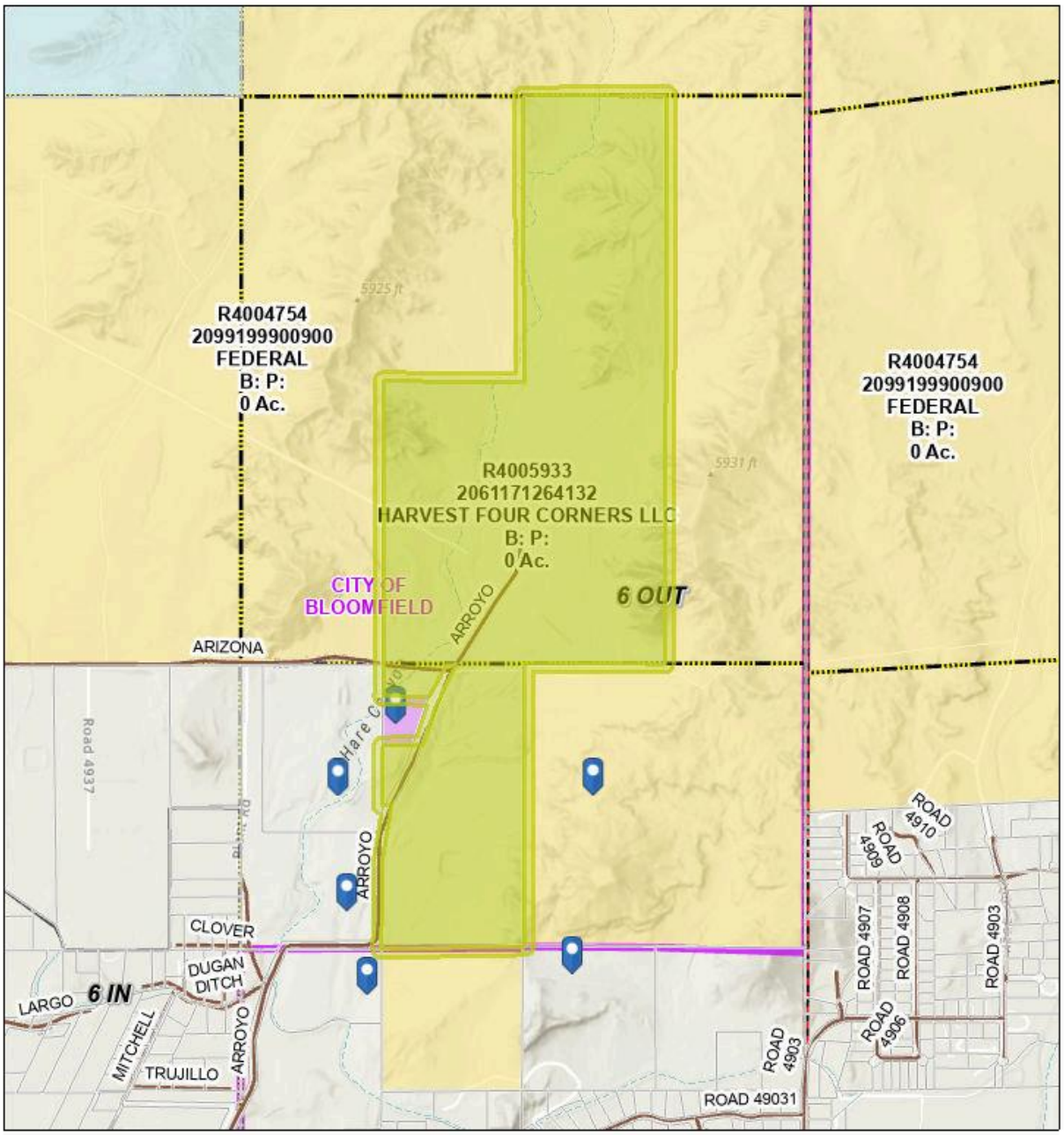
Milagro Gas Treating Plant



5/30/2024, 10:19:11 AM

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0 0.2 0.4 0.8 km

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.

The primary function of the Milagro Gas Treating Plant is to remove CO_2 and water from raw natural gas and delivery a pipeline quality sales gas to downstream pipelines.

The raw natural gas feeding the plant contains both CO_2 and water exceeding pipeline quality specifications. The gas stream is treated through five process trains. Each process train routes inlet gas through an amine contactor to remove CO_2, followed by a triethylene glycol (TEG) contactor to remove water.

Trains 1-3 are designed for a maximum throughput of 145 MMscfd each. Train 4 is designed for a maximum throughput of 90 MMscfd. Train 5 is designed for a maximum throughput of 120 MMscfd.

Amine is regenerated in the amine regenerators, equipped on all 5 trains using 60 psig steam as a heat medium (Units 16a, 16b, 17, 18, 19). Released CO_2 is routed to atmosphere.

The dehydrator reboilers (Units 9a, 10a, and 11a) for trains 1-3 burn natural gas to provide heat needed to regenerate the TEG while the reboilers associated with trains 4 & 5 utilize 400 psig steam as a heat input. The dehydrators associated with trains 1-3 & 5 are equipped with flash tanks, while train 4 is not. Hydrocarbons from the flash tanks are recycled back into the plant fuel system. Emissions from the five dehydrator still vents are cooled and routed through either of the two vapor recovery units (VRU). The VRUs capture the still vent gas, compress it, and route it back into the plant fuel system. All condensate and produced water that results from cooling the dehydrator vent streams is piped to the condensate storage tanks (T25). From here produced water is separated and stored in the produced water tank (T33).

The facility is built around a 400 psig / 60 psig steam system. Superheated 400 psig steam drives steam turbines throughout the facility, which are coupled to pumps, FD fans, and electricity generators. The 60 psig steam is a byproduct of the 400 psig steam system and is designed to provide process heat to regenerate amine. Today the plant steam is provided by three package boilers; Boiler 1 (Unit 1), Boiler 3 (Unit 3), and Boiler 5 (Unit 20).

The Milagro Plant is also equipped with two General Electric cogeneration turbines. These units are comprised of gas turbines (Units 7A and 8A) and two heat recovery steam generators (HRSGs) (Units 7B and 8B). Both turbines are equipped with dry Lo-NOX combustors and are coupled to 30MW generators. The HRSG units route turbine exhaust through a boiler to recover waste heat generating 400 psig steam, which can be utilized in the gas processing system. This integration of the cogeneration units and the gas treating plant allows for increased efficiency regarding fuel gas utilization.

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 Section 2, 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. **The Milagro Gas Treating Plant facility is not one of the listed 20.2.74.501 Table I – PSD Source Categories, however, the power station inside of the facility is one of the listed 20.2.74.501 Table I – PSD Source Categories, creating a nested PSD source. The "project" emissions** for this modification are **not significant. Two boilers (Units 2 &3) and a generator (Unit 31b) are being removed from this facility, and a low-NO_x burner is being installed on the Unit 1 boiler. Even with the addition of the two turbines (Units 7A, 7B, 8A, and 8B), the facility has emissions less than 250 tpy for all pollutants. With this application, Milagro will now be a PSD Minor Source. The "project" emissions listed below do only result from changes described in this permit application, thus no emissions from other revisions or modifications, past or future to this facility. The project emissions for this project are as follows:**

a. **NOx: -37.0 TPY**
b. **CO: 15.6 TPY**
c. **VOC: -2.4 TPY**
d. **SOx: -0.4 TPY**
e. **PM: 6.8 TPY**
f. **PM10: 6.8 TPY**
g. **PM2.5: 6.8 TPY**
h. **Fluorides: 0.0 TPY**
i. **Lead: 0.0 TPY**
j. **Sulfur compounds: 0.0 TPY**
k. **GHG: 215,449.8 TPY**

C. **Project Emissions Accounting is required, and analysis is attached to this document.**

D. **BACT** is **not required for this modification, as this application is a minor modification.**

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.

Project Emissions Accounting for the Milagro Gas Treating Plant

	NO_x (tpy)	CO (tpy)	VOC (tpy)	SO_2 (tpy)	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	GHG (tpy)
Project Emissions								
Modification of Unit 1	-42.70	-9.83	-2.44	-0.15	-3.72	-3.72	-3.72	-29,582.9
Addition of Unit 7A/7B	+49.39	+43.09	+2.76	+0.14	+9.03	+9.03	+9.03	+177,552.6
Addition of Unit 8A/8B	+49.39	+43.09	+2.76	+0.14	+9.03	+9.03	+9.03	+177,552.6
Total	**56.1**	**76.3**	**3.1**	**0.1**	**14.3**	**14.3**	**14.3**	**325,522.4**
Project Emissions Increase								
Modification of Unit 1	-	-	-	-	-	-	-	-
Addition of Unit 7A/7B	+49.39	+43.09	+2.76	+0.14	+9.03	+9.03	+9.03	+177,552.6
Addition of Unit 8A/8B	+49.39	+43.09	+2.76	+0.14	+9.03	+9.03	+9.03	+177,552.6
Total	**+98.78**	**+86.18**	**+5.53**	**+0.29**	**+18.05**	**+18.05**	**+18.05**	**+355,105.23**
Project Emissions Decrease								
Modification of Unit 1	-42.70	-9.83	-2.44	-0.15	-3.72	-3.72	-3.72	-29,582.9
Removal of Unit 2 *	-	-	-	-	-	-	-	-
Removal of Unit 3	-66.58	-58.25	-5.09	-0.55	-7.03	-7.03	-7.03	-108,049.7
Removal of Unit 31b	-26.52	-2.53	-0.37	-0.02	-0.55	-0.55	-0.55	-2,022.9
Total	**-135.79**	**-70.61**	**-7.89**	**-0.72**	**-11.30**	**-11.30**	**-11.30**	**-139,655.4**
Net Emission Changes								
Net Emission Changes	**-37.01**	**15.57**	**-2.37**	**-0.44**	**+6.75**	**+6.75**	**+6.75**	**+215,449.8**
Significant Emission Rates (SER)	40	100	40	40	25	15	10	-
Below SER Levels?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	-

* The Unit 2 boiler has not operated in the contemporaneous period at the Milagro Gas Treating Plant. Therefore, Harvest cannot take credit for its removal. As a result, emissions from the Unit 2 boiler were removed from the Project Emissions Decrease.

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/

Table for State Regulations:

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.1 NMAC	General Provisions	Yes	Facility	This regulation is applicable because it establishes procedures for protecting confidential information, procedures for seeking a variance, NMAQB's authority to require sampling equipment, severability, and the effective date for conformance with the NMACs, and prohibits the violation of other requirements in attempting to comply with the NMACs.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	This is a State Implementation Plan (SIP) approved regulation that limits the maximum allowable concentrations of Total Suspended Particulates, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide. These requirements are not applicable under 20.2.70 NMAC (see 20.2.3.9 NMAC).
20.2.7 NMAC	Excess Emissions	Yes	Facility	This regulation is applicable because it prohibits excess emissions unless proper notification procedures are followed.
20.2.8 NMAC	Emissions Leaving New Mexico	Yes	Facility	This regulation is applicable because it establishes prohibitions on the release of pollutants that cross New Mexico State boundaries.
20.2.23 NMAC	Fugitive Dust Control	No	N/A	This regulation does not apply because this application is not for a Notice of Intent.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	Yes	Units 1, 7A, 8A, 9a, 10a, 11a & 20	This regulation is applicable because the facility is equipped with external gas burning equipment which have heat input rates exceeding the trigger level (one million MMBtu/year) established by the regulation. Since all the boilers and turbines were constructed after February 17, 1972, they are all required to meet the emissions limit identified in 20.2.33.108.A NMAC.
20.2.34 NMAC	Oil Burning Equipment: NO_2	No	N/A	This regulation is not applicable because the facility does not burn oil.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No	N/A	This regulation establishes sulfur emission standards for natural gas processing plants. This facility meets the definition of a new gas processing plant under this regulation but does not emit over 7.5 tpy of sulfur dioxide. Therefore, this regulation does not apply.
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	N/A	N/A	These regulations were repealed by the Environmental Improvement Board. If you had equipment subject to 20.2.37 NMAC before the repeal, your combustion emission sources are now subject to 20.2.61 NMAC.
20.2.38 NMAC	Hydrocarbon Storage Facility	No	N/A	This regulation is not applicable because the facility does not store hydrocarbons containing hydrogen sulfide, nor is there a tank battery storing hydrocarbon liquids with a capacity greater than or equal to 65,000 gallons.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	This regulation is not applicable as this facility is not a sulfur recovery plant.
20.2.50 NMAC	Oil and Gas Sector – Ozone Precursor Pollutants	Yes	Units 7A, 7B, F1, 9b, 10b, 11b, 14, 15, 1, 20	This regulation establishes emission standards for volatile organic compounds (VOC) and oxides of nitrogen (NOx) for oil and gas production, processing, compression, and transmission sources. 20.2.50 NMAC subparts below: ☒113 – Engines and Turbines ☐114 – Compressor Seals ☐115 – Control Devices and Closed Vent Systems ☒116 – Equipment Leaks and Fugitive Emissions ☐ 117 – Natural Gas Well Liquid Unloading ☒ 118 – Glycol Dehydrators ☒ 119 – Heaters ☐ 120 – Hydrocarbon Liquid Transfers ☐121 – Pig Launching and Receiving ☒122 – Pneumatic Controllers and Pumps ☐ 123 – Storage Vessels ☐124 – Well Workovers ☐ 125 – Small Business Facilities

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
				☐126 – Produced Water Management Unit ☐127 – Flowback Vessels and Preproduction Operations 113 – Units 7A and 8A are existing natural gas combustion turbines rated ≥ 15,900 hp and are therefore subject to the requirements of this subpart. 114 – N/A – There are no centrifugal or reciprocating compressor located at this facility; therefore, this subpart does not apply. 115 – N/A – The VRU control device at this a facility is not used to comply with the emission standards and emission reduction requirements of this Part, therefore, this subpart does not apply. 116 – Harvest will comply with the requirements of this subpart. 117 – N/A – There are natural gas wells located at this facility; therefore, this subpart does not apply. 118 – Units 9b, 10b, 11b, 14 & 15 are dehydrators that have a PTE ≥ 2 tpy VOC and are therefore subject to the requirements of this subpart. 119 – Boiler units 1 and 20 both have a rated heat input > 20 MMBtu/hr and are therefore subject to the requirements of this subpart. 120 – N/A – There are no hydrocarbon liquid transfers located at this facility; therefore, this subpart does not apply. 121 – N/A – There are no pipeline pig launching or receiving operations at this facility; therefore, this subpart does not apply. 122 – Harvest will comply with the requirements of this subpart. 123 – N/A – The existing storage vessels at this facility do not have a PTE ≥ 4 tpy VOC; therefore, this subpart does not apply. 124 – N/A – There are no oil or natural gas wells located at this facility; therefore, this subpart does not apply. 125 – N/A – This facility does not qualify as a small business facility; therefore, this subpart does not apply. 126 – N/A – There are no produced water management units located at this facility; therefore, this subpart does not apply. 127 – N/A – There are no wells located at this facility; therefore, this subpart does not apply.
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	Units 1, 7A, 7B, 8A, 8B, 9a, 10a, 11a, and 20	This regulation is applicable because the facility is equipped with stationary combustion sources, such as boilers, reboilers, turbines, and heat recovery steam generators (HRSGs). Emissions from these combustion sources are limited to less than 20% opacity (see 20.2.61.109 NMAC). The regulation is not applicable to the Title V insignificant heaters (see 20.2.61.111.D).
20.2.70 NMAC	Operating Permits	Yes	Facility	This regulation establishes requirements for obtaining an operating permit. This regulation is applicable because the facility is a Title V major source of NO_X, CO, and HAP.
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	This regulation establishes a schedule of operating permit emission fees. This regulation is applicable because the facility is subject to 20.2.70 NMAC.
20.2.72 NMAC	Construction Permits	Yes	Facility	This regulation establishes the requirements for obtaining a construction permit. The facility is a stationary source that has a potential emission rate greater than 10 pounds per hour or 25 tons per year of any regulated air contaminant for which there is a National or New Mexico Air Quality Standard. The facility has a construction permit to meet the requirements of this regulation.
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	Emissions Inventory Reporting per 20.2.73.300 NMAC applies to the site. All facilities that are a Title V Major Source as defined at 20.2.70.7.R NMAC are subject to Emissions Inventory Reporting.
20.2.74 NMAC	Permits – Prevention of Significant	No	N/A	This regulation is applicable to PSD major sources. This facility is currently a PSD major source, but after this modification, the facility will be a PSD Minor Source and no longer subject to this regulation.

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
	Deterioration (PSD)			
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This regulation is applicable because the facility is subject to 20.2.72 NMAC.
20.2.77 NMAC	New Source Performance	Yes	Unit 20, 7A, 7B	20.2.77 NMAC, New Source Performance Standards, incorporates by reference specific Standards of Performance for New Stationary Sources (NSPS) codified under 40 CFR Part 60, as amended in the Federal Register through June 28, 2023. The regulation is applicable because it adopts by reference the federal NSPS codified in 40 CFR 60. Unit 20 is subject to 40 CFR 60 Subpart Db, and units 7A and 8A are subject to 40 CFR Subpart GG.
20.2.78 NMAC	Emission Standards for HAPS	No	N/A	This regulation is not applicable because it incorporates by reference the NESHAPs codified under 40 CFR 61. The facility is not subject to 40 CFR 61.
20.2.79 NMAC	Permits – Nonattainment Areas	No	N/A	This regulation is not applicable because the facility is neither located in nor has a significant impact on a non attainment area.
20.2.80 NMAC	Stack Heights	Yes	Units 1, 7A, 7B, 8A, 8B, 9a, 10a, 11a, and 20	This regulation is applicable because it establishes guidelines for the selection of an appropriate stack height for the purposes of atmospheric dispersion modeling.
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	Units 9b, 10b, 11b, 14, 15	20.2.82 NMAC, Maximum Achievable Control Technology Standards for Source Categories of Hazardous Air Pollutants, incorporates by reference specified federal Maximum Available Control Technology (MACT) Standards codified in 40 CFR Part 63, as amended in the Federal Register through June 29, 2023. The facility includes equipment that are subject to 40 CFR 63, subparts A and HH as they were promulgated through March 6, 2013. Therefore, the regulation is applicable.

Table for Applicable Federal Regulations:

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 50	NAAQS	Yes	Facility	This regulation applies because the facility is subject to 20.2.70 and 20.2.72 NMAC.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	Unit 20, 7A, 8A	This regulation applies because 40 CFR 60, Subparts Db and GG apply.
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for **Electric Utility Steam Generating Units**	No	N/A	This regulation establishes standards for electric utility steam generating units that are capable of combusting more than 73 megawatts (MW) (250 million British thermal units per hour (MMBtu/hr)) heat input of fossil fuel (either alone or in combination with any other fuel) and were constructed, modified, or reconstructed after September 18, 1978. The facility is not equipped with fossil-fuel-fired generating units with heat input rates greater than the threshold capacity of 250 MMBtu/hr (40 CFR 60.40Da(a)); therefore, the subpart does not apply.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
NSPS 40 CFR60.40b Subpart Db	**Electric Utility Steam Generating Units**	Yes	Unit 20, 7B, 8B	This regulation establishes standards for electric utility steam generating units which were constructed, modified, or reconstructed after June 19, 1984 that have a heat input capacity from fuels combusted in the steam generating unit of greater than 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr)). Unit 20 must comply with the NO_X standards of the subpart (see §60.44b). As the unit burns only natural gas, the SO_2 and particulate standards of the subpart are not applicable (see §60.42b(k)(2) & §60.43b). Note that the regulation does not apply to the other boiler at the facility (Unit 1), as it was constructed prior to the applicability date and then subsequently moved to Milagro. This regulation is applicable because the heat recovery steam generators (HRSGs) are steam generating units with heat input rates greater than the threshold capacity of 100 MMBtu/hr and manufactured after the regulatory applicability date (40 CFR 60.40b(a)).
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	No	N/A	This regulation establishes standards for steam generating units which were constructed, modified, or reconstructed after June 9, 1989 that have a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr)) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr). This regulation is not applicable because the facility is not equipped with steam generating units with heat inputs greater than 10 MMBtu/hr but less than or equal to 100 MMBtu/hr.
NSPS 40 CFR 60, Subpart Ka	Standards of Performance for **Storage Vessels for Petroleum Liquids** for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and **Prior** to July 23, 1984	No	N/A	This regulation is not applicable because the storage tanks at the facility have capacities less than the minimum applicability threshold capacity of 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 is not applicable because the storage tanks at the facility have capacities less than the minimum applicability threshold capacity of 75 cubic meters (19,812 gallons) and/or do not contain volatile organic liquids (see §60.110b(a)). Note that the maximum true vapor pressure of methyldiethanolamine (<0.1 kPa), stored in the 21,000 gallon tank T17, is much less the 15 kPa threshold.
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	7A & 8A	Yes	This regulation establishes the standards for stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules (10 million Btu) per hour, based on the lower heating value of the fuel fired in which construction, modification, or reconstruction after October 3, 1977. Units 7A and 8A have a heat input greater than 10 MMBtu/hr and were constructed after the applicability date.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	No	N/A	This regulation is not applicable because the facility is not a natural gas processing plant as defined in this subpart.
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural Gas Processing**: SO_2 Emissions	No	N/A	This regulation is not applicable because the facility is not a natural gas processing plant as defined by the subpart.
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 does not apply because the facility is not equipped with "affected" sources that are constructed, modified, or reconstructed after August 23, 2011 and on or before September 18, 2015: gas wells, centrifugal or reciprocating compressors, pneumatic controllers, and storage vessels (see §60.5365). Note that the facility is not a natural gas processing plant as defined by the subpart (see §60.5430).
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	This regulation does not apply because the facility is not equipped with "affected" sources that are constructed, modified, or reconstructed after September 18, 2015: gas wells, centrifugal or reciprocating compressors, pneumatic controllers, storage vessels, pneumatic pumps, and equipment leaks (see §60.5365a). Note that the facility is not a natural gas processing plant as defined by the subpart (see §60.5430).
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	No	N/A	This regulation establishes standards of performance for stationary compression ignition internal combustion engines. This regulation does not apply as there are no stationary compression ignition internal combustion engines located at this facility.
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 stationary spark ignition internal combustion engines. This regulation does not apply as there are no stationary spark ignition internal combustion engines located at this facility.
40 CFR Subpart KKKK	Standards of Performance for Stationary Combustion Turbines	No	N/A	This subpart establishes standards for stationary combustion turbines that commenced construction, modification or reconstruction after February 18, 2005. The gas turbines at the facility were constructed prior to the regulatory applicability date. Therefore, the subpart does not apply.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
NSPS 40 CFR 60 Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units	No	N/A	This subpart establishes standards for the control of greenhouse gas emissions from a steam generating unit, IGCC, or a stationary combustion turbine that was constructed after January 8, 2014 or modified or reconstructed after June 18, 2014. This regulation does not apply as the steam generating units and stationary combustion turbines located at this facility were constructed before the applicability date.
NSPS 40 CFR 60 Subpart UUUUa	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No	N/A	This subpart establishes emission guidelines and approval criteria for State plans that establish standards of performance limiting greenhouse gas (GHG) emissions from an affected steam generating unit. 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 does not apply as the facility is not a municipal solid waste landfill.
NESHAP 40 CFR 61 Subpart A	General Provisions	No	N/A	This regulation does not apply because no 40 CFR 61 subparts apply.
NESHAP 40 CFR 61 Subpart E	National Emission Standards for **Mercury**	No	N/A	This regulation establishes a national emission standard for mercury. The facility does not have 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 [40 CFR Part 61.50]. The facility is not subject to this regulation.
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	No	N/A	The provisions of this subpart apply to each of the following sources that are intended to operate in volatile hazardous air pollutant (VHAP) service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices or systems required by this subpart (see §61.240(a)). VHAP service means a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight of VHAP. VHAP means a substance regulated under this subpart for which a standard for equipment leaks of the substance has been promulgated (see §61.241). This subpart does not apply because none of the above listed equipment at the facility are in VHAP service.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	Units 9b, 10b, 11b, 14, 15	This regulation applies because 40 CFR Subpart HH applies.
MACT 40 CFR 63.760 Subpart HH	Oil and Natural Gas Production Facilities	Yes	Units 9b, 10b, 11b, 14, 15	This regulation is applicable because the facility is equipped with dehydrators. Note, however, the plant is a HAP area source as defined by the subpart and the dehydrators emit less than one tpy benzene and are exempt (see §63.764(e)). The plant does not contain storage vessels with the potential for flashing losses or compressors or ancillary equipment in volatile HAP service as defined by the subpart, thus these portions of the regulation are not applicable (see §63.761). This subpart defines a natural gas processing plant as "any processing site engaged in the extraction of natural gas liquids from field gas, or the fractionation of mixed NGL to natural gas products, or a combination of both". The Milagro plant does not engage in either of these activities; therefore, it is not a processing plant as defined by the subpart.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
				This subpart defines a production field facility as a facility "located prior to the point of custody transfer" (see §63.761). The Milagro plant is a production field facility. The subpart states, "For facilities that are production field facilities, only HAP emissions from glycol dehydration units and storage vessels shall be aggregated for a major source determination" (see §63.761). Therefore, the Milagro plant is an area HAP source.
MACT 40 CFR 63 Subpart HHH	National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities	No	N/A	This regulation does not apply as the facility is not a natural gas transmission and storage facility as defined by the subpart.
MACT 40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	Yes	Units 1, 20	This regulation establishes national emission limitations and work practice standards for HAPs emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAP. Units 1 and 20 are boilers located at a major source of HAPs and are therefore subject to the requirements of this subpart.
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 limitations and work practice standards for HAPs emitted from coal- and oil-fired electric utility steam generating units as defined in this subpart. This regulation does not apply as the electric utility steam generating units at this facility are neither coal-fired nor oil-fired.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	No	N/A	Subpart ZZZZ establishes national emission limitations and operating limitations for HAPs emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This regulation does not apply as there are no RICE units located at this facility.
40 CFR 64	**Compliance Assurance Monitoring**	No	N/A	This regulation is not applicable because none of the equipment at the facility uses a control device to achieve compliance with emission limits or standards where pre control emissions equal or exceed the major source threshold (100 tons per year).
40 CFR 68	**Chemical Accident Prevention**	No	N/A	This regulation is not applicable because the facility does not store any of the identified toxic and flammable substances in quantities exceeding the applicability thresholds.
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	Yes	Facility	CFR 72, Permits Regulation, is applicable because the station operates a source subject to Title IV of the Clean Air Act (CAA) and is required to obtain an Acid Rain Permit. The Milagro facility operates under the authority of State Acid Rain Permit P101AR3.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
Title IV – Acid Rain 40 CFR 73	**Sulfur Dioxide** Allowance Emissions	Yes	Facility	This regulation is applicable or potentially applicable to the Milagro facility because it operates a source subject to Title IV of the Clean Air Act (CAA).
Title IV-Acid Rain 40 CFR 75	**Continuous Emissions Monitoring**	Yes	Facility	This regulation is applicable to the facility based on it is subject to Acid Rain Permit requirements under Title IV of the Clean Air Act (CAA).
Title IV – Acid Rain 40 CFR 76	**Acid Rain** Nitrogen Oxides **Emission Reduction Program**	Yes	Facility	This regulation is applicable to the facility because it operates sources subject to Title IV of the Clean Air Act (CAA).
Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	No	N/A	This regulation is not applicable because the facility does not produce, manufacture, transform, destroy, import, or export ozone-depleting substances; does not maintain or service motor vehicle air conditioning units or refrigeration equipment; and does not sell, distribute, or offer for sale or distribution any product that contains ozone depleting substances.

Section 14

Operational Plan to Mitigate Emissions

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

☐ **Title V Sources** (20.2.70 NMAC)**:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Emissions During Startups, Shutdowns, and Emergencies** defining the measures to be taken to mitigate source emissions during startups, shutdowns, and emergencies as required by 20.2.70.300.D.5(f) and (g) NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☒ **NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Source Emissions During Malfunction, Startup, or Shutdown** defining the measures to be taken to mitigate source emissions during malfunction, startup, or shutdown as required by 20.2.72.203.A.5 NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☒ **Title V** (20.2.70 NMAC)**, NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has established and implemented a Plan to Minimize Emissions During Routine or Predictable Startup, Shutdown, and Scheduled Maintenance through work practice standards and good air pollution control practices as required by 20.2.7.14.A and B NMAC. This plan shall be kept on site or at the nearest field office to be made available to the Department upon request. This plan should not be submitted with this application.

Startup and shutdown procedures are performed according to guidelines, which dictate proper procedural sequence to minimize emissions from the facility during such activities.

Equipment located at the plant is equipped with various safety devices that aid in preventing excess emissions to the atmosphere in the event of an operational emergency. In the event of a malfunction, startup, shutdown, or scheduled maintenance in which emission rates from the facility exceed permitted allowable emissions, Harvest Four Corners will notify the AQB in accordance with 20.2.7 NMAC and the equipment responsible for the exceedance will be repaired as soon as possible.

Section 15

Alternative Operating Scenarios

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Alternative Operating Scenarios: Provide all information required by the department to define alternative operating scenarios. This includes process, material and product changes; facility emissions information; air pollution control equipment requirements; any applicable requirements; monitoring, recordkeeping, and reporting requirements; and compliance certification requirements. Please ensure applicable Tables in this application are clearly marked to show alternative operating scenario.

Construction Scenarios: When a permit is modified authorizing new construction to an existing facility, NMED includes a condition to clearly address which permit condition(s) (from the previous permit and the new permit) govern during the interval between the date of issuance of the modification permit and the completion of construction of the modification(s). There are many possible variables that need to be addressed such as: Is simultaneous operation of the old and new units permitted and, if so for example, for how long and under what restraints? In general, these types of requirements will be addressed in Section A100 of the permit, but additional requirements may be added elsewhere. Look in A100 of our NSR and/or TV permit template for sample language dealing with these requirements. Find these permit templates at: www.env.nm.gov/air-quality/permitting-section-procedures-and-guidance/. Compliance with standards must be maintained during construction, which should not usually be a problem unless simultaneous operation of old and new equipment is requested.

In this section, under the bolded title “Construction Scenarios”, specify any information necessary to write these conditions, such as: conservative-realistic estimated time for completion of construction of the various units, whether simultaneous operation of old and new units is being requested (and, if so, modeled), whether the old units will be removed or decommissioned, any PSD ramifications, any temporary limits requested during phased construction, whether any increase in emissions is being requested as SSM emissions or will instead be handled as a separate Construction Scenario (with corresponding emission limits and conditions, etc.

There are no alternative operating scenarios at this facility.

Section 16

Air Dispersion Modeling

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

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

Check each box that applies:

☐ See attached, approved modeling **waiver for all** pollutants from the facility.

☐ See attached, approved modeling **waiver for some** pollutants from the facility.

☒ Attached in Universal Application Form 4 (UA4) is a **modeling report for all** pollutants from the facility.

☐ Attached in UA4 is a **modeling report for some** pollutants from the facility.

☐ No modeling is required.

AIR DISPERSION MODELING PROTOCOL

NSR Minor Modification

Harvest Four Corners, LLC
Milagro Gas Treating Plant

Prepared By:

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Project 233201.0084

1. INTRODUCTION

1.1 Purpose of Modeling

Milagro Gas Treating Plant (the "Facility") is located in San Juan County, New Mexico. The Facility receives sour natural gas from pipelines and treats it to remove acid gas (CO_2 and H_2S) and other contaminants. The treated gas is compressed and sent off-site via pipeline.

Harvest Four Corners, LLC ("Harvest") is submitting an application for a minor modification to Construction Permit 0895M10 pursuant to 20.2.72 NMAC. The purpose of this revision is to:

- Add two (2) 380.9 MMBtu/hr GE PG6541B turbines;
- Add two (2) 195 MMBtu/hr Heat Recovery Steam Generators (HRSG);
- Remove Boiler No. 3 from the permit; and,
- Request federally-enforceable emission limits for Boiler No. 1.

As a result of these modifications, Facility emissions will be below major New Source Review levels; Prevention of Significant Deterioration requirements will no longer apply. On this basis, the Emergency Generator emissions will also be removed from the permit.

Harvest seeks to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS), New Mexico Ambient Air Quality Standards (NMAAQS), and PSD Increment standards as applicable for the following pollutants and averaging periods: NO_2 (1-hour and annual), CO (1-hour and 8-hour), SO_2 (1-hour, 3-hour, 24-hour, and annual), H_2S (1-hour), $PM_{2.5}$ (24-hour and annual), and PM_{10} (24-hour and annual). Surrogate modeling will be applied as shown in the current version of the NMED Modeling Guidelines.[1]

1.2 Facility Description and Location

The approximate UTM coordinates of the facility are 237,260 meters east and 4,069,600 meters north with WGS84 datum at an elevation of approximately 1,734 meters above mean sea level. The Facility is located within Air Quality Control Region (AQCR) 14.

[1] Table 19, "Standards for which Modeling is not Required", New Mexico Air Quality Bureau, Air Dispersion Modeling Guidelines, Revised December 2023.

2. PROPOSED MODELING

2.1 Model Input Options

The latest version of the AERMOD dispersion model (version 23132) will be used for this analysis. The model will be run in regulatory mode with all default options. The ARM2 method will be used to convert NO_X to NO_2. Default minimum and maximum ambient ratios will be utilized.

Table 1 shows the emission sources and stack parameters for the facility. Please note that emissions may vary throughout the development of this application.

Table 1 - Emission sources and stack parameters to be included in the air dispersion modeling[1]

Unit Number	NO_x lb/hr	CO lb/hr	SO_2 lb/hr	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	H_2S lb/hr	Height ft	Temp. F	Velocity ft/s	Diam. ft
BOILER 01	5.452	11.055	0.127	0.756	0.756	-	46.2	350	10	5
BOILER 05	9.795	20.548	0.163	2.078	2.078	-	46.2	350	10	5
TEG01	0.333	0.280	0.002	0.025	0.025	-	31.8	400	10	1.33
TEG02	0.250	0.210	0.0015	0.019	0.019	-	26.0	400	10	1.33
TEG03	0.333	0.280	0.002	0.025	0.025	-	25.1	400	10	1.33
7A	11.210	10.356	0.035	2.176	2.176	-	80.0	996	25	10
7B	-	-	-	-	-	-	80.0	350	10	10
8A	11.210	10.356	0.035	2.176	2.176	-	80.0	996	25	10
8B	-	-	-	-	-	-	80.0	350	10	10

[1] Preliminary emissions may change.

A downwash analysis using the latest version of BPIP will be conducted and incorporated into the modeling analysis to account for potential effluent downwash due to structures at the facility. Tables 2 and 3 below list the parameters for the building downwash structures. Please note that rectangular and circular buildings are based off an aerial view of the facility and some buildings listed may be awnings instead.

Table 2 - Rectangular Building Downwash Structures

Building ID	X Coordinate m	Y Coordinate m	Elevation m	Height feet	X Length feet	Y Length feet
BLDG07	237255.4	4069553.9	1734.29	19.2	52	200
BLDG09	237368.9	4069578.7	1736.39	17.5	49.54	31.8
BLDG10	237367.9	4069552.7	1736.52	16.5	34.12	31.82
BLDG11	237359	4069532.6	1736.52	15.6	63.65	35.43
BLDG12	237335	4069554.6	1736.39	26.8	77.43	52.17
BLDG13	237302.9	4069533.8	1736.09	20.5	63.32	34.45
BLDG16	237360.1	4069517.1	1736.5	16.7	27.89	15.09
BLDG19	237440.9	4069511.7	1739.57	43.94	25.26	40.15
BLDG20	237325.4	4069634.7	1736.08	21.92	13	41.71
BLDG24	237439.1	4069473.1	1739.55	20	50.20	119.09
BLDG25	237349.1	4069594.2	1736.24	21.5	26.57	111.22
BLDG04	237352.6	4069681.4	1736.29	17.8	30	55
BLDG26	237411.3	4069512.2	1739.34	19.04	50.13	39.13
TURB01A	237289.2	4069735.8	1735.58	15.10	40	21
TURB01B	237301.3	4069738.4	1736.19	13.12	108.60	10.50
TURB02A	237342.3	4069734.1	1736.17	15.10	40	21
TURB02B	237354.4	4069736.7	1736.29	13.12	108.60	10.50
BLDG27	237316.3	4069694	1736.11	10.1	14.2	8
BLDG28	237326	4069694.2	1736.28	12.6	72.8	13
GEN	237332.5	4069683.3	1736.22	12.25	39.1	7.8
BLDG30	237371.1	4069661.8	1736.16	12.5	21.1	18.5
BLDG17	237359.5	4069504.5	1736.51	16.67	28.54	29.20

Table 3 - Circular Building Downwash Structures

Building ID	X Coordinate m	Y Coordinate m	Elevation m	Height m	Radius m	Corners
TANK01	237315.3	4069557.4	1736.26	3.66	2.32	24
TANK02	237309.5	4069557.6	1736.23	3.66	1.96	24
TANK03	237304.8	4069557.6	1736.18	3.66	1.66	24
TANK04	237382.2	4069608.7	1736.53	4.57	2.35	24
TANK05	237373.7	4069609.2	1736.27	4.57	2.35	24
TANK06	237410.8	4069612.2	1743.33	4.57	2.29	24
BL01STCK	237350.1	4069600	1736.22	13.72	0.76	24
BL02STCK	237350.4	4069611.3	1736.18	13.72	0.76	24
BL03STCK	237350.8	4069624.4	1736.12	13.72	0.76	24
BL05STCK	237311	4069642.8	1736.07	18.29	0.79	24

Table 4 - Polygon Building Downwash Structures

Building ID	X Coordinate m	Y Coordinate m	Elevation m	Height feet
BLDG01	237137.6	4069666.7	1730.92	18.5
BLDG06	237252.6	4069629.7	1734.91	18.5
BLDG05	237369.8	4069613.1	1736.22	21.5

2.2 Receptor Grid Description and Elevation Data

The center point of the facility will be designated at 237,260 meters east and 4,069,600 meters north. This center point will serve as the center point for a variable density circular receptor grid. The facility fenceline will be modeled using 25-meter grid spacing. A 50-meter grid spacing will extend out to 800 meters in each direction from the facility center point for a very fine grid resolution. A 100-meter grid spacing will extend from 800 meters to 3,000 meters in each direction for a fine grid resolution. A 250-meter grid spacing will extend from 3,000 meters to 6,000 meters in each direction for a medium grid resolution. A 500-meter grid spacing will extend from 6,000 meters to 10,000 meters in each direction for a coarse grid resolution. A 1,000-meter grid spacing will extend from 10,000 meters to 50,000 meters in each direction. It is expected that the highest impacts from the proposed source will be at or near the facility property.

See below for Class I receptor grid spacing.

The elevations of receptors and facility sources will be determined using the most recent NED data currently available (1/3 arc-second NED).

2.3 Meteorological Data

The Bloomfield NWS dataset for five meteorological years (2015-2019) obtained from the NMED website will be used. This dataset has been processed with AERMET; no further processing is required.

2.4 Significance Analysis (SIL) and Cumulative Impact Analysis (CIA)

The maximum modeled ground-level concentrations (GLC_{Max})will be compared to the corresponding significant impact levels (SILs) to determine whether any modeled ground-level concentrations at any receptor locations are greater than the SIL (i.e., "significant" receptors). If the significance analysis reveals that modeled ground-level concentrations for a particular pollutant and averaging period are greater than the applicable SIL, a Cumulative Impact Analysis (CIA) will be performed at the significant receptors. The CIA will include impacts from the facility sources and background concentrations/surround sources specified in the current version of the NMED Modeling Guidelines.

As required, the background concentration for NO_2, $PM_{2.5}$, and PM_{10} will be the Bloomfield Monitor (1ZB). The inclusion of background concentrations will follow the guidance shown in Table 20: "Modeling the Design Value Summary (Default Modeling)" from the Modeling Guidelines.[2]

[2] *Ibid.*

For $PM_{2.5}$ and PM_{10} modeling, we will include modeling the Facility and nearby sources and adding secondary formation (if applicable) and a background concentration. Per NMED Modeling Guidelines[3], nearby sources includes all sources within 10 km of the Facility. An inventory of the surrounding sources will be obtained from the NMED. Based on EPA's Guidance for $PM_{2.5}$ Permit Modeling and NMED'S Modeling Guidelines, sources that emit at least 40 tons per year of NO_x or at least 40 tons per year of SO_2 are considered to emit significant amounts of precursors. Sources with significant increases of $PM_{2.5}$ precursors must qualitatively and/or quantitatively account for the secondary formation of $PM_{2.5}$. The secondary formation of $PM_{2.5}$ will be calculated in this modeling following the NMED Modeling Guidelines.

2.5 Class II PSD Increment Analysis

The minor source baseline dates for AQCR 14 have been established for NO_X, SO_2, and PM_{10}. If the results of the ROI analysis for NO_X, SO_2, or PM_{10} indicate concentrations greater than significance levels, Class II PSD increment analysis will be conducted for the appropriate averaging periods. If required, the Class II PSD increment analysis will include all PSD increment consuming and expanding sources within 25 km of the facility, plus sources emitting over 1,000 pounds per hour within 50 km of the facility. Surrounding source information will be obtained from NMED-AQB. The predicted maximum concentrations will be compared to the appropriate Class II PSD Standard.

2.6 Class I Areas Analysis

The nearest Class I area is Mesa Verde National Park, 64.2 km distant from the facility. There are no other Class I areas within 100km of the Facility. Class I area analysis for Mesa Verde National Park will be performed if concentrations are greater than significance levels at a 50 km radial from the Facility. If a Class I area increment analysis is required, AERMOD will be used with a receptor grid spacing of 1,000m within the exterior boundary of the National Park. These receptors will be obtained from NMED MergeMaster.

[3] *Ibid,* Section 4.8.1.1, page 62.

Universal Application 4

Air Dispersion Modeling Report

Refer to and complete Section 16 of the Universal Application form (UA3) to assist your determination as to whether modeling is required. If, after filling out Section 16, you are still unsure if modeling is required, e-mail the completed Section 16 to the AQB Modeling Manager for assistance in making this determination. If modeling is required, a modeling protocol would be submitted and approved prior to an application submittal. The protocol should be emailed to the modeling manager. A protocol is recommended but optional for minor sources and is required for new PSD sources or PSD major modifications. Fill out and submit this portion of the Universal Application form (UA4), the "Air Dispersion Modeling Report", only if air dispersion modeling is required for this application submittal. This serves as your modeling report submittal and should contain all the information needed to describe the modeling. No other modeling report or modeling protocol should be submitted with this permit application.

16-A: Identification

1	Name of facility:	Milagro Gas Treating Plant
2	Name of company:	Harvest Four Corners, LLC
3	Current Permit number:	0859-M10 and P101-R3
4	Name of applicant's modeler:	Adam Erenstein
5	Phone number of modeler:	(505) 266-6611
6	E-mail of modeler:	aerenstein@trinityconsultants.com

16-B: Brief

1	Was a modeling protocol submitted and approved?	Yes☒	No☐
2	Why is the modeling being done?	Other (describe below)	
3	Describe the permit changes relevant to the modeling.		
	Adding two turbine co-generation units. Remove other emission sources from the permit.		
4	What geodetic datum was used in the modeling?	WGS84	
5	How long will the facility be at this location?		
6	Is the facility a major source with respect to Prevention of Significant Deterioration (PSD)? Though currently a PSD major source, this application proposes federally enforceable limits that result in a minor source.	Yes☐	No☒

7	Identify the Air Quality Control Region (AQCR) in which the facility is located	014	
8	List the PSD baseline dates for this region (minor or major, as appropriate). Minor source dates shown below.		
	NO2	6/6/1989	
	SO2	8/7/1978	
	PM10	8/7/1978	
	PM2.5	Not Established	
9	Provide the name and distance to Class I areas within 50 km of the facility (300 km for PSD permits).		
	None within 50 km. Mesa Verde National Park is 64.2 km distant.		
10	Is the facility located in a non-attainment area? If so describe below	Yes☐	No☒
11	Describe any special modeling requirements, such as streamline permit requirements.		
	None.		

16-C: Modeling History of Facility

1. Describe the modeling history of the facility, including the air permit numbers, the pollutants modeled, the National Ambient Air Quality Standards (NAAQS), New Mexico AAQS (NMAAQS), and PSD increments modeled. (Do not include modeling waivers).

Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
CO	0859-M10	10/4/2017	NAAQS, NMAAQS: 1hr, 8hr
NO_2	0859-M10	10/4/2017	NAAQS, NMAAQS, PSD increment
SO_2	N/A	N/A	N/A
H_2S	N/A	N/A	N/A
PM2.5	0859-M10	10/4/2017	NAAQS (24hr, annual), PSD increment
PM10	0859-M10	10/4/2017	NAAQS (24hr), PSD increment
Lead	N/A	N/A	
Ozone (PSD only)	N/A	N/A	
NM Toxic Air Pollutants (20.2.72.402 NMAC)	N/A	N/A	

16-D: Modeling performed for this application

1. For each pollutant, indicate the modeling performed and submitted with this application.
Choose the most complicated modeling applicable for that pollutant, i.e., culpability analysis assumes ROI and cumulative analysis were also performed.

Pollutant	ROI	Cumulative analysis	Culpability analysis	Waiver approved	Pollutant not emitted or not changed.
CO	☒	☐	☐	☐	☐

	NO_2	☒	☒	☐	☐	☐
	SO_2	☒	☐	☐	☐	☐
	H_2S	☐	☐	☐	☐	☒
	PM2.5	☒	☒	☐	☐	☐
	PM10	☒	☐	☐	☐	☐
	Lead	☐	☐	☐	☐	☒
	Ozone	☐	☐	☐	☐	☒
	State air toxic(s) (20.2.72.402 NMAC)	☐	☐	☐	☐	☒

16-E: New Mexico toxic air pollutants modeling

1 List any New Mexico toxic air pollutants (NMTAPs) from Tables A and B in 20.2.72.502 NMAC that are modeled for this application. **None**

2 List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required. **None**

Pollutant	Emission Rate (pounds/hour)	Emission Rate Screening Level (pounds/hour)	Stack Height (meters)	Correction Factor	Emission Rate/ Correction Factor
N/A					

16-F: Modeling options

1	Was the latest version of AERMOD used with regulatory default options? If not explain below.	Yes☒	No☐

16-G: Surrounding source modeling

1	Date of surrounding source retrieval	March 20, 2024

2 If the surrounding source inventory provided by the Air Quality Bureau was believed to be inaccurate, describe how the sources modeled differ from the inventory provided. If changes to the surrounding source inventory were made, use the table below to describe them. Add rows as needed. **No changes.**

AQB Source ID	Description of Corrections

16-H: Building and structure downwash

1	How many buildings are present at the facility?	27 downwash structures; numerous small, non-downwash structures

2	How many above ground storage tanks are present at the facility?	6 downwash tanks; numerous small tanks.	
3	Was building downwash modeled for all buildings and tanks? If not explain why below.	Yes☒	No☐
4	Building comments		

16-I: Receptors and modeled property boundary

1	"Restricted Area" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with a steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area. A Restricted Area is required in order to exclude receptors from the facility property. If the facility does not have a Restricted Area, then receptors shall be placed within the property boundaries of the facility. Describe the fence or other physical barrier at the facility that defines the restricted area.		
	Locking, monitored gates; fence is chain link at least 6' tall.		
2	Receptors must be placed along publicly accessible roads in the restricted area. Are there public roads passing through the restricted area?	Yes☐	No☒
3	Are restricted area boundary coordinates included in the modeling files?	Yes☒	No☐

4 Describe the receptor grids and their spacing. The table below may be used, adding rows as needed.

Grid Type	Shape	Spacing	Start distance from restricted area or center of facility	End distance from restricted area or center of facility	Comments
Very fine	circular	50m	Center: 237,260e; 4,069,600n	800m	
Fine	circular	100m	800m	3,000m	
Medium	circular	250m	3,000m	6,000m	
Coarse	circular	500m	6,000m	10,000m	
Coarse	circular	1,000m	10,000m	50,000m	

5	Describe receptor spacing along the fence line. 25m
6	Describe the PSD Class I area receptors. Not required. A circular grid with 50 km radius demonstrated impacts from all pollutants were below Class I significance. No Class I receptors were required.

16-J: Modeling Scenarios

1	Identify, define, and describe all modeling scenarios. Examples of modeling scenarios include using different production rates, times of day, times of year, simultaneous or alternate operation of old and new equipment during transition periods, etc. Alternative operating scenarios should correspond to all parts of the Universal Application and should be fully described in Section 15 of the Universal Application (UA3).		
	There are at least operating scenarios for various combinations of boiler and co-generator emission rates. None of these scenarios includes operation of 100% simultaneous load. However, as a conservative measure, all units assumed operation at simultaneous at 100% load. Then only two scenarios were required: operation of the co-generators in bypass mode or in Heat Recovery Steam Generator (HRSG) mode.		
2	Which scenario produces the highest concentrations? Why?		
	Co-generators operated in HRSG mode due to less dispersive stack parameters.		
3	Were emission factor sets used to limit emission rates or hours of operation? (This question pertains to the "SEASON", "MONTH", "HROFDY" and related factor sets, not to the factors used for calculating the maximum emission rate.)	Yes☐	No☒
4	If so, describe factors for each group of sources. List the sources in each group before the factor table for that group. (Modify or duplicate table as necessary. It's ok to put the table below section 16-K if it makes formatting easier.) Sources: N/A		

5

Hour of Day	Factor	Hour of Day	Factor								
1		13									
2		14									
3		15									
4		16									
5		17									
6		18									
7		19									
8		20									
9		21									
10		22									
11		23									
12		24									

If hourly, variable emission rates were used that were not described above, describe them below.

6	Were different emission rates used for short-term and annual modeling? If so describe below.	Yes☐	No☒

16-K: NO_2 Modeling

1	Which types of NO_2 modeling were used? Check all that apply.	
	☒	ARM2
	☐	100% NO_X to NO_2 conversion
	☐	PVMRM
	☐	OLM
	☐	Other:
2	Describe the NO_2 modeling.	
	Followed Modeling Guidelines (Dec 2023) pp 24-27.	
3	Were default NO_2/NO_X ratios (0.5 minimum, 0.9 maximum or equilibrium) used? If not describe and justify the ratios used below.	Yes☒ No☐
4	Describe the design value used for each averaging period modeled.	
	1-hour: High eighth high Annual Other (Describe): : Highest 3 yr annual average in a 5-yr met set.	

16-L: Ozone Analysis

1	NMED has performed a generic analysis that demonstrates sources that are minor with respect to PSD do not cause or contribute to any violations of ozone NAAQS. The analysis follows. The basis of the ozone SIL is documented in *Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program*, EPA, April 17, 2018 and associated documents. NMED accepts this SIL basis and incorporates it into this permit record by reference. Complete documentation of the ozone concentration analysis using MERPS is included in the New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines.				
2	The MERP values presented in Table 10 and Table 11 of the NM AQB Modeling Guidelines that produce the highest concentrations indicate that facilities emitting no more than 250 tons/year of NO_X and no more than 250 tons/year of VOCs will cause less formation of O_3 than the O_3 significance level. $$[O_3]_{8-hour} = \left(\frac{250 \frac{ton}{yr}}{340_{MERP_{NOX}}} + \frac{250 \frac{ton}{yr}}{4679_{MERP_{VOC}}} \right) \times 1.96\ \mu g/m^3$$ =1.546 µg/m³, which is below the significance level of 1.96 µg/m³. Sources that produce ozone concentrations below the ozone SIL do not cause or contribute to air contaminant levels exceeding the ozone NAAQS.				
3	Does the facility emit at least 250 tons per year of NO_X or at least 250 tons per year of VOCs? Sources that emit at least 250 tons per year of NO_X or at least 250 tons per year of VOCs are covered by the analysis above and require an individual analysis.	Yes☐	No☒		
5	For new PSD Major Sources or PSD major modifications, if MERPs were used to account for ozone fill out the information below. If another method was used describe below.				

NO_X (ton/yr)	$MERP_{NOX}$	VOCs (ton/yr)	$MERP_{VOC}$	$[O_3]_{8\text{-hour}}$
N/A	N/A	N/A	N/A	N/A

16-M: Particulate Matter Modeling

1	Select the pollutants for which plume depletion modeling was used.	
	☐	PM2.5
	☐	PM10
	☒	None
2	Describe the particle size distributions used. Include the source of information.	

3	Does the facility emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2? Sources that emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2 are considered to emit significant amounts of precursors and must account for secondary formation of PM2.5.	Yes☒	No☐
4	Was secondary PM modeled for PM2.5?	Yes☒	No☐

5 If MERPs were used to account for secondary PM2.5 fill out the information below. If another method was used describe below.

Pollutant	NO_X	SO_2		$[PM2.5]_{24\text{-hour}}$
$MERP_{annual}$	43,833	48,057		0.006198 ug/m3
$MERP_{24\text{-hour}}$	33,634	11,410		$[PM2.5]_{annual}$
Emission rate (ton/yr)				0.000778 ug/m3

16-N: Setback Distances

1	Portable sources or sources that need flexibility in their site configuration requires that setback distances be determined between the emission sources and the restricted area boundary (e.g. fence line) for both the initial location and future locations. Describe the setback distances for the initial location.
	N/A
2	Describe the requested, modeled, setback distances for future locations, if this permit is for a portable stationary source. Include a haul road in the relocation modeling.
	N/A

16-O: PSD Increment and Source IDs

1	The unit numbers in Tables 2-A, 2-B, 2-C, 2-E, 2-F, and 2-I should match the ones in the modeling files. Do these match? If not, provide a cross-reference table between unit numbers if they do not match below.	Yes☒	No☐

Unit Number in UA-2	Unit Number in Modeling Files

2	The emission rates in the Tables 2-E and 2-F should match the ones in the modeling files. Do these match? If not, explain why below.			Yes☒	No☐
3	Have the minor NSR exempt sources or Title V Insignificant Activities" (Table 2-B) sources been modeled?			Yes☐	No☒
4	Which units consume increment for which pollutants?				
	Unit ID	NO_2	SO_2	PM10	PM2.5
	All units in 16-O-1	X	X	X	Baseline not established
5	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date).	N/A – no unusual sources			
6	Are all the actual installation dates included in Table 2A of the application form, as required? This is necessary to verify the accuracy of PSD increment modeling. If not please explain how increment consumption status is determined for the missing installation dates below.			Yes☐	No☐

16-P: Flare Modeling

1	For each flare or flaring scenario, complete the following **N/A**			
	Flare ID (and scenario)	Average Molecular Weight	Gross Heat Release (cal/s)	Effective Flare Diameter (m)

16-Q: Volume and Related Sources

1	Were the dimensions of volume sources different from standard dimensions in the Air Quality Bureau (AQB) Modeling Guidelines? **Not applicable; no volume sources.** If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☐	No☒
	N/A		
2	Describe the determination of sigma-Y and sigma-Z for fugitive sources.		
	N/A		
3	Describe how the volume sources are related to unit numbers. Or say they are the same.		
	N/A		
4	Describe any open pits.		
	N/A		
5	Describe emission units included in each open pit.		

	N/A

16-R: Background Concentrations

1	Were NMED provided background concentrations used? Identify the background station used below. If non-NMED provided background concentrations were used describe the data that was used.	Yes☒	No☐
	CO: N/A		
	NO_2: Bloomfield (350450009)		
	PM2.5: Farmington Environment Department Office (350450019)		
	PM10: N/A		
	SO_2: N/A		
	Other: N/A		
	Comments:		
2	Were background concentrations refined to monthly or hourly values? If so describe below.	Yes☐	No☒

16-S: Meteorological Data

1	Was NMED provided meteorological data used? If so select the station used. Four Corners (Bloomfield)	Yes☒	No☐
2	If NMED provided meteorological data was not used describe the data set(s) used below. Discuss how missing data were handled, how stability class was determined, and how the data were processed.		
	N/A		

16-T: Terrain

1	Was complex terrain used in the modeling? If not, describe why below.	Yes☒	No☐
2	What was the source of the terrain data?		
	USGS NED, 1/3 arc-second, retrieved from USGS website in March 2024.		

16-U: Modeling Files

1	Describe the modeling files:		
	File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
	CO-SIL-Bypass	CO: 1hr, 8hr	SIA
	CO-SIL-HRSG	CO: 1hr, 8hr	SIA
	NO2-SIL-CIA-Bypass	NO2: 1hr, 24hr, annual	SIA, CIA (background only), Class II incr.
	NO2-SIL-CIA-HRSG	NO2: 1hr, 24hr, annual	SIA, CIA (background only), Class II incr.

	NO2-Class I-Bypass	NO2: annual	Class I SIA
	NO2- Class I -HRSG	NO2: annual	Class I SIA
	PM10- SIL -Bypass	PM10: 24hr	SIA
	PM10- SIL -HRSG	PM10: 24hr	SIA
	PM10- Class I -Bypass	PM10: 24hr, annual	Class I SIA
	PM10- Class I -HRSG	PM10: 24hr, annual	Class I SIA
	PM25- SIL -Bypass	PM25: 24hr, annual	SIA
	PM25- SIL -HRSG	PM25: 24hr, annual	SIA
	PM25- Class I -Bypass	PM25: 24hr, annual	Class I SIA
	PM25- Class I -HRSG	PM25: 24hr, annual	Class I SIA
	SO2- SIL -Bypass	SO2: 1hr, 3hr, 24hr, annual	SIA
	SO2- SIL -HRSG	SO2: 1hr, 3hr, 24hr, annual	SIA
	SO2- Class I -Bypass	SO2: 3hr, 24hr, annual	Class I SIA
	SO2- Class I -HRSG	SO2: 3hr, 24hr, annual	Class I SIA
	PM25-CIA24hr-Bypass	PM2.5: 24hr	CIA
	PM25-CIA24hr-HRSG	PM2.5: 24hr	CIA
	PM25-CIAANN-Bypass	PM2.5: Annual	CIA
	PM25-CIAANN-HRSG	PM2.5: Annual	CIA

16-V: PSD New or Major Modification Applications

1	A new PSD major source or a major modification to an existing PSD major source requires additional analysis. Was preconstruction monitoring done (see 20.2.74.306 NMAC and PSD Preapplication Guidance on the AQB website)? N/A	Yes☐	No☒
2	If not, did AQB approve an exemption from preconstruction monitoring? N/A	Yes☐	No☒
3	Describe how preconstruction monitoring has been addressed or attach the approved preconstruction monitoring or monitoring exemption.		
	N/A		
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC.		
	N/A		
5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed? If so describe below.	Yes☐	No☐
	N/A		

16-W: Modeling Results

1	If ambient standards are exceeded because of surrounding sources, a culpability analysis is required for the source to show that the contribution from this source is less than the significance levels for the specific pollutant. Was culpability analysis performed? If so describe below.	Yes☐	No☒
	Compliance demonstrated for all pollutants and averaging periods.		
2	Identify the maximum concentrations from the modeling analysis. Rows may be modified, added and removed from the table below as necessary.		

Pollutant, Time Period and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary PM (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (m)
CO 8-hr Bypass SIL	118.47	-	-	-	118.47	500	23.7%	237760	4069800	5902
CO 8-hr HRSG SIL	119.30	-	-	-	119.30	500	23.9%	237760	4069800	5902
CO 1-hr Bypass SIL	187.20	-	-	-	187.20	2000	9.4%	237710	4069700	5914
CO 1-hr HRSG SIL	188.28	-	-	-	188.28	2000	9.4%	237710	4069700	5914
NO_2 Annual Bypass SIL	3.10	-	-	-	3.10	1.0	Significant	237410	4069650	5720
NO_2 Annual HRSG SIL	3.17	-	-	-	3.17	1.0	Significant	237410	4069650	5720
NO_2 Annual Bypass Class I SIL	0.017	-	-	-	0.017	0.1	17.4%	231260	4020600	6320
NO_2 Annual HRSG Class I SIL	0.023	-	-	-	0.023	0.1	23.4%	281260	4089600	6020
NO_2 24-hr Bypass SIL	18.21	-	-	-	18.21	5.0	Significant	237710	4069750	5910
NO_2 24-hr HRSG SIL	18.54	-	-	-	18.54	5.0	Significant	237760	4069800	5902
NO_2 1-hr Bypass SIL	83.67	-	-	-	83.67	7.52	Significant	237560	4069650	5784

Pollutant, Time Period and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary PM (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (m)
NO_2 1-hr HRSG SIL	83.75	-	-	-	83.75	7.52	Significant	237560	4069650	5784
$PM_{2.5}$ Annual Bypass SIL	0.46	-	-	-	0.46	0.13	Significant	237710	4069700	5914
$PM_{2.5}$ Annual HRSG SIL	0.53	-	-	-	0.53	0.13	Significant	237710	4069700	5914
$PM_{2.5}$ Annual Bypass Class I SIL	0.0035	-	-	-	0.0035	0.03	11.8%	281260	4089600	6020
$PM_{2.5}$ Annual HRSG Class I SIL	0.0048	-	-	-	0.0048	0.03	16.0%	281260	4089600	6020
$PM_{2.5}$ 24-hr Bypass SIL	2.62	-	-	-	2.62	1.2	Significant	237710	4069750	5910
$PM_{2.5}$ 24-hr HRSG SIL	2.78	-	-	-	2.78	1.2	Significant	237710	4069750	5910
$PM_{2.5}$ 24-hr Bypass Class I SIL	0.051	-	-	-	0.051	0.27	19.1%	282260	4088600	6020
$PM_{2.5}$ 24-hr HRSG Class I SIL	0.074	-	-	-	0.074	0.27	27.6%	282260	4088600	6020
PM_{10} Annual Bypass SIL	0.46	-	-	-	0.46	1.0	45.9%	237710	4069700	5914
PM_{10} Annual HRSG SIL	0.53	-	-	-	0.53	1.0	53.1%	237710	4069700	5914
PM_{10} Annual Bypass Class I SIL	0.0035	-	-	-	0.0035	0.2	1.8%	281260	4089600	6020
PM_{10} Annual HRSG Class I SIL	0.0048	-	-	-	0.0048	0.2	2.4%	281260	4089600	6020
PM_{10} 24-hr Bypass SIL	3.52	-	-	-	3.52	5.0	70.4%	237760	4069800	5902
PM_{10} 24-hr HRSG SIL	3.61	-	-	-	3.61	5.0	72.2%	237760	4069800	5902
PM_{10} 24-hr Bypass Class I SIL	0.11	-	-	-	0.11	0.3	35.6%	282260	4088600	6020

Pollutant, Time Period and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary PM (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (m)
PM_{10} 24-hr HRSG Class I SIL	0.16	-	-	-	0.16	0.3	54.1%	282260	4088600	6020
SO_2 Annual Bypass SIL	0.046	-	-	-	0.046	1.0	4.6%	237710	4069700	5914
SO_2 Annual HRSG SIL	0.047	-	-	-	0.047	1.0	4.7%	237710	4069700	5914
SO_2 Annual Bypass Class I SIL	0.00028	-	-	-	0.00028	0.1	0.3%	281260	4089600	6020
SO_2 Annual HRSG Class I SIL	0.00030	-	-	-	0.00030	0.1	0.3%	281260	4089600	6020
SO_2 24-hr Bypass SIL	0.42	-	-	-	0.42	5.0	8.5%	237710	4069750	5910
SO_2 24-hr HRSG SIL	0.43	-	-	-	0.43	5.0	8.5%	237710	4069750	5910
SO_2 24-hr Bypass Class I SIL	0.0087	-	-	-	0.0087	0.2	4.4%	282260	4088600	6020
SO_2 24-hr HRSG Class I SIL	0.0096	-	-	-	0.0096	0.2	4.8%	282260	4088600	6020
SO_2 3-hr Bypass SIL	1.49	-	-	-	1.49	25.0	6.0%	237710	4069750	5910
SO_2 3-hr HRSG SIL	1.49	-	-	-	1.49	25.0	6.0%	237710	4069750	5910
SO_2 3-hr Bypass Class I SIL	0.033	-	-	-	0.033	1.0	3.3%	282260	4088600	6020
SO_2 3-hr HRSG Class I SIL	0.036	-	-	-	0.036	1.0	3.6%	282260	4088600	6020
SO_2 1-hr Bypass SIL	1.80	-	-	-	1.80	7.8	23.1%	237710	4069700	5914
SO_2 1-hr HRSG SIL	1.81	-	-	-	1.81	7.8	23.2%	237710	4069700	5914
NO_2 Annual Bypass PSD Increment Class II	3.10	-	-	18.5	21.60	25.0	86.4%	237410	4069650	5720

Pollutant, Time Period and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary PM (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (m)
NO_2 Annual HRSG PSD Increment Class II	3.17	-	-	18.5	21.67	25.0	86.7%	237410	4069650	5720
NO_2 Annual Bypass NMAAQS	3.10	-	-	18.5	21.60	94.02	23.0%	237410	4069650	5720
NO_2 Annual HRSG NMAAQS	3.17	-	-	18.5	21.67	94.02	23.0%	237410	4069650	5720
NO_2 1-hr Bypass NAAQS	80.97	-	-	61.4	142.37	188.03	75.7%	237710	4069700	5914
NO_2 1-hr HRSG NAAQS	82.04	-	-	61.4	143.44	188.03	76.3%	237710	4069700	5914
$PM_{2.5}$ Annual Bypass NAAQS	0.46	0.967	0.00078	4.19	5.16	9.0	57.3%	237510	4069550	5772
$PM_{2.5}$ Annual HRSG NAAQS	0.53	0.999	0.00078	4.19	5.19	9.0	57.7%	237560	4069650	5784
$PM_{2.5}$ 24-hr Bypass NAAQS	2.34	4.75	0.0062	11.77	16.53	35.0	47.2%	237560	4069700	5785
$PM_{2.5}$ 24-hr HRSG NAAQS	2.59	4.82	0.0062	11.77	16.60	35.0	47.4%	237560	4069700	5785

16-X: Summary/conclusions	
1	A statement that modeling requirements have been satisfied and that the permit can be issued.
	All modeling requirements pursuant to NMED Modeling Guidelines (Dec 2023) and 40 CFR Subpart 51, Appendix W have been satisfied; the permit may be issued.

Section 17

Compliance Test History

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

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

Compliance Test History Table

Unit No.	Test Description	Test Date
1	Tested for NO_x and CO in accordance with EPA test methods 1-4, 7, 10 and 19.	09/26/2017 4/11/2024
20	Tested for NO_x and CO in accordance with EPA test methods 1-4, 7, 10 and 19.	05/03/2016 4/11/2024

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.

There is no other relevant information being provided with this application.

Section 22: Certification

Company Name: Harvest Four Corners, LLC

I, Travis Jones, hereby certify that the information and data submitted in this application are true and as accurate as possible, to the best of my knowledge and professional expertise and experience.

Signed this 31 day of May, 2024, upon my oath or affirmation, before a notary of the State of New Mexico.

*Signature

5/31/2024
Date

Travis Jones
Printed Name

EHS Manager
Title

Scribed and sworn before me on this 31 day of May, 2024

My authorization as a notary of the State of New Mexico expires on the 23 day of November, 2025.

Notary's Signature

5/31/2024
Date

Jennifer Deal
Notary's Printed Name

STATE OF NEW MEXICO
NOTARY PUBLIC
JENNIFER DEAL
COMMISSION # 1136075
COMMISSION EXPIRES 11/23/2025

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