October 12, 2022

Elizabeth Bisbey-Kuehn
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505-1816

Re: Application to Construction Permit Number 5695-M1-R2
Harvest Four Corners, LLC – Crow Mesa Compressor Station

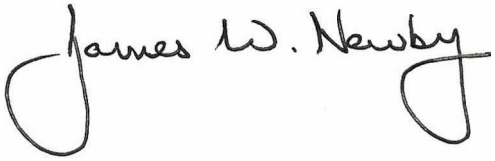
Dear Ms. Bisbey-Kuehn,

On behalf of Harvest Four Corners, LLC (Harvest), Cirrus Consulting, LLC submits the attached application to modify the construction permit for the Crow Mesa Compressor Station.

Thank you for your assistance. If you have questions or need any additional information, please contact Monica Smith of Harvest at (505) 632-4625.

Sincerely,

CIRRUS CONSULTING, LLC



James W. Newby

Attachment
Crow Mesa Compressor Station Construction Permit Application

c: Monica Smith, Harvest

Cirrus Consulting, LLC
11139 Crisp Air Drive
Colorado Springs, Colorado 80908
Phone: (801) 294-3024
jnewby@cirrusllc.com

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NEW MEXICO 20.2.72 NMAC APPLICATION TO MODIFY PERMIT NUMBER 5695-M1-R2

CROW MESA COMPRESSOR STATION

Submitted By:

HARVEST FOUR CORNERS, LLC
1755 Arroyo Drive
Bloomfield, New Mexico 87413

Prepared By:

CIRRUS CONSULTING, LLC
11139 Crisp Air Drive
Colorado Springs, Colorado 80908
(801) 294-3024

October 2022

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Introduction

The Harvest Four Corners, LLC (Harvest) Crow Mesa Compressor Station currently operates under a construction permit, 5695-M1, dated July 11, 2014 (with revisions through -R2 dated September 7, 2021), and a Title V operating permit, P271, dated February 19, 2018.

A list of the equipment currently approved for use at the facility by the construction permit can be found in Tables 2-A and 2-B of Section 2 of this application.

This application is being submitted to modify the construction permit. The following modifications are requested:

- Permit the option to replace one Waukesha L7042GL engine (Unit 1a) with a Waukesha F3521GL engine (Unit 1b). Note that Unit 1a is identified in the current permit as Unit 1;
- Reduce startup, shutdown and maintenance emissions (Unit SSM) from 35.6 to 8.3 tons per year (tpy);
- Add two pig receivers (Units PR1 & PR2);
- Permit condensate truck loading (Unit L1) as a non-exempt source, rather than an exempt source;
- Assign unit numbers to the existing compressors (Units C1a or C1b, C2 & C3); and
- Assign unit numbers to the existing pneumatic devices (Units PC1 – PC26).

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

Universal Air Quality Permit Application

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

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

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

Acknowledgements:

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

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

☑ Check No.: **1008** in the amount of **$500.00**

☑ 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) NMAC**
(e.g. application for a new minor source would be 20.2.72.200.A NMAC, one example for a Technical Permit Revision is 20.2.72.219.B.1.b NMAC, a Title V acid rain application would be: 20.2.70.200.C NMAC)

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known (see 1st 3 to 5 #s of permit IDEA ID No.): **34057**	Updating Permit/NOI #: **5695-M1-R2**
1	Facility Name: **Crow Mesa Compressor Station**	Plant primary SIC Code (4 digits): **1389**	
		Plant NAIC code (6 digits): **213112**	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): **See directions in Section 1-D4**		
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, New Mexico 87413**		
b	Plant Operator's New Mexico Corporate ID or Tax ID: **76-0451075**		

3	Plant Owner(s) name(s): **Same as #2 above**	Phone/Fax: **Same as #2 above**
a	Plant Owner(s) Mailing Address(s): **Same as #2a above**	
4	Bill To (Company): **Same as #2 above**	Phone/Fax: **Same as #2 above**
a	Mailing Address: **Same as #2a above**	E-mail: **N/A**
5	☐ Preparer: ☐ Consultant: **James Newby, Cirrus Consulting, LLC**	Phone/Fax: **(801) 294-3024**
a	Mailing Address: **11139 Crisp Air Drive, Colorado Springs, CO 80908**	E-mail: **jnewby@cirrusllc.com**
6	Plant Operator Contact: **Monica Smith**	Phone/Fax: **(505) 632-4625 / (505) 632-4782**
a	Address: **Same as #2a above**	E-mail: **msmith@harvestmidstream.com**
7	Air Permit Contact: **Same as #6 above**	Title: **Environmental Specialist**
a	E-mail: **Same as #6a above**	Phone/Fax: **Same as #6 above**
b	Mailing Address: **Same as #2a above**	
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 **It is assumed this question refers to question 4 rather than question 3.**	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☑ Yes ☐ No	If yes, the permit No. is: **P271**
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: **5695-M1-R2**
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☐ Yes ☑ No	If yes, the register No. is: **N/A**

Section 1-C: Facility Input Capacity & Production Rate

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: **1.25 MMCF[(a)]**	Daily: **30 MMCF[(a)]**	Annually: **10,950 MMCF[(a)]**
b	Proposed	Hourly: **1.25 MMCF[(a)]**	Daily: **30 MMCF[(a)]**	Annually: **10,950 MMCF[(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: **1.25 MMCF[(a)]**	Daily: **30 MMCF[(a)]**	Annually: **10,950 MMCF[(a)]**
b	Proposed	Hourly: **1.25 MMCF[(a)]**	Daily: **30 MMCF[(a)]**	Annually: **10,950 MMCF[(a)]**

[(a)] The station capacity is a direct function of available horsepower. The throughput is therefore dependent on atmospheric temperature and pressure, gas temperature and pressure, relative humidity and gas quality, was well 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.

Section 1-D: Facility Location Information

1	Section: **02**	Range: **08W**	Township: **24N**	County: **San Juan**	Elevation (ft): **7,206**
2	UTM Zone: ☐ 12 or ☑ 13			Datum: ☐ NAD 27 ☐ NAD 83 ☑ WGS 84	
a	UTM E (in meters, to nearest 10 meters): **261,211 m**			UTM N (in meters, to nearest 10 meters): **4,025,467 m**	
b	**AND** Latitude (deg., min., sec.): **36° 20' 40.86"**			Longitude (deg., min., sec.): **-107° 39' 38.46"**	
3	Name and zip code of nearest New Mexico town: **Nageezi, New Mexico 87037**				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): **From Bloomfield, drive south on US Hwy 550 to mile marker 109, turn left (north) on Road 7997 and drive 4 miles to the closed gate, go through the gate and drive 2.9 miles to intersection, turn right (northeast) and drive 0.9 miles, stay left at the Y intersection and drive 0.2 miles, site is located on the left (north).**				
5	The facility is **approximately 8.5** miles **northeast** of **Nageezi, New Mexico**.				
6	Status of land at facility (check one): ☐ Private ☐ Indian/Pueblo ☐ Federal BLM ☐ Federal Forest Service ☑ Other (specify) **State of New Mexico**				
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: **None; Navajo Reservation; San Juan Co., Rio Arriba Co., Sandoval Co.**				
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/aqb/modeling/class1areas.html)? ☐ Yes ☑ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: **N/A**				
9	Name nearest Class I area: **San Pedro Parks Wilderness**				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): **72.8 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: **≈ 9,234 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? **N/A**				

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

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

Section 1-F: Other Facility Information

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

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

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

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

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

1	Responsible Official (R.O.) (20.2.70.300.D.2 NMAC): **Travis Jones**		Phone: **(713) 289-2630**
a	R.O. Title: **EH&S Manager**	R.O. e-mail: **trjones@harvestmidstream.com**	
b	R. O. Address: **1111 Travis Street, Houston, Texas 77002**		
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC): **TBD**		Phone: **TBD**
a	A. R.O. Title: **TBD**	A. R.O. e-mail: **TBD**	
b	A. R. O. Address: **TBD**		
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.): **Hilcorp Energy Company**		
a	Address of Parent Company: **Same as #1b above**		
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: **Yes. State of Colorado, ~72.7 km; Southern Ute Tribe ~72.7 km; Navajo Tribe, ~4.3 km; Jicarilla Apache Tribe, ~22.6 km; and Mountain Ute Tribe, ~77.3 km**		

Section 1-I – Submittal Requirements

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

Hard Copy Submittal Requirements:

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

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

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

Electronic files sent by (check one):

☑ CD/DVD attached to paper application

☐ secure electronic transfer. Air Permit Contact Name_____

Email_____

Phone number _____

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

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

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

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

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

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

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

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

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

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

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

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Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
1a	Compressor Engine	Waukesha	7042GL	TBD	1,480 hp	1,338 hp	TBD TBD	N/A 1	20200202	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
or 1b	Compressor Engine	Waukesha	5321GL	TBD	738 hp	667 hp	TBD TBD	N/A 1	20200202	☐ Existing (unchanged) ☐ To be Removed ☑ **New/Additional** ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
2	Compressor Engine	Waukesha	7042GL	338574 (pkg. 76459)	1,480 hp	1,338 hp	01/22/80 01/22/80	N/A 2	20200202	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
3	Compressor Engine	Waukesha	7042GL	TBD	1,480 hp	1,338 hp	TBD TBD	N/A 3	20200202	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
C1a or C1b, C2 & C3	Reciprocating Compressors						N/A N/A	N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
SSM	Startup, Shutdown & Maintenance	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
F1	Fugitive Emissions	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31088811	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
MAL	Malfunctions	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PC1 - PC26	Pneumatic Controllers						N/A N/A	N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PR1	Pig Receiver						N/A N/A	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☑ **New/Additional** ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PR2	Pig Receiver						N/A N/A	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☑ **New/Additional** ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
L1	Truck Loading (Condensate)	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
T1	Condensate Storage Tank	Unknown	Unknown	Unknown	400 bbl	400 bbl	1984 1984	N/A T1	40400311-12	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
T6	Condensate Storage Tank	TBD	TBD	TBD	400 bbl	400 bbl	TBD TBD	N/A T6	40400311-12	☑ **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 http://www.env.nm.gov/aqb/forms/InsignificantListTitleV.pdf . TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No. / 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
T2	Produced Water Storage Tank			45 / bbl	Insignificant Activity List Item #1		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T3	Waste Water Storage Tank			45 / bbl	Insignificant Activity List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T4	Used Lube Oil Storage Tank			500 / gal	Insignificant Activity List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T5	Lube Oil Storage Tank			500 / gal	Insignificant Activity List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T7	Lube Oil Storage Tank			500 / gal	Insignificant Activity List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T8	Lube Oil Storage Tank			500 / gal	Insignificant Activity List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T9	Used Lube Oil Storage Tank			500 / gal	Insignificant Activity List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T10	Used Lube Oil Storage Tank			N/A / N/A	Insignificant Activity List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
L2	Truck Loading - Produced water			N/A / N/A	Insignificant Activity List Item #1		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

[1] Insignificant activities exempted due to size or production rate are defined in 20.2.70.300.D.6, 20.2.70.7.Q NMAC, and the NMED/AQB List of Insignificant Activities, dated September 15, 2008. Emissions from these insignificant activities do not need to be reported, unless specifically requested.

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

Table 2-C: Emissions Control Equipment

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

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
N/A						

[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
Totals																		

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

Table 2-E: Requested Allowable Emissions

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

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1a	4.42	19.38	7.81	34.23	2.95	12.92	5.82E-03	2.55E-02	9.88E-02	4.33E-01	9.88E-02	4.33E-01	9.88E-02	4.33E-01	-	-	-	-
1b	2.21	9.66	3.90	17.07	1.47	6.44	2.94E-03	1.29E-02	5.00E-02	2.19E-01	5.00E-02	2.19E-01	5.00E-02	2.19E-01	-	-	-	-
2	4.42	19.38	7.81	34.23	2.95	12.92	5.82E-03	2.55E-02	9.88E-02	4.33E-01	9.88E-02	4.33E-01	9.88E-02	4.33E-01	-	-	-	-
3	4.42	19.38	7.81	34.23	2.95	12.92	5.82E-03	2.55E-02	9.88E-02	4.33E-01	9.88E-02	4.33E-01	9.88E-02	4.33E-01	-	-	-	-
SSM	-	-	-	-	-	8.33	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	1.88	8.24	-	-	-	-	-	-	-	-	-	-	-	-
MAL	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-	-	-
PR1	-	-	-	-	-	1.64E-01	-	-	-	-	-	-	-	-	-	-	-	-
PR2	-	-	-	-	-	2.50	-	-	-	-	-	-	-	-	-	-	-	-
L1	-	-	-	-	90.35	1.63	-	-	-	-	-	-	-	-	-	-	-	-
T1	-	-	-	-	-	142.8	-	-	-	-	-	-	-	-	-	-	-	-
T6	-	-	-	-	-	w/T1	-	-	-	-	-	-	-	-	-	-	-	-
Totals #1 assumes Harvest elects to operate with Unit 1a.																		
Totals #2 assumes Harvest elects to operate with Unit 1b.																		
Totals #1	13.27	58.13	23.44	102.69	101.08	212.41	1.75E-02	7.64E-02	2.96E-01	1.30	2.96E-01	1.30	2.96E-01	1.30	-	-	-	-
Totals #2	11.05	48.41	19.53	85.53	99.60	205.94	1.46E-02	6.39E-02	2.48E-01	1.08	2.48E-01	1.08	2.48E-01	1.08	-	-	-	-

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

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

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

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

Unit No.	NOx		CO		VOC		SOx		PM[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SSM	-	-	-	-	-	8.33	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAL	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-	-	-
PR1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PR2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals #1 assumes Harvest elects to operate with Unit 1a.																		
Totals #2 assumes Harvest elects to operate with Unit 1b.																		
Totals #1	-	-	-	-	-	18.33	-	-	-	-	-	-	-	-	-	-	-	-
Totals #2	-	-	-	-	-	18.33	-	-	-	-	-	-	-	-	-	-	-	-

[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)			
1a	1a	V	No	22	699	124.2	-	-	151.8	1.02
1b	1b	V	No	22	693	62.5	-	-	168.2	0.69
2	2	V	No	22	699	124.2	-	-	151.8	1.02
3	3	V	No	22	699	124.2	-	-	151.8	1.02

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		n-Hexane ☑ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		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
1a	1a	0.5	2.3	0.5	2.2	-	-												
1b	1b	0.3	1.1	0.2	1.1	-	-												
2	2	0.5	2.3	0.5	2.2	-	-												
3	3	0.5	2.3	0.5	2.2	-	-												
SSM	SSM	-	0.3	-	-	-	0.2												
F1	F1	0.0	0.2	-	-	0.0	0.1												
MAL	MAL	-	0.4	-	-	-	0.2												
PR1	PR1	-	0.0	-	-	-	0.0												
PR2	PR2	-	0.1	-	-	-	0.1												
L1	L1	3.2	0.1	-	-	3.1	0.1												
T1	T1	-	1.1	-	-	-	1.0												
T6	T6	-	1.1	-	-	-	1.0												
Totals #1 assumes Harvest elects to operate with Unit 1a.																			
Totals #2 assumes Harvest elects to operate with Unit 1b.																			
Totals #1		4.9	10.1	1.5	6.5	3.1	2.7												
Totals #2		4.6	8.9	1.2	5.4	3.1	2.7												

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
1a	Natural gas	Field Natural Gas	900 Btu/scf	10.99 Mscfh	96.31 Mmscfy	-	-
1b	Natural gas	Field Natural Gas	900 Btu/scf	5.56 Mscfh	48.70 Mmscfy	-	-
2	Natural gas	Field Natural Gas	900 Btu/scf	10.99 Mscfh	96.31 Mmscfy	-	-
3	Natural gas	Field Natural Gas	900 Btu/scf	10.99 Mscfh	96.31 Mmscfy	-	-

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)
T1	40400311-12	Condensate	Mixed hydrocarbons	6.02	61.52	67.36	9.87	80.79	12.04
T6	40400311-12	Condensate	Mixed hydrocarbons	6.02	61.52	67.36	9.87	80.79	12.04
T2	40400315	Produced Water	Water w/trace hydrocarbons	Insignificant source					
T3	40400313	Waste Water	Water w/trace hydrocarbons	Insignificant source					
T4	40400313	Used Lube Oil	Lubrication Oil	Insignificant source					
T5	40400313	Lube Oil	Used Lubrication Oil	Insignificant source					
T7	40400313	Lube Oil	Lubrication Oil	Insignificant source					
T8	40400313	Lube Oil	Lubrication Oil	Insignificant source					
T9	40400313	Used Lube Oil	Used Lubrication Oil	Insignificant source					
T10	40400313	Used Lube Oil	Used Lubrication Oil	Insignificant source					

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			
T1		Condensate	N/A	FX	400		3.66	3.23	Gray Medium	Gray Medium	Good	189,042	11.76
T6		Condensate	N/A	FX	400		3.66	3.23	Gray Medium	Gray Medium	Good	189,042	11.76
T2		Produced Water	N/A	Grate	45		Insignificant source						
T3		Waste Water	N/A	Grate	45		Insignificant source						
T4		Used Lube Oil	N/A	FX	11.9		Insignificant source						
T5		Lube Oil	N/A	FX	11.9		Insignificant source						
T7		Lube Oil	N/A	FX	11.9		Insignificant source						
T8		Lube Oil	N/A	FX	11.9		Insignificant source						
T9		Used Lube Oil	N/A	FX	11.9		Insignificant source						
T10		Used Lube Oil	N/A	FX	11.9		Insignificant source						

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)**
Low pressure natural gas	C1-C6+	Gas	10,950 mmscfy	High pressure natural gas	C1-C6+	Gas	10,950 mmscfy
Hydrocarbon liquid	Mixed hydrocarbons (HC)	Liquid	9,002 barrels per year (bpy)	Hydrocarbon liquid	Mixed HC	Liquid	9,002 bpy
Produced water	H2O + Mixed HC	Liquid	3,800 bpy	Produced water	H2O + Mixed HC	Liquid	3,800 bpy
The station capacity is a direct function of available horsepower. The throughput is therefore dependent on atmospheric temperature and pressure, gas temperature and pressure,							
relative humidity and gas quality, was well 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									

Table 2-O: Parametric Emissions Measurement Equipment

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

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

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	**N_2O** ton/yr	**CH_4** ton/yr	**SF_6** ton/yr	**PFC/HFC** ton/yr[2]									**Total GHG** Mass Basis ton/yr[4]	**Total CO_2e** ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**										
1a	**mass GHG**	6010.45	1.13E-02	1.13E-01											6010.58	-
	CO_2e	6010.45	3.38	2.83											-	6016.66
1b	**mass GHG**	2840.48	5.35E-03	5.35E-02											2840.54	-
	CO_2e	2840.48	1.60	1.34											-	2843.41
2	**mass GHG**	6010.45	1.13E-02	1.13E-01											6010.58	-
	CO_2e	6010.45	3.38	2.83											-	6016.66
3	**mass GHG**	6010.45	1.13E-02	1.13E-01											6010.58	-
	CO_2e	6010.45	3.38	2.83											-	6016.66
C1a or C1b, C2 & C3	**mass GHG**	3.53	-	161.87											165.39	-
	CO_2e	3.53	-	4046.70											-	4050.23
SSM	**mass GHG**	7.04E-01	-	32.27											32.97	-
	CO_2e	7.04E-01	-	806.75											-	807.46
F1	**mass GHG**	2.00E-01	-	9.16											9.36	-
	CO_2e	2.00E-01	-	228.93											-	229.13
MAL	**mass GHG**	8.45E-01	-	38.74											39.59	-
	CO_2e	8.45E-01	-	968.56											-	969.40
PC1 - PC26	**mass GHG**	1.21E-01	-	5.55											5.67	-
	CO_2e	1.21E-01	-	138.72											-	138.84
PR1	**mass GHG**	1.38E-02	-	6.34E-01											6.48E-01	-
	CO_2e	1.38E-02	-	15.85											-	15.86
PR2	**mass GHG**	2.11E-01	-	9.69											9.90	-
	CO_2e	2.11E-01	-	242.25											-	242.46
L1	**mass GHG**	-	-	-											-	-
	CO_2e	-	-	-											-	-
T1	**mass GHG**	8.63E-02	-	9.07E-01											9.94E-01	-
	CO_2e	8.63E-02	-	22.68											-	22.77
T6	**mass GHG**	8.63E-02	-	9.07E-01											9.94E-01	-
	CO_2e	8.63E-02	-	22.68											-	22.77

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**										
Totals #1	**mass GHG**	18037.15	3.40E-02	260.06	Totals #1 assumes Harvest elects to operate with Unit 1a.										18297.25	
	CO_2e	18037.154	10.13	6501.61												24548.89
Totals #2	**mass GHG**	14867.18	2.80E-02	260.00	Totals #2 assumes Harvest elects to operate with Unit 1b.										15127.21	
	CO_2e	14867.18	8.35	6500.12												21375.64

[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.

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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

The Harvest Crow Mesa Compressor Station currently operates under a construction permit, 5695-M1, dated July 11, 2014 (with revisions through -R2 dated September 7, 2021), and a Title V operating permit, P271, dated February 19, 2018.

A list of the equipment currently approved for use at the facility by the construction permit can be found in Tables 2-A and 2-B of Section 2 of this application.

This application is being submitted to modify the construction permit. The following modifications are requested:

- Permit the option to replace one Waukesha L7042GL engine (Unit 1a) with a Waukesha F3521GL engine (Unit 1b). Note that Unit 1a is identified in the current permit as Unit 1;
- Reduce startup, shutdown and maintenance emissions (Unit SSM) from 35.6 to 8.3 tons per year (tpy). Harvest engineering has determined that the blowdown volume is 1,680 cubic feet per event, rather than the 6,442 cubic feet per event previously estimated;
- Add two pig receivers (Units PR1 & PR2);
- Permit condensate truck loading (Unit L1) as a non-exempt source, rather than an exempt source. Calculations using the condensate composition from the most recent VMGSym results show emissions to exceed the 0.5 tpy exemption threshold;
- Assign unit numbers to the existing compressors (Units C1a or C1b, C2 & C3); and

- Assign unit numbers to the existing pneumatic devices (Units PC1 – PC26).

The applicable regulation is 20.2.72 New Mexico Administrative Code (NMAC). The lowest level regulatory citation is 20.2.72.219.D(1) NMAC.

There are no modifications in this application to de-bottleneck impacts or change the facility's major/minor status (both prevention of significant deterioration [PSD] & Title V).

Process Description

The facility compresses pipeline quality natural gas for transport to a downstream processing facility.

Startup, Shutdown and Maintenance Emissions

Except for blowdown events (described below), it is concluded there are no SSM emissions in excess of those identified for steady-state operation as seen in Table 2-E of Section 2. Discussions justifying this conclusion are provided in Section 6.

SSM emissions from blowdowns of the compressors and piping associated with the facility were calculated from the quantity of gas vented during each event, the composition of the gas, and the number of events. The number of blowdowns events were estimated based on historical operations. A safety factor was included.

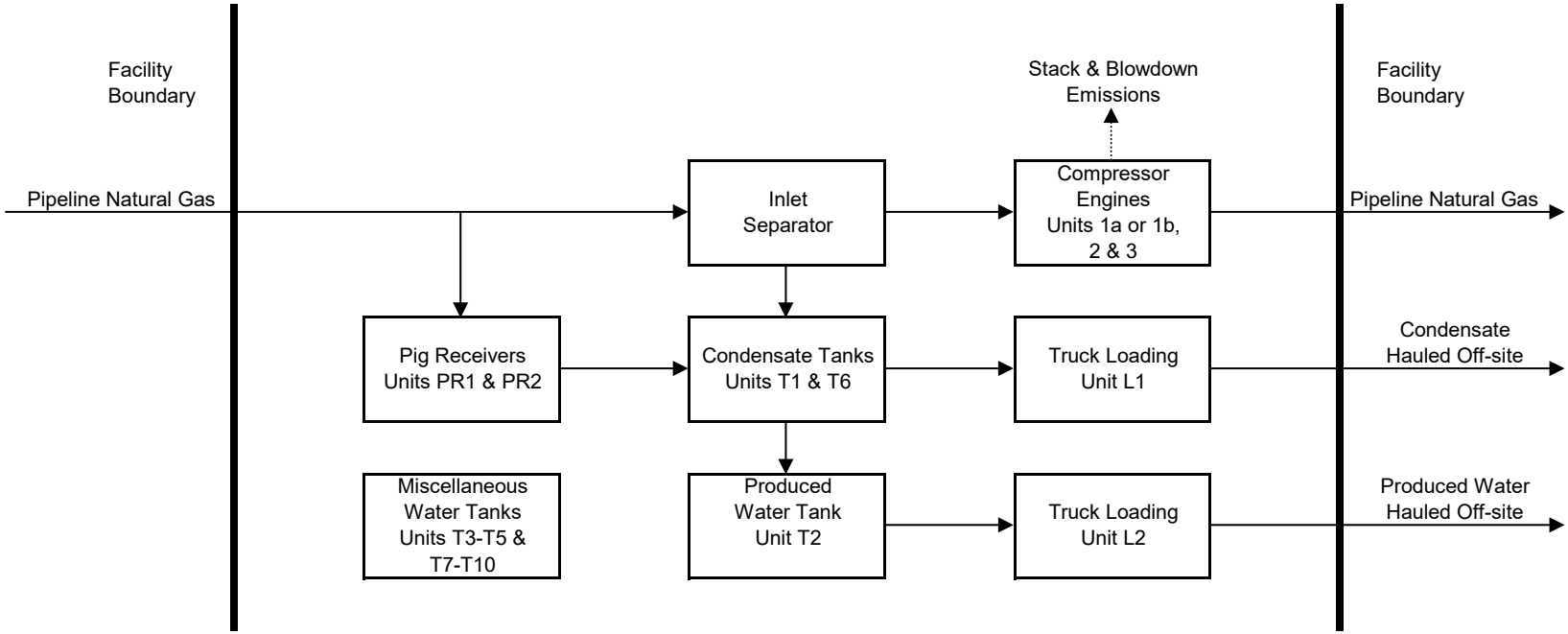
Section 4

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 in this section. Please see the following page.

Flow Diagram

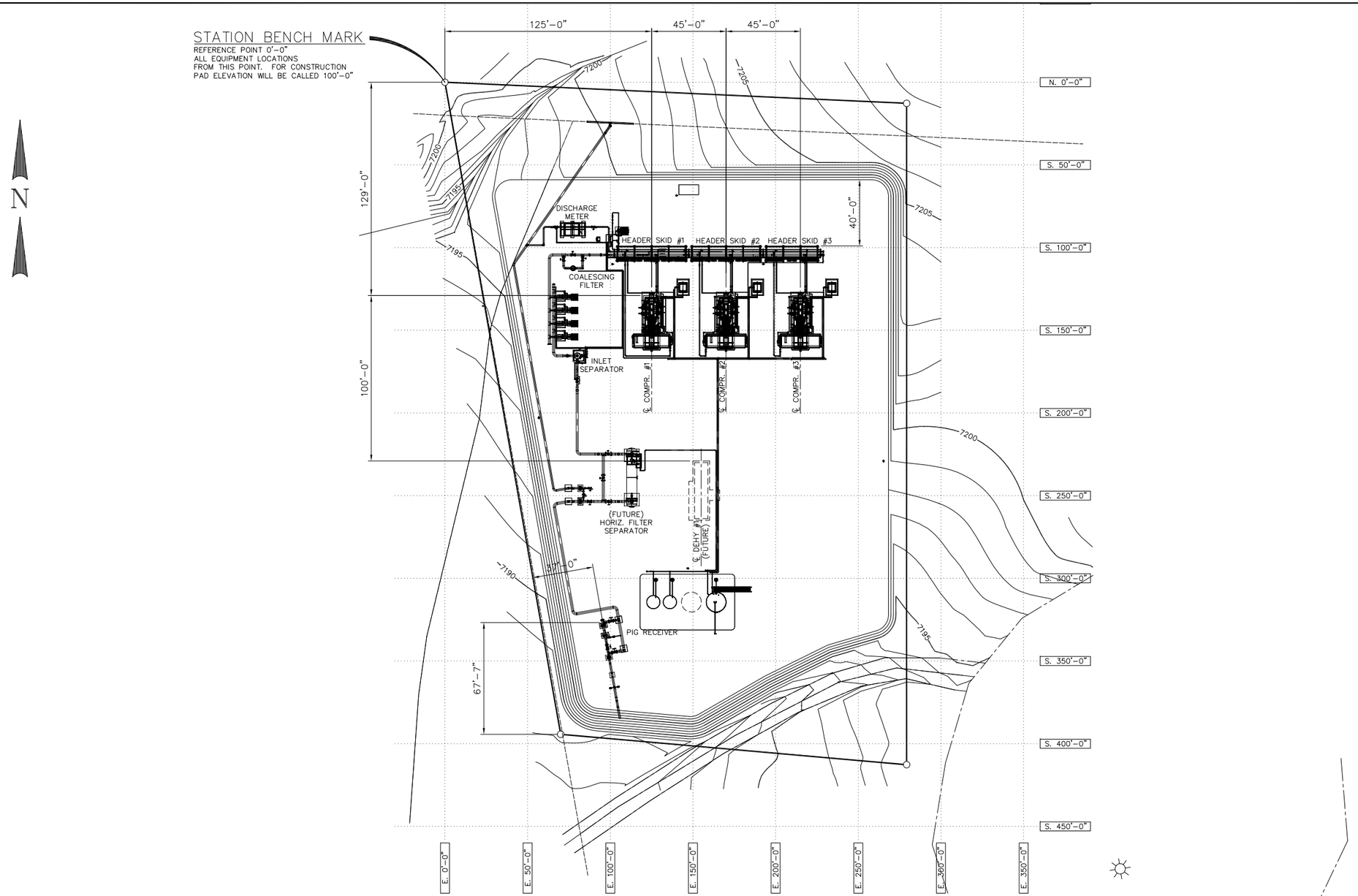


Section 5

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 in this section. Please see the following page.



ISSUED FOR CONSTRUCTION
09-02-2014

NOTES:

DDA DESIGN SERVICES, INC
262 N. SAM HOUSTON PKWY. E.
SUITE 400
HOUSTON, TEXAS 77060
PHONE: 281-591-6330
WWW.DDADESIGNSERVICES.COM

DRAWING NO.	TITLE

REFERENCE DRAWINGS

REV	DRAWN BY	DATE REVISED	CHECKED BY	PROJECT ENG.	APPROVED BY
1	DDA	11-03-14			
	ISSUED FOR AIR PERMIT				
0	DDA	09-02-14	DDA		
	ISSUED FOR CONSTRUCTION				
A	DDA	07-22-14	DDA		
	ISSUED FOR BID				

REVISIONS

WILLIAMS MIDSTREAM GAS & LIQUIDS

CROW MESA COMPRESSOR STATION
PIPING PLOT PLAN
SAN JUAN COUNTY, NEW MEXICO

DRAWN BY	DDA	SCALE: 1"=30'	A.F.E.: WOD1156969
CHECKED BY	DDA		
PROJECT ENG.			
APPROVED BY			
DATE ISSUED			

CRO-P10-001

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.

Engines

The NO_2, CO, and VOC emissions from the engines were calculated from manufacturer's data. The SO_2 and particulate emissions were calculated using AP-42 emission factors from Table 3.2-2. HAP emissions were calculated using GRI-HAPCalc 3.0. All emissions were calculated assuming each engine operates at full site capacity for 8,760 hours per year.

The engines startup with no load and a rich fuel mixture. As a result, emissions are minimized. Because the engines take only minutes to reach operating temperature, emissions during startup are not expected to exceed the steady-state allowable limits. Similarly, emissions during shutdown do not exceed the steady-state allowable limits, because fuel and air flow cease within seconds of shutdown. Emissions due to scheduled maintenance are negligible as the engines are not in operation during maintenance.

No modifications are being made to the currently permitted engines or their operation (except for the option to replace Unit 1a with a Waukesha 3521GL engine [Unit 1b]). Permitted criteria pollutant and HAP emissions for the currently permitted engines are carried forward and not revised.

Compressors and Piping (SSM)

Blowdown emissions from the compressors and piping associated with the facility occur when high pressure gas is used to purge air from the system prior to startup. Also, after shutdowns, high pressure gas is released to atmosphere as a safety precaution.

VOC and HAP emissions from blowdowns of the compressors and piping associated with the station were calculated from the quantity of gas vented during each event, the composition of the gas, and the number of events. The quantity of gas vented during each event was determined by Harvest engineering. The composition of the gas was determined from a recent extended gas analysis. For each unit, the annual number of blowdown events were estimated based on historical operations. A safety factor was added because emissions from each blowdown event are dependent on the composition of the gas in the pipeline and because the number of blowdowns in a year may vary. Use of the safety factor is also designed to ensure an adequate emissions limit, which includes emissions from other miscellaneous startup, shutdown and maintenance activities.

The SSM emissions identified in this application are routine or predictable startup/shutdown and scheduled maintenance and do not include malfunctions or upsets.

Equipment Leak Emissions

VOC and HAP emissions from equipment leaks were calculated using emission factors from Table 2.4 of the 1995 Protocol for Equipment Leak Emission Estimates published by the Environmental Protection Agency (EPA) and the gas stream composition obtained from a recent extended gas analysis. Emissions were calculated assuming the equipment operates 8,760 hours per year.

Due to the nature of the source, it is estimated that SSM emissions from the equipment are accounted for in the calculations.

No modifications are being made to the equipment leak emissions. Permitted VOC emissions are carried forward and not revised.

Malfunctions

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). Based on the gas release rate associated with the set annual VOC emission rate, HAP emissions are calculated using a recent extended gas analysis. Note that these malfunction emissions include the venting of gas only, not combustion emissions.

No modifications are being made to the malfunction emissions. Permitted VOC emissions are carried forward and not revised.

Pig Receivers

VOC and HAP emissions from the pig receivers were calculated from the quantity of gas vented during each event, the composition of the gas, and the number of events. The quantity of gas vented during each event was determined by Harvest engineering. The composition of the gas was determined from a recent extended gas analysis. The annual number of blowdown events were estimated based on historical operations. A safety factor was added because VOC and HAP emissions from each blowdown event are dependent on the composition of the gas in the pipeline and because the number of blowdowns in a year may vary. Experience indicates there will be a nominal variation in the composition of the gas.

Due to the nature of the source, it is estimated that SSM emissions from the pig receivers are already accounted for in the calculations.

Truck Loading (Condensate)

VOC emissions from condensate truck loading were calculated using the AP-42 emission factor from Section 5.2 and data provided by Harvest. HAP emissions were calculated from the composition of the condensate as determined from TANKS 4.0 results.

Due to the nature of the source, it is estimated there are no startup or shutdown emissions associated with truck loading. No maintenance is conducted during truck loading operations.

Truck Loading (Produced Water)

The VOC emissions from produced water truck loading were calculated using the AP-42 emissions factor identified in Section 5.2-1. The data used to calculate the emission factor was obtained assuming the liquid was pure water.

Due to the nature of the source, it is estimated that SSM emissions from truck loading are accounted for in the calculations.

The produced water truck loading is an exempt source in accordance with 20.2.72.202.B(5) NMAC (VOC emissions are less than 0.5 tons per year).

Storage Tanks

Emissions from the condensate storage tanks were calculated using TANKS 4.0.9d for working-breathing losses and VMGSym for flash emissions. Emissions were calculated using a condensate (post flash) throughput of 9,002 barrels per year.

VOC and HAP emissions from the produced water tank were calculated using a maximum throughput and emission factors from the Colorado Department of Public Health and Environment (CDPHE) and the Texas Commission on Environmental Quality (TCEQ). As the VOC emission rate from the produced water storage tank is less than 0.5 tpy, it is an NSR exempt source in accordance with 20.2.72.202.B(5) NMAC and a Title V insignificant source in accordance with Insignificant Activity Item #1.

For the remaining tanks, the following assumptions were made:

- Residual oil #6 was used as an estimate for lubrication oil. As the vapor pressure of residual oil #6 is less than 0.2 psia, the tanks containing lubrication oil are NSR exempt sources under 20.2.72.202.B(2) NMAC; and

- The wastewater storage tank is assumed to be 99% water and 1% residual oil. As the vapor pressure of residual oil is less than 0.2 psia, the tank containing wastewater is an exempt source under 20.2.72.202.B(2) NMAC.

Due to the nature of operations, startup and shutdown emissions from the storage tanks are assumed to be accounted for in the calculations discussed above. Emissions due to maintenance are negligible as the units are not in operation during maintenance.

No changes are being made to the storage tanks or their operation. Emissions from the tanks are carried forward and not revised.

Engine Exhaust Emissions Calculations

Unit Number: 1a, 2, & 3
Description: Waukesha L7042GL

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

Horsepower Calculations

7,206	ft above MSL	Elevation	
1,480	hp	Nameplate hp	Mfg. data
1,338	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 4,000 ft)
1,311	hp	Mfg. Site-rated hp	Mfg. product bulletin Power Derate, S8154-6, April 2001 (loss of 2% for every 1,000 ft over 1,500 ft)

Engine Specifications

1200	rpm	Engine rpm	Mfg. data
7040	cu in	Engine displacement	Mfg. data
125.41	psi	BMEP	Mfg. data (+[(792,000 x NMAQB Site-rated hp) / (rpm * in^3)])

Fuel Consumption

7397	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
9.89	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x NMAQB site-rated hp / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content
10,994	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
86,677	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
96.31	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Emission Factors, g/hp-hr	Uncontrolled Emission Rates pph	tpy
NOX	1.50	4.42	19.38
CO	2.65	7.81	34.23
VOC	1.00	2.95	12.92

NO_X, CO & VOC emissions taken from Waukesha Bulletin 7005 0107
Uncontrolled Emission Rates (pph) = g/hp-hr x NMAQB Site-rated hp / 453.59 g/lb
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
SO2	5.88E-04	5.82E-03	2.55E-02
TSP	9.99E-03	9.88E-02	4.33E-01
PM10	9.99E-03	9.88E-02	4.33E-01
PM2.5	9.99E-03	9.88E-02	4.33E-01

Emission factors taken from AP-42, Table 3.2-2
Particulate factors include both filterable and condensible emissions
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

699	°F	Stack exit temperature	Mfg. data
7451	acfm	Stack flowrate	Mfg. data
1.02	ft	Stack exit diameter	Harvest Four Corners, LLC
0.82	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
151.72	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
22.00	ft	Stack height	Harvest Four Corners, LLC

Engine Exhaust Emissions Calculations

Unit Number: 1b
Description: Waukesha 3521GL

Horsepower Calculations

7,206	ft above MSL	Elevation	
738	hp	Nameplate hp	Mfg. data
667	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 4,000 ft)
654	hp	Mfg. Site-rated hp	Mfg. product bulletin Power Derate, S8154-6, April 2001 (loss of 2% for every 1,000 ft over 1,500 ft)

Engine Specifications

1200	rpm	Engine rpm	Mfg. data
3520	cu in	Engine displacement	Mfg. data
125.07	psi	BMEP	Mfg. data (+[(792,000 x NMAQB Site-rated hp) / (rpm * in^3)])

Fuel Consumption

7501	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
5.00	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x NMAQB site-rated hp / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content
5,560	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
43,831	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
48.70	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Emission Factors, g/hp-hr	Uncontrolled Emission Rates pph	tpy
NOX	1.50	2.21	9.66
CO	2.65	3.90	17.07
VOC	1.00	1.47	6.44

NO_X, CO & VOC emissions taken from Waukesha Bulletin 7005 0107
Uncontrolled Emission Rates (pph) = g/hp-hr x NMAQB Site-rated hp / 453.59 g/lb
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
SO2	5.88E-04	2.94E-03	1.29E-02
TSP	9.99E-03	5.00E-02	2.19E-01
PM10	9.99E-03	5.00E-02	2.19E-01
PM2.5	9.99E-03	5.00E-02	2.19E-01

Emission factors taken from AP-42, Table 3.2-2
Particulate factors include both filterable and condensible emissions
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

693	°F	Stack exit temperature	Mfg. data
3747	acfm	Stack flowrate	Mfg. data
0.69	ft	Stack exit diameter	Harvest Four Corners, LLC
0.37	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
168.24	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
22.00	ft	Stack height	Harvest Four Corners, LLC

GRI-HAPCalc® 3.0
Engines Report

Facility ID:	**CROW MESA**	**Notes:**
Operation Type:	**COMPRESSOR STATION**	
Facility Name:	**CROW MESA COMPRESSOR STATION**	
User Name:	**Harvest Four Corners, LLC**	
Units of Measure:	**U.S. STANDARD**	

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

Engine Unit

Unit Name: 3521GL

Hours of Operation:	8,760	Yearly
Rate Power:	667	hp
Fuel Type:	FIELD GAS	
Engine Type:	4-Stroke, Lean Burn	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
Formaldehyde	1.0830	0.16830000 g/bhp-hr	GRI Literature
Benzene	0.0335	0.00520000 g/bhp-hr	GRI Literature
Toluene	0.0135	0.00210000 g/bhp-hr	GRI Literature
Xylenes(m,p,o)	0.0090	0.00140000 g/bhp-hr	GRI Literature
Total	1.1390		

Unit Name: 7042GL

Hours of Operation:	8,760	Yearly
Rate Power:	1,338	hp
Fuel Type:	FIELD GAS	
Engine Type:	4-Stroke, Lean Burn	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
Formaldehyde	2.1725	0.16830000 g/bhp-hr	GRI Literature
Benzene	0.0671	0.00520000 g/bhp-hr	GRI Literature
Toluene	0.0271	0.00210000 g/bhp-hr	GRI Literature
Xylenes(m,p,o)	0.0181	0.00140000 g/bhp-hr	GRI Literature
Total	2.2848		

Compressor Blowdown Emissions Calculations

Unit Number: SSM
Description: Compressor & Piping Associated With Station

Throughput

3	# of units	Number of units	Harvest Four Corners, LLC
365	events/yr/unit	Blowdowns per year per unit	Harvest Four Corners, LLC
1,680	scf/event	Gas loss per blowdown	Harvest Four Corners, LLC
1,839,600	scf/yr	Annual gas loss	# of units x events/yr/unit x scf/event

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	9.056E-03	8.33
Benzene	2.841E-05	2.61E-02
Ethylbenzene	2.519E-06	2.32E-03
n-Hexane	2.135E-04	1.96E-01
Isooctane	8.188E-06	7.53E-03
Toluene	6.557E-05	6.03E-02
Xylene	2.155E-05	1.98E-02

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	0.6600	44.01	7.656E-04
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	1.6799	28.01	1.240E-03
Methane	82.9849	16.04	3.508E-02
Ethane	8.3711	30.07	6.635E-03
Propane	3.6291	44.09	4.217E-03
Isobutane	0.5046	58.12	7.730E-04
n-Butane	0.9677	58.12	1.482E-03
Isopentane	0.3310	72.15	6.295E-04
n-Pentane	0.2753	72.15	5.235E-04
Cyclopentane	0.0124	70.14	2.292E-05
n-Hexane	0.0940	86.17	2.135E-04
Cyclohexane	0.0445	84.16	9.871E-05
Other hexanes	0.2071	86.18	4.704E-04
Heptanes	0.0703	100.20	1.857E-04
Methylcyclohexane	0.0739	98.19	1.913E-04
Isooctane	0.0031	100.21	8.188E-06
Benzene	0.0138	78.11	2.841E-05
Toluene	0.0270	92.14	6.557E-05
Ethylbenzene	0.0009	106.17	2.519E-06
Xylenes	0.0077	106.17	2.155E-05
C8+ Heavies	0.0418	110.00	1.212E-04
Total	100.0001		
Total VOC			9.056E-03

Gas stream composition obtained from Crow Mesa extended gas analysis dated 11/29/2021
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Equipment Leaks Emissions Calculations

Unit Number: F1
Description: Valves, Connectors, Seals & Open-Ended Lines

Steady-State Emission Rates

Equipment	Number of Components, # of sources	Emission Factors, kg/hr/source	Emission Factors, lb/hr/source	Uncontrolled Emission Rates, pph	tpy
Valves	378	0.0045	0.0099	3.74	16.39
Connectors	339	0.0002	0.0004	0.15	0.65
Pump Seals	0	0.0024	0.0053	0.00	0.00
Compressor Seals	36	0.0088	0.0194	0.70	3.05
Pressure Relief Valves	25	0.0088	0.0194	0.48	2.12
Open-Ended Lines	103	0.0020	0.0044	0.45	1.99
Total				**5.53**	**24.20**

Number of components based on the numbers of compressors and dehydrators at the station (see next page)
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 8,760 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	0.6600	44.010				
Hydrogen sulfide	0.0000	34.070				
Nitrogen	1.6799	28.013				
Methane	82.9849	16.043	13.313	69.093		
Ethane	8.3711	30.070	2.517	13.064		
Propane	3.6291	44.097	1.600	8.305	4.59E-01	2.01
Isobutane	0.5046	58.123	0.293	1.522	8.41E-02	3.68E-01
n-Butane	0.9677	58.123	0.562	2.919	1.61E-01	7.06E-01
Isopentane	0.3310	72.150	0.239	1.239	6.85E-02	3.00E-01
n-Pentane	0.2753	72.150	0.199	1.031	5.70E-02	2.49E-01
Cyclopentane	0.0124	70.134	0.009	0.045	2.49E-03	1.09E-02
n-Hexane	0.0940	86.177	0.081	0.420	2.32E-02	1.02E-01
Cyclohexane	0.0445	84.161	0.037	0.194	1.07E-02	4.70E-02
Other hexanes	0.2071	86.177	0.178	0.926	5.12E-02	2.24E-01
Heptanes	0.0703	100.204	0.070	0.366	2.02E-02	8.85E-02
Methylcyclohexane	0.0739	98.188	0.073	0.377	2.08E-02	9.11E-02
Isooctane	0.0031	114.231	0.004	0.018	1.02E-03	4.45E-03
Benzene	0.0138	78.114	0.011	0.056	3.09E-03	1.35E-02
Toluene	0.0270	92.141	0.025	0.129	7.13E-03	3.12E-02
Ethylbenzene	0.0009	106.167	0.001	0.005	2.74E-04	1.20E-03
Xylenes	0.0077	106.167	0.008	0.042	2.34E-03	1.03E-02
C8+ Heavies	0.0418	114.231	0.048	0.248	1.37E-02	6.00E-02
Total	100.0001		19.269			
Total VOC					9.86E-01	4.32

Gas stream composition obtained from Crow Mesa extended gas analysis dated 11/29/2021
Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Weight Percent (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Uncontrolled Emission Rates (pph) = Total Uncontrolled Emission Rate (from Table 1 above) (pph) x (% / 100)

Equipment Leaks Emissions Calculations

Unit Number: F1
Description: Valves, Connectors, Seals & Open-Ended Lines

Component Count

Number of Compressors at the Facility: 3
Number of Dehydrators at the Facility: 0

Process Equipment Description	Equipment Count						Instrument Count		
	Valves	Connectors	Pump Seals	Compressor Seals	Pressure Relief Valves	Open-End	Flow	Level	Pressure
Station inlet, meter run to pulsation dampener	17	14	0	0	1	13	3	0	3
Pulsation dampener	12	8	0	0	0	2	0	4	1
Compressor suction header	7	4	0	0	0	3	0	0	1
Suction header feed to instrument gas header	3	1	0	0	0	1	0	0	0
Compressor discharge header and bypass to station discharge	6	5	0	0	0	3	0	1	1
Compressor discharge header and suction header bypass lines	4	2	0	0	0	2	0	0	1
Fuel gas header	2	2	0	0	1	2	0	0	1
Instrument gas header	2	2	0	0	1	2	0	0	0
Station discharge header	9	5	0	0	1	6	0	0	2
Fuel gas recovery header	2	2	0	0	1	2	0	0	0
Fuel gas feed and filter loop	15	9	0	0	0	1	0	4	1
Instrument gas feed and filter loop	9	11	0	0	0	3	0	0	0
Produced water storage tank	1	0	0	0	0	1	0	1	0
ESD panel	12	0	0	0	0	0	0	0	0
Starting gas header	6	2	0	0	1	3	0	0	0
Hot gas header	2	2	0	0	0	2	0	0	0
Volume bottle lop	12	4	0	24	1	2	0	0	1
Components from Compressors	132	177	0	12	18	33	0	12	27
Components from dehydrators	0	0	0	0	0	0	0	0	0
Total	253	250	0	36	25	81	3	22	39
Adjusted Total	378	339	0	36	25	103			

The following additions are included in the Adjusted Total:

1 valve is added for each open end line
2 connectors are added for each flow meter
2 valves, 2 connectors and 1 open end line are added for each level gauge
1 connector is added for each pressure gauge

The component count is based on the evaluation of a comparable facility (Sim Mesa Central Delivery Point)

Malfunction Emissions Data and Calculations

Unit Number: MAL
Description: Malfunctions

Emission Rates

Pollutants	Weight Percents, %	Uncontrolled Emission Rates, tpy
VOC		10.00
Benzene	3.137E-01	3.14E-02
Ethylbenzene	2.781E-02	2.78E-03
n-Hexane	2.358E+00	2.36E-01
Isooctane	9.042E-02	9.04E-03
Toluene	7.241E-01	7.24E-02
Xylene	2.379E-01	2.38E-02

Weight percents calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = VOC Emission Rate (tpy) x (% / 100)

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent, %
Carbon dioxide	0.6600	44.01		
Hydrogen sulfide	0.0000	34.07		
Nitrogen	1.6799	28.01		
Methane	82.9849	16.04		
Ethane	8.3711	30.07		
Propane	3.6291	44.09	1.6001	46.57
Isobutane	0.5046	58.12	0.2933	8.536E+00
n-Butane	0.9677	58.12	0.5624	16.37
Isopentane	0.3310	72.15	0.2388	6.951E+00
n-Pentane	0.2753	72.15	0.1986	5.781E+00
Cyclopentane	0.0124	70.14	0.0087	2.531E-01
n-Hexane	0.0940	86.17	0.0810	2.358E+00
Cyclohexane	0.0445	84.16	0.0375	1.090E+00
Other hexanes	0.2071	86.18	0.1785	5.195E+00
Heptanes	0.0703	100.20	0.0704	2.050E+00
Methylcyclohexane	0.0739	98.19	0.0726	2.112E+00
Isooctane	0.0031	100.21	0.0031	9.042E-02
Benzene	0.0138	78.11	0.0108	3.137E-01
Toluene	0.0270	92.14	0.0249	7.241E-01
Ethylbenzene	0.0009	106.17	0.0010	2.781E-02
Xylenes	0.0077	106.17	0.0082	2.379E-01
C8+ Heavies	0.0418	110.00	0.0460	1.338E+00
Total	100.00			
Total VOC			3.4357	

Gas stream composition obtained from Crow Mesa extended gas analysis dated 11/29/2021
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)

Pig Receiver Emissions Calculations

Unit Number: PR1
Description: Pig Receiver (H-21)

Blowdown Volume

Outside Diameter, in	Wall Thickness, in	Tube Length, ft	Port Size, in	Pressure, psig	Purge Duration, min	Gas Loss, mscf
12	0.375	15	1	40	1	0.695

Blowdown Gas Loss
(([Outside diameter (in)] - 2 * [Wall thickness (in)]) ^ 2) * [Pressure (psig)] * [Pipeline length (ft)] * 0.372 / 1000000
Purge Gas Loss
([Port size (in)] ^ 2) * [Pressure (psig)] * ([Purge duration (min)] / 60)

Throughput

52	events/yr	Blowdowns per year	Harvest Four Corners, LLC
695	scf/event	Gas loss per blowdown	Calculated above
36,136	scf/yr	Annual gas loss	events/yr x scf/event

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	9.056E-03	1.64E-01
Benzene	2.841E-05	5.13E-04
Ethylbenzene	2.519E-06	4.55E-05
n-Hexane	2.135E-04	3.86E-03
Isooctane	8.188E-06	1.48E-04
Toluene	6.557E-05	1.18E-03
Xylene	2.155E-05	3.89E-04

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	0.6600	44.01	7.656E-04
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	1.6799	28.01	1.240E-03
Methane	82.9849	16.04	3.508E-02
Ethane	8.3711	30.07	6.635E-03
Propane	3.6291	44.09	4.217E-03
Isobutane	0.5046	58.12	7.730E-04
n-Butane	0.9677	58.12	1.482E-03
Isopentane	0.3310	72.15	6.295E-04
n-Pentane	0.2753	72.15	5.235E-04
Cyclopentane	0.0124	70.14	2.292E-05
n-Hexane	0.0940	86.17	2.135E-04
Cyclohexane	0.0445	84.16	9.871E-05
Other hexanes	0.2071	86.18	4.704E-04
Heptanes	0.0703	100.20	1.857E-04
Methylcyclohexane	0.0739	98.19	1.913E-04
Isooctane	0.0031	100.21	8.188E-06
Benzene	0.0138	78.11	2.841E-05
Toluene	0.0270	92.14	6.557E-05
Ethylbenzene	0.0009	106.17	2.519E-06
Xylenes	0.0077	106.17	2.155E-05
C8+ Heavies	0.0418	110.00	1.212E-04
Total	100.0001		
Total VOC			9.056E-03

Gas stream composition obtained from Crow Mesa extended gas analysis dated 11/29/2021
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Pig Receiver Emissions Calculations

Unit Number: PR2
Description: Pig Receiver (H-28)

Blowdown Volume

Outside Diameter, in	Wall Thickness, in	Tube Length, ft	Port Size, in	Pressure, psig	Purge Duration, min	Gas Loss, mscf
16	0.375	12	1	300	1	5.311

Blowdown Gas Loss
(([Outside diameter (in)] - 2 * [Wall thickness (in)]) ^ 2) * [Pressure (psig)] * [Pipeline length (ft)] * 0.372 / 1000000
Purge Gas Loss
([Port size (in)] ^ 2) * [Pressure (psig)] * ([Purge duration (min)] / 60)

Throughput

104	events/yr	Blowdowns per year	Harvest Four Corners, LLC
5,311	scf/event	Gas loss per blowdown	Calculated above
552,391	scf/yr	Annual gas loss	events/yr x scf/event

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	9.056E-03	2.50
Benzene	2.841E-05	7.85E-03
Ethylbenzene	2.519E-06	6.96E-04
n-Hexane	2.135E-04	5.90E-02
Isooctane	8.188E-06	2.26E-03
Toluene	6.557E-05	1.81E-02
Xylene	2.155E-05	5.95E-03

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	0.6600	44.01	7.656E-04
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	1.6799	28.01	1.240E-03
Methane	82.9849	16.04	3.508E-02
Ethane	8.3711	30.07	6.635E-03
Propane	3.6291	44.09	4.217E-03
Isobutane	0.5046	58.12	7.730E-04
n-Butane	0.9677	58.12	1.482E-03
Isopentane	0.3310	72.15	6.295E-04
n-Pentane	0.2753	72.15	5.235E-04
Cyclopentane	0.0124	70.14	2.292E-05
n-Hexane	0.0940	86.17	2.135E-04
Cyclohexane	0.0445	84.16	9.871E-05
Other hexanes	0.2071	86.18	4.704E-04
Heptanes	0.0703	100.20	1.857E-04
Methylcyclohexane	0.0739	98.19	1.913E-04
Isooctane	0.0031	100.21	8.188E-06
Benzene	0.0138	78.11	2.841E-05
Toluene	0.0270	92.14	6.557E-05
Ethylbenzene	0.0009	106.17	2.519E-06
Xylenes	0.0077	106.17	2.155E-05
C8+ Heavies	0.0418	110.00	1.212E-04
Total	100.0001		
Total VOC			9.056E-03

Gas stream composition obtained from Crow Mesa extended gas analysis dated 11/29/2021
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Condensate Truck Loading Emissions Calculations

Unit Number: L1
Description: Truck Loading

Emission Factor

0.6	Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
12.0379 psia (maximum)	True vapor pressure of liquid, P	TANKS 4.0 output file
9.873 psia (average)	True vapor pressure of liquid, P	TANKS 4.0 output file
61.5186 lb/lb-mole	Molecular weight of vapors, M	TANKS 4.0 output file
80.79 °F (maximum)	Temperature of liquid	TANKS 4.0 output file
67.36 °F (average)	Temperature of liquid	TANKS 4.0 output file
540.46 °R (maximum)	Temperature of liquid, T	°F + 459.67
527.03 °R (average)	Temperature of liquid, T	°F + 459.67
10.24 lb/10^3 gal (maximum)	Emission factor, L	AP-42, Section 5.2, Equation 1
8.62 lb/10^3 gal (average)	Emission factor, L	AP-42, Section 5.2, Equation 1

$$L = 12.46 \frac{SPM}{T}$$

Production Rate

8.82 10^3 gal/hr	Maximum hourly production rate	Harvest Four Corners, LLC
378.08 10^3 gal/yr	Maximum annual production rate	Harvest Four Corners, LLC

Steady-State Emission Rates

Pollutant	Uncontrolled Emission Rates, pph	tpy
VOC	90.35	1.63

The short-term emission rates are calculated using the maximum true vapor pressure and maximum temperature of the liquid
The annual emission rates are calculated using the average true vapor pressure and average temperature of the liquid
Uncontrolled Emission Rate (pph) = lb/10^3 gal x 10^3 gal/hr
Uncontrolled Emission Rate (tpy) = lb/10^3 gal x 10^3 gal/yr / 2,000 lb/ton

Pollutants	Percent of VOC, %	Uncontrolled Emission Rates, pph	tpy
Benzene	8.57E-02	7.75E-02	1.40E-03
Ethylbenzene	1.05E-02	9.52E-03	1.72E-04
n-Hexane	3.39	3.06	5.52E-02
Isooctane	0.00E+00	0.00E+00	0.00E+00
Toluene	6.84E-02	6.18E-02	1.11E-03
m-Xylene	3.95E-02	3.57E-02	6.43E-04

Percent of VOC calculated from the TANKS 4.0 results
Percent of VOC (%) = 100 x Pollutant Emission Rate (lb/yr) / Total VOC Emission Rate (lb/yr)
Uncontrolled Emission Rates (pph) = VOC Uncontrolled Emission Rate (pph) x (% / 100)
Uncontrolled Emission Rates (tpy) = VOC Uncontrolled Emission Rate (tpy) x (% / 100)

Condensate Storage Tank Emissions Data and Calculations

Unit Number: T1 & T6
Description: Condensate Storage Tanks (with flash emissions)

Emission Rates

Source/Pollutants	Working/Breathing Losses, ppy	Working/Breathing Losses, tpy	Flash Losses, tpy	Uncontrolled Emission Rates, tpy
T1				
VOC	17,085.16	8.54	19.50	28.05
Benzene	14.65	7.33E-03	2.78E-02	3.51E-02
Ethylbenzene	1.80	9.00E-04	3.14E-03	4.04E-03
n-Hexane	579.47	2.90E-01	7.33E-01	1.02
Isooctane	0.00	0.00E+00	0.00E+00	0.00E+00
Toluene	11.68	5.84E-03	2.00E-02	2.58E-02
Xylene	6.75	3.38E-03	1.05E-02	1.39E-02
T6				
VOC	17,085.16	8.54	19.50	28.05
Benzene	14.65	7.33E-03	2.78E-02	3.51E-02
Ethylbenzene	1.80	9.00E-04	3.14E-03	4.04E-03
n-Hexane	579.47	2.90E-01	7.33E-01	1.02
Isooctane	0.00	0.00E+00	0.00E+00	0.00E+00
Toluene	11.68	5.84E-03	2.00E-02	2.58E-02
Xylene	6.75	3.38E-03	1.05E-02	1.39E-02
Combined Total				
VOC	34,170.32	17.09	39.01	56.09
Benzene	29.30	1.47E-02	5.56E-02	7.02E-02
Ethylbenzene	3.60	1.80E-03	6.27E-03	8.07E-03
n-Hexane	1,158.94	5.79E-01	1.47	2.04
Isooctane	0.00	0.00E+00	0.00E+00	0.00E+00
Toluene	23.36	1.17E-02	4.00E-02	5.16E-02
Xylene	13.50	6.75E-03	2.10E-02	2.78E-02

Working/breathing losses taken from TANKS 4.0 results
Flash emissions taken from HYSYS 2.4.1 results

Condensate Storage Tank Emissions Data and Calculations

Unit Number: T1 & T6
Description: Condensate Storage Tanks (with flash emissions)

Flash Emissions Composition (To Determine HAP Emissions)

Components	Mole Fraction	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent, %
Carbon dioxide	0.0039	44.010		
Hydrogen sulfide	0.0000	34.070		
Nitrogen	0.0040	28.013		
Water	0.0191	18.015		
Methane	0.1124	16.043		
Ethane	0.1487	30.070		
Propane	0.3488	44.097	15.381	39.677
Isobutane	0.0613	58.123	3.563	9.191
n-Butane	0.1812	58.123	10.532	27.168
Isopentane	0.0448	72.150	3.232	8.338
n-Pentane	0.0463	72.150	3.341	8.617
Cyclopentane	0.0000	70.134	0.000	0.000
n-Hexane	0.0169	86.177	1.456	3.757
Cyclohexane	0.0024	84.161	0.202	0.521
Other hexanes	0.0000	86.177	0.000	0.000
Heptanes	0.0063	100.204	0.631	1.628
Methylcyclohexane	0.0000	98.188	0.000	0.000
Isooctane	0.0000	114.231	0.000	0.000
Benzene	0.0007	78.114	0.055	0.142
Toluene	0.0004	92.141	0.040	0.102
Ethylbenzene	0.0001	106.167	0.006	0.016
Xylenes	0.0002	106.167	0.021	0.054
n-Octane	0.0021	114.232	0.240	0.619
n-Nonane	0.0004	128.259	0.050	0.129
n-Decane	0.0001	142.286	0.016	0.040
Total	1.0001		38.766	100.000

Gas stream composition obtained from VGMSym output
Component Weights (lb/lb-mole) = Mole Fraction * Molecular Weights (lb/lb-mole)
Weight Percent of TOC (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)

Condensate Storage Tank Emissions Data and Calculations

Unit Number: T1 & T6
Description: Condensate Storage Tanks (with flash emissions)

Condensate Composition (for TANKS 4 calculations)

Components	Mole Fraction	Molecular Weights, lb/lb-mole	Liquid Weight, lb/lb-mole	Weight Percent, %
Carbon dioxide	0.0014	44.01		
Hydrogen sulfide	0.0000	34.07		
Nitrogen	0.0091	28.01		
Water	0.0000	18.02		
Methane	0.0881	16.04		
Ethane	0.0427	30.07		
Propane	0.0986	44.10	4.348	
Isobutane	0.0256	58.12	1.488	4.6868
n-Butane	0.0966	58.12	5.615	9.9686
Isopentane	0.0519	72.15	3.745	4.7926
n-Pentane	0.0675	72.15	4.870	6.2332
Cyclopentane	0.0000	70.13	0.000	0.0000
n-Hexane	0.0864	86.18	7.446	9.5296
Cyclohexane	0.0181	84.16	1.523	1.9497
Other hexanes	0.0000	86.18	0.000	0.0000
Heptanes	0.1033	100.20	10.351	13.2482
Methylcyclohexane	0.0000	98.19	0.000	0.0000
Isooctane	0.0000	114.23	0.000	0.0000
Benzene	0.0039	78.11	0.305	0.3899
Toluene	0.0091	92.14	0.838	1.0732
Ethylbenzene	0.0036	106.17	0.382	0.4892
Xylenes	0.0162	106.17	1.720	2.2013
n-Octane	0.1104	114.23	12.611	16.1409
n-Nonane	0.0672	128.26	8.619	11.0313
n-Decane	0.1003	142.29	14.271	18.2656
Total	1.0000		78.132	100.0000

Condensate composition was obtained from VMGSym results
Liquid Weight (lb/lb-mole) = Mole Fraction x Molecular Weight
Weight Percent (%) = [Liquid Weight / Total Liquid Weight] x 100
The gaseous constituents were included with isobutane and n-butane (even distribution), since TANKS 4 is designed to estimate working/breathing losses from liquids only.

Simulation Report

Symmetry

File Name:	Crow Mesa Condensate Flash Calc 8.19.2022
Company:	VMG, a Schlumberger Technology
Customer:	
Project:	
Job No:	
Prepared By:	
Report Date:	Friday, August 19, 2022
Unit Set:	Field

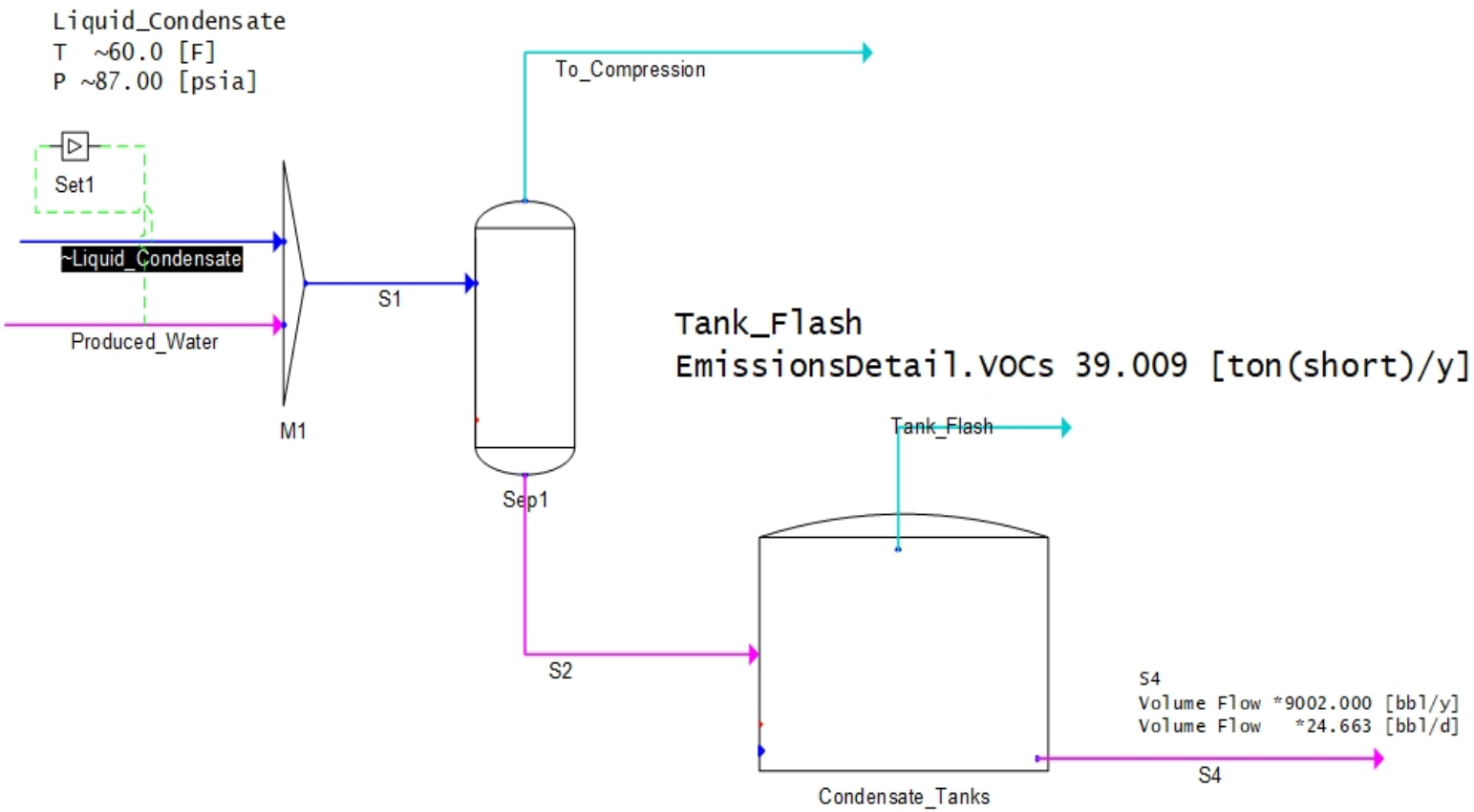
File: U:\Environmental\Condensate Flash Calcs\Crow Mesa Condensate Flash Calc 8.19.2022.vsym

Symmetry

Main Flowsheet

*Bold face throughout the report denotes specified values.

*Italic face throughout the report denotes recycle values.


Liquid_Condensate
T ~60.0 [F]
P ~87.00 [psia]
To_Compression
Set1
~Liquid_Condensate
Produced_Water
S1
M1
Sep1
Tank_Flash
EmissionsDetail.VOCs 39.009 [ton(short)/y]
Tank_Flash
S2
S4
Volume Flow *9002.000 [bbl/y]
Volume Flow *24.663 [bbl/d]
S4
Condensate_Tanks

Symmetry

	Liquid_Condensate	Tank_Flash
In.VapFrac	0.1209	1.00
In.T [F]	60.0	60.0
In.P [psia]	87.00	13.00
In.Mole Flow [lbmol/h]	1.54	0.23
In.Mass Flow [lb/h]	126.33	10.49
In.Volume Flow [ft3/s]	0.004	0.027
In.Mole Fraction [Fraction]		
NITROGEN	0.0091	0.0040
METHANE	0.0881	0.1124
CARBON DIOXIDE	0.0014	0.0039
ETHANE	0.0427	0.1487
PROPANE	0.0986	0.3488
ISOBUTANE	0.0256	0.0613
n-BUTANE	0.0966	0.1812
ISOPENTANE	0.0519	0.0448
n-PENTANE	0.0675	0.0463
n-HEXANE	0.0864	0.0169
BENZENE	0.0039	7.07E-04
CYCLOHEXANE	0.0181	0.0024
n-HEPTANE	0.1033	0.0063
TOLUENE	0.0091	4.31E-04
n-OCTANE	0.1104	0.0021
ETHYLBENZENE	0.0036	5.87E-05
m-XYLENE	0.0162	1.97E-04
n-NONANE	0.0672	3.90E-04
n-DECANE	0.0525	9.44E-05
n-UNDECANE	0.0239	1.21E-05
n-DODECANE	0.0239	3.82E-06
WATER	0.00	0.0191

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Crow Mesa - T1 & T6 (Condensate)
City:	Nageezi
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	400 Barrel Condensate Storage Tanks

Tank Dimensions

Shell Height (ft):	20.00
Diameter (ft):	12.00
Liquid Height (ft) :	19.00
Avg. Liquid Height (ft):	9.50
Volume (gallons):	16,074.56
Turnovers:	11.76
Net Throughput(gal/yr):	189,042.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
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

Crow Mesa - T1 & T6 (Condensate) - Vertical Fixed Roof Tank
Nageezi, 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	67.36	53.93	80.79	59.23	9.8730	7.6572	12.0379	61.5186			93.58	
Benzene						1.4274	0.9846	2.0237	78.1100	0.0039	0.0009	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.9357	23.3576	34.6684	58.1230	0.0997	0.4598	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4738	1.0254	2.0729	84.1600	0.0195	0.0044	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.1827	0.0011	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0049	0.0001	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.1325	0.0155	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.0953	0.0339	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Iso-Butane						43.3083	34.4026	53.8185	58.1230	0.0469	0.3127	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0479	0.0876	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.1103	0.0013	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.1614	0.0044	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0623	0.0771	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0107	0.0007	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0220	0.0004	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)

Crow Mesa - T1 & T6 (Condensate) - Vertical Fixed Roof Tank
Nageezi, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	14,351.3805
Vapor Space Volume (cu ft):	1,201.6592
Vapor Density (lb/cu ft):	0.1074
Vapor Space Expansion Factor:	1.9986
Vented Vapor Saturation Factor:	0.1524
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,201.6592
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	10.6250
Tank Shell Height (ft):	20.0000
Average Liquid Height (ft):	9.5000
Roof Outage (ft):	0.1250
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1250
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.1074
Vapor Molecular Weight (lb/lb-mole):	61.5186
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	9.8730
Daily Avg. Liquid Surface Temp. (deg. R):	527.0322
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):	518.9042
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	1.9986
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	4.3807
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	9.8730
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	7.6572
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	12.0379
Daily Avg. Liquid Surface Temp. (deg R):	527.0322
Daily Min. Liquid Surface Temp. (deg R):	513.6028
Daily Max. Liquid Surface Temp. (deg R):	540.4617
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.1524
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	9.8730
Vapor Space Outage (ft):	10.6250

Working Losses (lb):	2,733.7763
Vapor Molecular Weight (lb/lb-mole):	61.5186
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	9.8730
Annual Net Throughput (gal/yr.):	189,042.0000
Annual Turnovers:	11.7600
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	16,074.5600
Maximum Liquid Height (ft):	19.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	17,085.1568

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Crow Mesa - T1 & T6 (Condensate) - Vertical Fixed Roof Tank
Nageezi, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	2,733.78	14,351.38	17,085.16
Iso-Butane	854.95	4,488.21	5,343.17
Butane (-n)	1,256.95	6,598.57	7,855.52
Isopentane	239.49	1,257.27	1,496.76
Pentane (-n)	210.85	1,106.87	1,317.72
Hexane (-n)	92.72	486.75	579.47
Cyclohexane	12.10	63.54	75.64
Heptane (-n)	42.41	222.64	265.05
Benzene	2.34	12.31	14.65
Toluene	1.87	9.81	11.68
Ethylbenzene	0.29	1.51	1.80
Xylenes (mixed isomers)	1.08	5.67	6.75
Octane (-n)	12.03	63.15	75.18
Nonane (-n)	3.64	19.12	22.76
Decane (-n)	3.04	15.96	19.00

Produced Water Truck Loading Emissions Calculations

Unit Number: L2
Description: Produced Water Truck Loading - ***Exempt Source***

Emission Factor

0.6		Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
0.3045	psia (average)	True vapor pressure of liquid, P	Estimated using Antoine's Equation (see calculations below)
18.02	lb/lb-mole	Molecular weight of vapors, M	TANKS 4.0 Database
65	°F (average)	Temperature of liquid	Estimated (see calculations below)
524.67	°R (average)	Temperature of liquid, T	°F + 459.67
0.08	lb/10^3 gal (average)	Emission factor, L	AP-$L = 12.46 \frac{SPM}{T}$ uation 1

Production Rate

159.60	10^3 gal/yr	Maximum annual production rate	Harvest Four Corners, LLC

Steady-State Emission Rates

Pollutant	Emission Rate, tpy
VOC	6.24E-03

Uncontrolled Emission Rate (pph) = lb/10^3 gal x 10^3 gal/hr
Uncontrolled Emission Rate (tpy) = lb/10^3 gal x 10^3 gal/yr / 2,000 lb/ton

Pollutants	Mass Fraction	Emission Rates, tpy
Benzene	0.0267	1.67E-06
Ethylbenzene	0.0027	1.67E-07
n-Hexane	0.0840	5.24E-06
Toluene	0.0344	2.14E-06
m-Xylene	0.0229	1.43E-06

HAP mass fractions are estimated from the produced water tank emission factors
HAP Mass Fraction = HAP Emission Factor (lb/bbl) / VOC Emission Factor (lb/bbl)
Emission Rates (tpy) = VOC Emission Rate (tpy) x HAP Mass Fraction

Vapor Pressure of Produced Water:

It is estimated that the true vapor pressure of produced water is approximately equal to the true vapor pressure of pure water. An estimate of the true vapor pressure for water is calculated using Antoine's equation (see AP-42, Section 7.1, Equation 1-25).

Average:

Temperature = 65 °F

log P = A - (B / (C + T))

A = 8.07131
B = 1730.63
C = 233.426
T = 18.33 °C
P = mmHg

P = 10^(A - (B / (C + T))

P = 15.75 mmHg
P = 0.3045 psi

Note: 760 mmHg = 14.7 psia

Produced Water Storage Tank Emissions Calculations

Unit Number: T2
Description: Produced Water Storage Tank - ***Exempt Source***

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

Throughput

45	bbl/turnover	Tank capacity	Harvest Four Corners, LLC
84	turnover/yr	Turnovers per year	Harvest Four Corners, LLC
3,800	bbl/yr	Annual liquid throughput	bbl/turnover x turnover/yr

Emission Rates

Pollutant	Emission Factor, lb/bbl	Uncontrolled, Emission Rate, tpy
VOC	0.262	4.98E-01
Benzene	0.007	1.33E-02
Ethylbenzene	0.0007	1.33E-03
n-Hexane	0.022	4.18E-02
Toluene	0.009	1.71E-02
Xylene	0.006	1.14E-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

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)

CO_2, CH_4, and N_2O exhaust emissions were calculated using emission factors from 40 Code of Federal Regulations (CFR), Part C, Tables C-1 & C-2 and the combustion source higher heating value (HHV) design heat rates.

The SSM, malfunction, and pig receiver CO_2 and CH_4 emissions were calculated from the annual blowdown volumes and gas composition.

The reciprocating compressor CO_2 and CH_4 emissions were calculated using a combination of equations W-26 & W-36 (from Subpart W).

CO_2 and CH_4 equipment leaks emissions were calculated using the TOC emission factors and gas stream composition.

There are no GHG emissions associated with the truck loading operations.

The condensate storage tanks CO_2 and CH_4 emissions were calculated from the the VMGSym results.

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 (Total #1)	18,031.36	3.40E-01	3.40E-02	18,031.73	18049.98
Engine & Turbine Exhaust Emissions (Total #2)	14,861.38	2.80E-01	2.80E-02	14,861.69	14876.73
SSM Emissions	7.04E-01	32.27	--	32.97	807.46
Reciprocating Compressor Venting Emissions	3.53	161.87	--	165.39	4050.23
Equipment Leak Emissions	2.00E-01	9.16	--	9.36	229.13
Pig Launcher & Receiver Emissions	2.25E-01	10.32	--	10.55	258.32
Natural Gas Pneumatic Device Venting Emissions	1.21E-01	5.55	--	5.67	138.84
Malfunction Emissions	8.45E-01	38.74	--	39.59	969.40
Storage Tank Emissions	1.73E-01	1.81	--	1.99	45.54
Total #1	18,037.15	260.06	3.40E-02	18,297.25	24,548.89
Total #2	14,867.18	260.00	2.80E-02	15,127.21	21,375.64

Total #1 assumes Harvest elects to operate with Unit 1a.
Total #2 assumes Harvest elects to operate with Unit 1b.

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
1a	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
1b	Waukesha 3521GL	53.06	1.00E-03	1.00E-04	2,840.48	5.35E-02	5.35E-03
2	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
3	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
	Total #1				18,031.36	3.40E-01	3.40E-02
	Total #2				14,861.38	2.80E-01	2.80E-02

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
Total #1 assumes Harvest elects to operate with Unit 1a.
Total #2 assumes Harvest elects to operate with Unit 1b.

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
1a	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
1b	Waukesha 3521GL	Nat. Gas	8,760	5.00	5.56	48,667
2	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
3	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979

The fuel types and operating times are provided by Harvest
The LHV design heat rates are taken from manufacturers data
HHV Design Heat Rates (MMBtu/hr) = LHV Design Heat Rates (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
SSM	SSM	1,839,600	0.0008	0.0351	7.04E-01	32.27

The annual blowdown volumes are calculated from data provided by Harvest
The CO2 and CH4 emission factors are calculated from the facility extended gas analysis
Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Green House Gas Emissions Data and Calculations

Reciprocating Compressor Venting Emissions

Unit Numbers	Description	Emission Rates	
		CO2, tpy	CH4, tpy
NA	Blowdown Valve Leakage	3.37E-01	15.46
NA	Rod Packing Emissions	3.19	146.41
NA	Isolation Valve Leakage	0.00E+00	0.00E+00
	Total	3.53	161.87

Operating or standby mode - includes blowdown valve leakage through blowdown vent stack
Operating mode - includes rod packing emissions
Non-operating depressurized mode - includes isolation valve leakage through open blowdown vents (without blind flanges)
Rod packing gas emissions assume 4 cylinders per compressor
A combination of equations W-26 & W-36 (Subpart W) is used to calculate reciprocating compressor 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 Rates (tpy) = # x scf/hr x hr/yr x (CO2 Mole Percent (%) / 100) x CO2 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne
CH4 Emission Rates (tpy) = # x scf/hr x hr/yr x (CH4 Mole Percent (%) / 100) x CH4 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne

Unit Numbers	Description	Number of Compressors, #	Gas Emissions, scf/hr	Operating Times, hr/yr	CO2 Mole Percents, %	CH4 Mole Percents, %	CO2 Density, kg/scf	CH4 Density, kg/scf
NA	Blowdown Valve Leakage	3	33.5	8,760	0.66	82.98	0.0526	0.0192
NA	Rod Packing Emissions	3	317.2	8,760	0.66	82.98	0.0526	0.0192
NA	Blowdown Valve Leakage (St	3	10.5	0	0.66	82.98	0.0526	0.0192

The number of compressors are provided by Harvest
Blowdown valve leakage (33.5 scf/hr) and rod packing emissions occur in operating mode
Blowdown valve leakage (10.5 scf/hr) occurs in standby pressurized mode
Emission factors are the three year rolling average (2012-2014) of all measurements in the Williams Field Services, LLC compressor fleet located at natural gas processing plants
The operating times (the average operating times for all station compressors combined) are provided by Williams
The facility CO2 and CH4 contents are taken from the facility extended gas analysis
The CO2 & CH4 densities (kg/scf) are taken from Subpart W, Paragraph 98.233(v)

Equipment Leaks Emissions

Unit Numbers	Description	Emission Rates	
		CO2, tpy	CH4, tpy
NA	Valves	1.5E-01	7.0
NA	Connectors	1.9E-02	8.9E-01
NA	Open-Ended Lines	1.1E-02	4.9E-01
NA	Pressure Relief Valves	1.6E-02	7.4E-01
	Total	2.0E-01	9.2

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	378	0.121	0.66	82.98	8,760	0.0526	0.0192
NA	Connectors	339	0.017	0.66	82.98	8,760	0.0526	0.0192
NA	Open-Ended Lines	103	0.031	0.66	82.98	8,760	0.0526	0.0192
NA	Pressure Relief Valves	25	0.193	0.66	82.98	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
The operating times are provided by Williams (default is the entire year)
The CO2 & CH4 densities are taken from Subpart W, Paragraph 98.233(v)

Green House Gas Emissions Data and Calculations

Pig Launcher & Receiver 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
PR1	Pig Receiver	36,136	0.0008	0.0351	1.38E-02	6.34E-01
PR2	Pig Receiver	552,391	0.0008	0.0351	2.11E-01	9.69
	Total				2.25E-01	10.32

The annual blowdown volumes are calculated from data provided by Harvest
The CO2 and CH4 emission factors are calculated from the facility extended gas analysis
Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Natural Gas Pneumatic Device Venting Emissions

Unit Numbers	Description	Number of Devices, #	Emission Factors, scf/hr/device	Operating Times, hr/yr	Emission Rates	
					CO2, tpy	CH4, tpy
NA	Continuous High Bleed Pneumatic Devices	0	37.3	8,760	0.00E+00	0.00E+00
NA	Intermittent Bleed Pneumatic Devices	0	13.5	8,760	0.00E+00	0.00E+00
NA	Continuous Low Bleed Pneumatic Devices	26	1.39	8,760	1.21E-01	5.55
	Total				1.21E-01	5.55

The number of devices are provided by Harvest
The emission factors are taken from Subpart W, Table W-1A (Western U.S. - Gas Service)
The operating times are provided by Harvest
Equation W-1 (Subpart W) is used to calculate CO2 & CH4 emissions
As the NMED requires CO2 & CH4 emissions in addition to CO2e emissions, it is necessary to divide by the global warming potentials
CO2 Emission Rates (tpy) = # x scf/hr/device x (CO2 Content (mole %) / 100) x CO2 Conversion Factors (tonne CO2e/scf) x hr/yr
x (2,204.6 lb/tonne / 2,000 lb/ton) / CO2 Global Warming Potentials (tonne CO2e/tonne CO2)
CH4 Emission Rates (tpy) = # x scf/hr/device x (CH4 Contents (mole %) / 100) x CH4 Conversion Factors (tonne CO2e/scf) x hr/yr
x (2,204.6 lb/tonne / 2,000 lb/ton) / CH4 Global Warming Potentials (tonne CO2e/tonne CH4)

Unit Numbers	Description	CO2 Contents, mole %	CH4 Contents, mole %	CO2 Conversion Factors, tonne CO2e /scf	CH4 Conversion Factors, tonne CO2e /scf	CO2 Global Warming Potentials, tonne CO2e /tonne CO2	CH4 Global Warming Potentials, tonne CO2e /tonne CH4
NA	Continuous High Bleed Pneumatic Devices	0.66	82.98	5.262E-05	4.790E-04	1	25
NA	Continuous Low Bleed Pneumatic Devices	0.66	82.98	5.262E-05	4.790E-04	1	25
NA	Intermittent Bleed Pneumatic Devices	0.66	82.98	5.262E-05	4.790E-04	1	25

The facility CO2 and CH4 contents are taken from the facility extended gas analysis
The conversion factors are taken from Subpart W, Paragraph 98.233(a)
The global warming potentials are taken from 40 CFR Part 98, Table A-1

Malfunction Emissions

Malfunction Emissions

Unit Number	Description	Total Component Weight, lb/lb-mole	VOC Component Weight, lb/lb-mole	CO2 Weight % of Total, %	CH4 Weight % of Total, %	Emission Rates		
						VOC, tpy	CO2, tpy	CH4, tpy
M1	Malfunctions	20.02	3.44	1.45	66.47	10.00	8.45E-01	38.74

The total & VOC component weights and CO2 & CH4 weight % of totals are calculated from the facility extended gas analysis
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)

Green House Gas Emissions Data and Calculations

Storage Tank Emissions

Unit Number	Description	Emission Rates	
		CO2, tpy	CH4, tpy
T1 & T6	Flash Emissions	1.73E-01	1.81
	Total	1.73E-01	1.81

Calculated from VMGSym results

Gas Stream Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of Total, %	Emission Factors, lb/scf
Carbon Dioxide	0.6600	44.01	0.29	1.4505	0.0008
Hydrogen Sulfide	0.0000	34.07	0.00	0.0000	0.0000
Nitrogen	1.6799	28.01	0.47	2.3498	0.0012
Methane	82.9849	16.04	13.31	66.4718	0.0351
Ethane	8.3711	30.07	2.52	12.5704	0.0066
Propane	3.6291	44.09	1.60	7.9905	0.0042
IsoButane	0.5046	58.12	0.29	1.4646	0.0008
Normal Butane	0.9677	58.12	0.56	2.8087	0.0015
IsoPentane	0.3310	72.15	0.24	1.1926	0.0006
Normal Pentane	0.2753	72.15	0.20	0.9919	0.0005
Cyclopentane	0.0124	70.14	0.01	0.0434	0.0000
n-Hexane	0.0940	86.17	0.08	0.4045	0.0002
Cyclohexane	0.0445	84.16	0.04	0.1870	0.0001
Other Hexanes	0.2071	86.18	0.18	0.8913	0.0005
Heptanes	0.0703	100.20	0.07	0.3518	0.0002
Methylcyclohexane	0.0739	98.19	0.07	0.3624	0.0002
2,2,4-Trimethylpentane	0.0031	100.21	0.00	0.0155	0.0000
Benzene	0.0138	78.11	0.01	0.0538	0.0000
Toluene	0.0270	92.14	0.02	0.1242	0.0001
Ethylbenzene	0.0009	106.17	0.00	0.0048	0.0000
Xylenes	0.0077	106.17	0.01	0.0408	0.0000
C8+ heavies	0.0418	110.00	0.05	0.2296	0.0001
Total	100.0001		20.02	100.0000	0.0528
VOC			3.44	--	0.0091

Gas stream composition obtained from Crow Mesa extended gas analysis dated 11/29/2021
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) / 379.4 scf/lb-mole

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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.

STANDARD EQUIPMENT

AIR CLEANER – Two, 3" dry type filter with hinged rain shield and service indicator.

BARRING DEVICE – Manual.

BATTERY BOX – Ship loose battery box designed to accommodate two series 31 12 VDC batteries. Includes power disconnect switch and 20 foot (6.1 m) cable for connection to ESM Power Distribution Box.

BEARINGS – Heavy duty, replaceable, precision type.

BREATHER – Self regulating, closed system.

CONNECTING RODS – Drop forged steel, rifle drilled.

CONTROL SYSTEM – Waukesha Engine System Manager (ESM) integrates spark timing control, speed governing, detonation detection, start-stop control, diagnostic tools, fault logging and engine safeties. Engine Control Unit (ECU) is central brain of the control system and main customer interface. Interface with ESM is through 25 foot (7.6 m) harness to local panel, through MODBUS RTU slave connection RS-485 multidrop hardware, and through the Electronic Service Program (ESP). Customer connections are only required to the local panel, fuel valve, and 24V DC power supply. Compatible with Woodward load sharing module. ESM meets Canadian Standards Association Class I, Division 2, Group D, hazardous location requirements. ESM controlled prechamber logic.

CRANKCASE – Integral crankcase and cylinder frame. Main bearing caps drilled and tapped for temperature sensors. Does not include sensors.

CRANKSHAFT – Counterweighted, forged steel, seven main bearings, and dynamically balanced.

CYLINDERS – Removable bainitic cast iron wet type cylinder liners, chrome plated on outer diameter.

CYLINDER HEADS – Twelve interchangeable. Two hard faced intake and two hard faced exhaust valves per cylinder. Hard faced intake and exhaust valve seat inserts. Roller valve lifters and hydraulic push rods. Includes prechamber and related fuel control valves.

ENGINE ROTATION – Counterclockwise when facing flywheel.

ENGINE MONITORING DEVICES – Factory mounted and wired sensors for lube oil pressure and temperature; intake manifold temperature and pressure; overspeed; and jacket water temperature; all accessible through ESM®. ESM continually monitors combustion performance through accelerometers to provide detonation protection. Dual magnetic pick-ups are used for accurate engine speed monitoring. ESM provides predictive spark plug diagnostics as well as advanced diagnostics of engine and all ESM sensors and logs any faults into non-volatile flash memory.

EXHAUST THERMOCOUPLES – 14 K-type thermocouples. One for each individual cylinder and one pre-turbine for each bank and 25 foot (7.6 m) harness.

EXHAUST OUTLET – Single vertical at rear. Flexible stainless steel connection with 8" (203 mm) pipe flange.

FLYWHEEL – Approx. WR2 = 155000 lb-in2; with ring gear (208 teeth), machined to accept two drive adapters: 31.88" (810 mm) pilot bore, 30.25"(768 mm) bolt circle, (12) 0.75"–10 tapped holes; or 28.88" (734 mm) pilot bore, 27.25" (692 mm) bolt circle, (12) 0.625"–11 tapped holes and (12) 0.75"–10 tapped holes.

FLYWHEEL HOUSING – No. 00 SAE.

FUEL SYSTEM – Single 3" ANSI flange fuel inlet connection. Dual natural gas, 4" (102 mm) duplex updraft carburetors. Two mounted Mooney Flowgrid 250, 2" (51 mm) gas regulators, 43 – 60 psi (296 – 414 kPa) gas inlet pressure required. Prechamber fuel system and control logic. 10 foot (3 m) harness provided for ESM control of customer supplied fuel shutoff valve.

GOVERNOR – Electric throttle actuator controlled by ESM with throttle position feedback. Governor tuning is performed using ESP. ESM includes option of a load-coming feature to improve engine response to step loads.

IGNITION SYSTEM – Ignition Power Module (IPM) controlled by ESM, with spark timing optimized for any speed-load condition. Dual voltage energy levels automatically controlled by ESM to maximize spark plug life.

INTERCOOLER – Air–to–water.

LEVELING BOLTS

LIFTING EYES – Requires 9.5 ton Working Load Limit (W.L.L.) anchor shackles.

LUBRICATION – Full pressure, gear type pump. Engine mounted full flow lube oil micro-fiberglass filters with mounted differential pressure gauge. MICROSPIN® bypass filter, engine mounted. Lube oil strainer, mounted. Air/gas motor driven prelube pump, requires final piping.

MANIFOLDS – Exhaust, (2) water cooled.

OIL COOLER – Shell and tube type, with thermostatic temperature controller and pressure regulating valve. Factory mounted.

OIL PAN – Deep sump type. 190 gallon (719 L) capacity including filter and cooler.

PAINT – Oilfield orange primer.

PISTONS – Aluminum with floating pin. Oil cooled.

SHIPPING SKID – For domestic truck or rail.

TURBOCHARGERS – Two, dry type. Wastegate controlled.

VIBRATION DAMPER – Two, viscous type. Guard included with remote mounted radiator or no radiator.

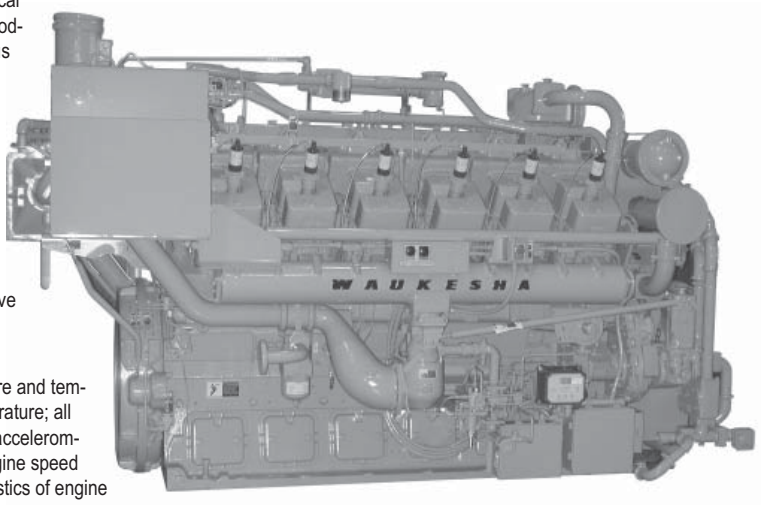
WATER CIRCULATING SYSTEM, AUXILIARY CIRCUIT – Belt driven water circulating high capacity pump for intercooler and lube oil cooler. See S6543-38 performance curve for use with standard 10" diameter crankshaft pulley. Includes thermostatic valve.

WATER CIRCULATING SYSTEM, ENGINE JACKET – Belt driven water circulating pump, cluster type thermostatic temperature regulating valve, full flow bypass type. Flange connections and mating flanges for (2) 4" (102 mm) inlets and (1) 5" (127 mm) outlet.

Waukesha
POWERING PERFORMANCE

L7042GL

VHP® Gas Engine
886 - 1547 BHP



Engine shown without Extender Series Features.

Model L7042GL with ESM®
Turbocharged and Intercooled, Twelve Cylinder, Lean Combustion, Four-Cycle Gas Engine

SPECIFICATIONS

Cylinders
V 12

Piston Displacement
7040 cu. in.
(115 L)

Bore & Stroke
9.375″ x 8.5″
(238 x 216 mm)

Compression Ratio
10.5:1

Jacket Water System Capacity
107 gal.
(405 L)

Lube Oil Capacity
190 gal.
(719 L)

Starting System
125 - 150 psi air/gas
24/32V electric

Dry Weight
21,000 lb.
(9525 kg)

POWER RATINGS: L7042GL VHP® GAS ENGINES

Model	I.C. Water Inlet Temp. °F (°C) (Tcra)	C.R.	Brake Horsepower (kWb Output) 800 rpm	900 rpm	1000 rpm	1100 rpm	1200 rpm
L7042GL	85° (29°)	10.5:1	928 (692)	1160 (865)	1289 (961)	1418 (1057)	1547 (1154)
L7042GL	130° (54°)	10.5:1	886 (661)	1110 (828)	1233 (919)	1357 (1012)	1480 (1104)

Rating Standard: All models: Ratings are based on ISO 3046/1-1995 with mechanical efficiency of 90% and auxiliary water temperature Tcra (clause 10.1) as specified above limited to ± 10° F (± 5° C). Ratings are also valid for SAE J1349, BS5514, DIN6271 and AP17B-11C standard atmospheric conditions.

ISO Standard Power/Continuous Power Rating: The highest load and speed which can be applied 24 hours a day, seven days a week, 365 days per year except for normal maintenance. It is permissible to operate the engine at up to 10% overload, or maximum load indicated by the intermittent rating, whichever is lower, for two hours in each 24 hour period.

All natural gas engine ratings are based on a fuel of 900 Btu/ft^3 (35.3 MJ/nm^3) SLHV value, with a 91 Waukesha Knock Index®.

For conditions or fuels other than standard, contact the Waukesha Engine Sales Engineering Department.

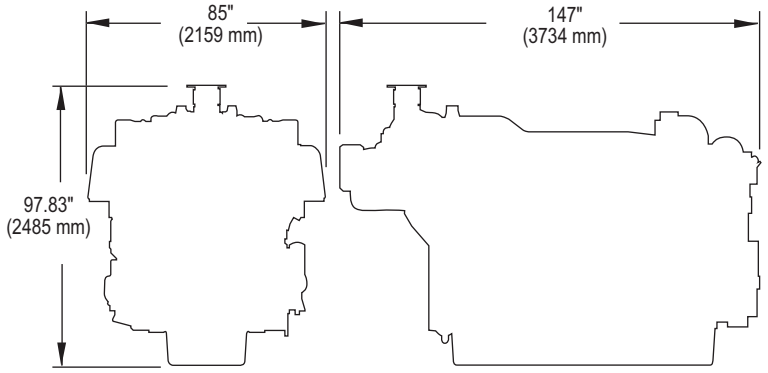
PERFORMANCE: L7042GL VHP® GAS ENGINES

NO_x Settings	English	130° F ICW		85° F ICW	
	RPM	**1200**	**1000**	**1200**	**1000**
1.5 g NO_x	Power (Bhp)	1480	1233	1547	1289
	BSFC (Btu/bhp-hr)	7135	6850	7160	6865
	NOx (grams/bhp-hr)	1.50	1.50	1.50	1.50
	CO (grams/bhp-hr)	2.65	2.65	2.65	2.65
	NMHC (grams/bhp--hr)	0.70	0.80	0.80	0.90

NO_x Settings	Metric	54° C ICW		29° C ICW	
	RPM	**1200**	**1000**	**1200**	**1000**
1.5 g NO_x	Power (kWb)	1104	919	1154	962
	BSFC (kJ/kW-hr)	10089	9686	10124	9707
	NOx (g/nm^3)	0.62	0.62	0.62	0.62
	CO (g/nm^3)	1.09	1.09	1.09	1.09
	NMHC (g/nm^3)	0.29	0.41	0.33	0.37

NOTES:

1) Fuel consumption and exhaust emissions are based on ISO 3046/1-1995 standard reference conditions and commercial quality natural gas of 900 Btu/ft^3 (35.38 MJ/m^3 [25, V(0; 101.325)]) saturated lower heat value, Waukesha Knock Index® of 91 and 93% methane content by volume. ISO 3046/1-1995 standard reference conditions are 77°F (25°C) ambient temperature, 29.54 inches Hg (100 kPa) barometric pressure, 30% relative humidity (1kPa/0.3 inches Hg water vapor pressure).
2) S.I. exhaust emissions are corrected to 5% O_2 (0°C and 101.325 kPa).
3) Data will vary due to variations in site conditions. For conditions and/or fuels other than standard, consult the Waukesha Engine Sales Engineering Department.
4) Fuel consumption based on ISO 3046/1-1995 with a +5% tolerance for commercial quality natural gas having a 900 Btu/ft^3 saturated low heat valve



DRESSER
Waukesha

WAUKESHA ENGINE
DRESSER, INC.
1101 West St. Paul Avenue
Waukesha, WI 53188-4999
Phone: (262) 547-3311 Fax: (262) 549-2795
waukeshaengine.dresser.com

Bulletin 7005 0107

Consult your local Waukesha Distributor for system application assistance. The manufacturer reserves the right to change or modify without notice, the design or equipment specifications as herein set forth without incurring any obligation either with respect to equipment previously sold or in the process of construction except where otherwise specifically guaranteed by the manufacturer.

ENVIRONMENTAL 9

GAS ENGINE EXHAUST EMISSION LEVELS

Waukesha Engine's approach to exhaust emission levels is to offer various stages of emission control technology. This approach allows the customer to select the exhaust emission level required for a particular installation.

The following tables indicate emission levels that are valid for new engines for the duration of the standard warranty period and are attainable by an engine in good operating condition running on commercial quality natural gas of 900 BTU/ft^3 (35.38 MJ/m^3 [25, V(0; 101.325)]) SLHV, Waukesha Knock Index® of 91 or higher, 93% methane content by volume, and at ISO standard conditions. Emissions are based on standard engine timing at 91 WKI® with an absolute humidity of 42 grains/lb. Refer to engine specific WKI® Power & Timing curves for standard timing. Unless otherwise noted, these emission levels can be achieved across the continuous duty speed range and from 75% to 110% of the ISO Standard Power (continuous duty) rating. ***Contact the local Waukesha representative or Waukesha's Application Engineering Department for emission values which can be obtained on a case-by-case basis for specific ratings, fuels, and site conditions.***

The tabulated emission levels for GL models are achieved at the standard engine settings. Trade off adjustments can be made to reduce emissions or fuel consumption, but not both. ***Contact the local Waukesha representative or Waukesha's Application Engineering Department for more information.***

As an aid in evaluating emission requirements, tables of approximate unit conversion factors for exhaust emission levels are included.

Both G and GSI engines that are manually adjusted have the potential to achieve the same emission values as engines equipped with an air/fuel ratio control device. The exhaust emissions, however, must be monitored and the engine adjusted to compensate for changes in ambient conditions and the heating value of the fuel gas. Particularly with catalytic exhaust after treatment, a Waukesha CEC AFM (Custom Engine Control® Air/Fuel Module) is recommended to achieve optimum emissions control.

Waukesha emission control systems are designed for long life and consistent engine emission levels as listed in the following tables. It must be recognized, however, that engine condition and the quality of engine maintenance have a direct bearing on emission control. **A control system cannot compensate for engine or maintenance deficiencies.**

Some acceptable instruments for site engine adjustment of emissions are portable analyzers with two percent (2%) accuracy, for example:

- Horiba Mexa-201GE CO NDIR Analyzer with 0.5% and 2% ranges
- Teledyne Model 320A Oxygen Analyzer

NOTE: Provision to lower the exhaust sample dew point to 40° F or less is required.

Waukesha Engine Division has available a mobile emissions measurement van which can provide a **non-certification** engine emissions testing service. The instruments and systems in the van were selected to comply with the Environmental Protection Agency (EPA) heavy duty engine test requirements - reference 40CFR86. In addition, a proposed procedure, modified EPA Reference Method 20 for stationary internal combustion engines, can be employed if required. The following emittants can be measured: oxides of nitrogen (NO, NO_2, NO_X), carbon monoxide (CO), carbon dioxide (CO_2), oxygen (O_2) and total and non-methane hydrocarbons (THC and NMHC). Contact Waukesha's ***Application Engineering*** Department for further information.

VHP EMISSION LEVELS

MODEL	CARBURETOR SETTING	GRAMS/BHP-HR				% OBSERVED DRY		MASS AFR [2]	VOLUME AFR [2]	EXCESS AIR RATIO
		NOx [1]	CO	NMHC [4]	THC	CO	O_2			
G, GSI	Lowest Manifold (Best Power)	8.5	32.0	0.35	2.3	1.15	0.30	15.5:1	9.3:1	0.97
	Equal NOx & CO	12.0	12.0	0.35	2.3	0.45	0.30	15.9:1	9.6:1	0.99
	Catalytic Conv. Input (3-way[3])	13.0	9.0	0.30	2.0	0.38	0.30	15.95:1	9.6:1	0.99
	Standard (Best Economy)	22.0	1.5	0.25	1.5	0.02	1.35	17.0:1	10.2:1	1.06
F3514GSI F3524GSI L7044GSI	Equal NOx & CO	14.0	14.0	0.25	1.1	0.45	0.30	15.85:1	9.5:1	0.99
	Catalytic Conv. Input (3-way[3])	15.0	13.0	0.20	1.0	0.38	0.30	15.95:1	9.6:1	0.99
L5794GSI	Equal NOx & CO	13.5	13.5	0.45	3.0	0.45	0.30	15.85:1	9.5:1	0.99
	Catalytic Conv. Input (3-way[3])	14.5	11.0	0.45	2.9	0.38	0.30	15.95:1	9.6:1	0.99
GL	Standard	1.5	2.65	1.0	5.5	0.06	9.8	28.0:1	16.8:1	1.74
L5774LT#	Standard	2.6	2.0	0.60	4.0	0.04	7.8	24.5:1	14.7:1	1.52
L5794LT#	Standard	2.6	2.0	0.60	4.0	0.04	7.8	24.5:1	14.7:1	1.52

L5774LT and L5794LT emission levels are based on 1000 – 1200 rpm operation. For information at all other speeds contact Waukesha's Application Engineering Department.

NOTE: The above table indicates emission levels that are valid for new engines for the duration of the standard warranty period and are attainable by an engine in good operating condition running on commercial quality natural gas of 900 BTU/ft^3 (35.38 MJ/m^3 [25, V(0; 101.325)]) SLHV, Waukesha Knock Index® of 91 or higher, 93% methane content by volume, and at ISO standard conditions. Emissions are based on standard engine timing at 91 WKI® with an absolute humidity of 42 grains/lb. Refer to engine specific WKI® Power & Timing curves for standard timing. Unless otherwise noted these emission levels can be achieved across the continuous duty speed range and from 75% to 110% of the ISO Standard Power (continuous duty) rating. ***Contact your local Waukesha representative or Waukesha's Application Engineering Department for emission values which can be obtained on a case-by-case basis for specific ratings, fuels, and site conditions.***

HEAT REJECTION AND OPERATING DATA
MODEL F3521GL
130° F INTERCOOLER WATER TEMPERATURE
180° F JACKET WATER TEMPERATURE

	BMEP (PSI)	LOW SPEED TURBOCHARGER			HIGH SPEED TURBOCHARGER	
		ENGINE SPEED — RPM			ENGINE SPEED — RPM	
		700	900	1000	1000	1200
POWER (BHP)	152	—	—	677	677	812
	138	—	554	615	615	738
	125	—	500	556	556	667
	100	311	400	444	444	533
	75	233	300	333	333	400
	50	156	200	222	222	267
BRAKE SPEC FUEL CONSUMPTION (BTU/BHP-HR)	152	—	—	7163	6993	7270
	138	—	6989	7254	7086	7377
	125	—	7090	7360	7196	7502
	100	7149	7351	7634	7478	7826
	75	7589	7787	8091	7948	8365
	50	8471	8658	9005	8889	9443
FUEL CONSUMPTION (BTU/HR X 1000)	152	—	—	4850	4735	5905
	138	—	3870	4460	4360	5445
	125	—	3545	4090	4000	5000
	100	2225	2940	3395	3325	4175
	75	1770	2335	2695	2650	3345
	50	1318	1730	2000	1975	2520
HEAT TO JACKET WATER (BTU/HR X 1000)	152	—	—	1316	1259	1580
	138	—	1047	1224	1171	1478
	125	—	972	1136	1088	1380
	100	622	833	970	931	1197
	75	524	695	805	774	1014
	50	426	556	640	618	832
HEAT TO LUBE OIL (BTU/HR X 1000)	152	—	—	195	188	236
	138	—	145	185	179	226
	125	—	138	175	170	217
	100	91.5	125	157	153	199
	75	80	112	139	136	182
	50	68.5	99	120	119	164
HEAT TO INTERCOOLER (BTU/HR X 1000)	152	—	—	270	229	312
	138	—	180	226	186	275
	125	—	148	187	150	239
	100	43	94.5	124	91	173
	75	13	50	70.5	46.5	105
	50	1	13.5	28.5	15	37
HEAT TO RADIATION (BTU/HR X 1000)	152	—	—	154	176	189
	138	—	149	153	174	187
	125	—	149	153	173	184
	100	143	148	152	173	179
	75	142	148	154	176	177
	50	142	148	161	182	182

DRESSER Waukesha

HEAT REJECTION AND OPERATING DATA MODEL F3521GL 130° F INTERCOOLER WATER TEMPERATURE 180° F JACKET WATER TEMPERATURE	EN: 120301 DATE: 10/02	Ref. S 6124-62

HEAT REJECTION AND OPERATING DATA
MODEL F3521GL
130° F INTERCOOLER WATER TEMPERATURE
180° F JACKET WATER TEMPERATURE

	BMEP (PSI)	LOW SPEED TURBOCHARGER			HIGH SPEED TURBOCHARGER	
		ENGINE SPEED — RPM			ENGINE SPEED — RPM	
		700	900	1000	1000	1200
TOTAL ENERGY IN EXHAUST (BTU/HR X 1000)	152	—	—	1292	1287	1690
	138	—	1028	1188	1185	1545
	125	—	944	1089	1088	1407
	100	591	788	910	911	1158
	75	472	635	742	746	934
	50	361	491	590	596	742
EXHAUST TEMP AFTER TURBINE (± 50° F)	152	—	—	662	673	712
	138	—	653	658	669	703
	125	—	651	655	666	693
	100	639	648	653	665	678
	75	632	647	660	673	673
	50	61	645	679	694	685
INDUCTION AIR FLOW (SCFM)	152	—	—	1580	1545	1925
	138	—	1260	1450	1420	1770
	125	—	1150	1325	1295	1630
	100	725	960	1105	1080	1355
	75	580	760	880	865	1090
	50	425	560	645	640	820
EXHAUST GAS FLOW (LBS/HR)	152	—	—	7180	7010	8750
	138	—	5715	6595	6445	8045
	125	—	5240	6040	5910	7390
	100	3285	4350	5020	4920	6180
	75	2615	3455	3995	3925	4955
	50	1950	2550	2945	2910	3710

NOTES:

1. All data are based on ISO standard conditions of 29.54 inches Hg. barometric pressure, 77° F ambient and induction air temperature, 30% relative humidity (0.3 inches Hg. water vapor pressure), 180° F engine jacket water outlet temperature, and standard 10° BTDC ignition timing.
2. Data are average values at the standard conditions and will vary for individual engines and with operating and ambient conditions and with changes to ignition timing or air/fuel ratio. An adequate reserve should be used for cooling system or heat recovery calculations. See also Cooling System Guidelines, S-6699-7, latest version.
3. ISO Standard (continuous) power ratings conform to ISO 3046/1, latest version, with a mechanical efficiency of 90% and Tcra of 130° F limited to ± 10° F.
4. Fuel rating standard; dry natural gas, 900 Btu/std. cu. ft. saturated lower heating value (SLHV), minimum 90 WKI™.
5. For heat rejection changes due to engine jacket water outlet temperature higher than standard (Note 1), refer to S-7613-3.
6. Total Exhaust Energy includes both recoverable and non-recoverable heat. For a procedure to calculate recoverable heat refer to S-8117-2.
7. Exhaust oxygen concentration set to 9.8% at rated speed and load at standard timing to provide 1.5 g/bhp-hr NOx, or less. This level is to be measured at the port located in the exhaust manifold, upstream of the turbocharger, for GL engines.
8. Reference curve C-968-16.
9. Exhaust flow at nominal 29.54 inches Hg. barometric pressure:

$$\text{Flow Rate: ACFM} = \frac{(\text{Exh. Flow, lb/hr}) \times (\text{Exh. Temp. }^{\circ}\text{F} + 460^{\circ})}{2275}$$

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

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

loading operation, resulting in high levels of vapor generation and loss. If the turbulence is great enough, liquid droplets will be entrained in the vented vapors.

A second method of loading is submerged loading. Two types are the submerged fill pipe method and the bottom loading method. In the submerged fill pipe method, the fill pipe extends almost to the bottom of the cargo tank. In the bottom loading method, a permanent fill pipe is attached to the cargo tank bottom. During most of submerged loading by both methods, the fill pipe opening is below the liquid surface level. Liquid turbulence is controlled significantly during submerged loading, resulting in much lower vapor generation than encountered during splash loading.

The recent loading history of a cargo carrier is just as important a factor in loading losses as the method of loading. If the carrier has carried a nonvolatile liquid such as fuel oil, or has just been cleaned, it will contain vapor-free air. If it has just carried gasoline and has not been vented, the air in the carrier tank will contain volatile organic vapors, which will be expelled during the loading operation along with newly generated vapors.

Cargo carriers are sometimes designated to transport only one product, and in such cases are practicing "dedicated service". Dedicated gasoline cargo tanks return to a loading terminal containing air fully or partially saturated with vapor from the previous load. Cargo tanks may also be "switch loaded" with various products, so that a nonvolatile product being loaded may expel the vapors remaining from a previous load of a volatile product such as gasoline. These circumstances vary with the type of cargo tank and with the ownership of the carrier, the petroleum liquids being transported, geographic location, and season of the year.

One control measure for vapors displaced during liquid loading is called "vapor balance service", in which the cargo tank retrieves the vapors displaced during product unloading at bulk plants or service stations and transports the vapors back to the loading terminal. Figure 5.2-5 shows a tank truck in vapor balance service filling a service station underground tank and taking on displaced gasoline vapors for return to the terminal. A cargo tank returning to a bulk terminal in vapor balance service normally is saturated with organic vapors, and the presence of these vapors at the start of submerged loading of the tanker truck results in greater loading losses than encountered during nonvapor balance, or "normal", service. Vapor balance service is usually not practiced with marine vessels, although some vessels practice emission control by means of vapor transfer within their own cargo tanks during ballasting operations, discussed below.

Emissions from loading petroleum liquid can be estimated (with a probable error of ±30 percent)[4] using the following expression:

$$L_L = 12.46 \frac{SPM}{T} \quad (1)$$

where:

L_L = loading loss, pounds per 1000 gallons ($lb/10^3$ gal) of liquid loaded

S = a saturation factor (see Table 5.2-1)
P = true vapor pressure of liquid loaded, pounds per square inch absolute (psia) (see Figure 7.1-5, Figure 7.1-6, and Table 7.1-2)
M = molecular weight of vapors, pounds per pound-mole (lb/lb-mole) (see Table 7.1-2)
T = temperature of bulk liquid loaded, °R (°F + 460)

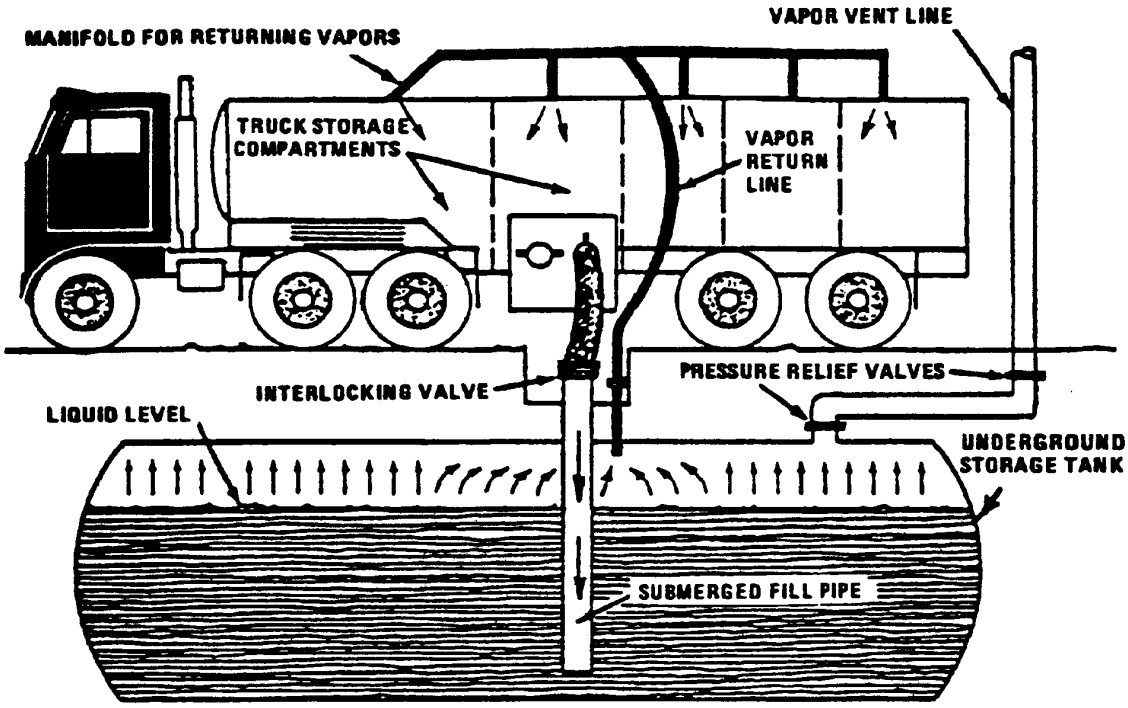


Figure 5.2-5. Tank truck unloading into a service station underground storage tank and practicing "vapor balance" form of emission control.

Table 5.2-1. SATURATION (S) FACTORS FOR CALCULATING PETROLEUM LIQUID LOADING LOSSES

Cargo Carrier	Mode Of Operation	S Factor
Tank trucks and rail tank cars	Submerged loading of a clean cargo tank	0.50
	Submerged loading: dedicated normal service	0.60
	Submerged loading: dedicated vapor balance service	1.00
	Splash loading of a clean cargo tank	1.45
	Splash loading: dedicated normal service	1.45
	Splash loading: dedicated vapor balance service	1.00
Marine vessels[a]	Submerged loading: ships	0.2
	Submerged loading: barges	0.5

[a] For products other than gasoline and crude oil. For marine loading of gasoline, use factors from Table 5.2-2. For marine loading of crude oil, use Equations 2 and 3 and Table 5.2-3.

The saturation factor, S, represents the expelled vapor's fractional approach to saturation, and it accounts for the variations observed in emission rates from the different unloading and loading methods. Table 5.2-1 lists suggested saturation factors.

Emissions from controlled loading operations can be calculated by multiplying the uncontrolled emission rate calculated in Equation 1 by an overall reduction efficiency term:

$$\left(1 - \frac{\text{eff}}{100}\right)$$

The overall reduction efficiency should account for the capture efficiency of the collection system as well as both the control efficiency and any downtime of the control device. Measures to reduce loading emissions include selection of alternate loading methods and application of vapor recovery equipment. The latter captures organic vapors displaced during loading operations and recovers the vapors by the use of refrigeration, absorption, adsorption, and/or compression. The recovered product is piped back to storage. Vapors can also be controlled through combustion in a thermal oxidation unit, with no product recovery. Figure 5.2-6 demonstrates the recovery of gasoline vapors from tank trucks during loading operations at bulk terminals. Control efficiencies for the recovery units range from 90 to over 99 percent, depending on both the nature of the vapors and the type of control equipment used.[5-6] However, not all of the displaced vapors reach the control device, because of leakage from both the tank truck and collection system. The collection efficiency should be assumed to be 99.2 percent for tanker trucks passing the MACT-level annual leak test (not more than 1 inch water column pressure change in 5 minutes after pressurizing to 18 inches water followed by pulling a vacuum of 6 inches water).[7] A collection efficiency of 98.7 percent (a 1.3 percent leakage rate) should be assumed for trucks passing the NSPS-level annual test (3 inches pressure change) A collection efficiency of 70 percent should be assumed for trucks not passing one of these annual leak tests[6].

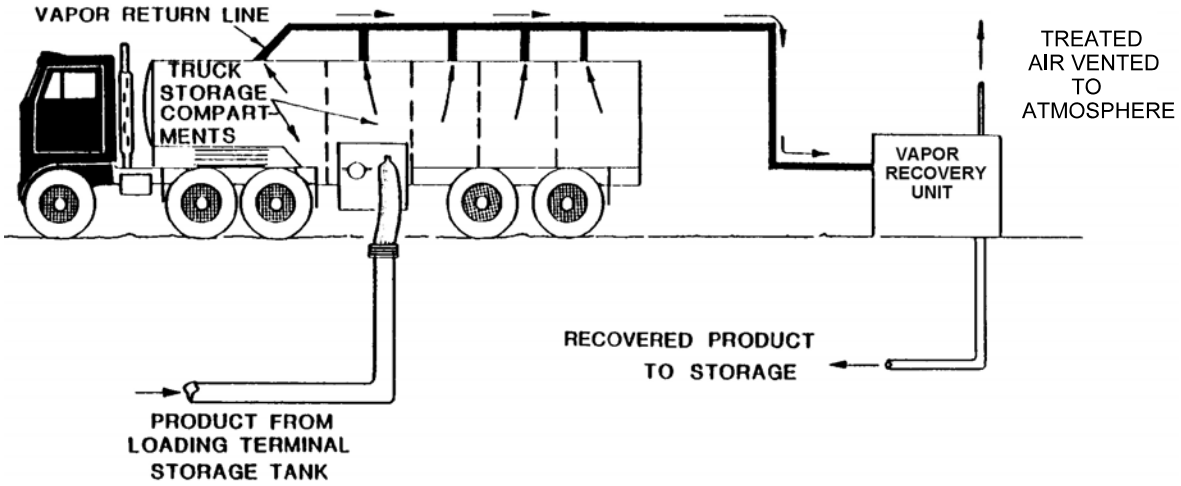


Figure 5.2-6. Tank truck loading with vapor recovery.

2030 Afton Place
Farmington, NM 87401
(505) 325-6622

Analysis No: HM2021105
Cust No: 33700-10035

Well/Lease Information

Customer Name:	HARVEST MIDSTREAM	Source:	METER RUN
Well Name:	CROW MESA	Well Flowing:	
County/State:		Pressure:	42 PSIG
Location:		Flow Temp:	56 DEG. F
Lease/PA/CA:		Ambient Temp:	56 DEG. F
Formation:		Flow Rate:	1.7 MCF/D
Cust. Stn. No.:		Sample Method:	
		Sample Date:	11/29/2021
		Sample Time:	9.00 AM
		Sampled By:	TC WHITAKER
Heat Trace:		Sampled by (CO):	HARVEST

Remarks: Calculated Molecular Weight:= 20.0626

Analysis

Component:	Mole%:	Unormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	1.6799	1.6737	0.1850	0.00	0.0162
CO2	0.6600	0.6576	0.1130	0.00	0.0100
Methane	82.9849	82.6787	14.1080	838.15	0.4597
Ethane	8.3711	8.3402	2.2450	148.14	0.0869
Propane	3.6291	3.6157	1.0030	91.31	0.0553
Iso-Butane	0.5046	0.5027	0.1660	16.41	0.0101
N-Butane	0.9677	0.9641	0.3060	31.57	0.0194
Neopentane 2,2 dmc3	0.0000	0.0000	0.0000	0.00	0.0000
I-Pentane	0.3310	0.3298	0.1210	13.24	0.0082
N-Pentane	0.2753	0.2743	0.1000	11.04	0.0069
Neohexane	0.0040	N/R	0.0020	0.19	0.0001
2-3-Dimethylbutane	0.0119	N/R	0.0050	0.56	0.0004
Cyclopentane	0.0124	N/R	0.0040	0.47	0.0003
2-Methylpentane	0.0800	N/R	0.0330	3.80	0.0024
3-Methylpentane	0.0330	N/R	0.0140	1.57	0.0010
C6	0.0940	0.5942	0.0390	4.47	0.0028
Methylcyclopentane	0.0782	N/R	0.0280	3.52	0.0023
Benzene	0.0138	N/R	0.0040	0.52	0.0004
Cyclohexane	0.0445	N/R	0.0150	1.99	0.0013
2-Methylhexane	0.0094	N/R	0.0040	0.51	0.0003
3-Methylhexane	0.0191	N/R	0.0090	1.04	0.0007
2-2-4-Trimethylpentane	0.0031	N/R	0.0020	0.19	0.0001
i-heptanes	0.0071	N/R	0.0030	0.38	0.0002
Heptane	0.0347	N/R	0.0160	1.91	0.0012

Methylcyclohexane	0.0739	N/R	0.0300	3.85	0.0025
Toluene	0.0270	N/R	0.0090	1.21	0.0009
2-Methylheptane	0.0110	N/R	0.0060	0.68	0.0004
4-Methylheptane	0.0053	N/R	0.0030	0.33	0.0002
i-Octanes	0.0077	N/R	0.0040	0.46	0.0003
Octane	0.0124	N/R	0.0060	0.77	0.0005
Ethylbenzene	0.0009	N/R	0.0000	0.05	0.0000
m, p Xylene	0.0069	N/R	0.0030	0.36	0.0003
o Xylene (& 2,2,4 tmc7)	0.0008	N/R	0.0000	0.04	0.0000
i-C9	0.0017	N/R	0.0010	0.11	0.0001
C9	0.0020	N/R	0.0010	0.14	0.0001
i-C10	0.0013	N/R	0.0010	0.09	0.0001
C10	0.0000	N/R	0.0000	0.00	0.0000
i-C11	0.0000	N/R	0.0000	0.00	0.0000
C11	0.0003	N/R	0.0000	0.03	0.0000
C12P	0.0001	N/R	0.0000	0.01	0.0000
Total	100.00	99.631	18.589	1179.11	0.6915

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY
**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBLITY FACTOR (1/Z):	1.0031	CYLINDER #:	18
BTU/CU.FT IDEAL:	1181.8	CYLINDER PRESSURE:	33 PSIG
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):	1185.5	ANALYSIS DATE:	12/02/2021
BTU/CU.FT (WET) CORRECTED FOR (1/Z):	1164.9	ANALYIS TIME:	02:43:27 AM
DRY BTU @ 15.025:	1209.2	ANALYSIS RUN BY:	ELAINE MORRISON
REAL SPECIFIC GRAVITY:	0.6934		

GPM, BTU, and SPG calculations as shown above are based on current GPA constants.
GPA Standard: GPA 2286-14
GC: SRI Instruments 8610 **Last Cal/Verify: 12/08/2021**
GC Method: C12+BTEX Gas

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.

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
Stationary Sources Program / Air Pollution Control Division

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.”

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Section 8

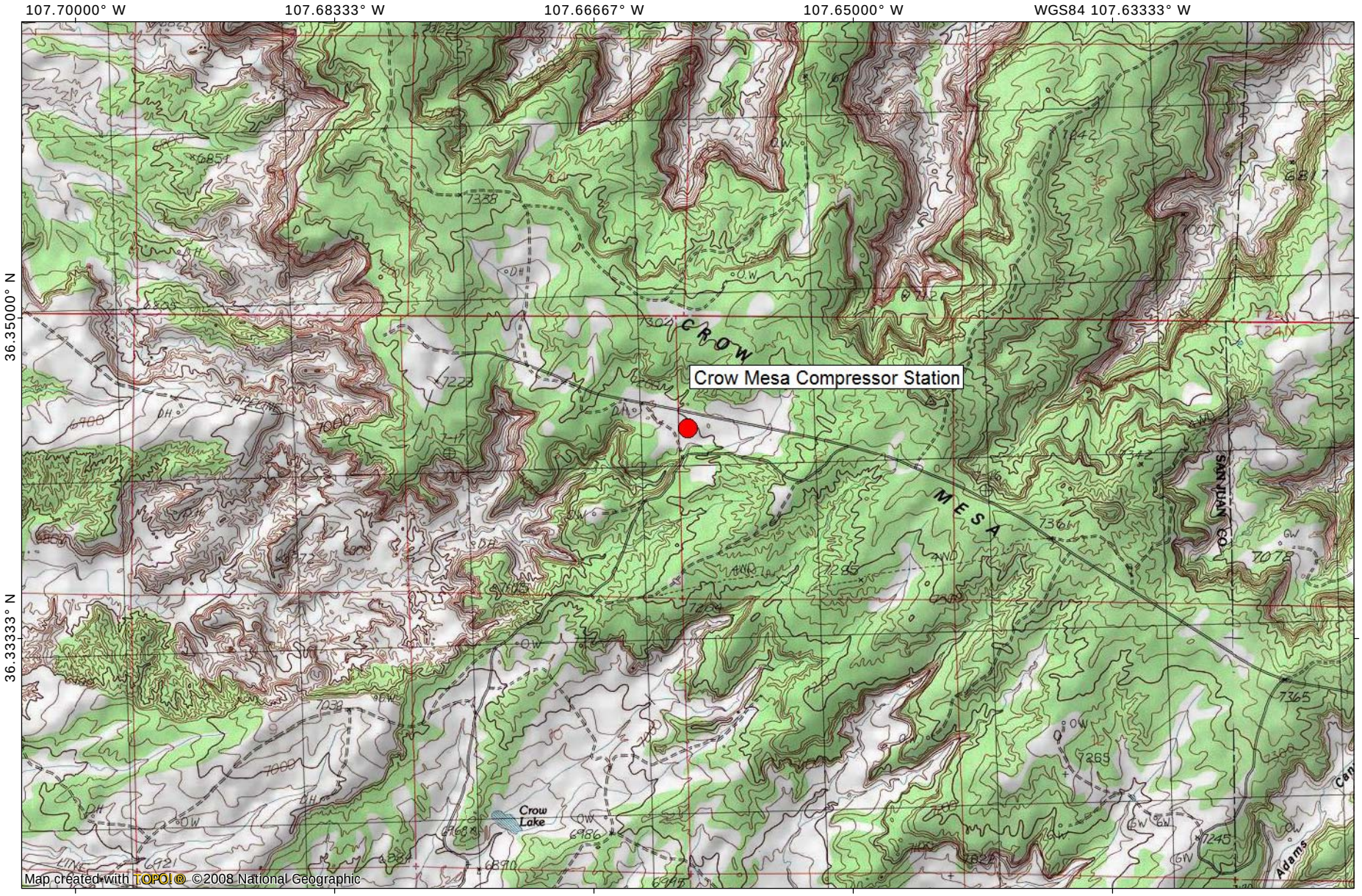
Map(s)

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

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

A topographic map of the area around the facility is provided in this section. Please see the following page.

HARVEST FOUR CORNERS, LLC - CROW MESA COMPRESSOR STATION - San Juan County, NM T 24 N, R 08 W, Section 2



0.0 0.5 1.0 miles

0.0 0.5 1.0 1.5 km

TN MN

8½°

01/26/22

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.

Landowners around the Crow Mesa Compressor Station were identified using the San Juan County Assessor's website. Table 1 identifies land owners within 100 feet of the facility who received a public notice letter.

Table 1

Land Owners Within 100 Feet of the Chaco Compressor Station Receiving Public Notice Letters	
Federal Bureau of Land Management	State of New Mexico

Table 2 identifies the counties, municipalities and tribes located within ten miles of the Crow Mesa Compressor Station that received public notice letters.

Table 2

Counties, Municipalities & Tribes Within 10 Miles of Crow Mesa Compressor Station	Public Notice Letter Sent To
Counties	
Rio Arriba	County Clerk
San Juan	County Clerk
Municipalities	
None	NA
Indian Tribes	
Navajo Nation	Navajo Nation Environmental Protection Agency

PO Box 61229
Houston, TX 77208

1111 Travis Street
Houston, TX 77002
Phone: 713/209-2400
Fax: 713/209-2478
harvestmidstream.com

October 7, 2022

CERTIFIED MAIL 7021 0950 0000 2267 9497

Bureau of Land Management
6251 College Blvd., Suite A
Farmington, New Mexico 87402

Dear Madam/Sir,

Harvest Four Corners, LLC announces the submittal of an application to the New Mexico Environment Department to revise the air quality permit for one of its natural gas compressor stations. The expected date of application submittal to the Air Quality Bureau is October 12, 2022.

The exact location of the facility, known as the Crow Mesa Compressor Station, is latitude 36 deg, 20 min, 40.86 sec and longitude -107 deg, 39 min, 38.46 sec. The approximate location of this facility is 8.5 miles northeast of Nageezi, New Mexico (from Bloomfield, drive south on US Hwy 550 to mile marker 109, turn left on Road 7997 and drive 4 miles to the closed gate, go through the gate and drive 2.9 miles to intersection, turn right and drive 0.9 miles, stay left at the Y intersection and drive 0.2 miles, site is located on the left).

The proposed modifications are to permit the option to replace one Waukesha 7042GL engine with a Waukesha 3521GL engine, reduce permitted startup, shutdown and maintenance emissions, add two pig receivers, and increase condensate truck loading emissions.

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

	Pounds Per Hour	Tons Per Year
Nitrogen Oxides (NO_X)	13.3	58.2
Carbon Monoxide (CO)	23.5	102.7
Volatile Organic Compounds (VOCs)	101.1	212.5
Particulate Matter Less Than 10 Microns (PM_{10})	0.3	1.3
Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)	0.3	1.3
Total Sum of all Hazardous Air Pollutants (HAPs)	4.9	10.1
Green House Gas Emissions as Total CO_2e	N/A	24,548.9

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

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

Please refer to the company name and 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

Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-476-5557.

Sincerely,

Monica Smith
Environmental Specialist

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: Kristine Yurdin, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

PO Box 61229
Houston, TX 77208

1111 Travis Street
Houston, TX 77002
Phone: 713/209-2400
Fax: 713/209-2478
harvestmidstream.com

October 7, 2022

CERTIFIED MAIL 7021 0950 0000 2267 9510

San Juan County Clerk
Post Office Box 550
Aztec, New Mexico 87410

Dear Madam/Sir,

Harvest Four Corners, LLC announces the submittal of an application to the New Mexico Environment Department to revise the air quality permit for one of its natural gas compressor stations. The expected date of application submittal to the Air Quality Bureau is October 12, 2022.

The exact location of the facility, known as the Crow Mesa Compressor Station, is latitude 36 deg, 20 min, 40.86 sec and longitude -107 deg, 39 min, 38.46 sec. The approximate location of this facility is 8.5 miles northeast of Nageezi, New Mexico (from Bloomfield, drive south on US Hwy 550 to mile marker 109, turn left on Road 7997 and drive 4 miles to the closed gate, go through the gate and drive 2.9 miles to intersection, turn right and drive 0.9 miles, stay left at the Y intersection and drive 0.2 miles, site is located on the left).

The proposed modifications are to permit the option to replace one Waukesha 7042GL engine with a Waukesha 3521GL engine, reduce permitted startup, shutdown and maintenance emissions, add two pig receivers, and increase condensate truck loading emissions.

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

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Green House Gas Emissions as Total CO_2e	N/A	24,548.9

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

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

Please refer to the company name and 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.

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Sincerely,

Monica Smith
Environmental Specialist

Harvest Four Corners, LLC
1755 Arroyo Drive
Bloomfield, NM 87413

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7021 0950 0000 2267 9497

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

For delivery information, visit our website at *www.usps.com®*.
Farmington, NM 87402

OFFICIAL USE

Certified Mail Fee	$4.00
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.60
Total Postage and Fees	$4.60

BRAIRGATE STATION 0620 29
COLORADO SPRINGS, COLORADO 80920
OCT - 7 2022
Postmark Here
10/07/2022

Sent To: Bureau of Land Management
Street and Apt. No., or PO Box No.: 6251 College Blvd., Suite A
City, State, ZIP+4®: Farmington, NM 87402

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

7021 0950 0000 2267 9534

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

For delivery information, visit our website at *www.usps.com®*.
Window Rock, AZ 86515

OFFICIAL USE

Certified Mail Fee	$4.00
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.60
Total Postage and Fees	$4.60

BRAIRGATE STATION 0620 29
COLORADO SPRINGS, COLORADO 80920
OCT - 7 2022
Postmark Here
10/07/2022

Sent To: Navajo Nation EPA
Street and Apt. No., or PO Box No.: P.O. Box 339
City, State, ZIP+4®: Window Rock, Arizona 86515

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

7021 0950 0000 2267 9527

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

For delivery information, visit our website at *www.usps.com®*.
Tierra Amarilla, NM 87575

OFFICIAL USE

Certified Mail Fee	$4.00
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.60
Total Postage and Fees	$4.60

BRAIRGATE STATION 0620 29
COLORADO SPRINGS, COLORADO 80920
OCT - 7 2022
Postmark Here
10/07/2022

Sent To: Rio Arriba County Clerk
Street and Apt. No., or PO Box No.: P.O. Box 158
City, State, ZIP+4®: Tierra Amarilla, NM 87575

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

7021 0950 0000 2267 9510

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

For delivery information, visit our website at *www.usps.com®*.
Aztec, NM 87410

OFFICIAL USE

Certified Mail Fee	$4.00
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.60
Total Postage and Fees	$4.60

BRAIRGATE STATION 0620 29
COLORADO SPRINGS, COLORADO 80920
OCT - 7 2022
Postmark Here
10/07/2022

Sent To: San Juan County Clerk
Street and Apt. No., or PO Box No.: P.O. Box 550
City, State, ZIP+4®: Aztec, NM 87410

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

7021 0950 0000 2267 9503

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

For delivery information, visit our website at *www.usps.com®*.
Santa Fe, NM 87505

OFFICIAL USE

Certified Mail Fee	$4.00
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.60
Total Postage and Fees	$4.60

BRAIRGATE STATION 0620 29
COLORADO SPRINGS, COLORADO 80920
OCT - 7 2022
Postmark Here
10/07/2022

Sent To: State of NM - Facilities Management
Street and Apt. No., or PO Box No.: 2542 Cerrillos Rd. Bldg T-187
City, State, ZIP+4®: Santa Fe, NM 87505

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

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STATE OF NEW MEXICO ATTN FACILTIY MANAGE

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R4004771
STATE OF NEW MEXICO ATTN FACILTIY MANAGE

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Ac: 0

6 OUT

- Crow Mesa Compressor Station

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

As a service provided to the public, the Assessor's Office has compliled the following collection of available data. The San Juan County Assessor's Office assumes no Liability for the accuracy of the information provided and it is not intended to be used as a survey. The data contained herein was derived from the most current information available at the time of publishing.

While the San Juan County Assessor's Office makes every effort to provide accurate and complete information, the data contained on this map is subject to change.

The San Juan County Assessor's Office provides no warranty, expressed or implied, as to the accuracy , reliability or completeness of the furnished data.

Legend

- County & City Addresses - Number & Unit
- Parcels
- Condos
- RegionalHighways-US
- RegionalHighways-State
- City Roads

Other Roads

- County Maintained
- Lesser County Maintained
- Navajo Route
- Oilfield Roads
- Private Roads
- Lakes
- Rivers
- Aztec City Limits
- Bloomfield City Limits
- Farmington City Limits
- Kirtland_TownLimits
- School Districts
- San Juan County Bounds
- Reservation

Date: 7/14/2022

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N W E S

San Juan County Assessor's Office
100 S. Oliver Dr.
Aztec, NM 87410
505-334-6157

WEST APACHE MINI STORAGE 2650 WEST APACHE ST. FARMINGTON, NM 87401 TO: JESSICA ETCITTY PO BOX 298 KIRTLAND, NM 87417, LORI TOLEDO 1607 W 59TH ST TULSA, OK 74102, MICHELLE JOHN 2605 W MAIN SP# 10 FARMINGTON,NM 87401

NOTICE IS HERE BY GIVEN THAT A SALE OF MISCELLANEOUS HOUSEHOLD AND PERSONAL ITEMS WILL BE HELD TO SATISFY DEBT OF BACK RENT.THE SALE WILL BE HELD ON OR AFTER OCTOBER 19, 2022 AT 10:30 AM AT WEST APACHE MINI STORAGE 2650 WEST APACHE FARMINGTON, NM 87401,

#5436549, Daily Times, Oct. 5, 12, 2022

NOTICE OF AIR QUALITY PERMIT APPLICATION

Harvest Four Corners, LLC announces the submittal of an application to the New Mexico Environment Department to revise the air quality permit for one of its natural gas compressor stations. The expected date of application submittal to the Air Quality Bureau is October 12, 2022.

The exact location of the facility, known as the Crow Mesa Compressor Station, is latitude 36 deg, 20 min, 40.86 sec and longitude -107 deg, 39 min, 38.46 sec. The approximate location of this facility is 8.5 miles northeast of Nageezi, New Mexico (from Bloomfield, drive south on US Hwy 550 to mile marker 109, turn left on Road 7997 and drive 4 miles to the closed gate, go through the gate and drive 2.9 miles to intersection, turn right and drive 0.9 miles, stay left at the Y intersection and drive 0.2 miles, site is located on the left).

The proposed modifications are to permit the option to replace one Waukesha 7042GL engine with a Waukesha 3521GL engine, reduce permitted startup, shutdown and maintenance emissions, add two pig receivers, and increase condensate truck loading emissions.

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	Pounds Per Hour	Tons Per Year
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Total Sum of all Hazardous Air Pollutants (HAPs)	4.9	10.1
Green House Gas Emissions as Total CO2e	N/A	24,548.9

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

The owner and/or operator of the facility is:

Harvest Four Corners, LLC
1755 Arroyo Drive
Bloomfield, New Mexico 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; (505) 476-4300; 1 800 224-7009; https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html.

Other comments and questions may be submitted verbally.

Please refer to the company name and site name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application.

Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

General information about air quality and the permitting process can be found at the Air Quality Bureau's web site. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC. This regulation can be found in the "Permits" section of this web site.

Attención

Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-476-5557.

Notice of Non-Discrimination

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Classifieds

All classified ads are subject to the applicable rate card, copies of which are available from our Advertising Dept. All ads are subject to approval before publication. The Farmington Daily Times reserves the right to edit, refuse, reject, classify or cancel any ad at any time. Errors must be reported in the first day of publication. The Farmington Daily Times shall not be liable for any loss or expense that results from an error in or omission of an advertisement. No refunds for early cancellation of order.

Legal Notices

2022 General Election
Statewide Constitutional Amendments and General Obligation Bonds

To better inform the public about the important statewide questions on the ballot, before each General Election the New Mexico Secretary of State publishes the text of the proposed constitutional amendments and general obligation bonds. Voters can use this publication to research and better understand these questions before voting. Visit NMVOTE.ORG for more information and resources about the upcoming General Election.

IMPORTANT DATES FOR THE 2022 GENERAL ELECTION:

October 11: Voter registration (by mail or online) closes.
October 11: First day that absentee ballots can be mailed to voters (who have submitted an absentee application), and first day of early voting and same day registration (at the county clerk's office).
October 22: Expanded early voting begins at alternate voting locations. Same day registration is available at certain polling locations, please reach out to your county clerk for more information.
November 3: Last day to request an absentee ballot.
November 5: Last day of early voting.
November 8: General Election Day, same day registration is available at all locations across the state.

Constitutional Amendment 1:
Proposing an amendment to Article 12, Section 7 of the Constitution of New Mexico to provide for additional annual distributions of the permanent school fund for enhanced instruction for students at risk of failure, extending the school year, teacher compensation and early childhood education; requiring congressional approval for distributions for early childhood education.

Enmienda Constitucional 1:
Se propone enmendar el Artículo 12, Sección 7 de la Constitución de Nuevo México para proveer distribuciones anuales adicionales del fondo escolar permanente para la instrucción aumentada de estudiantes en riesgo de fracaso, extender el año escolar, compensación para educadores y educación de la primera infancia; requiriendo la aprobación del congreso sobre las distribuciones para educación de la primera infancia.

Constitutional Amendment 2:
Proposing to amend Article 9, Section 14 of the Constitution of New Mexico to allow public investment to provide access to essential household services, including internet, energy, water, wastewater and other similar services as provided by law, upon the enactment of general implementing legislation by a majority vote of the members elected to each house of the Legislature.

Enmienda Constitucional 2:
Se propone enmendar el Artículo 9, Sección 14 de la Constitución de Nuevo México para permitir inversión pública para proveer acceso a servicios esenciales del hogar, incluyendo internet, energía, agua, aguas residuales y otros servicios similares según lo previsto por la ley, cuando se establezca la legislación general de implementación por voto mayoritario de los miembros electos a cada cámara de la Legislatura.

Constitutional Amendment 3:
Proposing to amend Article 6, Section 35 of the Constitution of New Mexico to provide that an appointed judge serve at least one year before a general election is held for the office to which the judge was appointed.

Enmienda Constitucional 3:
Se propone enmendar el Artículo 6, Sección 35 de la Constitución de Nuevo México para proveer que un juez designado sirva por lo menos un año antes de que se administre una elección general para el cargo al que el juez fue designado.

Bond Question 1
The 2022 Capital Projects General Obligation Bond Act authorizes the issuance and sale of senior citizen facility improvement, construction and equipment acquisition bonds. Shall the state be authorized to issue general obligation bonds in an amount not to exceed twenty-four million four hundred seventy thousand dollars ($24,470,000) to make capital expenditures for certain senior citizen facility improvement, construction and equipment acquisition projects and provide for a general property tax imposition and levy for the payment of principal of, interest on and expenses incurred in connection with the issuance of the bonds and the collection of the tax as permitted by law?

Pregunta de Bonos 1
La Ley de Bonos de Obligación General de Proyectos de Capital de 2022 autoriza la emisión y venta de bonos para la mejora de instalaciones, construcción y la adquisición de equipos para personas de edad avanzada. ¿Estará el estado autorizado a emitir bonos de obligación general por una cantidad que no exceda los veinticuatro millones, cuatrocientos setenta mil dólares ($24,470,000) para realizar gastos de capital para ciertos proyectos de mejora de instalaciones, construcción y adquisición de equipo para personas de edad avanzada y proveer una imposición general de impuestos sobre la propiedad y recaudar el pago del capital, los intereses y los gastos incurridos en relación con la emisión de los bonos y el cobro del impuesto según lo permitido por la ley?

Bond Question 2
The 2022 Capital Projects General Obligation Bond Act authorizes the issuance and sale of library acquisition bonds. Shall the state be authorized to issue general obligation bonds in an amount not to exceed nineteen million two hundred sixty-six thousand dollars ($19,266,000) to make capital expenditures for academic, public school, tribal and public library resource acquisitions and provide for a general property tax imposition and levy for the payment of principal of, interest on and expenses incurred in connection with the issuance of the bonds and the collection of the tax as permitted by law?

Pregunta de Bonos 2
La Ley de Bonos de Obligación General de Proyectos de Capital de 2022 autoriza la emisión y venta de bonos para la adquisición de recursos bibliotecarios. ¿Estará el estado autorizado a emitir bonos de obligación general por una cantidad que no exceda los diecinueve millones doscientos sesenta y seis mil dólares ($19,266,000) para realizar gastos de capital para la adquisición de recursos para bibliotecas académicas, de escuelas públicas, tribales y públicas y proveer una imposición general de impuestos sobre la propiedad y recaudar el pago del capital, los intereses y los gastos incurridos en relación con la emisión de los bonos y el cobro del impuesto según lo permitido por la ley?

Bond Question 3
The 2022 Capital Projects General Obligation Bond Act authorizes the issuance and sale of higher education, special schools and tribal schools capital improvement and acquisition bonds. Shall the state be authorized to issue general obligation bonds in an amount not to exceed two hundred fifteen million nine hundred eighty-six thousand dollars ($215,986,000) to make capital expenditures for certain higher education, special schools and tribal schools capital improvements and acquisitions and provide for a general property tax imposition and levy for the payment of principal of, interest on and expenses incurred in connection with the issuance of the bonds and the collection of the tax as permitted by law?

Pregunta de Bonos 3
La Ley de Bonos de Obligación General de Proyectos de Capital de 2022 autoriza la emisión y venta de bonos para la adquisición y mejora de escuelas de educación superior, escuelas especiales y escuelas tribales. ¿Estará el estado autorizado a emitir bonos de obligación general por una cantidad que no exceda los doscientos quince millones novecientos ochenta y seis mil dólares ($215,986,000) para realizar gastos de capital para las mejoras y adquisiciones de ciertas escuelas de educación superior, escuelas especiales y escuelas tribales y proveer una imposición general de impuestos sobre la propiedad y recaudar el pago del capital, los intereses y los gastos incurridos en relación con la emisión de los bonos y el cobro del impuesto según lo permitido por la ley?
Pub#5420573 Run Dates: Oct 2-28, 2022

STATE OF NEW MEXICO
COUNTY OF SAN JUAN
ELEVENTH JUDICIAL DISTRICT

No. D-1116-PB-2022-00092-5

IN THE MATTER OF THE ESTATE OF
BOBBY FRANK MORLAN, Deceased.

NOTICE TO CREDITORS

NOTICE IS HEREBY GIVEN that Janet Delinda Morlan, Richard Scott Morlan and Robert Alan Morlan have been appointed Co-Personal Representatives of this estate. All persons having claims against this estate are required to present their claims within four (4) months after the date of the first publication of this Notice or the claims will be forever barred.
Claims must be presented either to the undersigned Co-Personal Representatives at the following address:

Janet Delinda Morlan
461 Road 4990
Bloomfield, NM 87413

Richard Scott Morlan
1420 W. McDermott, Apt. 538
Allen, TX 75013

Robert Alan Morlan
P.O. Box 842
Farmington, NM 87401

or filed with the Probate Court of San Juan County, New Mexico, located at 103 South Oliver Drive, Aztec, New Mexico.
DATED this 6th day of October, 2022.
T. Ryan Lane, Attorney for the Estate of
Bobby Frank Morlan
103 S. Main Ave.
Aztec, New Mexico 87410
#5442652, Daily Times, Oct. 12, 19, 26, 2022

Legal Notices

WEST APACHE MINI STORAGE 2650 WEST APACHE ST. FARMINGTON, NM 87401 TO: JESSICA ETCITTY PO BOX 298 KIRTLAND, NM 87417, LORI TOLEDO 1607 W 59TH ST TULSA, OK 74102, MICHELLE JOHN 2605 W MAIN SP# 10 FARMINGTON,NM 87401
NOTICE IS HERE BY GIVEN THAT A SALE OF MISCELLANEOUS HOUSEHOLD AND PERSONAL ITEMS WILL BE HELD TO SATISFY DEBT OF BACK RENT.THE SALE WILL BE HELD ON OR AFTER OCTOBER 19, 2022 AT 10:30 AM AT WEST APACHE MINI STORAGE 2650 WEST APACHE FARMINGTON, NM 87401,
#5436549, Daily Times, Oct. 5, 12, 2022

NOTICE OF AIR QUALITY PERMIT APPLICATION
Harvest Four Corners, LLC announces the submittal of an application to the New Mexico Environment Department to revise the air quality permit for one of its natural gas compressor stations. The expected date of application submittal to the Air Quality Bureau is October 12, 2022.
The exact location of the facility, known as the Crow Mesa Compressor Station, is latitude 36 deg, 20 min, 40.86 sec and longitude -107 deg, 39 min, 38.46 sec. The approximate location of this facility is 8.5 miles northeast of Nageezi, New Mexico (from Bloomfield, drive south on US Hwy 550 to mile marker 109, turn left on Road 7997 and drive 4 miles to the closed gate, go through the gate and drive 2.9 miles to intersection, turn right and drive 0.9 miles, stay left at the Y intersection and drive 0.2 miles, site is located on the left).
The proposed modifications are to permit the option to replace one Waukesha 7042GL engine with a Waukesha 3521GL engine, reduce permitted startup, shutdown and maintenance emissions, add two pig receivers, and increase condensate truck loading emissions.
The estimated maximum quantities of any regulated air contaminants will be as follows in pounds per hour and tons per year and may change slightly during the course of the Department's review:

	Pounds Per Hour	Tons Per Year
Nitrogen Oxides (NOX)	13.3	58.2
Carbon Monoxide (CO)	23.5	102.7
Volatile Organic Compounds (VOCs)	101.1	212.5
Particulate Matter Less Than 10 Microns (PM10)	0.3	1.3
Particulate Matter Less Than 2.5 Microns (PM2.5)	0.3	1.3
Total Sum of all Hazardous Air Pollutants (HAPs)	4.9	10.1
Green House Gas Emissions as Total CO2e	N/A	24,548.9

The standard and maximum operating schedules for the station will be 24 hours per day, 7 days per week, and a maximum of 52 weeks per year.
The owner and/or operator of the facility is:
Harvest Four Corners, LLC
1755 Arroyo Drive
Bloomfield, New Mexico 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; (505) 476-4300; 1 800 224-7009; https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html.
Other comments and questions may be submitted verbally.
Please refer to the company name and site name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application.
Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.
General information about air quality and the permitting process can be found at the Air Quality Bureau's web site. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC. This regulation can be found in the "Permits" section of this web site.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-476-5557.

Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non--discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Kristine Yurdin, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.
#5445503, Daily Times, Oct. 12, 2022

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TX-GCI0957350-01

Mexico files 2nd suit over arms from US

Foreign affairs secretary highlights trafficking record

ASSOCIATED PRESS

MEXICO CITY – The Mexican government filed another lawsuit Monday against U.S. companies it claims are responsible for the flow of illegal weapons into Mexico.

The first lawsuit, which was recently dismissed, targeted U.S. gun manufacturers. The second, which Foreign Affairs Secretary Marcelo Ebrard said was filed in Arizona Monday, appears to target gun dealers.

"We are suing them because clearly there is a pattern; we contend that it is obvious that there is weapons trafficking and that it is known that these guns are going to our country," Ebrard said.

Mexico's Foreign Affairs Secretary Marcelo Ebrard said "it is obvious that there is weapons trafficking and that it is known that these guns are going to our country." RAQUEL CUNHA/POOL VIA AP

Ebrard promised last week the new lawsuit would target gun shops or dealers in U.S. border states who sell guns to "straw" purchasers who pass them on to smugglers, who then take the weapons into Mexico.

Ebrard said about 60% of the weapons seized in Mexico in recent years were believed to have been sold in 10 U.S. counties, mostly along the border. Mexico has very strict restrictions on weapon possession, but drug cartel violence has cost hundreds of thousands of lives in the country in recent years.

"We are going to show that many of these outlets where they sell these products in these counties I mentioned are dealing with straw purchasers, and criminal charges have to be brought," Ebrard said last week in an appearance before the Mexican Senate.

A recently enacted U.S. law defines straw purchasing as a crime, and sets out sentences of as much as 15 to 25 years if the offense is related to drug trafficking.

The announcement comes several days after a U.S. federal judge dismissed Mexico's first lawsuit against U.S. gun manufacturers. Ebrard said Mexico would appeal that decision.

The judge ruled Mexico's claims did not overcome the broad protection provided to gun manufacturers by the Protection of Lawful Commerce in Arms Act passed in 2005.

Mexico was seeking at least $10 billion in compensation, but legal experts had viewed the lawsuit as a long shot.

The Mexican government estimates 70% of the weapons trafficked into Mexico come from the U.S., according to the Foreign Affairs Ministry. It said that in 2019 alone, at least 17,000 homicides in Mexico were linked to trafficked weapons.

Concert

Continued from Page 1A

being impacted by this," Rapp Sandu said.

The concert will feature dozens of performers spread out across several groups, including the choirs from Piedra Vista and Farmington high schools, Julia Thom and James Golden, students of Laura Argotsinger, Mann Dance Academy students and students of Tennille's Violin House. It also will feature a performance by Ukranian youngster Ivanna Demokhina, who will perform a song on piano while accompanied by local trumpet player Mick Hesse.

Other highlights will include a performance of the tune "Kalyna" by all the Ukranians in the concert, which Rapp Sandu said has become an unofficial anthem of Ukraine's war with Russia, and the song "Prayer for Ukraine," the event finale, during which the audience will be invited to sing along.

In all, the performance includes 17 musical or dance pieces, Rapp Sandu said.

Farmington's community of displaced Ukrainians now includes four families, all of whom arrived between May and August.

"They all have housing, and all of those houses have been furnished with donations," Rapp Sandu said. "It's been sort of miraculous how just the right kind of housing has come along at exactly the time we need it."

The members of all four families seem to be adapting to their new surroundings quickly, she said, noting that two of the Ukrainians already have found jobs, and two others have received government authorization that will allow them to work. One more of the Ukrainians is still in the process of seeking that authorization.

"If people have jobs and would be interested in hiring Ukrainian newcomers, some of them will be getting their work authorization soon," Rapp Sandu said.

Yana Shozda, left, her mother Luda Shozda and Martia Glass, a Gordon Glass Sponsor Circle co-coordinator, pose for a photo during a Sept. 17 potluck dinner featuring Ukrainian families that have resettled in Farmington. PHOTO PROVIDED

The other significant need for the Ukrainian families now is transportation, she said, explaining that if anyone has a car to donate, it would be greatly appreciated.

"It doesn't need to be new, as long as it's in good working order and reliable," she said.

The Ukrainian community in Farmington now consists of 16 people — four families that came here through the auspices of a Ukrainian rescue operation in Atlanta and a single Ukrainian woman who made her way to Farmington on her own.

"I think it's going pretty well, all things considered," Rapp Sandu said of the Ukrainians' transition to life in America. "Of course, when things happen in Ukraine, some days are more concerning to them than others."

The members of the Gordon Glass Sponsor Circle — which is named for a retired Farmington family counselor, community activist and outdoors enthusiast who died in January — have done their best to make the newcomers feel welcome by planning regular group events, including a large birthday party last weekend for all the local Ukrainians who were born in the fall.

Rapp Sandu said a representative of the Atlanta rescue group that is organizing the placement of Ukrainian families in America told her that the Farmington experience has become a model for the resettlement of Ukrainians in this country.

"The fact that we have taken in more than one family and the way the community has come together," Rapp Sandu said, recounting the factors that have made Farmington's response noteworthy.

Rapp Sandu said some of the local Ukrainians also have related to her that they have heard from other Ukrainians who have resettled in the United States that their experience has not been so positive.

"We've heard they don't have the same resources that Farmington has provided to them," Rapp Sandu said.

The members of the sponsor circle have taken on the role of legal financial sponsor for the families, meaning they have pledged to support them financially for two years.

But Rapp Sandu said the relationship that members of the circle have developed with the Ukrainians is far from being one sided. In her case, she said, her involvement with the Ukrainians has allowed her to feel a sense of community again that largely was eliminated by the COVID-19 pandemic.

"It's nice coming out of the last couple of years when there was so much separation and people not working together," she said. "This has been an opportunity for people to come together. Our initial reason to do this was to help Ukrainians, but I think it helps Farmington."

The "A New Generation of Hope" concert will be presented at 7 p.m. Saturday, Oct. 15 at the First Presbyterian Church of Farmington, 865 N. Dustin Ave. Admission is $10 at the door, and children are admitted free.

Anyone who wishes to donate to the Gordon Glass Support Circle can drop off a donation at the First Presbyterian Church, Rapp Sandu said.

Mike Easterling can be reached at 505-564-4610 or measterling@daily-times.com. Support local journalism with a digital subscription: http://bit.ly/2I6TU0e.

CALENDAR OF EVENTS

A Brown Bag Birding session will be held at noon Wednesday, Oct. 12, at the Riverside Nature Center in Animas Park off Browning Parkway in Farmington. Participants are invited to bring lunch and join the center staff in the observation room to watch wildlife. Free. Call 505-599-1422.

The Aztec Farmers Market will take place from 4:30 to 7 p.m. Wednesday, Oct. 12, at the Westside Plaza, 1409 W. Aztec Blvd. Call 505-634-6171.

The San Juan County Historical Society will feature a presentation by Angela Watkins on "Migrations to Aztec New Mexico" at 6 p.m. Wednesday, Oct. 12, at the Aztec Senior Center, 101 S. Park Ave. Historical society members also will be able to pick up copies of "Greenlawn: A History of Farmington's Pioneer Cemetery, Est. 1896" by Connie Nordstrom. Free.

Trivia Night takes place at 6:30 p.m. Wednesday, Oct. 12, at Traegers Bar, 5170 College Blvd., Suite 106 in Farmington. Call 505-278-8568.

Jose Villareal performs at 7 p.m. Wednesday, Oct. 12, at Clancy's Irish Cantina, 2701 E. 20th St. in Farmington. Free. Call 505-325-8176.

Compiled by Mike Easterling, who can be reached at 505-564-4610 or measterling@daily-times.com. Support local journalism with a digital subscription: http://bit.ly/2I6TU0e.

NOTICE

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Green House Gas Emissions as Total CO_2e	N/A	24,548.9

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

The owner and/or operator of the facility is:

Harvest Four Corners, LLC
1755 Arroyo Drive
Bloomfield, New Mexico 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; (505) 476-4300; 1 800 224-7009; https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html. Other comments and questions may be submitted verbally.

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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General Posting of Notices – Certification

I, Kayleigh Ruybalid, the undersigned, certify that on October 13, 2022, I posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in San Juan County, State of New Mexico on the following dates:

	Posting Location	Date of Posting
1.	Crow Mesa Facility Entrance	10/13/2022
2.	Bloomfield City Hall, Bloomfield NM 87413	10/12/2022
3.	Bloomfield Post Office, Bloomfield NM 87413	10/12/2022
4.	Bloomfield Public Library, Bloomfield NM 87413	10/12/2022

Signed this 13th day of October, 2022,

Kayleigh Ruybalid — 10/13/2022

Signature — Date

Kayleigh Ruybalid — EHS Systems Coordinator

Printed Name — Title (Applicant or Relationship to Applicant)


Oct 13, 2022 at 7:54:50 AM
HARVEST MIDSTREAM
CROW MESA COMPRESSOR STATION
SAN JUAN COUNTY, NM.
NMAQB PERMIT # 5695
SECTION 2- TOWNSHIP 24N- RANGE 8W
LONGITUDE W 107 DEGREES 39' 40.48"
LATTITUDE N 36 DEGREES 20' 42.48"
IN CASE OF EMERGENCY CALL 1-800-635-4700
NOTICE

PUBLIC SERVICE ANNOUNCEMENT

Harvest Four Corners, LLC announces its intent to apply to the New Mexico Environment Department for a revision to the air quality permit for the Crow Mesa Compressor Station located approximately 8.5 miles northeast of Nageezi, New Mexico (from Bloomfield, drive south on US Hwy 550 to mile marker 109, turn left on Road 7997 and drive 4 miles to the closed gate, go through the gate and drive 2.9 miles to intersection, turn right and drive 0.9 miles, stay left at the Y intersection and drive 0.2 miles, site is located on the left).

The proposed modifications are to permit the option to replace one Waukesha 7042GL engine with a Waukesha 3521GL engine, reduce permitted startup, shutdown and maintenance emissions, add two pig receivers, and increase condensate truck loading emissions.

Notices regarding the application have been posted at the following locations:

1. Crow Mesa Facility Entrance
2. Bloomfield City Hall
3. Bloomfield Post Office
4. Bloomfield Public Library

Comments regarding the application may be directed to:

Permit Programs Manager
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505-1816
505- 476-4300 or 1-800-224-7009

Submittal of Public Service Announcement – Certification

I, James W. Newby, the undersigned, certify that on October 14, 2022, I submitted a public service announcement to Four Corners Broadcasting that serves San Juan County, State of New Mexico, in which the source is or is proposed to be located and that Four Corners Broadcasting did not respond.

Signed this 14th day of October, 2022,

James W. Newby
Signature

10/14/2022
Date

James W. Newby
Printed Name

Consultant
Title (Applicant or Relationship to Applicant)

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Section 10

Written Description of the Routine Operations of the Facility

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A written description of the routine operations of the facility. Include a description of how each piece of equipment will be operated, how controls will be used, and the fate of both the products and waste generated. For modifications and/or revisions, explain how the changes will affect the existing process. In a separate paragraph describe the major process bottlenecks that limit production. The purpose of this description is to provide sufficient information about plant operations for the permit writer to determine appropriate emission sources.

The Crow Mesa Compressor Station is a production field facility that receives natural gas collected in production gathering fields via pipeline.

Natural gas and mixed condensate and water streams are received from independent producers via pipeline at the facility inlet. The stream first passes through an inlet separator. Within this separator, an internal pressure drop allows the natural gas to separate from the liquids. The natural gas is sent to compressors for pressurization and pipeline transport to a downstream processing facility. A portion of the gas is used as fuel for the compressor engines.

The mixed condensate and water streams are piped to vertical fixed roof storage tanks. The pressurized gas entrained in the condensate, including volatile organic compounds (VOC), "flashes" upon depressurization when entering the tank. Within the tank, the mixture of post-flashed ("stable") condensate and water separates, with the condensate floating to the top of the column and produced water settling to the bottom. This stabilized condensate is stored in the tank until it is transported offsite via tank truck. The produced water is drawn off the bottom of the storage tank and piped to a produced water storage tank, where it is stored until transported offsite via tank truck.

A waste water storage tank collects storm water runoff and small amounts of heavy hydrocarbon residues resulting from any drips or spills that may occur from machinery, where it is stored until transport offsite via tank truck. The hydrocarbon residues are of low volatility. The lube oil and used lube oil tanks store heavy hydrocarbon machinery oils, also with low volatility.

Other emission sources include: startups, shutdowns and routine maintenance (SSM) from the compressors and piping (Unit SSM), and fugitive emissions from process piping (valves, flanges, seals, etc.).

The facility is authorized to operate continuously.

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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)**:**

Crow Mesa Compressor Station – natural gas compression facility

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):

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Section 12.A

PSD Applicability Determination for All Sources

(Submitting under 20.2.72, 20.2.74 NMAC)

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

A. This facility is:

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

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

a. NOx: 0.0 TPY
b. CO: 0.0 TPY
c. VOC: 0.0 TPY
d. SOx: 0.0 TPY
e. PM: 0.0 TPY
f. PM10: 0.0 TPY
g. PM2.5: 0.0 TPY
h. Fluorides: 0.0 TPY
i. Lead: 0.0 TPY
j. Sulfur compounds (listed in Table 2): 0.0 TPY
k. GHG: 0..0 TPY

C. Netting not required (project is not significant).

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.

Not applicable, since there are no emission increases associated with the requested modification. The project does not include "de-bottlenecking", or other associated emissions resulting in higher emissions.

Section 12.B

Special Requirements for a PSD Application

(Submitting under 20.2.74 NMAC)

Prior *to Submitting a PSD application*, the permittee shall:

- ☐ Submit the BACT analysis for review prior to submittal of the application. No application will be ruled complete until the final determination regarding BACT is made, as this determination can ultimately affect information to be provided in the application. A pre-application meeting is recommended to discuss the requirements of the BACT analysis.
- ☐ Submit a modeling protocol prior to submitting the permit application. **[Except for GHG]**
- ☐ Submit the monitoring exemption analysis protocol prior to submitting the application. **[Except for GHG]**

For PSD applications, the permittee shall also include the following:

- ☐ Documentation containing an analysis on the impact on visibility. **[Except for GHG]**
- ☐ Documentation containing an analysis on the impact on soil. **[Except for GHG]**
- ☐ Documentation containing an analysis on the impact on vegetation, including state and federal threatened and endangered species. **[Except for GHG]**
- ☐ Documentation containing an analysis on the impact on water consumption and quality. **[Except for GHG]**
- ☐ Documentation that the federal land manager of a Class I area within 100 km of the site has been notified and provided a copy of the application, including the BACT and modeling results. The name of any Class I Federal area located within one hundred (100) kilometers of the facility.

Not applicable, since this is not a PSD significant modification application.

Section 13

Determination of State & Federal Air Quality Regulations

This section lists each state and federal air quality regulation that may apply to your facility and/or equipment that are stationary sources of regulated air pollutants. Not all state and federal air quality regulations are included in this list. Go to the Code of Federal Regulations (CFR) or to the Air Quality Bureau's regulation page to see the full set of air quality regulations.

Required Information for Specific Equipment:

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

Required Information for Regulations that Apply to the Entire Facility:

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

Regulatory Citations for Regulations That Do Not, but Could Apply:

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

Regulatory Citations for Emission Standards:

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

Federally Enforceable Conditions:

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

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

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

State Regulations

Applicable state requirements are embodied in the New Mexico SIP, the New Mexico Administrative Code (NMAC), and the terms and conditions of any preconstruction permits issued pursuant to regulations promulgated through rulemaking under Title I of the CAA.

Table for STATE REGULATIONS:

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
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. Although this regulation is applicable, it does not impose any specific requirements.
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.
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.
20.2.14 NMAC	Particulate Emissions from Coal Burning Equipment	No	N/A	This regulation is not applicable because the facility does not burn coal (see 20.2.14.5 NMAC).
20.2.18 NMAC	Oil Burning Equipment - Particulate Matter	No	N/A	This regulation is not applicable because the facility does not burn oil (see 20.2.18.5 NMAC).
20.2.31 NMAC	Coal Burning Equipment – Sulfur Dioxide	No	N/A	This regulation is not applicable because the facility does not burn coal (see 20.2.31.6 NMAC).
20.2.32 NMAC	Coal Burning Equipment – Nitrogen Dioxide,	No	N/A	This regulation is not applicable because the facility does not burn coal (see 20.2.32.6 NMAC).
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	N/A	This regulation is not applicable because the facility is not equipped with external gas burning equipment which have heat input rates exceeding the trigger level (one million MMBtu/year) established by the regulation (see 20.2.33.108 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 (see 20.2.34.6 NMAC).
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No	N/A	This regulation is not applicable because the facility is not a natural gas processing plant (see 20.2.35.6 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 (see 20.2.38.112 NMAC).
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	This regulation is not applicable because the facility is not equipped with a sulfur recovery plant (see 20.2.39.6 NMAC).

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
20.2.50 NMAC	Oil and Gas Sector – Ozone Precursor Pollutants	Yes	1a or 1b, 2, 3, C1a or C1b, C2, C3, SSM, F1, PC1-PC31, PR1, PR2, L1, T1 & T6	This regulation is applicable because the facility is equipped with affected equipment as defined by the regulation: engines, reciprocating compressors, equipment leaks and fugitive emissions, pig receivers, condensate transfers, pneumatic controllers and pumps, and storage vessels. The facility is not currently equipped with turbines, dehydrators, control devices and closed vent systems, heaters, pig launchers, wells, produced water management units, and flowback vessels and preproduction operations.
20.2.61 NMAC	Smoke & Visible Emissions	Yes	1a or 1b, 2 & 3	This regulation is applicable because the facility is equipped with stationary combustion sources. Emissions from these combustion sources are limited to less than 20% opacity (see 20.2.61.109 NMAC). The regulation is not applicable to Title V insignificant heaters (see 20.2.61.111.D NMAC).
20.2.70 NMAC	Operating Permits	Yes	Facility	This regulation is applicable because the facility is a major source of VOC emissions (see 20.2.70.200 NMAC).
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	This regulation is applicable because the facility is subject to 20.2.70 NMAC (see 20.2.71.6 NMAC).
20.2.72 NMAC	Construction Permits	Yes	Facility	This regulation is applicable because the facility has potential emission rates (PER) greater than 10 pph or 25 tpy for pollutants subject to a state or federal ambient air quality standards (does not include VOCs or HAPs).
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	The Notice of Intent portion of this regulation is not applicable because the facility is subject to 20.2.72 NMAC. The emissions inventory portion of this regulation is applicable since the facility is a Title V major source (see 20.2.73.300.B(1) & (2)).
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	N/A	This regulation is not applicable because the facility is not a PSD major source.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This regulation is applicable because the facility is subject to 20.2.72 NMAC and it establishes the fee schedule associated with the filing of construction permits (see 20.2.75.6 NMAC).
20.2.77 NMAC	New Source Performance	No	N/A	This regulation is not applicable because it adopts by reference the federal NSPS codified in 40 CFR 60 (see 20.2.77.6 NMAC). The facility is not subject to 40 CFR 60.
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 (see 20.2.78.6 NMAC). 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 nonattainment area (see 20.2.79.6 NMAC).
20.2.80 NMAC	Stack Heights	Yes	1a or 1b, 2 & 3/A	This regulation is applicable because it establishes guidelines for the selection of an appropriate stack height for the purpose of atmospheric dispersion modeling (see 20.2.80.6 NMAC). This application requires modeling.
20.2.82 NMAC	MACT Standards for Source Categories of HAPS	Yes	1a or 1b, 2 & 3	This regulation is applicable because it adopts by reference the federal MACT Standards for source categories codified in 40 CFR 63 (see 20.2.82.6 NMAC). The facility is subject to 40 CFR 63, Subparts A & ZZZZ.

Federal Regulations

Federal standards and requirements are embodied in Title 40 (Protection of the Environment), Subchapter C (Air Programs) of the CFR, Parts 50 through 99.

FEDERAL REGULATIONS APPLICABILITY CHECKLIST

FEDERAL REGULATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 50	NAAQS	Yes	Facility	This regulation is applicable because it applies to all sources in the state of New Mexico.
40 CFR 52	Approval and Promulgation of Implementation Plans	No	N/A	40 CFR 52.21 *Prevention of Significant Deterioration of Air Quality* is not applicable because the facility is not a major Prevention of Significant Deterioration source. The remainder of 40 CFR 52 is not applicable because it addresses approval and promulgation of implementation plans.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	Equipment Leaks	This regulation is applicable because 40 CFR Part 60 Subpart OOOOa applies.
NSPS 40 CFR 60, Subpart K	Standards of Performance for Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978	No	N/A	This regulation is not applicable because the petroleum liquids storage tanks at the facility have capacities less than the minimum applicability threshold capacity of 40,000 gallons (see §60.110(a)).
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 (see §60.110a(a)).
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984	No	N/A	This regulation is not applicable because all storage tanks at the facility have capacities less than the minimum applicability threshold capacity of 75 cubic meters (19,812 gallons) (see §60.110b(a)).

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR 60, Subpart KKK	Standards of Performance for Equipment Leaks of VOC from Onshore Gas Plants	No	N/A	This regulation is not applicable because the facility is not an onshore natural gas processing plant as defined by the subpart (see §60.630(a)(1)). Natural gas processing plant (gas plant) means any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both (see §60.631).
NSPS 40 CFR 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. It is not equipped with a sweetening unit (see §60.640(a)).
NSPS 40 CFR 60, Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	No	N/A	This regulation is not applicable because the facility is not equipped with stationary compression ignition (CI) internal combustion engines (ICE) that commenced construction after July 11, 2005 and were manufactured after April 1, 2006 (see §60.4200(a)(2)(i)). For the purpose of this subpart, construction commences on the date the engine is ordered by the owner or operator (see §60.4200(a)).
NSPS 40 CFR 60, Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	No	N/A	This regulation is not applicable because the facility is not equipped with spark ignition (SI) internal combustion engines (ICE) constructed, modified, or reconstructed after June 12, 2006. Units 1-3 were constructed prior to the applicability date and have not been modified or reconstructed. See the definitions of construction, modification, and reconstruction referenced in Subpart OOOO below.
NSPS 40 CFR 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 On or Before September 18, 2015	No	N/A	This regulation is not applicable because the facility is not equipped with "affected" sources that commenced construction, modification or reconstruction 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). Commenced construction means a continuous program of fabrication, erection or installation (see §60.2). Modification means any physical change in or change in the method of operation of an existing facility which increases emissions or results in new emissions (see §60.2). The following, by themselves, are not modifications: routine maintenance, repair or replacement, production increase without capital expenditure, increase in hours of operation, addition of emission controls, or the relocation or change in ownership of an existing facility (see §60.14). Reconstruction means the replacement of components of an existing facility such that the fixed capital cost of the new components exceeds 50 % of the fixed capital cost required to construct a comparable entirely new facility. Fixed capital cost means the capital needed to provide all the depreciable components (see §60.15).

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR 60, Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015	Yes	Equipment Leaks	This regulation is applicable because the facility is equipped with "affected" sources that commenced construction, modification or reconstruction after September 18, 2015: equipment leaks (see §60.5365a). The following are not affected sources: gas wells, centrifugal or reciprocating compressors, pneumatic controllers, storage vessels, sweetening units, 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 §60.5430a). See the definitions of construction, modification, and reconstruction referenced in Subpart OOOO above.
NESHAP 40 CFR 61, Subpart A	General Provisions	No	N/A	This regulation is not applicable because no other 40 CFR Part 61 subparts apply (see §61.01(c)).
NESHAP 40 CFR 61, Subpart V	National Emission Standards for Equipment Leaks (Fugitive Emission Sources)	No	N/A	This regulation is not applicable because none of the listed equipment at the facility is in VHAP service. 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).
MACT 40 CFR 63, Subpart A	General Provisions	Yes	1a or 1b, 2 & 3	This regulation is applicable because 40 CFR 63 Subpart ZZZZ applies (see §63.1(b)).
MACT 40 CFR 63, Subpart HH	National Emission Standards for Hazardous Air Pollutants For Oil and Natural Gas Production Facilities	No	N/A	This regulation is not applicable because the facility is not equipped with affected equipment. The facility is an area HAP source. Note that since it is a production field facility (located prior to the point of custody transfer), only HAP emissions from glycol dehydration units and storage vessels are aggregated for a major source determination. Storage vessels include crude oil tanks, condensate tanks, intermediate hydrocarbon liquid tanks, and produced water tanks (see §63.761). At area HAP facilities, the regulation is only applicable to dehydrators (see §63.760(b)(2)). The facility is not equipped with dehydrators.
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 is not applicable because the facility is not a natural gas transmission and storage facility as defined by the subpart. A compressor station that transports natural gas prior to the point of custody transfer or to a natural gas processing plant (if present) are not considered a part of the natural gas transmission and storage source category (see §63.1270(a)).

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
MACT 40 CFR 63, Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE MACT)	Yes	1a or 1b, 2 & 3	This regulation is applicable because the facility is equipped with affected sources. The station is an area HAP source as defined by the subpart. For production field facilities, only HAP emissions from engines, turbines, dehydrators, and storage vessels with the potential for flash emissions are aggregated for the HAP major source determination (see §63.6675). A condensate tank with the potential for flash emissions must have an actual annual average hydrocarbon liquid throughput of 79,500 liters per day (500 bbl/day). As condensate throughput at the facility is limited to 9,002 bbl/yr, the facility is not equipped with condensate storage tanks with the potential for flash emissions as defined by the Subpart (see §63.6675). Units 1-3 are 4-stroke, lean burn (4SLB) spark ignition (SI) RICE with a site rating of more than 500 hp, and were constructed prior to December 19, 2002. Under §63.6603(a), the engines must meet the maintenance and operating standards in Table 2d (Row 8), including oil and filter change and inspection of spark plugs, all hoses and belts every 2,160 hours of operating time or annually, whichever comes first. Engine startups and idle times will be minimized in accordance with the regulation.
40 CFR 64	Compliance Assurance Monitoring	No	N/A	This regulation is not applicable because no equipment at the facility requires 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). (see §64.2(a)).
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 (see §68.10(a), §68.115(a), and §68.130 Tables 1-4).
40 CFR 70	State Operating Permit Programs	No	N/A	This regulation is not applicable, as the requirements associated with Title V are delegated to the State of New Mexico and implemented under 20 NMAC 2.70.
40 CFR 82	Protection of Stratospheric Ozone	No	N/A	This regulation is not applicable because the facility does not produce, transform, destroy, import, or export ozone-depleting substances (see §82.1(b),); does not service motor vehicle air conditioning units (see §82.30(b)); and does not sell, distribute, or offer for sale or distribution any product that contains ozone-depleting substances (see §82.64).

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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.

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Section 15

Alternative Operating Scenarios

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Alternative Operating Scenarios: Provide all information required by the department to define alternative operating scenarios. This includes process, material and product changes; facility emissions information; air pollution control equipment requirements; any applicable requirements; monitoring, recordkeeping, and reporting requirements; and compliance certification requirements. Please ensure applicable Tables in this application are clearly marked to show alternative operating scenario.

Construction Scenarios: When a permit is modified authorizing new construction to an existing facility, NMED includes a condition to clearly address which permit condition(s) (from the previous permit and the new permit) govern during the interval between the date of issuance of the modification permit and the completion of construction of the modification(s). There are many possible variables that need to be addressed such as: Is simultaneous operation of the old and new units permitted and, if so for example, for how long and under what restraints? In general, these types of requirements will be addressed in Section A100 of the permit, but additional requirements may be added elsewhere. Look in A100 of our NSR and/or TV permit template for sample language dealing with these requirements. Find these permit templates at: https://www.env.nm.gov/aqb/permit/aqb_pol.html. Compliance with standards must be maintained during construction, which should not usually be a problem unless simultaneous operation of old and new equipment is requested.

In this section, under the bolded title "Construction Scenarios", specify any information necessary to write these conditions, such as: conservative-realistic estimated time for completion of construction of the various units, whether simultaneous operation of old and new units is being requested (and, if so, modeled), whether the old units will be removed or decommissioned, any PSD ramifications, any temporary limits requested during phased construction, whether any increase in emissions is being requested as SSM emissions or will instead be handled as a separate Construction Scenario (with corresponding emission limits and conditions, etc.

This application is seeking approval for the option to operate either Unit 1a or Unit 1b.

Construction Scenarios

It is not known if or when Harvest might elect to exercise the option to replace one unit with the other. The minimum amount of time required to make the switch is approximately one week. However, since only one unit can be installed in the slot at any given time, simultaneous operation is not possible and is not being requested. As has been demonstrated in this application, there are no PSD ramifications. There are no temporary limits being requested during construction. There is no requested increase in SSM emissions during construction.

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Section 16

Air Dispersion Modeling

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

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

Check each box that applies:

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

Universal Application 4

Air Dispersion Modeling Report

Refer to and complete Section 16 of the Universal Application form (UA3) to assist your determination as to whether modeling is required. If, after filling out Section 16, you are still unsure if modeling is required, e-mail the completed Section 16 to the AQB Modeling Manager for assistance in making this determination. If modeling is required, a modeling protocol would be submitted and approved prior to an application submittal. The protocol should be emailed to the modeling manager. A protocol is recommended but optional for minor sources and is required for new PSD sources or PSD major modifications. Fill out and submit this portion of the Universal Application form (UA4), the "Air Dispersion Modeling Report", only if air dispersion modeling is required for this application submittal. This serves as your modeling report submittal and should contain all the information needed to describe the modeling. No other modeling report or modeling protocol should be submitted with this permit application.

Introduction

The Crow Mesa Compressor Station permit is being modified to allow the option of replacing one currently permitted Waukesha 7042GL engine with a Waukesha 3521GL engine. This report summarizes the modeling conducted to demonstrate compliance with the NO_2 1-hour average NAAQS. A modeling waiver was obtained for CO, SO_2, PM_{10} and $PM_{2.5}$, as well as the NO_2 annual average impacts. The waiver is provided as a part of this report.

16-A: Identification

1	Name of facility:	**Crow Mesa Compressor Station**
2	Name of company:	**Harvest Four Corners, LLC**
3	Current Permit number:	**5695-M1R1 & P271**
4	Name of applicant's modeler:	**James Newby**
5	Phone number of modeler:	**(801) 294-3024**
6	E-mail of modeler:	**jnewby@cirrusllc.com**

16-B: Brief

1	Was a modeling protocol submitted and approved?	**Yes☒**	No☐
2	Why is the modeling being done?	Adding New Equipment	
3	Describe the permit changes relevant to the modeling. **The existing NSR permit approves three Waukesha 7042GL reciprocating internal combustion engines (Units 1-3) for operation at the facility. The modification will allow Harvest to replace one of these existing engines with a Waukesha 3521GL engine.**		
4	What geodetic datum was used in the modeling?	**WGS84**	

5	How long will the facility be at this location?	**Indefinitely**	
6	Is the facility a major source with respect to Prevention of Significant Deterioration (PSD)?	Yes☐	**No☒**
7	Identify the Air Quality Control Region (AQCR) in which the facility is located:	**014**	
8	List the PSD baseline dates for this region (minor or major, as appropriate).		
	NO2	**N/A – there is no established increment for NO2 1-hour average impacts.**	
	SO2	**N/A**	
	PM10	**N/A**	
	PM2.5	**N/A**	
9	Provide the name and distance to Class I areas within 50 km of the facility (300 km for PSD permits).		
	N/A – there is no established increment for NO2 1-hour average impacts.		
10	Is the facility located in a non-attainment area? If so, describe below	Yes☐	**No☒**
	N/A		
11	Describe any special modeling requirements, such as streamline permit requirements.		
	N/A		

16-C: Modeling History of Facility

1. Describe the modeling history of the facility, including the air permit numbers, the pollutants modeled, the National Ambient Air Quality Standards (NAAQS), New Mexico AAQS (NMAAQS), and PSD increments modeled. (Do not include modeling waivers).

Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
CO	**N/A**		
NO_2	**5695-M1**	**08/13/2015**	**NO2 1-hour average modeling was not included in that evaluation.**
SO_2	**N/A**		
H_2S	**N/A**		
PM2.5	**N/A**		
PM10	**N/A**		
Lead	**N/A**		
Ozone (PSD only)	**N/A**		
NM Toxic Air Pollutants (20.2.72.402 NMAC)	**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)	☐	☐	☐	☐	☒

The modeling was conducted in accordance with the modeling protocol and the current NMAQB modeling guidelines. A copy of the modeling protocol is provided as a part of this report.

16-E: New Mexico toxic air pollutants modeling

1 List any New Mexico toxic air pollutants (NMTAPs) from Tables A and B in 20.2.72.502 NMAC that are modeled for this application. **N/A**

2 List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required.

Pollutant	Emission Rate (pounds/hour)	Emission Rate Screening Level (pounds/hour)	Stack Height (meters)	Correction Factor	Emission Rate/ Correction Factor
N/A					

16-F: Modeling options

1	Was the latest version of AERMOD used with regulatory default options? If not explain below.	**Yes☒**	No☐
	N/A		

Both significant and cumulative impact modeling were conducted using the latest version of the AMS/EPA Regulatory Model (AERMOD). The Beeline Software BEEST for Windows modeling manager was used to prepare the input files and manage processing. The EPA recommended defaults were used. As the station is located in a rural area, urban area modeling was not conducted.

16-G: Surrounding source modeling

1	Date of surrounding source retrieval:	**N/A**

2 If the surrounding source inventory provided by the Air Quality Bureau was believed to be inaccurate, describe how the sources modeled differ from the inventory provided. If changes to the surrounding source inventory were made, use the table below to describe them. Add rows as needed.

AQB Source ID	Description of Corrections
N/A	

The modeling was conducted using a background concentration, rather than neighboring sources.

16-H: Building and structure downwash

1	How many buildings are present at the facility?	**3**		
2	How many above ground storage tanks are present at the facility?	**4**		
3	Was building downwash modeled for all buildings and tanks? If not explain why below.		**Yes☒**	No☐
	N/A			
4	Building comments	**The inlet separator was modeling as a tall, thin tank.**		

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.						
	Fence						
2	Receptors must be placed along publicly accessible roads in the restricted area. Are there public roads passing through the restricted area?					Yes☐	**No☒**
3	Are restricted area boundary coordinates included in the modeling files?					**Yes☒**	No☐
4	Describe the receptor grids and their spacing. The table below may be used, adding rows as needed.						
	Grid Type	Shape	Spacing	Start distance from restricted area or center of facility	End distance from restricted area or center of facility	Comments	
	Cartesian	**Rectangle**	**50 m**	**0 m**	**500 m**		
	Cartesian	**Rectangle**	**10 m**	**500 m**	**1,000 m**		
	Cartesian	**Rectangle**	**250 m**	**1,000 m**	**3,000 m**		
	Cartesian	**Rectangle**	**500 m**	**3,000 m**	**5,000 m**		
5	Describe receptor spacing along the fence line.						
	Maximum 25 m spacing						
6	Describe the PSD Class I area receptors.						
	N/A						

A discrete cartesian grid with variable receptor spacing was used to evaluate significant impacts around the facility. The grid contained receptors with 25-meter spacing around the fence line, 50-meter spacing from the fence line out to at least 500 meters, 100-meter spacing from the 500 meters beyond the fence line out to at least 1,000 meters, 250-meter spacing from 1,000 meters beyond the fence line out to at least 3,000 meters, and 500-

meter spacing from 3,000 meters beyond the fence line out to at least 5,000 meters. There were no significant impacts beyond 5,000 meters from the fence line.

Note: There was an area east of the facility, in the 100-meter and 250-meter spacing portion of the grid, where cumulative impacts exceeded 75% of the standard. A grid with 50 meter spacing, surrounding that entire area, was added to the grid described above.

Cumulative impact modeling was conducted using only those receptors from the grid defined in the paragraphs above for which there were significant impacts.

The coordinate system used to reference receptor locations was of the UTM convention.

16-J: Sensitive areas

1	Are there schools or hospitals or other sensitive areas near the facility? If so describe below. This information is optional (and purposely undefined) but may help determine issues related to public notice.	Yes☐	**No☒**
	N/A		
2	The modeling review process may need to be accelerated if there is a public hearing. Are there likely to be public comments opposing the permit application?	Yes☐	**No☒**

16-K: Modeling Scenarios

1	Identify, define, and describe all modeling scenarios. Examples of modeling scenarios include using different production rates, times of day, times of year, simultaneous or alternate operation of old and new equipment during transition periods, etc. Alternative operating scenarios should correspond to all parts of the Universal Application and should be fully described in Section 15 of the Universal Application (UA3).		
	Modeling was conducted using three scenarios, one for each location where the replacement engine might be located. Scenario 1 placed the new 3521GL engine in slot number 1 (the 7042GL engines were placed in slots 2 & 3). Scenario 2 placed the new 3521GL engine in slot number 2 (the 7042GL engines were placed in slots 1 & 3). Scenario 3 placed the new 3521GL engine in slot number 3 (the 7042GL engines were placed in slots 1 & 2).		
2	Which scenario produces the highest concentrations? Why?		
	The results for the three scenarios were nearly identical, as the three engine slots are located side by side.		
3	Were emission factor sets used to limit emission rates or hours of operation? (This question pertains to the "SEASON", "MONTH", "HROFDY" and related factor sets, not to the factors used for calculating the maximum emission rate.)	Yes☐	**No☒**
4	If so, describe factors for each group of sources. List the sources in each group before the factor table for that group. (Modify or duplicate table as necessary. It's ok to put the table below section 16-K if it makes formatting easier.) Sources: **N/A**		

5

Hour of Day	Factor	Hour of Day	Factor								
1		13									
2		14									
3		15									
4		16									
5		17									
6		18									
7		19									
8		20									

	9		21									
	10		22									
	11		23									
	12		24									
	If hourly, variable emission rates were used that were not described above, describe them below.											
	N/A											
6	Were different emission rates used for short-term and annual modeling? If so describe below.								Yes☐	**No☒**		
	N/A											

For each scenario, emissions from the replacement engine were first modeled to determine if there are significant impacts. As impacts for each scenario exceeded the SIL, cumulative impacts for comparison with the NAAQS were determined using facility impacts plus the appropriate background concentration.

16-L: NO_2 Modeling

1	Which types of NO_2 modeling were used? Check all that apply.	
	☒	ARM2
	☐	100% NO_X to NO_2 conversion
	☐	PVMRM
	☐	OLM
	☐	Other:
2	Describe the NO_2 modeling.	
	Significant impact modeling was evaluated using ARM2 and high-first-high impacts. Cumulative impacts were evaluated using AMR2 and the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations (high-eighth-highs).	
3	Were default NO_2/NO_X ratios (0.5 minimum, 0.9 maximum or equilibrium) used? If not describe and justify the ratios used below.	**Yes☒** / No☐
	N/A	
4	Describe the design value used for each averaging period modeled.	
	1-hour: High eighth high Annual: Choose an item.	

16-M: Particulate Matter Modeling

1	Select the pollutants for which plume depletion modeling was used. **N/A**	
	☐	PM2.5
	☐	PM10
	☐	None
2	Describe the particle size distributions used. Include the source of information.	
	N/A	

3	Does the facility emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2? Sources that emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2 are considered to emit significant amounts of precursors and must account for secondary formation of PM2.5.	**Yes☒**	No☐
4	Was secondary PM modeled for PM2.5?	Yes☐	**No☒**

5	If MERPs were used to account for secondary PM2.5 fill out the information below. If another method was used describe below.			
	NO_X (ton/yr)	SO_2 (ton/yr)	$[PM2.5]_{annual}$	$[PM2.5]_{24\text{-}hour}$
	N/A			
	$PM_{2.5}$ modeling was not conducted.			

16-N: Setback Distances

1	Portable sources or sources that need flexibility in their site configuration requires that setback distances be determined between the emission sources and the restricted area boundary (e.g. fence line) for both the initial location and future locations. Describe the setback distances for the initial location.
	N/A
2	Describe the requested, modeled, setback distances for future locations, if this permit is for a portable stationary source. Include a haul road in the relocation modeling.
	N/A

16-O: PSD Increment and Source IDs

1	The unit numbers in the Tables 2-A, 2-B, 2-C, 2-E, 2-F, and 2-I should match the ones in the modeling files. Do these match? If not, provide a cross-reference table between unit numbers if they do not match below.	Yes☐	**No☒**

Unit Number in UA-2	Unit Number in Modeling Files
1a	**ENG_1A**
1b	**ENG_1B1 (for slot 1), ENG_1B2 (for slot 2) & ENG_1B3 (for slot 3)**
2	**ENG_2**
3	**ENG_3**

2	The emission rates in the Tables 2-E and 2-F should match the ones in the modeling files. Do these match? If not, explain why below.	**Yes☒**	No☐
	N/A		
3	Have the minor NSR exempt sources or Title V Insignificant Activities" (Table 2-B) sources been modeled?	Yes☐	**No☒**

4	Which units consume increment for which pollutants?				
	Unit ID	NO_2	SO_2	PM10	PM2.5
	N/A				

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

6	Are all the actual installation dates included in Table 2A of the application form, as required? This is necessary to verify the accuracy of PSD increment modeling. If not please explain how increment consumption status is determined for the missing installation dates below.	**Yes☒**	No☐
	N/A		

16-P: Flare Modeling

1	For each flare or flaring scenario, complete the following:			
	Flare ID (and scenario)	Average Molecular Weight	Gross Heat Release (cal/s)	Effective Flare Diameter (m)
	N/A			

16-Q: Volume and Related Sources

1	Were the dimensions of volume sources different from standard dimensions in the Air Quality Bureau (AQB) Modeling Guidelines? If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☐	No☐
	N/A – No volume sources were used in the modeling.		
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: Choose an item.		
	NO_2: Navajo Dam (350450018)		
	PM2.5: Choose an item.		
	PM10: Choose an item.		
	SO_2: Choose an item.		
	Other:		
	Comments: **The 1-hour 98th percentile concentration was added to the facility impacts (43.9 µg/m³).**		
2	Were background concentrations refined to monthly or hourly values? If so describe below.	Yes☐	**No☒**

	N/A

16-S: Meteorological Data

1	Was NMED provided meteorological data used? If so, select the station used.	**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		

All stacks at the facility are fairly short, only 6.7 meters high. In accordance with Table 28 of the modeling guidelines, modeling was conducted using Bloomfield meteorological data from 2019. Impacts did not exceed 95% of the standard.

16-T: Terrain

1	Was complex terrain used in the modeling? If not, describe why below.	**Yes☒**	No☐
	N/A		
2	What was the source of the terrain data?		
	Terrain elevation data was obtained from NED data (1/3 second) taken from the USGS website. The AERMOD Terrain Preprocessor (AERMAP) was used to calculate the receptor elevations and terrain maximums. The domain used to calculate terrain maximums was sufficient to identify all terrain nodes that create a slope greater than or equal to 10 percent. **Since the facility was leveled at construction, the height of all the sources and structures were estimated at 7, 197 feet.**		

16-U: Modeling Files

Describe the modeling files:

File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
Crow Mesa – Modeling – AERMAP Files.zip	**N/A**	**N/A**
Crow Mesa – Modeling – AERMOD Files (ROI).zip	**NO2**	**ROI/SIA**
Crow Mesa – Modeling – AERMOD Files (NAAQS).zip	**NO2**	**Cumulative**
Crow Mesa – Modeling – Data & Results.xlsx	**N/A**	**N/A**

The Crow Mesa – Modeling – Data & Results.xlsx workbook contains summaries of the results, input parameters, receptor locations, etc.

16-V: PSD New or Major Modification Applications

1	A new PSD major source or a major modification to an existing PSD major source requires additional analysis. Was preconstruction monitoring done (see 20.2.74.306 NMAC and PSD Preapplication Guidance on the AQB website)?	Yes☐	**No☒**
2	If not, did AQB approve an exemption from preconstruction monitoring?	Yes☐	**No☒**

3	Describe how preconstruction monitoring has been addressed or attach the approved preconstruction monitoring or monitoring exemption.		
	N/A – PSD modeling for a major modification was not required.		
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC.		
	N/A		
5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed? If so describe below.	Yes☐	**No☒**
	N/A		

16-W: Modeling Results

1	If ambient standards are exceeded because of surrounding sources, a culpability analysis is required for the source to show that the contribution from this source is less than the significance levels for the specific pollutant. Was culpability analysis performed? If so, describe below.	Yes☐	**No☒**
	N/A		
2	Identify the maximum concentrations from the modeling analysis. Rows may be modified, added and removed from the table below as necessary.		

Pollutant, Time Period and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary PM (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (ft)
NO2 1-Hour NAAQS (Scenario 1)	**108.08**	**N/A**	**N/A**	**43.9**	**151.98**	**188.03**	**80.83**	**261350**	**4025450**	**7214**
NO2 1-Hour NAAQS (Scenario 2)	**108.01**	**N/A**	**N/A**	**43.9**	**151.91**	**188.03**	**80.79**	**261350**	**4025450**	**7214**
NO2 1-Hour NAAQS (Scenario 3)	**108.18**	**N/A**	**N/A**	**43.9**	**152.08**	**188.03**	**80.88**	**261350**	**4025450**	**7214**

16-X: Summary/conclusions/	
1	A statement that modeling requirements have been satisfied and that the permit can be issued.
	The modeling requirements have been satisfied and the permit can be issued.

August 4, 2022

Mr. Sufi Mustafa
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505-1816

Re: Air Dispersion Modeling Protocol
Harvest Four Corners, LLC – Crow Mesa Compressor Station

Dear Mr. Mustafa:

Harvest Four Corners, LLC (Harvest) is preparing to submit a permit application to the New Mexico Air Quality Bureau (NMAQB) requesting a modification to the construction permit for the Crow Mesa Compressor Station (Crow Mesa). In support of this application, air dispersion modeling will be conducted for nitrogen dioxide (NO_2). The analysis will evaluate compliance with the 1-hour National Ambient Air Quality Standard (NAAQS). This protocol outlines the proposed air dispersion modeling techniques that will be used to assess impacts surrounding the facility.

Introduction

Crow Mesa currently operates under a permit issued by the NMAQB, 5695-M1R2, dated September 7, 2021. This permit approves the following equipment/sources for operation at the facility:

- Three Waukesha 7042GL reciprocating internal combustion engines (Units 1-3);
- Two condensate storage tanks (Units T1 & T6);
- Startup, shutdown and maintenance emissions (Unit SSM); and
- Malfunction emissions (Unit M1).

The application will request the option for Harvest to replace one of the Waukesha 7042GL engines with a Waukesha 3521GL engine.

Based on modeling conducted in April of 2015, a waiver is being requested for the NO_2 annual average modeling. It will be submitted under a separate cover. The replacement of one Waukesha 7042GL engine with a Waukesha 3521GL engine will reduce impacts.

Cirrus Consulting, LLC
11139 Crisp Air Drive
Colorado Springs, Colorado 80908
Tel: (801) 294-3024
jnewby@cirrusllc.com

A waiver is also being requested for carbon monoxide (CO), sulfur dioxide (SO2) and particulate modeling. Facility total emissions for each of these pollutants are less than the modeling thresholds.

Facility

Crow Mesa is located approximately 8.5 miles northeast of Nageezi, New Mexico, at approximately 261,211 meters Easting, 4,025,467 meters Northing, Zone 13, North American Datum 1983 (NAD83), at an elevation of approximately 7,197 feet above mean sea level. The facility is located in a rural area.

Standards

Table 1 identifies the applicable significant impact level (SIL) and NAAQS.

Table 1
SIL & NAAQS

Pollutant	Averaging Period	SIL ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
NO_2	1-Hour	7.52	188.03

The high-eighth-high daily maximum 1-hour NO_2 concentration will be used to evaluate compliance with the NAAQS.

The facility is located in Air Quality Control Region 014, an attainment area for all pollutants; therefore, non-attainment modeling impacts will not be considered.

Dispersion Model

Both significant and cumulative impact modeling will be conducted using the latest version of the AMS/EPA Regulatory Model (AERMOD). The Beeline Software BEEST for Windows modeling manager will be used to prepare the input files and manage processing. Environmental Protection Agency (EPA) recommended defaults will be used. As the station is located in a rural area, urban area modeling will not be conducted.

Methodology

The modeling will be conducted in accordance with this protocol and the current NMAQB modeling guidelines.

The modeling will be conducted using three scenarios, one for each location where the replacement engine might be located. First, for each scenario, emissions from the replacement engine will be modeled to determine if there are significant impacts. Where impacts from a scenario are less than the SIL, no additional modeling will be conducted. Where impacts from a scenario exceed the SIL,

cumulative impacts for comparison with the NAAQS will be determined using one of the methodologies identified in the modeling guidelines (facility impacts plus background concentrations or facility plus neighboring source impacts).

Facility Sources

The modeled emission rates will be the pounds per hour emission rates identified in the application. Modeling will be conducted using stack parameters provided by manufacturers as identified in the application.

There are no NO_2 startup, shutdown and maintenance (SSM) emissions associated with the sources.

The coordinate system used to reference source locations will be of the Universal Transverse Mercator (UTM) convention (NAD83). Terrain elevation data will be obtained from National Elevation Dataset (NED) data (1/3 second) taken from the United States Geological Survey (USGS) website, taking into account changes that may have occurred during construct of the facility.

Building Downwash

The EPA Building Profile Input Program - Prime (BPIP-Prime) will be used to evaluate structures for building downwash impacts. All structures close enough (of sufficient height and/or width) to produce downwash effects from the stacks will be included in the evaluation.

Receptor Selection

A Cartesian grid with variable receptor spacing will be used to evaluate significant impacts around the facility. The grid will contain receptors with 25-meter spacing around the fence line, 50-meter spacing from the fence line out to at least 500 meters, 100-meter spacing from the 500 meters beyond the fence line out to at least 1,000 meters, 250-meter spacing from 1,000 meters beyond the fence line out to at least 3,000 meters, and 500-meter spacing from 3,000 meters beyond the fence line out to at least 5,000 meters. If the significant impact area extends beyond 5,000 meters from the fence line, the grid will also include receptors with 1,000-meter spacing sufficient to cover the entire significant impact area.

Cumulative impact modeling will be conducted using only those receptors from the grid defined in the paragraph above for which there were significant impacts. If maximum cumulative impacts greater than or equal to 75 percent of the applicable standard are calculated at receptors located in the 100-meter, 250-meter, 500-meter or 1,000-meter interval portions of the grid, then refined grids with 50-meter spacing will be centered on these receptors to identify the local high. These refined grids will be large enough to include adjacent receptors in all directions (200 meters square in the 100-meter interval portion of the grid, 500 meters square in the 250-meter interval portion of the grid, 1,000 meters square in the 500-meter interval portion of the grid, and 2,000 meters

square in the 1,000-meter interval portion of the grid). Note: These refined grids will include only those receptors for which there are significant impacts.

The coordinate system used to reference receptor locations will be of the UTM convention (NAD83). Terrain elevation data will be obtained from NED data (1/3 second) taken from the USGS website. The AERMOD Terrain Preprocessor (AERMAP) will be used to calculate the receptor elevations and terrain maximums. The domain used to calculate terrain maximums will be sufficient to identify all terrain nodes that create a slope greater than or equal to 10 percent.

Meteorological Data

All stacks at the facility are fairly short, only 6.7 meters high. In accordance with Table 28 of the modeling guidelines, modeling will be conducted using Bloomfield meteorological data from 2019. If impacts exceed 95% of the standard, modeling will be conducted using all five years of Bloomfield meteorological data (2015- 2019). The data will be obtained from the NMAQB web site.

The Crow Mesa Compressor Station is located on the southwestern slope of Crow Mesa at an elevation of approximately 7,197 feet. The top of the mesa is oriented, in general, along a line from northwest to southeast. North and west of the station, the mesa reaches heights just above 7,300 feet. The station sits near the top of a small canyon that in general drops away to the west. This is the most significant terrain feature near the station. The station is protected from flows traveling up and down the canyons to the north and west by the mesa itself.

Regionally, Crow Mesa is located on the western side of a grouping of mesas running, in general, along a line from north to south. There are no significant terrain features interfering with wind flow from the west. The station would tend to be protected from easterly wind flows. However, as the station is located near the top of the mesa, it could still be impacted by easterly flows.

Of the meteorological data available on the NMAQB website, the location of Bloomfield meteorological station is much closer Crow Mesa than any other station. It is to be expected that the regional flows from Bloomfield will best represent the conditions at Crow Mesa.

Neighboring Sources

Per the modeling guidelines, cumulative impacts to demonstrate compliance with the NO_2 NAAQS may be calculated using facility impacts plus neighboring source impacts. Neighboring sources are defined as all those within 25 kilometers of the facility and those between 25 and 50 kilometers from the facility that are permitted to emit 1,000 pounds per hour or more.

If used, neighboring sources will be obtained from the NMAQB (via MergeMaster).

Background Concentrations

Per the modeling guidelines, cumulative impacts to demonstrate compliance with the NO_2 NAAQS may be calculated as facility impacts plus background concentrations. If a background concentration is used, Table 2 below identifies that concentration.

Table 2
Background Concentrations

Pollutant	Averaging Period	Background ($\mu g/m^3$)	Source ID
NO_2	1-Hour	43.9	1NL

The NO_2 data was obtained from Table 31 of the modeling guidelines. Navajo Dam data was selected both because Navajo Dam is fairly close to Crow Mesa and because, like Crow Mesa, Navajo Dam is a fairly rural area (more so than is Bloomfield). The 1-hour background 98th percentile concentration will be added to the facility 1-hour average impacts.

If a more refined approach is needed to demonstrate compliance, it will be coordinated with the NMAQB.

NO_X TO NO_2 CONVERSION

NO_X impacts will be converted to NO_2 impacts using the Ambient Ratio Method 2 (ARM2). If an NO_2/NO_X ratio of less than 0.5 is used, justification will be provided.

Again, if a more refined approach is needed to demonstrate compliance, it will be coordinated with the NMAQB.

Thank you for your attention in this matter. If you have any questions or comments, please contact me at (801) 294-3024.

Sincerely,

CIRRUS CONSULTING, LLC

James W. Newby

cc: Monica Smith, Harvest

From: Peters, Eric, ENV
To: jwnewby@comcast.net
Subject: RE: [EXTERNAL] FW: Crowe Mesa Modeling Protocol
Date: Monday, October 3, 2022 5:43:59 PM

James,

I approve the Crow Mesa Compressor Station modeling protocol for modification of permit 5695M1R2.

Thanks,

Eric

Eric Peters, Air Dispersion Modeler
New Mexico Environment Department / Air Quality Bureau
525 Camino de Los Marquez - Suite 1 / Santa Fe, NM, 87505
Phone: 505-629-5299
E-mail: eric.peters@env.nm.gov
www.env.nm.gov

From: jwnewby@comcast.net <jwnewby@comcast.net>
Sent: Friday, September 30, 2022 9:25 AM
To: Peters, Eric, ENV <eric.peters@state.nm.us>
Subject: [EXTERNAL] FW: Crowe Mesa Modeling Protocol

Eric,

Here is the Crow Mesa modeling protocol.

James

From: jnewby@cirrusllc.com <jnewby@cirrusllc.com>
Sent: Thursday, August 4, 2022 3:52 PM
To: Sufi Mustafa (sufi.mustafa@state.nm.us) <sufi.mustafa@state.nm.us>
Subject: Crowe Mesa Modeling Protocol

Sufi

Attached is a modeling protocol for the Harvest Four Corners, LLC – Crow Mesa Compressor Station. Please review cand comment.

Thanks for your assistance. Hope things are going well for you.

James Newby
Cirrus Consulting, LLC
Phone: (801) 294-3024
E-mail: jnewby@cirrusllc.com

New Mexico Environment Department
Air Quality Bureau
Modeling Section
525 Camino de Los Marquez - Suite 1
Santa Fe, NM 87505

Phone: (505) 476-4300
Fax: (505) 476-4375
www.env.nm.gov/aqb/

For Department use only:

Approved by: Eric Peters

Date: October 3, 2022

Air Dispersion Modeling Waiver Request Form

This form must be completed and submitted with all air dispersion modeling waiver requests.

If an air permit application requires air dispersion modeling, in some cases the demonstration that ambient air quality standards and Prevention of Significant Deterioration (PSD) increments will not be violated can be satisfied with a discussion of previous modeling. The purpose of this form is to document and streamline requests to certify that previous modeling satisfies all or some of the current modeling requirements. The criteria for requesting and approving modeling waivers is found in the Air Quality Bureau Modeling Guidelines. Typically, only construction permit applications submitted per 20.2.72, 20.2.74, or 20.2.79 NMAC require air dispersion modeling. However, modeling is sometimes also required for a Title V permit application.

A waiver may be requested by e-mailing this completed form in **MS Word** format to the modeling manager, sufi.mustafa@state.nm.us.

This modeling waiver is not valid if the emission rates in the application are higher than those listed in the approved waiver request.

Section 1 and Table 1: Contact and facility information:

Contact name	James Newby
E-mail Address:	jnewby@cirrusllc.com
Phone	(801) 294-3024
Facility Name	Crow Mesa Compressor Station
Air Quality Permit Number(s)	5695-M1R2 & P271
Agency Interest Number (if known)	34057
Latitude and longitude of facility (decimal degrees)	36.34468, -107.66068

General Comments: (Add introductory remarks or comments here, including the purpose of and type of permit application.)

The Crow Mesa Compressor Station currently operates under a permit issued by the NMAQB, 5695-M1R2, dated September 7, 2021. This permit approves the following equipment/sources for operation at the facility:

- Three Waukesha 7042GL reciprocating internal combustion engines (Units 1-3);
- Two condensate storage tanks (Units T1 & T6);
- Startup, shutdown and maintenance emissions (Unit SSM); and
- Malfunction emissions (Unit M1).

The application will request the option for Harvest to replace one of the Waukesha 7042GL engines with a Waukesha 3521GL engine.

Based on modeling conducted in April of 2015, a waiver is being requested for the NO_2 annual average modeling. The replacement of one Waukesha 7042GL engine with a Waukesha 3521GL engine will reduce impacts.

A waiver is also being requested for carbon monoxide (CO), sulfur dioxide (SO2) and particulate modeling. Facility total emissions for each of these pollutants are less than the modeling thresholds.

Section 2 – List All Regulated Pollutants from the Entire Facility - Required

In Table 2, below, list all regulated air pollutants emitted from your facility, except for New Mexico Toxic Air Pollutants, which are listed in Table 6 of this form. All pollutants emitted from the facility must be listed regardless if a modeling waiver is requested for that pollutant or if the pollutant emission rate is subject to the proposed permit changes.

Table 2: Air Pollutant summary table (Check all that apply. Include all pollutants emitted by the facility):

Pollutant	Pollutant is not emitted at the facility and modeling or waiver are not required.	Pollutant does not increase in emission rate at any emission unit (based on levels currently in the permit) and stack parameters are unchanged. Modeling or waiver are not required.	Stack parameters or stack location has changed.	Pollutant is new to the permit, but already emitted at the facility.	Pollutant is increased at any emission unit (based on levels currently in the permit).	A modeling waiver is being requested for this pollutant.	Modeling for this pollutant will be included in the permit application.
CO					**X**	**X**	
NO_2					**X**	**X**	**X**
SO_2					**X**	**X**	
PM10					**X**	**X**	
PM2.5					**X**	**X**	
H_2S	**X**						
Reduced S	**X**						
O_3 (PSD only)	**X**						
Pb	**X**						

Section 3: Facility wide pollutants, other than NMTAPs, with very low emission rates

The Air Quality Bureau has performed generic modeling to demonstrate that small sources, as listed in Appendix 2 of this form, do not need computer modeling. After comparing the facility's emission rates for various pollutants to Appendix 2, please list in Table 3 the pollutants that do not need to be modeled because of very low emission rates.

Section 3 Comments. (If you are not requesting a waiver for any pollutants based on their low emission rate, then note that here. You do not need to complete the rest of Section 3 or Table 3.)

Table 3: List of Pollutants with very low facility-wide emission rates

Pollutant	Requested Allowable Emission Rate From Facility (pounds/hour)	Release Type (select "all from stacks >20 ft" or "other")	Waiver Threshold (from appendix 2) (lb/hr)
CO	**23.44**	**All from stacks > 20 ft**	**50**
SO2	**0.0175**	**All from stacks > 20 ft**	**2.0**
PM10	**0.296**	**All from stacks > 20 ft**	**1.0**
PM2.5	**0.296**	**All from stacks > 20 ft**	**0.3**

Section 4: Pollutants that have previously been modeled at equal or higher emission rates

List the pollutants and averaging periods in Table 4 for which you are requesting a modeling waiver based on previous modeling for this facility. The previous modeling reports that apply to the pollutant must be submitted with the modeling waiver request. Request previous modeling reports from the Modeling Section of the Air Quality Bureau if you do not have them and believe they exist in the AQB modeling file archive or in the permit folder.

Section 4 Comments. (If you are not asking for a waiver based on previously modeled pollutants, note that here. You do not need to complete the rest of section 4 or table 4.)

Table 4: List of previously modeled pollutants (facility-wide emission rates)

Pollutant	Averaging period	Proposed emission rate (pounds/hour)	Previously modeled emission rate (pounds/hour)	Proposed minus modeled emissions (lb/hr)	Modeled percent of standard or increment	Year modeled
NO2	**Annual**	**13.27**	**13.27**	**0.00**	**8.96 (NAAQS)**	**2015**
NO2	**Annual**	**13.27**	**13.27**	**0.00**	**24.96 (PSD)**	**2015**

Table 5: Questions about previous modeling:

Question	Yes	No
Was AERMOD used to model the facility?	**X**	
Did previous modeling predict concentrations less than 95% of each air quality standard and PSD increment?	**X**	
Were all averaging periods modeled that apply to the pollutants listed above?		**X**
Were all applicable startup/shutdown/maintenance scenarios modeled?	**X**	
Did modeling include all sources within 1000 meters of the facility fence line that now exist?	**X**	
Did modeling include background concentrations at least as high as current background concentrations?		**X**
If a source is changing or being replaced, is the following equation true for all pollutants for which the waiver is requested? (Attach calculations if applicable.) $\frac{[(g) \times (h1)] + [(v1)^2/2] + [(c) \times (T1)]}{q1} <= \frac{[(g) \times (h2)] + [(v2)^2/2] + [(c) \times (T2)]}{q2}$ Where g = gravitational constant = 32.2 ft/sec^2 h1 = existing stack height, feet v1 = exhaust velocity, existing source, feet per second c = specific heat of exhaust, 0.28 BTU/lb-degree F T1 = absolute temperature of exhaust, existing source = degree F + 460 q1 = emission rate, existing source, lbs/hour h2 = replacement stack height, feet v2 = exhaust velocity, replacement source, feet per second T2 = absolute temperature of exhaust, replacement source = degree F + 460 q2 = emission rate, replacement source, lbs/hour	**X**	

If you checked "no" for any of the questions, provide an explanation for why you think the previous modeling may still be used to demonstrate compliance with current ambient air quality standards.

Based on modeling conducted in April of 2015, a waiver is being requested for the NO_2 annual average impacts. NO2 1-hour average modeling will be provided with the application.

The 2015 modeling was conducted using neighboring sources rather than background concentrations. Note, however, if the current Navajo Dam annual background concentration is added to the 2015 modeled concentration, impacts are still well below the NAAQS (6.53 ug/m^3 + 11.0 ug/m^3 = 17.53 ug/m^3, NAAQS = 99.66 ug/m^3, NMAAQS = 94.02 ug/m^3).

See the attached calculations.

Section 5: Modeling waiver using scaled emission rates and scaled concentrations

Not applicable.

At times it may be possible to scale the results of modeling one pollutant and apply that to another pollutant. If the analysis for the waiver gets too complicated, then it becomes a modeling review rather than a modeling waiver, and applicable modeling fees will be charged for the modeling. Plume depletion, ozone chemical reaction modeling, post-processing, and unequal pollutant ratios from different sources are likely to invalidate scaling.

If you are not scaling previous results, note that here. You do not need to complete the rest of section 5.

To demonstrate compliance with standards for a pollutant describe scenarios below that you wish the modeling section to consider for scaling results.

Section 6: New Mexico Toxic air pollutants – 20.2.72.400 NMAC

Not applicable.

Modeling must be provided for any New Mexico Toxic Air Pollutant (NMTAP) with a facility-wide controlled emission rate in excess of the pound per hour emission levels specified in Tables A and B at **20.2.72.502 NMAC** - Toxic Air Pollutants and Emissions. An applicant may use a stack height correction factor based on the release height of the stack for the purpose of determining whether modeling is required. See Table C - Stack Height Correction Factor at 20.2.72.502 NMAC. Divide the emission rate for each release point of a NMTAP by the correction factor for that release height and add the total values together to determine the total adjusted pound per hour emission rate for that NMTAP. If the total adjusted pound per hour emission rate is lower than the emission rate screening level found in Tables A and B, then modeling is not required.

In Table 6, below, list the total facility-wide emission rates for each New Mexico Toxic Air Pollutant emitted by the facility. The table is pre-populated with common examples. Extra rows may be added for NMTAPS not listed or for NMTAPS emitted from multiple stack heights. NMTAPS not emitted at the facility may be deleted, left blank, or noted as 0 emission rate. Toxics previously modeled may be addressed in Section 5 of this waiver form. For convenience, we have listed the stack height correction factors in Appendix 1 of this form.

Section 6 Comments. (If you are not requesting a waiver for any NMTAPs then note that here. You do not need to complete the rest of section 6 or Table 6.)

Table 6: New Mexico Toxic Air Pollutants emitted at the facility

If requesting a waiver for any NMTAP, all NMTAPs from this facility must be listed in Table 3 regardless if a modeling waiver is requested for that pollutant or if the pollutant emission rate is subject to the proposed permit changes.

Pollutant	Requested Allowable Emission Rate (pounds/hour)	Release Height (Meters)	Correction Factor	Allowable Emission Rate Divided by Correction Factor	Emission Rate Screening Level (pounds/hour)
Ammonia					1.20
Asphalt (petroleum) fumes					0.333
Carbon black					0.233
Chromium metal					0.0333
Glutaraldehyde					0.0467
Nickel Metal					0.0667
Wood dust (certain hard woods as beech & oak)					0.0667
Wood dust (soft wood)					0.333
(add additional toxics if they are present)					

Section 7: Approval or Disapproval of Modeling Waiver

The AQB air dispersion modeler should list each pollutant for which the modeling waiver is approved, the reasons why, and any other relevant information. If not approved, this area may be used to document that decision.

This modeling waiver is approved for annual NO_2 modeling based on previous modeling that is still valid. 1-hour NO_2 modeling will be submitted with the application. The waiver is also approved for CO, SO_2, PM10, and PM2.5 based on modeling the AQB has conducted for very low emission rate sources.

Appendix 1: Stack Height Release Correction Factor (adapted from 20.2.72.502 NMAC)

Release Height in Meters	Correction Factor
0 to 9.9	1
10 to 19.9	5
20 to 29.9	19
30 to 39.9	41
40 to 49.9	71
50 to 59.9	108
60 to 69.9	152
70 to 79.9	202
80 to 89.9	255
90 to 99.9	317
100 to 109.9	378
110 to 119.9	451
120 to 129.9	533
130 to 139.9	617
140 to 149.9	690
150 to 159.9	781
160 to 169.9	837
170 to 179.9	902
180 to 189.9	1002
190 to 199.9	1066
200 or greater	1161

Appendix 2. Very small emission rate modeling waiver requirements

Modeling is waived if emissions of a pollutant for the entire facility (including haul roads) are below the amount:

Pollutant	If all emissions come from stacks 20 feet or greater in height and there are no horizontal stacks or raincaps (lb/hr)	If not all emissions come from stacks 20 feet or greater in height, or there are horizontal stacks, raincaps, volume, or area sources (lb/hr)
CO	50	2
H_2S (Pecos-Permian Basin)	0.1	0.02
H_2S (Not in Pecos-Permian Basin)	0.01	0.002
Lead	No waiver	No waiver
NO_2	2	0.025
PM2.5	0.3	0.015
PM10	1.0	0.05
SO_2	2	0.025
Reduced sulfur (Pecos-Permian Basin)	0.033	No waiver
Reduced sulfur (Not in Pecos-Permian Basin)	No waiver	No waiver

Evaluating Changes In Modeling Parameters And Emission Rates

If the following equation is true, modeling may not be required:

([(g * h1) + ((v1^2) / 2) + (c * [T1 +460])] / q1) ≤ ([(g * h2) + ((v2^2) / 2) + (c * [T2 +460])] / q2)

h1 = Existing Stack Height (ft):	22.00		22.00	h2 = Replacement Stack Height (ft):
v1 = Existing Stack Exit Velocity (ft/sec):	151.72		168.24	v2 = Replacement Stack Exit Velocity (ft/sec):
T1 = Existing Stack Exit Temperature (°F):	699		693	T2 = Replacement Stack Exit Temperature (°F):
q1 = Existing Emission Rate (lb/hr):	4.42		2.21	q2 = Replacement Emission Rate (lb/hr):
g = Gravitational Constant (ft/sec^2):	32.20		32.20	g = Gravitational Constant (ft/sec^2):
c = Specific Heat of Exhaust (Btu/lb-°F):	0.28		0.28	c = Specific Heat of Exhaust (Btu/lb-°F):
	2835.08	≤	6870.40	

Note: Typically, existing stack parameters and emission rates should be those previously modeled. Replacement stack parameters and emission rates should be those requested in the current permit application.

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Section 17

Compliance Test History

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

To show compliance with existing NSR permit 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	Compliance testing for NO_X and CO in accordance with Condition A201.C	9/11/2018
2	Compliance testing for NO_X and CO in accordance with Condition A201.C	12/8/2021
3	Compliance testing for NO_X and CO in accordance with Condition A201.C	3/2/2018

Units 1 & 3 are not currently installed.

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Section 18

Addendum for Streamline Applications

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

Not applicable, as this is not a streamline application.

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Section 19

Requirements for Title V Program

Who Must Use this Attachment:

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

Not applicable, as this is not a Title V application.

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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.

Not applicable, as no other relevant information is being provided.

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Section 21

Addendum for Landfill Applications

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

EPA Background Information for MSW Landfill Air Quality Regulations:
https://www3.epa.gov/airtoxics/landfill/landflpg.html

NM Solid Waste Bureau Website: https://www.env.nm.gov/swb/

Not applicable, as the facility is not a landfill.

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Section 22

Certification

Company Name: Harvest Four Corners, LLC

I, Monica Smith, hereby certify that the information and data submitted in this application are true and as accurate as possible, to the best of my knowledge and professional expertise and experience. Signed this 13 day of October, 2022, upon my oath or affirmation, before a notary of the State of New Mexico.

Monica Smith
*Signature

10/13/2022
Date

Monica Smith
Printed Name

Environmental Specialist
Title

Scribed and sworn before me on this 13 day of October, 2023.

My authorization as a notary of the State of New Mexico expires on the 23 day of November, 2025.

Jen Deal
Notary's Signature

10/13/2022
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.AD NMAC.