Cirrus Consulting, LLC

Received
MAR 23 2020
Air Quality Bureau

March 20, 2020

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 Modify Construction Permit Number PSD-0340-M14-R2
Harvest Four Corners, LLC – El Cedro Compressor Station

Dear Ms. Bisbey-Kuehn,

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

A check for the application filing fee is also attached.

Thank you for your help. If you have questions or need any additional information, please contact Kijun Hong of HFC at (505) 632-4475.

Sincerely,

CIRRUS CONSULTING, LLC

James W. Newby

James W. Newby

Attachments
Check
El Cedro Compressor Station Construction Permit Application

c: Kijun Hong, HFC

Cirrus Consulting, LLC
979 Manchester Road
Kaysville, Utah 84037

Phone: (801) 294-3024
jnewby@cirrusllc.com

NEW MEXICO 20.2.72 NMAC APPLICATION TO MODIFY PERMIT NUMBER PSD-0340-M14-R2

EL CEDRO COMPRESSOR STATION

Submitted By:

HARVEST MIDSTREAM

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

Prepared By:

CIRRUS CONSULTING, LLC
951 Diestel Road
Salt Lake City, Utah 84105
(801) 484-4412

March 2020

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- Increase condensate truck loading (Unit 38) from 3,390,000 to 13,560,000 gallons per rolling 12-month period;
- Increase permitted facility total produced water throughput to the storage tanks (Units T501, T91024 & T91025) from 705,600 to 2,822,400 gallons per rolling 12-month period;
- Adjust permitted emissions from the condensate storage tanks, produced water storage tanks, and condensate truck loading as required to account for the increase in condensate and produced water throughput;
- Add produced water truck loading (Unit 46); and
- Increase facility total pig receiver (Units PR1 & PR2) emissions.

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	NEW MEXICO ENVIRONMENT DEPARTMENT	Received MAR 2 3 2020 Air Quality Bureau 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.: **2459** 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.
☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance program (SBEAP) and qualifies for 50% of the normal application and permit fees. Enclosed is a check for 50% of the normal application fee which will be verified with the Small Business Certification Form for your company.
☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance Program (SBEAP) but does not qualify for 50% of the normal application and permit fees. To see if you qualify for SBEAP assistance and for the small business certification form go to https://www.env.nm.gov/aqb/sbap/small_business_criteria.html).

Citation: Please provide the **low level citation** under which this application is being submitted: **20.2.72.219.D 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.): **1002**	Updating Permit/NOI #: **PSD-0340-M14-R2**
1	Facility Name: **El Cedro 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: **979 Manchester Road, Kaysville, Utah 84037**	E-mail: **jnewby@cirrusllc.com**
6	Plant Operator Contact: **Kijun Hong**	Phone/Fax: **(505) 632-4807 / (505) 632-4782**
a	Address: **Same as #2a above**	E-mail: **khong@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	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☑ Yes ☐ No	If yes, the permit No. is: **P046-M3**
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: **PSD-0340-M14-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: **17 MMCF[(a)]**	Daily: **408 MMCF[(a)]**	Annually: **148,920 MMCF[(a)]**
b	Proposed	Hourly: **17 MMCF[(a)]**	Daily: **408 MMCF[(a)]**	Annually: **148,920 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: **N/A**	Daily: **N/A**	Annually: **N/A**
b	Proposed	Hourly: **N/A**	Daily: **N/A**	Annually: **N/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: **31**	Range: **5W**	Township: **29N**	County: **Rio Arriba**	Elevation (ft): **6,450**
2	UTM Zone: ☐ 12 or ☑ 13			Datum: ☐ NAD 27 ☐ NAD 83 ☑ WGS 84	
a	UTM E (in meters, to nearest 10 meters): **285,405**			UTM N (in meters, to nearest 10 meters): **4,063,080**	
b	**AND** Latitude (deg., min., sec.): **36° 41' 21.0"**			Longitude (deg., min., sec.): **-107° 24' 06.8"**	
3	Name and zip code of nearest New Mexico town: **Navajo Dam, New Mexico 87419**				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): **From Bloomfield drive east on Highway 64 to mile marker 100.5, facility is on the left.**				
5	The facility is **approximately 18** miles **east southeast** of **Navajo Dam, New Mexico**.				
6	Status of land at facility (check one): ☑ Private ☐ Indian/Pueblo ☐ Federal BLM ☐ Federal Forest Service ☐ Other (specify)				
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: **No municipalities, Jicarilla Apache Indian Reservation, Rio Arriba County**				
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/aqb/modeling/class1areas.html)? ☑ Yes ☐ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: **Colorado (32.2 km)**				
9	Name nearest Class I area: **Weminuche Wilderness Area**				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): **73.75 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: **≈500 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? ☐ Yes ☑ No 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: **N/A**					
4	Month and year of anticipated construction completion: **N/A**					
5	Month and year of anticipated startup of new or modified facility: **N/A**					
6	Will this facility operate at this site for more than one year? ☑ Yes ☐ No					

Section 1-F: Other Facility Information

1	Are there any current Notice of Violations (NOV), compliance orders, or any other compliance or enforcement issues related to this facility? ☐ Yes ☑ No If yes, specify: **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: **1111 Travis Street, Houston, Texas 77002**		
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.): **N/A**		
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: **N/A**		
7	Affected Programs to include Other States, local air pollution control programs (i.e. Bernalillo) and Indian tribes: Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B)? If yes, state which ones and provide the distances in kilometers: **Yes, Colorado (≈ 32.2 km), Jicarilla Apache Indian Reservation (≈ 16.1 km), Southern Ute Indian Reservation (≈ 32.2 km), Navajo Indian Reservation (≈ 75.6 km), and Ute Mountain Indian Reservation (≈ 77.2 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 #	Manufact-urer'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 Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
1	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-10461/7 (Package # X00387)	1,232 hp	1,142 hp	12/16/1991 12/16/1991	N/A 1	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
2	Reciprocating Engine (Compressor)	Waukesha	L7042GL	400911 (Package # X00388)	1,232 hp	1,142 hp	4/19/1989 4/19/1989	N/A 2	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
3	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-61028/3 (Package # X00389)	1,232 hp	1,142 hp	4/22/1998 4/22/1998	N/A 3	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
4	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-12095/2 (Package # X00390)	1,232 hp	1,142 hp	7/25/1996 7/25/1996	N/A 4	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
5	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-11657/3 (Package # X00391)	1,232 hp	1,142 hp	3/8/1995 3/8/1995	N/A 5	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
6	Reciprocating Engine (Compressor)	Waukesha	L7042GL	402862 (Package # X00392)	1,232 hp	1,142 hp	12/4/1990 12/4/1990	N/A 6	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
7	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-10607/8 (Package # X00393)	1,232 hp	1,142 hp	6/3/1992 6/3/1992	N/A 7	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
8	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-61146/1 (Package # X00394)	1,232 hp	1,142 hp	2/22/1991 2/22/1991	N/A 8	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
9	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-12588/3 (Package # X00068)	1,232 hp	1,142 hp	7/24/1998 7/24/1998	N/A 9	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
10	Reciprocating Engine (Compressor)	Waukesha	L7042GL	TBD - not installed	1,232 hp	1,142 hp	TBD - not installed TBD - not installed	N/A 10	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
15	Turbine (Compressor)	Solar	MARS 90-T12000S	OHC12-M0031 (Package # MC81315)	12,579 hp	11,647 hp	11/15/1996 11/15/1996	N/A 15	20200209	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
16	Turbine (Compressor)	Solar	MARS 90-T12000S	OHD13-M8920 (Package # MC81316)	12,579 hp	11,647 hp	7/11/1995 7/11/1995	N/A 16	20200209	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
17	Reciprocating Engine (Generator #2)	Waukesha	L7042G	308280/C	1,025 hp	873 hp	5/1/1994 5/1/1994	N/A 17	20100253	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	N/A
18	Reciprocating Engine (Generator #1)	Waukesha	L7042GSI	C-12779/2	1,480 hp	1,467 hp	4/16/1999 4/16/1999	N/A 18	20100253	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	N/A
or 18a	Reciprocating Engine (Generator #4)	Waukesha	F2895GSI	83247	607 hp	562 hp	12/19/84 05/20/19	N/A 18a	20100253	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	N/A

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 #	Manufact-urer'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 Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
19	Reciprocating Engine (Generator #4)	Waukesha	F2895GSI	361831	754 hp	699 hp	3/30/1981 3/30/1981	N/A 19	20100253	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	N/A
20	Fuel Gas Heater	BS&B Inc.		13634	0.5 MMBtu/hr	0.5 MMBtu/hr	1991 1994	N/A 20	31000404	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
28	Fuel Gas Heater	Pesco		404851	0.7 MMBtu/hr	0.7 MMBtu/hr	2002 	N/A 28	31000404	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
38	Truck Loading							N/A N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
SSM	Startup, Shutdown & Maintenance							N/A N/A	31000203	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
F1	Equipment Leaks							N/A N/A	31088811	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
M1	Malfunctions							N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PR1	G-12 Pig Receiver							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	11-S Pig Receiver							N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T501	Produced Water Storage Tank	NATCO		9Y24701-01	200 bbl	200 bbl	10/2007 Prior to 08/23/2011	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T91019	Condensate Storage Tank	American Tank & Steel Corp.		8364	500 bbl	500 bbl	1981 Prior to 08/23/2011	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T91020	Condensate Storage Tank	American Tank & Steel Corp.		3263	300 bbl	300 bbl	05/1969 Prior to 08/23/2011	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T91021	Condensate Storage Tank	American Tank & Steel Corp.		3265	300 bbl	300 bbl	05/1969 Prior to 08/23/2011	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T91024	Produced Water Storage Tank	Continental Tank Co.		5229	300 bbl	300 bbl	5/1957 Prior to 08/23/2011	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T91025	Produced Water Storage Tank	NATCO		8Y91701-04	200 bbl	200 bbl	5/2007 Prior to 08/23/2011	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A

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 #	Manufact-urer'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 Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
T91028	Condensate Storage Tank	NATCO		8J54101-03	500 bbl	500 bbl	01/24/2008 Prior to 08/23/2011	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
BGT-1	Below Grade Produced Water Storage Tank				120 bbl	120 bbl	2019 2019	N/A N/A	31000299	☐ 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
37	Stabilizer Reboiler	Exotherm Corp.	UNIFLUX	0.8	20.2.72.202.B(5)		☑ Existing (unchanged) ☐ To be Removed
			4332	MMBtu/hr	#1a & #1b		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
39	Water Tank Heater			0.25	20.2.72.202.B(5)		☑ Existing (unchanged) ☐ To be Removed
				MMBtu/hr	#1a & #1b		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
40	Tech Shop Heater			0.125	20.2.72.202.B(1)(a)		☑ Existing (unchanged) ☐ To be Removed
				MMBtu/hr	#1a, #1b & 3		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
41	Maintenance Shop Heater			0.125	20.2.72.202.B(1)(a)		☑ Existing (unchanged) ☐ To be Removed
				MMBtu/hr	#1a, #1b & 3		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
42	Maintenance Shop Heater			0.125	20.2.72.202.B(1)(a)		☑ Existing (unchanged) ☐ To be Removed
				MMBtu/hr	#1a, #1b & 3		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
43	Maintenance Shop Heater			0.125	20.2.72.202.B(1)(a)		☑ Existing (unchanged) ☐ To be Removed
				MMBtu/hr	#1a, #1b & 3		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
44	Generator Building Heater			0.125	20.2.72.202.B(1)(a)		☑ Existing (unchanged) ☐ To be Removed
				MMBtu/hr	#1a, #1b & 3		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
45	Tech Shop Heater			0.25	20.2.72.202.B(1)(a)		☑ Existing (unchanged) ☐ To be Removed
				MMBtu/hr	#1a, #1b & 3		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
46	Produced Water Truck Loading				20.2.72.202.B(1)(a)		☐ Existing (unchanged) ☐ To be Removed
					#1a, #1b & 3		☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T1-T10	Lubrication Oil Storage Tanks (RICE day tanks)			500	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed
				gal	#1a, #1b & 5		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T15	Lubrication Oil Storage Tank (for RICE)			100	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed
				bbl	#1a, #1b & 5		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T16	Used Oil Storage Tank (for RICE)			165	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed
				bbl	#1a, #1b & 5		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T17	Waste Water Storage Tank			300	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed
				bbl	#1a, #1b & 5		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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
T19	Used Oil Storage Tank			500	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal	#1a, #1b & 5		
T20	Gasoline Storage Tank			500	20.2.72.202.B(5)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal			
T21	Diesel Storage Tank			300	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal	#1a, #1b & 5		
T22	Lubrication Oil Storage Tank (for turbines)			150	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	#1a, #1b & 5		
T23	Lubrication Oil Storage Tank (turbine day tank)			800	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal	#1a, #1b & 5		
T24	Lubrication Oil Storage Tank (generator engine day tank)			600	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal	#1a, #1b & 5		
T28	Waste Water Overflow Storage Tank			165	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	#1a, #1b & 5		
T30	Waste Water Storage Tank (for RICE)			165	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	#1a, #1b & 5		
T32	Storage Tank			300	Out-of-Service		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	For Information Only		
T33	De-ionized Water Storage Tank			500	Not An Emissions Source		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	For Information Only		
T34	De-ionized Water Storage Tank			300	Not An Emissions Source		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	For Information Only		
T35	Methanol Storage Tank			1,100	20.2.72.202.B(5)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal	#1a & #1b		
T36	Methanol Storage Tank			300	20.2.72.202.B(5)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	#1a & #1b		

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
T37	Storage Tank			500	Out-of-Service		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional
				gal	For Information Only		☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T38	Glycol Storage Tank			300	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional
				bbl	#1a, #1b & 5		☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T40	Storage Tank			300	Out-of-Service		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional
				bbl	For Information Only		☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T41	Utility Water Storage Tank			500	Not An Emissions Source		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional
				bbl	For Information Only		☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T42	Used Oil Filter Storage Tank			100	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional
				gal	#1a, #1b & 5		☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T43	Used Oil Filter Storage Tank			500	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional
				gal	#1a, #1b & 5		☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T44	Used Oil Storage Tank (for generator engines)			882	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional
				gal	#1a, #1b & 5		☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T46 & T47	Media Heat Release Storage Tanks			120	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional
				bbl	#1a, #1b & 5		☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T48	Heat Media Relief Storage Tank			200	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional
				bbl	#1a, #1b & 5		☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T49	Emulsion Breaker Storage Tank			65	20.2.72.202.B(5)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional
				gal	#1a & #1b		☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T50 & T51	De-ionized Water Storage Tank (for turbines)			8,000	Not An Emissions Source		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional
				gal	For Information Only		☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T52	Corrosion Inhibitor Storage Tank			325	20.2.72.202.B(5)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional
				gal	#1a & #1b		☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T53	Used Oil Storage Tank			50	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional
				bbl	#1a, #1b & 5		☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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
T54	Antifreeze Storage Tank			500	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal	#1a, #1b & 5		
T55	Soap Storage Tank			500	Not An Emissions Source		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal	For Information Only		

[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
17	Air/fuel ratio controller & non-selective catalytic converter	5/1/1994	NOX, CO & VOC	17	93, 85 & 20	Manufacturer's Data
18	Air/fuel ratio controller & non-selective catalytic converter	Before 05/94	NOX, CO & VOC	18	93, 85 & 20	Manufacturer's Data
or 18a	Air/fuel ratio controller & non-selective catalytic converter	05/20/19	NOX, CO & VOC	18a	96, 78 & 33	Manufacturer's Data

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

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

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

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

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
2	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
3	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
4	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
5	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
6	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
7	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
8	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
9	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
10	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
15	13.45	59.10	10.78	47.30	3.09	13.60	3.01E-01	1.32	5.84E-01	2.56	5.84E-01	2.56	5.84E-01	2.56	-	-	9.13E-05	4.00E-04
16	13.45	59.10	10.78	47.30	3.09	13.60	3.01E-01	1.32	5.84E-01	2.56	5.84E-01	2.56	5.84E-01	2.56	-	-	9.13E-05	4.00E-04
17	30.79	134.87	25.02	109.58	4.81E-01	2.11	3.90E-03	1.71E-02	1.29E-01	5.65E-01	1.29E-01	5.65E-01	1.29E-01	5.65E-01	-	-	-	-
18	51.74	226.63	42.04	184.13	8.08E-01	3.54	6.75E-03	2.96E-02	2.23E-01	9.76E-01	2.23E-01	9.76E-01	2.23E-01	9.76E-01	-	-	-	-
or 18a	16.12	70.61	11.16	48.88	3.72E-01	1.63	2.66E-03	1.17E-02	8.78E-02	3.85E-01	8.78E-02	3.85E-01	8.78E-02	3.85E-01	-	-	-	-
19	33.89	148.43	49.29	215.90	5.39E-01	2.36	3.20E-03	1.40E-02	1.06E-01	4.63E-01	1.06E-01	4.63E-01	1.06E-01	4.63E-01	-	-	-	-
20	5.56E-02	2.43E-01	4.67E-02	2.04E-01	3.06E-03	1.34E-02	3.33E-04	1.46E-03	4.22E-03	1.85E-02	4.22E-03	1.85E-02	4.22E-03	1.85E-02	-	-	2.78E-07	1.22E-06
28	7.78E-02	3.41E-01	6.53E-02	2.86E-01	4.28E-03	1.87E-02	4.67E-04	2.04E-03	5.9E-03	2.6E-02	5.91E-03	2.59E-02	5.91E-03	2.59E-02	-	-	3.89E-07	1.70E-06
38	-	-	-	-	14.97	11.51	-	-	-	-	-	-	-	-	-	-	-	-
SSM	-	-	-	-	Unspecified	33.07	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	2.33	10.20	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	Unspecified	10.00	-	-	-	-	-	-	-	-	-	-	-	-
PR1	-	-	-	-	Unspecified	9.63E-01	-	-	-	-	-	-	-	-	-	-	-	-
PR2	-	-	-	-	Unspecified	9.02	-	-	-	-	-	-	-	-	-	-	-	-
T501	-	-	-	-	Unspecified	8.80	-	-	-	-	-	-	-	-	-	-	-	-
T91019	-	-	-	-	1.82	26.08	-	-	-	-	-	-	-	-	-	-	-	-
T91020	-	-	-	-	Unspecified	w/T91019	-	-	-	-	-	-	-	-	-	-	-	-

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
T91021	-	-	-	-	Unspecified	w/T91019	-	-	-	-	-	-	-	-	-	-	-	-
T91024	-	-	-	-	Unspecified	w/T501	-	-	-	-	-	-	-	-	-	-	-	-
T91025	-	-	-	-	Unspecified	w/T501	-	-	-	-	-	-	-	-	-	-	-	-
T91028	-	-	-	-	Unspecified	w/T91019	-	-	-	-	-	-	-	-	-	-	-	-
BGT-1	-	-	-	-	Unspecified	w/T501	-	-	-	-	-	-	-	-	-	-	-	-
Total #1	181.21	794.06	204.72	896.84	52.30	255.12	6.65E-01	2.91	2.46	10.77	2.46	10.77	2.46	10.77	-	-	1.83E-04	8.03E-04
Total #2	145.59	638.05	173.84	761.59	51.86	253.20	6.61E-01	2.89	2.32	10.18	2.32	10.18	2.32	10.18	-	-	1.83E-04	8.03E-04

[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).

Total #1 assumes Harvest Four Corners, LLC choses to operate Unit 18.

Total #2 assumes Harvest Four Corners, LLC choses to operate Unit 18a.

Table 2-E: Requested Allowable Emissions

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

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
2	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
3	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
4	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
5	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
6	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
7	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
8	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
9	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
10	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
15	13.45	59.10	10.78	47.30	3.09	13.60	3.01E-01	1.32	5.84E-01	2.56	5.84E-01	2.56	5.84E-01	2.56	-	-	9.13E-05	4.00E-04
16	13.45	59.10	10.78	47.30	3.09	13.60	3.01E-01	1.32	5.84E-01	2.56	5.84E-01	2.56	5.84E-01	2.56	-	-	9.13E-05	4.00E-04
17	2.12	9.27	3.85	16.86	3.85E-01	1.69	3.90E-03	1.71E-02	1.29E-01	5.65E-01	1.29E-01	5.65E-01	1.29E-01	5.65E-01	-	-	-	-
18	3.56	15.58	6.47	28.33	6.47E-01	2.83	6.75E-03	2.96E-02	2.23E-01	9.76E-01	2.23E-01	9.76E-01	2.23E-01	9.76E-01	-	-	-	-
or 18a	6.20E-01	2.72	2.48	10.86	2.48E-01	1.09	2.66E-03	1.17E-02	8.78E-02	3.85E-01	8.78E-02	3.85E-01	8.78E-02	3.85E-01	-	-	-	-
19	33.89	8.47	49.29	12.32	5.39E-01	1.35E-01	3.20E-03	8.00E-04	1.06E-01	2.64E-02	1.06E-01	2.64E-02	1.06E-01	2.64E-02	-	-	-	-
20	5.56E-02	2.43E-01	4.67E-02	2.04E-01	3.06E-03	1.34E-02	3.33E-04	1.46E-03	4.22E-03	1.85E-02	4.22E-03	1.85E-02	4.22E-03	1.85E-02	-	-	2.78E-07	1.22E-06
28	7.78E-02	3.41E-01	6.53E-02	2.86E-01	4.28E-03	1.87E-02	4.67E-04	2.04E-03	5.91E-03	2.59E-02	5.91E-03	2.59E-02	5.91E-03	2.59E-02	-	-	3.89E-07	1.70E-06
38	-	-	-	-	14.97	11.51	-	-	-	-	-	-	-	-	-	-	-	-
SSM	-	-	-	-	Unspecified	33.07	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	2.33	10.20	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	Unspecified	10.00	-	-	-	-	-	-	-	-	-	-	-	-
PR1	-	-	-	-	Unspecified	9.63E-01	-	-	-	-	-	-	-	-	-	-	-	-
PR2	-	-	-	-	Unspecified	9.02	-	-	-	-	-	-	-	-	-	-	-	-
T501	-	-	-	-	Unspecified	8.80	-	-	-	-	-	-	-	-	-	-	-	-
T91019	-	-	-	-	1.82	26.08	-	-	-	-	-	-	-	-	-	-	-	-
T91020	-	-	-	-	Unspecified	w/T91019	-	-	-	-	-	-	-	-	-	-	-	-
T91021	-	-	-	-	Unspecified	w/T91019	-	-	-	-	-	-	-	-	-	-	-	-
T91024	-	-	-	-	Unspecified	w/T501	-	-	-	-	-	-	-	-	-	-	-	-

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
T91025	-	-	-	-	Unspecified	w/T501	-	-	-	-	-	-	-	-	-	-	-	-
T91028	-	-	-	-	Unspecified	w/T91019	-	-	-	-	-	-	-	-	-	-	-	-
BGT-1	-	-	-	-	Unspecified	w/T501	-	-	-	-	-	-	-	-	-	-	-	-
Total #1	104.35	317.46	147.98	444.73	52.04	251.76	6.65E-01	2.90	2.46	10.34	2.46	10.34	2.46	10.34	-	-	1.83E-04	8.03E-04
Total #2	101.41	304.60	143.99	427.27	51.64	250.01	6.61E-01	2.88	2.32	9.74	2.32	9.74	2.32	9.74	-	-	1.83E-04	8.03E-04

Total #1 assumes Harvest Four Corners, LLC choses to operate Unit 18.

Total #2 assumes Harvest Four Corners, LLC choses to operate Unit 18a.

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
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
or 18a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SSM	-	-	-	-	Unspecified	33.07	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	Unspecified	10.00	-	-	-	-	-	-	-	-	-	-	-	-
PR1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PR2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T501	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T91019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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
T91020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T91021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T91024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T91025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T91028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BGT-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	Unspecified	43.07	-	-	-	-	-	-	-	-	-	-	-	-

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

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

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

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

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

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

Table 2-H: Stack Exit Conditions

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

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
1	1	V	No	19.67	667	101			289	0.67
2	2	V	No	19.67	667	101			289	0.67
3	3	V	No	19.67	667	101			289	0.67
4	4	V	No	19.67	667	101			289	0.67
5	5	V	No	19.67	667	101			289	0.67
6	6	V	No	19.67	667	101			289	0.67
7	7	V	No	19.67	667	101			289	0.67
8	8	V	No	19.67	667	101			289	0.67
9	9	V	No	19.67	667	101			289	0.67
10	10	V	No	19.67	667	101			289	0.67
15	15	V	No	41.50	845	3097			161	4.95
16	16	V	No	41.50	845	3097			161	4.95
17	17	V	No	16.60	1053	73			69	1.17
18	18a	V	No	19.08	1125	116			108	1.17
or 18a	or 18b	V	No	19.08	1070	44			80.1	0.83
19	19	V	No	20.00	1110	55			278	0.50
20	20	V	No	16.67	600	1			6	0.50
28	28	V	No	14.25	600	2			6	0.67

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

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

Stack No.	Unit No.(s)	Total HAPs		Acetaldehyde ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		Formaldehyde ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	1	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
2	2	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
3	3	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
4	4	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
5	5	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
6	6	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
7	7	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
8	8	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
9	9	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
10	10	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
15	15	1.1	4.7	0.4	1.9	-	0.1	0.4	1.9	-	0.2	-	-						
16	16	1.1	4.7	0.4	1.9	-	0.1	0.4	1.9	-	0.2	-	-						
17	17	0.1	0.5	-	-	-	0.1	0.1	0.3	-	-	-	-						
18	18	0.2	0.9	-	-	0.1	0.3	0.1	0.5	-	-	-	0.1						
or 18a	or 18a	0.1	0.3	-	-	-	0.1	0.0	0.2	-	-	-	-						
19	19	2.2	0.5	-	-	0.6	0.1	1.1	0.3	-	-	0.2	-						
20	20	-	-	-	-	-	-	-	-	-	-	-	-						
28	28	-	-	-	-	-	-	-	-	-	-	-	-						
38	38	3.8	3.0	-	-	-	-	-	-	-	-	-	-						
SSM	SSM	-	0.9	-	-	-	-	-	-	-	-	-	-						
F1	F1	0.1	0.3	-	-	-	-	-	-	-	-	-	-						
M1	M1	-	0.3	-	-	-	-	-	-	-	-	-	-						
PR1	PR1	-	-	-	-	-	-	-	-	-	-	-	-						
PR2	PR2	-	0.3	-	-	-	-	-	-	-	-	-	-						
T501	T501	-	1.5	-	-	-	0.2	-	-	-	0.7	-	0.3						
T91019	T91019	0.5	3.4	-	-	0.1	0.3	-	-	0.4	2.9	0.0	0.2						

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

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

Stack No.	Unit No.(s)	Total HAPs		Acetaldehyde ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		Formaldehyde ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		Toluene ☑ 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
T91020	T91020	-	w/T91019	-	-	-	w/T91019	-	-	-	w/T91019	-	w/T91019						
T91021	T91021	-	w/T91019	-	-	-	w/T91019	-	-	-	w/T91019	-	w/T91019						
T91024	T91024	-	w/T501	-	-	-	w/T501	-	-	-	w/T501	-	w/T501						
T91025	T91025	-	w/T501	-	-	-	w/T501	-	-	-	w/T501	-	w/T501						
T91028	T91028	-	w/T91019	-	-	-	w/T91019	-	-	-	w/T91019	-	w/T91019						
BGT-1	BGT-1	-	w/T501	-	-	-	w/T501	-	-	-	w/T501	-	w/T501						
Total #1		13.5	40.6	0.9	3.9	1.4	2.3	6.4	23.4	3.6	7.6	0.6	1.5						
Total #2		13.3	40.0	0.9	3.9	1.3	2.1	6.3	23.1	3.6	7.6	0.6	1.4						

Total #1 assumes Harvest Four Corners, LLC choses to operate Unit 18.

Total #2 assumes Harvest Four Corners, LLC choses to operate Unit 18a.

Table 2-J: Fuel

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

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash
1	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
2	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
3	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
4	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
5	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
6	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
7	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
8	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
9	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
10	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
15	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	98.3 MCF	860.9 MMCF	NA	NA
16	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	98.3 MCF	860.9 MMCF	NA	NA
17	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	7.4 MCF	64.6 MMCF	NA	NA
18	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	12.8 MCF	111.8 MMCF	NA	NA
or 18a	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	5.0 MCF	44.0 MMCF	NA	NA
19	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	6.0 MCF	3.0 MMCF	NA	NA
20	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	556 CF	4.9 MMCF	NA	NA
28	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	778 CF	6.8 MMCF	NA	NA

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-T10	31000299	Lubrication Oil	Lubrication Oil	Exempt/Insignificant Source					
T15	31000299	Lubrication Oil	Lubrication Oil	Exempt/Insignificant Source					
T16	31000299	Used Oil	Used Oil	Exempt/Insignificant Source					
T17	31000299	Waste Water	99% H2O & 1% Hydrocarbon	Exempt/Insignificant Source					
T19	31000299	Used Oil	Used Oil	Exempt/Insignificant Source					
T20	31000299	Gasoline	Gasoline	Exempt					
T21	31000299	Diesel	Diesel	Exempt/Insignificant Source					
T22	31000299	Lubrication Oil	Lubrication Oil	Exempt/Insignificant Source					
T23	31000299	Lubrication Oil	Lubrication Oil	Exempt/Insignificant Source					
T24	31000299	Lubrication Oil	Lubrication Oil	Exempt/Insignificant Source					
T28	31000299	Waste Water	99% H2O & 1% Hydrocarbon	Exempt/Insignificant Source					
T30	31000299	Waste Water	99% H2O & 1% Hydrocarbon	Exempt/Insignificant Source					
T32	31000299	Out-of-Service	Out-of-Service	Out-of-Service - For Information Only					
T33	31000299	De-ionized Water	De-ionized Water	Not An Emissions Source - For Information Only					
T34	31000299	De-ionized Water	De-ionized Water	Not An Emissions Source - For Information Only					
T35	31000299	Methanol	Methanol	Exempt/Insignificant Source					
T36	31000299	Methanol	Methanol	Exempt/Insignificant Source					
T37	31000299	Out-of-Service	Out-of-Service	Out-of-Service - For Information Only					
T38	31000299	Glycol	Glycol	Exempt/Insignificant Source					
T40	31000299	Out-of-Service	Out-of-Service	Out-of-Service - For Information Only					
T41	31000299	Water	Water	Not An Emissions Source - For Information Only					
T42	31000299	Used Oil	Used Oil	Exempt/Insignificant Source					
T43	31000299	Used Oil	Used Oil	Exempt/Insignificant Source					
T44	31000299	Used Oil	Used Oil	Exempt/Insignificant Source					
T46 & T47	31000299	Glycol	50% H2O & 50% Glycol	Exempt/Insignificant Source					
T48	31000299	Glycol	50% H2O & 50% Glycol	Exempt/Insignificant Source					
T49	31000299	Emulsion Breaker	Sulfatron DN-100	Exempt/Insignificant Source					

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)
T50 & T51	31000299	De-ionized Water	De-ionized Water	Not An Emissions Source - For Information Only					
T52	31000299	Corrosion Inhibitor	CG049 Corrosion Inhibitor	Exempt/Insignificant Source					
T53	31000299	Used Oil	Used Oil	Exempt/Insignificant Source					
T54	31000299	Antifreeze	50% EG & 50% H2O	Exempt/Insignificant Source					
T55	31000299	Soap	Soap	Not An Emissions Source - For Information Only					
T501	31000299	Produced Water	99% H2O & 1% Hydrocarbon						
T91019	31000299	Condensate	Condensate	5.77	83.36	67.36	1.44	80.79	1.99
T91020	31000299	Condensate	Condensate	5.77	83.36	67.36	1.44	80.79	1.99
T91021	31000299	Condensate	Condensate	5.77	83.36	67.36	1.44	80.79	1.99
T91024	31000299	Produced Water	99% H2O & 1% Hydrocarbon						
T91025	31000299	Produced Water	99% H2O & 1% Hydrocarbon						
T91028	31000299	Condensate	Condensate	5.77	83.36	67.36	1.44	80.79	1.99
BGT-1	31000299	Produced Water	99% H2O & 1% Hydrocarbon						

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-T10		Lubrication Oil		FX	12		Exempt/Insignificant Source						
T15		Lubrication Oil		FX	100		Exempt/Insignificant Source						
T16		Used Oil		FX	165		Exempt/Insignificant Source						
T17		Waste Water		FX	300		Exempt/Insignificant Source						
T19		Used Oil		FX	12		Exempt/Insignificant Source						
T20		Gasoline		FX	21		Exempt						
T21		Diesel		FX	7		Exempt/Insignificant Source						
T22		Lubrication Oil		FX	150		Exempt/Insignificant Source						
T23		Lubrication Oil		FX	19		Exempt/Insignificant Source						
T24		Lubrication Oil		FX	14		Exempt/Insignificant Source						
T28		Waste Water		FX	165		Exempt/Insignificant Source						
T30		Waste Water		FX	165		Exempt/Insignificant Source						
T32		Amine		FX	300		Out-of-Service - For Information Only						
T33		De-ionized Water		FX	500		Not An Emissions Source - For Information Only						
T34		De-ionized Water		FX	300		Not An Emissions Source - For Information Only						
T35		Methanol		FX	26		Exempt/Insignificant Source						
T36		Methanol		FX	300		Exempt/Insignificant Source						
T37		Out-of-Service		FX	12		Out-of-Service - For Information Only						
T38		Glycol		FX	300		Exempt/Insignificant Source						
T40		Out-of-Service		FX	300		Out-of-Service - For Information Only						
T41		Water		FX	500		Not An Emissions Source - For Information Only						
T42		Used Oil		FX	2		Exempt/Insignificant Source						
T43		Used Oil		FX	12		Exempt/Insignificant Source						
T44		Used Oil		FX	21		Exempt/Insignificant Source						
T46 & T47		Glycol		FX	120		Exempt/Insignificant Source						
T48		Glycol		FX	200		Exempt/Insignificant Source						
T49		Emulsion Breaker		FX	2		Exempt/Insignificant Source						
T50 & T51		De-ionized Water		FX	190		Not An Emissions Source - For Information Only						
T52		Corrosion Inhibitor		FX	8		Exempt/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			
T53		Used Oil		FX	50		Exempt/Insignificant Source						
T54		Antifreeze		FX	12		Exempt/Insignificant Source						
T55		Soap		FX	12		Not An Emissions Source - For Information Only						
T501		Produced Water		FX	200							643,200	76.57
T91019		Condensate		FX	500		4.72	2.79	MG	MG	Good	4,567,895	231.15
T91020		Condensate		FX	300		3.66	2.48	MG	MG	Good	2,737,760	231.14
T91021		Condensate		FX	300		3.66	2.48	MG	MG	Good	2,737,760	231.14
T91024		Produced Water		FX	300							964,800	76.57
T91025		Produced Water		FX	200							643,200	76.57
T91028		Condensate		FX	500		4.11	4.01	MG	MG	Good	3,516,586	234.59
BGT-1		Produced Water		N/A	120							571,200	113.3

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
	Mechanical Shoe Seal	**Liquid-mounted resilient seal**	**Vapor-mounted resilient seal**	**Seal Type**		
FX: Fixed Roof					**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	148,920 MMcf/yr	High pressure natural gas	C1-C6+	Gas	148,920 MMcf/yr
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
17 & 18 or 18a	Pressure Drop	Across catalyst	Inches H2O	± 2" from tested pressure	As per manufacturer	As per manufacturer	Manual	NA
17 & 18 or 18a	Temperature	Inlet to catalyst	°F	750 - 1250 °F	As per manufacturer	As per manufacturer	CPMS	4-hr

Table 2-P: Greenhouse Gas Emissions

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

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**										
1	**mass GHG**	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
2	**mass GHG**	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
3	**mass GHG**	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
4	**mass GHG**	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
5	**mass GHG**	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
6	**mass GHG**	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
7	**mass GHG**	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
8	**mass GHG**	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
9	**mass GHG**	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
10	**mass GHG**	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
15	**mass GHG**	50367.37	9.49E-02	9.49E-01											50368.41	-
	CO_2e	50367.37	28.28	23.73											-	50419.38
16	**mass GHG**	50367.37	9.49E-02	9.49E-01											50368.41	-
	CO_2e	50367.37	28.28	23.73											-	50419.38
17	**mass GHG**	4209.59	7.93E-03	7.93E-02											4209.68	-
	CO_2e	4209.59	2.36	1.98											-	4213.94

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**										
18	**mass GHG**	6453.57	1.22E-02	1.22E-01											6453.70	-
	CO_2e	6453.57	3.64	3.05											-	6460.26
or 18a	**mass GHG**	2573.47	4.85E-03	4.85E-02											2573.52	-
	CO_2e	2573.47	1.45	1.21											-	2576.13
19	**mass GHG**	163.75	3.09E-04	3.09E-03											163.75	-
	CO_2e	163.75	9.21E-02	7.73E-02											-	163.92
20	**mass GHG**	284.05	5.35E-04	5.35E-03											284.06	-
	CO_2e	284.05	1.59E-01	1.34E-01											-	284.34
28	**mass GHG**	397.67	7.49E-04	7.49E-03											397.68	-
	CO_2e	397.67	2.23E-01	1.87E-01											-	398.08
37	**mass GHG**	454.48	8.57E-04	8.57E-03											454.49	-
	CO_2e	454.48	2.55E-01	2.14E-01											-	454.95
38	**mass GHG**	-	-	-											0.00	-
	CO_2e	-	-	-											-	0.00
39	**mass GHG**	142.02	2.68E-04	2.68E-03											142.02	-
	CO_2e	142.02	7.99E-02	6.70E-02											-	142.17
40	**mass GHG**	71.01	1.34E-04	1.34E-03											71.01	-
	CO_2e	71.01	3.99E-02	3.35E-02											-	71.08
41	**mass GHG**	71.01	1.34E-04	1.34E-03											71.01	-
	CO_2e	71.01	3.99E-02	3.35E-02											-	71.08
42	**mass GHG**	71.01	1.34E-04	1.34E-03											71.01	-
	CO_2e	71.01	3.99E-02	3.35E-02											-	71.08
43	**mass GHG**	71.01	1.34E-04	1.34E-03											71.01	-
	CO_2e	71.01	3.99E-02	3.35E-02											-	71.08
44	**mass GHG**	71.01	1.3E-04	1.34E-03											71.01	-
	CO_2e	71.01	4.0E-02	3.35E-02											-	71.08

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**										
45	**mass GHG**	142.02	2.7E-04	2.7E-03											142.02	-
	CO_2e	142.02	8.0E-02	6.7E-02											-	142.17
SSM	**mass GHG**	276.46	-	1278.04											1554.50	-
	CO_2e	276.46	-	31951.00											-	32227.46
F1	**mass GHG**	7.71	-	37.93											45.64	-
	CO_2e	7.71	-	948.25											-	955.96
M1	**mass GHG**	328.07	-	1195.65											1523.72	-
	CO_2e	328.07	-	29891.25											-	30219.32
PR1	**mass GHG**	1.20E-01	-	3.52											3.64	-
	CO_2e	1.20E-01	-	88.00											-	88.12
PR2	**mass GHG**	1.04	-	20.48											21.52	-
	CO_2e	1.04	-	512.00											-	513.04
T501	**mass GHG**	-	-	-											0.00	-
	CO_2e	-	-	-											-	0.00
T19019	**mass GHG**	2.72E-02	-	2.58E-01											0.29	-
	CO_2e	2.72E-02	-	6.45											-	6.48
T19020	**mass GHG**	1.63E-02	-	1.55E-01											0.17	-
	CO_2e	1.63E-02	-	3.88											-	3.89
T19021	**mass GHG**	1.63E-02	-	1.55E-01											0.17	-
	CO_2e	1.63E-02	-	3.88											-	3.89
T19024	**mass GHG**	-	-	-											0.00	-
	CO_2e	-	-	-											-	0.00
T19025	**mass GHG**	-	-	-											0.00	-
	CO_2e	-	-	-											-	0.00

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**										
T19028	**mass GHG**	2.09E-02	-	1.99E-01											0.22	-
	CO_2e	2.09E-02	-	4.98											-	5.00
BGT_1	**mass GHG**	-	-	-											0.00	-
	CO_2e	-	-	-											-	0.00
Total #1	**mass GHG**	174054.92	3.27E-01	2539.65											176,594.90	
	CO_2e	174054.92	97.32	63491.32												237,643.56
Total #2	**mass GHG**	170174.82	3.19E-01	2539.58											172,714.72	-
	CO_2e	170174.82	95.13	63489.48											-	233,759.43

[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.

Total #1 assumes Harvest Four Corners, LLC choses to operate Unit 18.

Total #2 assumes Harvest Four Corners, LLC choses to operate Unit 18a.

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.

Summary

The HFC El Cedro Compressor Station currently operates under a construction permit, 0340-M14-R2 dated September 17, 2019 and a Title V operating permit, P046-R3, dated April 19, 2019.

Under the construction permit, the station is currently permitted to operate the following equipment/sources:

- Ten 4SLB Waukesha 7042GL natural gas-fired compressor engines (Units 1-10);
- Two Solar Mars 90-T12000S natural gas-fired turbines (Units 15 & 16);
- One 4SRB Waukesha 7042G natural gas-fired generator engine (Unit 17);
- One 4SRB Waukesha 7042GSI natural gas-fired generator engine (Unit 18);
- One 4SRB Waukesha F2895GSI natural gas-fired generator engine (Unit 18a);
- One 4SRB Waukesha F2895GSI natural gas-fired standby emergency generator engine (Unit 19);
- One BS&B, Inc. natural gas-fired fuel gas heater (Unit 20) rated at 0.5 MMBtu/hr;
- One Pesco natural gas-fired fuel gas heater (Unit 28) rated at 0.7 MMBtu/hr;
- Truck loading/unloading rack (Unit 38);
- SSM emissions (Unit SSM) from the turbines, compressors and piping associated with the station;
- Malfunction (Unit M1) emissions;
- Two pig receivers (Units PR1 & PR2);
- Two 200 bbl produced water storage tanks (Units T501 & T91025);
- Two 500 bbl condensate storage tanks (Units T91019 & T91028);
- Two 300 bbl condensate storage tanks (Units T91020 & T91021); and
- One 300 bbl produced water storage tank (Unit T91024).

Note that the facility is equipped with a condensate stabilizer. This unit removes flash emissions from a large majority of the condensate before it is routed to the storage tanks. The flash gases are inserted into the facility gas stream.

This application is being submitted to make the following modifications to the construction permit:

- Increase permitted facility total condensate throughput to the storage tanks (Units T91019, T91020, T91021 & T91028) from 3,390,000 to 13,560,000 gallons per rolling 12-month period;
- Decrease permitted facility total unstabilized condensate throughput to the storage tanks (Units T91019, T91020, T91021 & T91028) from 325,920 to 42,000 gallons per rolling 12-month period;

  Note: The stabilizer heater is being set so as to ensure the stabilizer bottoms temperature is well above that required to ensure full stabilization. For this reason, the limit of 42,000 gallons of unstabilized condensate is adequate.
- Increase condensate truck loading (Unit 38) from 3,390,000 to 13,560,000 gallons per rolling 12-month period;
- Increase permitted facility total produced water throughput to the storage tanks (Units T501, T91024 & T91025) from 705,600 to 2,822,400 gallons per rolling 12-month period;
- Adjust permitted emissions from the condensate storage tanks, produced water storage tanks, and condensate truck loading as required to account for the increase in condensate and produced water throughput;
- Add produced water truck loading (Unit 46). Note that this is an insignificant source in accordance with 20.2.72.202.B(5) (VOC emissions are less than 0.5 tons per year); and
- Increase facility total pig receiver (Units PR1 & PR2) emissions.

Consistent with previous applications, HFC continues to request a cap on emissions from both the condensate and produced water storage tanks.

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

Startup, Shutdown and Maintenance Emissions

For the reciprocating engines, turbines, heaters, truck loading, equipment leaks (valves, connectors, seals, etc.), pig receivers, and storage tanks, it is concluded that either there are no SSM emissions in excess of those identified for steady-state operation as seen in Section 2 (Table 2-E) or the SSM emissions are not quantifiable. Discussions justifying this conclusion are provided in Section 6.

SSM emissions from blowdowns of the turbines, compressors and piping associated with the station are calculated from the quantity of gas vented during each event, the composition of the gas in the compressors, and the number of events. A safety factor is included.

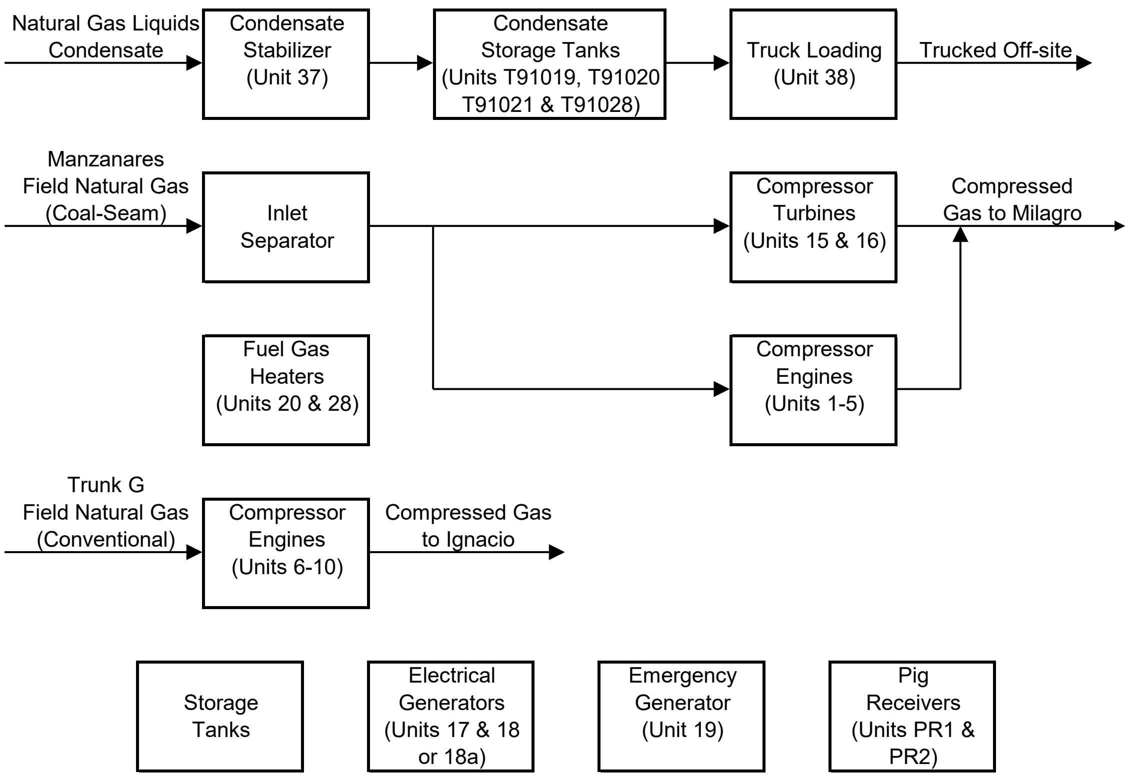
Section 4

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



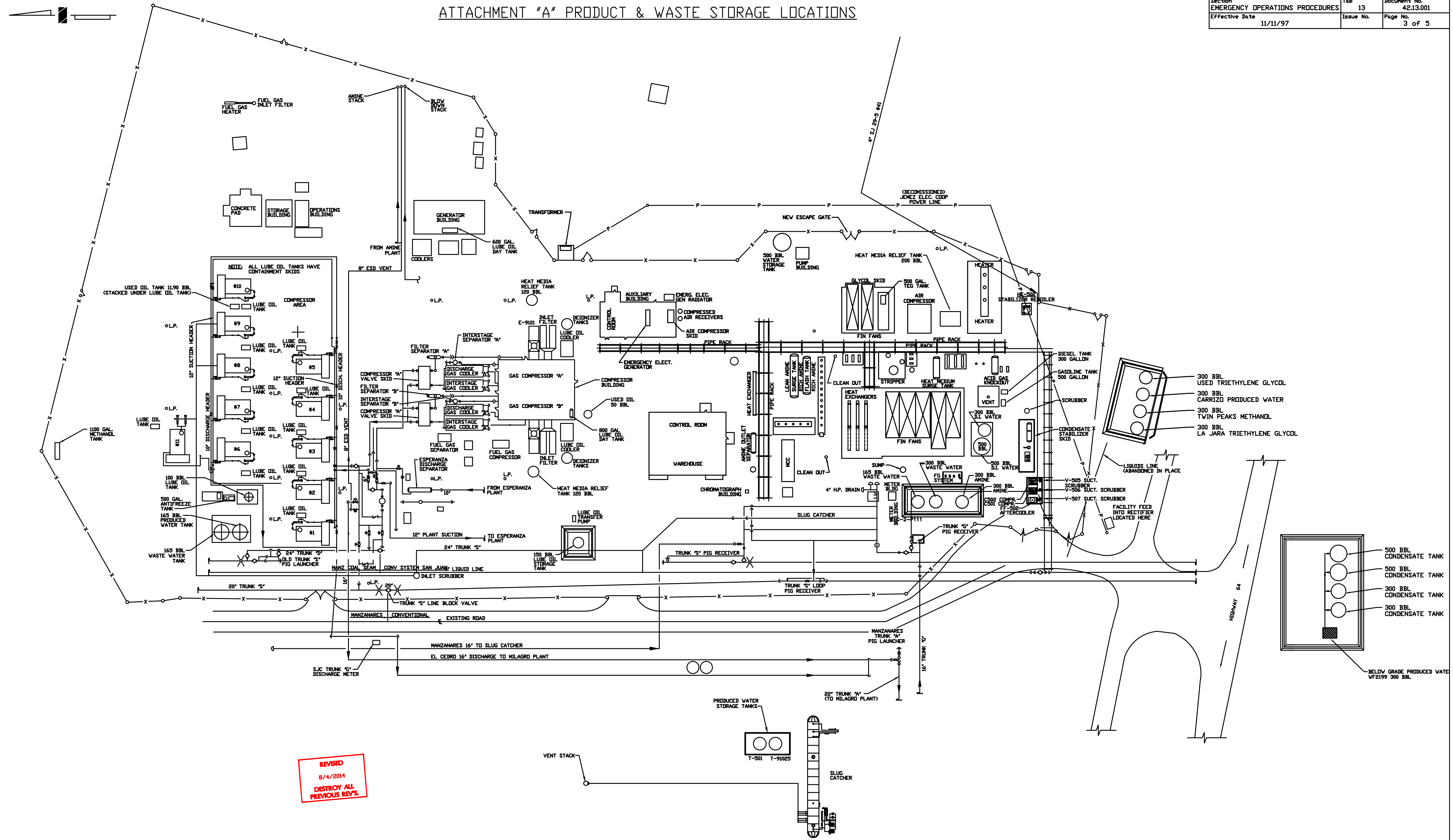
Section 5

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.

ATTACHMENT "A" PRODUCT & WASTE STORAGE LOCATIONS



NO.	DATE	BY	DESCRIPTION	W.O.NO.	CHK.	APP.
2	8/4/2014	TAG	REVISED PER FIELD REDLINES FROM J.F.			
1	11/26/97	BES	EOD DRAWING REDRAWN ON 24"x36" BORDER			E

REVISIONS

DRAWING NO.	TITLE	DRAWING NO.	TITLE

REFERENCE DRAWINGS

LEGEND

DRAFTING	BY	DATE
DRAWN	BES	06/11/97
CHECKED		
APPROVED		
ENGINEERING	BY	DATE
PROJ. APPROVED		

WILLIAMS FIELD SERVICES
ONE OF THE WILLIAMS COMPANIES

EL CEDRO GAS CONDITIONING PLANT
PLOT PLAN
SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN
SAN JUAN COUNTY, NEW MEXICO

SCALE: 1"=40'-0"
W.O. NO.
DWG. NO. ELC-1-P21
REV. 02

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.

Reciprocating Engines

The nitrogen oxides (NO_X), carbon monoxide (CO) and volatile organic compounds (VOC) emissions from the engines (Units 1-10, 17, 18, 18a & 19) were calculated from manufacturer's data. Note that the NO_X, CO, and VOC emissions from two of the rich burn engines (Units 17, 18 & 18a) were calculated from manufacturer's data consistent with BACT as established in previous permitting. The SO_2 and particulate emissions from the lean burn engines (Units 1-10) were calculated using AP-42 emission factors from Table 3.2-2. The SO_2 and particulate emissions from the rich burn engines (Units 17, 18 & 19) were calculated using AP-42 emission factors from Table 3.2-3. HAP emissions from the engines were calculated using GRI-HAPCalc 3.0. Except for the standby generator (Unit 19), emissions were calculated assuming all the units operate at full site capacity for 8,760 hours per year. Emissions from the standby generator were calculated assuming the unit operates 500 hours per year.

As there are no EPA approved test methods for measuring startup and shutdown emissions, they are not quantifiable. However, it should be noted that 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, with the exceptions noted below, emissions during startup are not expected to exceed the steady-state allowable limits. Similarly, emissions during shutdown are not expected to 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.

Units 17, 18 & 18a are required to be equipped with air/fuel ratio controllers and non-selective catalytic converters to control NO_X, CO and VOC emissions. As it takes several minutes for the catalysts to reach effective operating temperatures, emissions during this warm-up period likely exceed the steady-state allowable limits.

The engine emission rates presented in this application are carried forward and not revised.

Turbines

The NO_X, CO and VOC emissions from the turbines (Units 15 & 16) were calculated using manufacturer's data. The SO_2 and particulate emissions were calculated using AP-42 emission factors from Table 3.1-2a. HAP emissions from the turbines werere calculated using GRI-HAPCalc 3.0. Emissions were calculated assuming each turbine operates at full site capacity for 8,760 hours per year.

As there are no EPA approved test methods for measuring startup and shutdown emissions, they are not quantifiable. However, it should be noted that the turbines startup with no load and a rich fuel mixture. As a result, combustion emissions are minimized. Because the turbines take only minutes to reach operating temperature, combustion emissions during startup are not expected to exceed the steady-state allowable limits. Similarly, because fuel and air flow cease within seconds of shutdown, combustion emissions during shutdown are not expected to exceed the steady-state allowable limits. Combustion emissions due to scheduled maintenance are negligible as the turbines are not in operation during maintenance.

The turbine emission rates presented in this application are carried forward and not revised.

SSM (Turbines, Compressors and Piping)

VOC and HAP emissions from blowdowns of the turbines, compressors and piping associated with the plant (Unit SSM) occur during startups and shutdowns. SSM emissions from the turbines result from the blowdown of motive gas used to drive turbine components during startups and shutdowns. SSM emissions from the compressors occur when high pressure gas is used to purge air from the compressors and associated piping prior to startups. This gas is vented to atmosphere. SSM emissions from the compressors also occur after shutdowns when high pressure gas in the compressors and associated piping is released to atmosphere as a safety precaution.

SSM emissions from blowdown of the turbines, compressors and piping associated with the plant 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 HFC engineering. The composition of the gas was determined from extended gas analyses. 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 the composition of the gas is likely to vary. The 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.

The SSM VOC emission rates presented in this application are carried forward and not revised.

Heaters & Reboiler

Criteria pollutant emissions from the heaters and condensate stabilizer reboiler (Units 20, 28, 37 & 39-45) were calculated using AP-42 emissions factors from Tables 1.4-1 and 1.4-2. HAP emissions were calculated using GRI-HAPCalc 3.0. Emissions were calculated assuming each heater and the reboiler operate at full capacity for 8,760 hours per year. Note that the condensate stabilizer reboiler (Unit 37) and the water tank heater (Unit 39) are exempt sources in accordance with 20.2.72.202.B(5) (criteria pollutant emissions are less than 0.5 tons per year). The building heaters (Units 40-45) are exempt sources in accordance with 20.2.72.202.B(1) (they are gaseous heaters rated less than 5 MMBtu/hr and are used solely for the purpose of comfort heating).

As there are no EPA approved test methods for measuring startup and shutdown emissions, they are not quantifiable. However, it should be noted that the heaters (uncontrolled) startup with less fuel input than during steady-state operation, so emissions are not expected to exceed the steady-state allowable limits. During shutdown, the fuel supply stops quickly, but air flow may not, causing the continued formation of NO_X. Even so, with no fuel, NO_X formation should be less than during steady-state operation. Emissions due to scheduled maintenance are negligible as the units are not in operation.

The heater and reboiler emission rates presented in this application are carried forward and not revised.

Truck Loading

The VOC emissions from condensate and produced water truck loading (Units 38 & 46) were calculated using the AP-42 emissions factor identified in Section 5.2-1.

The data used to calculate a condensate emission factor was obtained from the TANKS 4 output file. The condensate throughput was obtained from the VMGSim output file. HAP emissions are identified as percentages of the VOC emission rate, based on the HAP percentages predicted by TANKS 4.

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

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

Equipment Leak Emissions

Equipment leak (Unit F1) emissions were calculated using emission factors from Table 2.4 of the 1995 Protocol for Equipment Leak Emission Estimates published by the EPA. The component count was determined from the number of compressors and dehydrators permitted to operate at the station, using an equation derived by Harvest that is representative of their facilities. Emissions were calculated assuming the equipment operates 8,760 hours per year. To allow for variability in the composition of the inlet gas stream, the emission rates identified on the application forms are higher than the calculated emissions.

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

The equipment leak emission rates presented in this application are carried forward and not revised.

Malfunctions

Malfunction (Unit M1) 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 this set VOC emission rate, HAP emissions were calculated using facility gas composition. Note that these malfunction emissions include the venting of gas only, not combustion emissions.

The malfunction VOC emission rates presented in this application are carried forward and not revised.

Pig Receivers

VOC and HAP emissions from the pig receivers (Units PR1 & PR2) 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 HFC engineering. The composition of the gas was determined from extended gas analyses. 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.

Storage Tanks

The VOC and HAP emissions from the condensate tanks (Units T-91019, T-91020, T-91021 & T-91028) were calculated using TANKS 4.0.9d for working/breathing losses and VMGSim for flash emissions. Working/breathing losses were calculated using a condensate (post flash) throughput rate of 13,560,000 gallons per year (13,518,000 gallons of stabilized condensate and 42,000 gallons of unstabilized condensate).

Flash emissions were calculated using a condensate throughput rate of 42,000 gallons per year. The 42,000 gallons of unstabilized condensate were included in the calculations to allow for transfers during pigging upsets (i.e., bypasses around the condensate stabilizer), transfers of unstabilized condensate from the condensate stabilizer when the operating temperature and pressure do not achieve levels necessary to completely stabilize the condensate, and to allow the stabilizer to be taken off-line for maintenance and repair if required.

Note: The VMGSim Index and Main Flowsheet are provided in this section. To review the Material Stream data refer to the copy of the VMGSim output file on the CD submitted with this application.

Where required, VOC and HAP emissions (working/breathing losses) from the remaining storage tanks, except produced water tanks, were calculated using TANKS 4.0.9d. The following assumptions are made for the emissions calculations:

- Residual oil #6 was used as an estimate for lubrication oil, used oil and the hydrocarbons in waste water. As the vapor pressure of residual oil #6 is less than 0.2 pounds per square inch absolute (psia), the tanks containing lubrication oil, used oil and waste water (Units T1-T10, T15-T17, T19, T22-T24, T28, T30, T42-T44 & T53) were assumed to be exempt/insignificant sources;

- The gasoline in Unit T20 was assumed to have a Reid Vapor Pressure of 13;

- Distillate fuel oil #2 was used to estimate diesel emissions. As the vapor pressure of distillate fuel oil #2 is less than 0.2 psia, the tank containing diesel (Unit T21) was assumed to be an exempt/insignificant source;

- As the vapor pressure of triethylene glycol (TEG) is less than 0.2 psia, the tanks containing TEG (Units T38 & T46-T48) were assumed to be exempt/insignificant sources;

- The composition of Surfatron DN-100 (Unit T49) was identified from the Material Safety Data Sheet (MSDS);

- The composition of CGO49 Corrosion Inhibitor (Unit 52) was identified from the MSDS; and

- The antifeeze is an inhibited ethylene glycol (EG) coolant containing 50 percent EG and 50 percent water. As the vapor pressure of EG is less than 0.2 psia, the tank containing antifreeze (Unit T54) was assumed to be an exempt source.

VOC emissions from the gasoline storage tank (Unit T20) were 607.9 pounds per year. As such, it is an exempt source.

Combined emissions from the methanol storage tanks (Units T35 & T36) were 667.3 pounds per year. As such, they are exempt/insignificant sources.

VOC emissions from the Surfatron DN-100 storage tank (Unit T49) were calculated at 12.1 pounds per year. As such, it is an exempt/insignificant source.

VOC emissions from the corrosion inhibitor storage tank (Unit T52) were calculated at 19.5 pounds per year. As such, it is an exempt/insignificant source.

Emissions from the produced water tanks (Units T501, T91024, T91025 & BGT-1) were calculated using emission factors from the Colorado Department of Public Health and Environment (CDPHE) and the Texas Commission on Environmental Quality (TCEQ).

The water tanks (Units T33, T34, T41, T50 & T51) and soap tank (Unit T55) tanks are listed in the application for information only. They do not contain VOC or HAP. There are also a number of tanks at the station that are out of service (Units T32, T37 & T40). They are listed in the application for information only.

Due to the nature of operations, the startup and shutdown emissions from the storage tanks were assumed to be accounted for in the TANKS 4.0.9d program used to calculate emissions. Emissions due to maintenance were negligible as the units will not be in operation.

As noted above, emission calculations have been prepared for exempt sources (heaters and produced water truck loading). These calculations are located at the end of this section.

Engine Exhaust Emissions Calculations

Unit Number: 1-10
Description: Waukesha L7042GL

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

Horsepower Calculations

6,445	ft above MSL	Elevation	
1,232	hp	Nameplate hp	Mfg. data
1,142	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 4,000 ft)
1,110	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

1000	rpm	Engine rpm	Mfg. data
7040	cu in	Engine displacement	Mfg. data
128.43	psi	BMEP	Mfg. data (+[(792,000 x NMAQB Site-rated hp) / (rpm * in^3)])

Fuel Consumption

7230	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
8.25	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x NMAQB site-rated hp / 1,000,000
9,172	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
72,310	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
80.34	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, g/hp-hr	Uncontrolled Emission Rates, pph	tpy
NOX	1.50	3.78	16.54
CO	2.65	6.67	29.21
VOC	1.00	2.52	11.02

Emission factors 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	4.85E-03	2.13E-02
PM	9.99E-03	8.24E-02	3.61E-01
PM10	9.99E-03	8.24E-02	3.61E-01
PM2.5	9.99E-03	8.24E-02	3.61E-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

667	°F	Stack exit temperature	Mfg. data
6048	acfm	Stack flowrate	Mfg. data
0.67	ft	Stack exit diameter	Harvest Four Corners, LLC
0.35	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
288.76	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
19.67	ft	Stack height	Harvest Four Corners, LLC

Engine Exhaust Emissions Calculations

Unit Number: 17
Description: Waukesha L7042G (Naturally Aspirated)

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

Horsepower Calculations

6,445	ft above MSL	Elevation	
1,025	hp	Nameplate hp	Mfg. data
873	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 1,500 ft)
873	hp	Mfg. Site-rated hp	Mfg. product bulletin Power Derate, S8154-6, April 2001 (loss of 3% for every 1,000 ft over 1,500 ft)

Engine Specifications

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

Fuel Consumption

110,683	Btu/min	Brake specific fuel consumption	Mfg. data
6.64	MMBtu/hr	Hourly fuel consumption	Btu/min x 60 min/hr / 1,000,000
7,379	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
58,175	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
64.64	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Factors, g/hp-hr	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy	Controlled Emission Factors, g/hp-hr	Controlled Emission Rates, pph	Controlled Emission Rates, tpy
NOX	16.00	30.79	134.87	1.10	2.12	9.27
CO	13.00	25.02	109.58	2.00	3.85	16.86
VOC	0.25	4.81E-01	2.11	0.20	3.85E-01	1.69

Emission factors taken from Waukesha Product Bullletin 7011B 1008
Emission Rates (pph) = g/hp-hr x NMAQB Site-rated hp / 453.59 g/lb
Emission Rates (tpy) = Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
SO2	5.88E-04	3.90E-03	1.71E-02
PM	1.94E-02	1.29E-01	5.65E-01
PM10	1.94E-02	1.29E-01	5.65E-01
PM2.5	1.94E-02	1.29E-01	5.65E-01

Emission factors taken from AP-42, Table 3.2-3
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

1,053	°F	Stack exit temperature	Mfg. data
4,395	acfm	Stack flowrate	Mfg. data
1.17	ft	Stack exit diameter	Harvest Four Corners, LLC
1.07	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
68.51	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
16.60	ft	Stack height	Harvest Four Corners, LLC

Engine Exhaust Emissions Calculations

Unit Number: 18
Description: Waukesha L7042GSI (Turbocharged)

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

Horsepower Calculations

6,445	ft above MSL	Elevation	
1,480	hp	Nameplate hp	Mfg. data
1,371	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 4,000 ft)
1,467	hp	Mfg. Site-rated hp	Mfg. product bulletin Power Derate, S8154-6, April 2001 (loss of 2% for every 1,000 ft over 6,000 ft)

Engine Specifications

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

Fuel Consumption

7,829	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
11.48	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x Mfg. site-rated hp / 1,000,000
12,759	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
100,593	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
111.77	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Factors, g/hp-hr	Uncontrolled Emission Rates, pph	tpy	Controlled Emission Factors, g/hp-hr	Controlled Emission Rates, pph	tpy
NOX	16.00	51.74	226.63	1.10	3.56	15.58
CO	13.00	42.04	184.13	2.00	6.47	28.33
VOC	0.25	8.08E-01	3.54	0.20	6.47E-01	2.83

Emission factors taken from Waukesha Product Bulletin 7011 1008
Emission Rates (pph) = g/hp-hr x Mfg. Site-rated hp / 453.59 g/lb
Emission Rates (tpy) = Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
SO2	5.88E-04	6.75E-03	2.96E-02
PM	1.94E-02	2.23E-01	9.76E-01
PM10	1.94E-02	2.23E-01	9.76E-01
PM2.5	1.94E-02	2.23E-01	9.76E-01

Emission factors taken from AP-42, Table 3.2-3
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

1,125	°F	Stack exit temperature	Mfg. data
6,942	acfm	Stack flowrate	Mfg. data
1.17	ft	Stack exit diameter	Harvest Four Corners, LLC
1.07	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
108.23	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
19.08	ft	Stack height	Harvest Four Corners, LLC

Engine Exhaust Emissions Calculations

Unit Number: 18a
Description: Waukesha F2895GSI (Turbocharged)

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

Horsepower Calculations

6,445	ft above MSL	Elevation	
607	hp	Nameplate hp	Mfg. data
562	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 4,000 ft)
547	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
2894	cu in	Engine displacement	Mfg. data
128.28	psi	BMEP	Mfg. data (+[(792,000 x NMAQB Site-rated hp) / (rpm * in^3)])

Fuel Consumption

8,045	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
4.53	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x NMAQB site-rated hp / 1,000,000
5,028	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
39,640	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
44.04	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Factors, g/hp-hr	Uncontrolled Emission Rates, pph	tpy	Controlled Emission Factors, g/hp-hr	Controlled Emission Rates, pph	tpy
NOX	13.00	16.12	70.61	0.50	6.20E-01	2.72
CO	9.00	11.16	48.88	2.00	2.48	10.86
VOC	0.30	3.72E-01	1.63	0.20	2.48E-01	1.09

Uncontrolled emission factors taken from Waukesha data (EN: 125515, Date: 04/01, Ref. S-8483-4)
Controlled emission factors taken from EMIT datasheet
Emission Rates (pph) = g/hp-hr x NMAQB Site-rated hp / 453.59 g/lb
Emission Rates (tpy) = Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
SO2	5.88E-04	2.66E-03	1.17E-02
PM	1.94E-02	8.78E-02	3.85E-01
PM10	1.94E-02	8.78E-02	3.85E-01
PM2.5	1.94E-02	8.78E-02	3.85E-01

Emission factors taken from AP-42, Table 3.2-3
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

1,070	°F	Stack exit temperature	Mfg. data
2,621	acfm	Stack flowrate	Mfg. data
0.83	ft	Stack exit diameter	Harvest Four Corners, LLC
0.55	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
80.10	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
19.08	ft	Stack height	Harvest Four Corners, LLC

Engine Exhaust Emissions Calculations

Unit Number: 19
Description: Waukesha F2895GSI (Turbocharged)

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

Horsepower Calculations

6,445 ft above MSL	Elevation	
754 hp	Nameplate hp	Mfg. data
699 hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 4,000 ft)
679 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
2894 cu in	Engine displacement	Mfg. data
159.34 psi	BMEP	Mfg. data (+[(792,000 x NMAQB Site-rated hp) / (rpm * in^3)])

Fuel Consumption

7,790 Btu/hp-hr	Brake specific fuel consumption	Mfg. data
5.44 MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x NMAQB site-rated hp / 1,000,000
6,048 scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
500 hr/yr	Annual operating time	Harvest Four Corners, LLC
2,721 MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
3.02 MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900 Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Factors, g/hp-hr	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	22.00	33.89	8.47
CO	32.00	49.29	12.32
VOC	0.35	5.39E-01	1.35E-01

Uncontrolled emission factors taken from Waukesha data (EN: 125515, Date: 04/01, Ref. S-8483-4)
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	Uncontrolled Emission Rates, tpy
SO2	5.88E-04	3.20E-03	8.00E-04
PM	1.94E-02	1.06E-01	2.64E-02
PM10	1.94E-02	1.06E-01	2.64E-02
PM2.5	1.94E-02	1.06E-01	2.64E-02

Emission factors taken from AP-42, Table 3.2-3
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

1,110 °F	Stack exit temperature	Mfg. data
3,275 acfm	Stack flowrate	Mfg. data
0.50 ft	Stack exit diameter	Harvest Four Corners, LLC
0.20 ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
278.02 fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
20.00 ft	Stack height	Harvest Four Corners, LLC

Engine Exhaust Emissions Calculations

Unit Number: 19
Description: Waukesha F2895GSI (Turbocharged)

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

Horsepower Calculations

6,445	ft above MSL	Elevation	
754	hp	Nameplate hp	Mfg. data
699	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 4,000 ft)
679	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
2894	cu in	Engine displacement	Mfg. data
159.34	psi	BMEP	Mfg. data (+[(792,000 x NMAQB Site-rated hp) / (rpm * in^3)])

Fuel Consumption

7,790	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
5.44	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x NMAQB site-rated hp / 1,000,000
6,048	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
47,680	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
52.98	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Factors, g/hp-hr	Uncontrolled Emission Rates, pph	tpy
NOX	22.00	33.89	148.43
CO	32.00	49.29	215.90
VOC	0.35	5.39E-01	2.36

Uncontrolled emission factors taken from Waukesha data (EN: 125515, Date: 04/01, Ref. S-8483-4)
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	3.20E-03	1.40E-02
PM	1.94E-02	1.06E-01	4.63E-01
PM10	1.94E-02	1.06E-01	4.63E-01
PM2.5	1.94E-02	1.06E-01	4.63E-01

Emission factors taken from AP-42, Table 3.2-3
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

1,110	°F	Stack exit temperature	Mfg. data
3,275	acfm	Stack flowrate	Mfg. data
0.50	ft	Stack exit diameter	Harvest Four Corners, LLC
0.20	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
278.02	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
20.00	ft	Stack height	Harvest Four Corners, LLC

GRI-HAPCalc® 3.0
Engines Report

Facility ID:	**EL CEDRO**	**Notes:**
Operation Type:	**COMPRESSOR STATION**	
Facility Name:	**EL CEDRO 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: 2895GSI#1

Hours of Operation:	8,760	Yearly
Rate Power:	562	hp
Fuel Type:	FIELD GAS	
Engine Type:	4-Stroke, Rich 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	0.2271	0.04188340	g/bhp-hr	GRI Field
Methanol	0.0361	0.00666670	g/bhp-hr	GRI Field
Benzene	0.1198	0.02210000	g/bhp-hr	GRI Field
Toluene	0.0385	0.00710000	g/bhp-hr	GRI Field
Xylenes(m,p,o)	0.0092	0.00170000	g/bhp-hr	GRI Field
Naphthalene	0.0015	0.00027540	g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0003	0.00005050	g/bhp-hr	GRI Field
Acenaphthylene	0.0001	0.00001890	g/bhp-hr	GRI Field
Acenaphthene	0.0001	0.00001090	g/bhp-hr	GRI Field
Dibenzofuran	0.0000	0.00000570	g/bhp-hr	GRI Field
Fluorene	0.0001	0.00001720	g/bhp-hr	GRI Field
Anthracene	0.0000	0.00000400	g/bhp-hr	GRI Field
Phenanthrene	0.0002	0.00003210	g/bhp-hr	GRI Field
Fluoranthene	0.0001	0.00001260	g/bhp-hr	GRI Field
Pyrene	0.0000	0.00000860	g/bhp-hr	GRI Field
Benz(a)anthracene	0.0000	0.00000180	g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000220	g/bhp-hr	GRI Field
Benzo(a)pyrene	0.0000	0.00000040	g/bhp-hr	GRI Field
Benzo(b)fluoranthene	0.0000	0.00000220	g/bhp-hr	GRI Field
Benzo(k)fluoranthene	0.0000	0.00000220	g/bhp-hr	GRI Field
Benzo(g,h,i)perylene	0.0000	0.00000070	g/bhp-hr	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.00000050	g/bhp-hr	GRI Field
Dibenz(a,h)anthracene	0.0000	0.00000020	g/bhp-hr	GRI Field
Total	0.4331			

Criteria Pollutants

CO	49.2501	9.08349210 g/bhp-hr	GRI Field
NMEHC	1.4312	0.26396820 g/bhp-hr	GRI Field
NOx	40.8085	7.52654670 g/bhp-hr	GRI Field

Other Pollutants

Methane	5.3135	0.98000000 g/bhp-hr	GRI Field
Ethylene	0.6868	0.12666670 g/bhp-hr	GRI Field
Ethane	1.6627	0.30666670 g/bhp-hr	GRI Field
Propylene	0.1301	0.02400000 g/bhp-hr	GRI Field
Propane	0.5205	0.09600000 g/bhp-hr	GRI Field

Unit Name: 2895GSI#2

Hours of Operation:	8,760	Yearly
Rate Power:	699	hp
Fuel Type:	FIELD GAS	
Engine Type:	4-Stroke, Rich 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	0.2824	0.04188340 g/bhp-hr	GRI Field
Methanol	0.0450	0.00666670 g/bhp-hr	GRI Field
Benzene	0.1490	0.02210000 g/bhp-hr	GRI Field
Toluene	0.0479	0.00710000 g/bhp-hr	GRI Field
Xylenes(m,p,o)	0.0115	0.00170000 g/bhp-hr	GRI Field
Naphthalene	0.0019	0.00027540 g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0003	0.00005050 g/bhp-hr	GRI Field
Acenaphthylene	0.0001	0.00001890 g/bhp-hr	GRI Field
Acenaphthene	0.0001	0.00001090 g/bhp-hr	GRI Field
Dibenzofuran	0.0000	0.00000570 g/bhp-hr	GRI Field
Fluorene	0.0001	0.00001720 g/bhp-hr	GRI Field
Anthracene	0.0000	0.00000400 g/bhp-hr	GRI Field
Phenanthrene	0.0002	0.00003210 g/bhp-hr	GRI Field
Fluoranthene	0.0001	0.00001260 g/bhp-hr	GRI Field
Pyrene	0.0001	0.00000860 g/bhp-hr	GRI Field
Benz(a)anthracene	0.0000	0.00000180 g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(a)pyrene	0.0000	0.00000040 g/bhp-hr	GRI Field
Benzo(b)fluoranthene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(k)fluoranthene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(g,h,i)perylene	0.0000	0.00000070 g/bhp-hr	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.00000050 g/bhp-hr	GRI Field
Dibenz(a,h)anthracene	0.0000	0.00000020 g/bhp-hr	GRI Field
Total	0.5387		

Criteria Pollutants

CO	61.2559	9.08349210 g/bhp-hr	GRI Field
NMEHC	1.7801	0.26396820 g/bhp-hr	GRI Field
NOx	50.7564	7.52654670 g/bhp-hr	GRI Field

Other Pollutants

Methane	6.6088	0.98000000 g/bhp-hr	GRI Field
Ethylene	0.8542	0.12666670 g/bhp-hr	GRI Field
Ethane	2.0681	0.30666670 g/bhp-hr	GRI Field
Propylene	0.1618	0.02400000 g/bhp-hr	GRI Field
Propane	0.6474	0.09600000 g/bhp-hr	GRI Field

Unit Name: 7042G

Hours of Operation:	8,760	Yearly
Rate Power:	873	hp
Fuel Type:	FIELD GAS	
Engine Type:	4-Stroke, Rich 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	0.3528	0.04188340 g/bhp-hr	GRI Field
Methanol	0.0561	0.00666670 g/bhp-hr	GRI Field
Benzene	0.1861	0.02210000 g/bhp-hr	GRI Field
Toluene	0.0598	0.00710000 g/bhp-hr	GRI Field
Xylenes(m,p,o)	0.0143	0.00170000 g/bhp-hr	GRI Field
Naphthalene	0.0023	0.00027540 g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0004	0.00005050 g/bhp-hr	GRI Field
Acenaphthylene	0.0002	0.00001890 g/bhp-hr	GRI Field
Acenaphthene	0.0001	0.00001090 g/bhp-hr	GRI Field
Dibenzofuran	0.0000	0.00000570 g/bhp-hr	GRI Field
Fluorene	0.0001	0.00001720 g/bhp-hr	GRI Field
Anthracene	0.0000	0.00000400 g/bhp-hr	GRI Field
Phenanthrene	0.0003	0.00003210 g/bhp-hr	GRI Field
Fluoranthene	0.0001	0.00001260 g/bhp-hr	GRI Field
Pyrene	0.0001	0.00000860 g/bhp-hr	GRI Field
Benz(a)anthracene	0.0000	0.00000180 g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(a)pyrene	0.0000	0.00000040 g/bhp-hr	GRI Field
Benzo(b)fluoranthene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(k)fluoranthene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(g,h,i)perylene	0.0000	0.00000070 g/bhp-hr	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.00000050 g/bhp-hr	GRI Field
Dibenz(a,h)anthracene	0.0000	0.00000020 g/bhp-hr	GRI Field
Total	0.6727		
Criteria Pollutants			
CO	76.5042	9.08349210 g/bhp-hr	GRI Field
NMEHC	2.2232	0.26396820 g/bhp-hr	GRI Field
NOx	63.3911	7.52654670 g/bhp-hr	GRI Field
Other Pollutants			
Methane	8.2539	0.98000000 g/bhp-hr	GRI Field
Ethylene	1.0668	0.12666670 g/bhp-hr	GRI Field
Ethane	2.5828	0.30666670 g/bhp-hr	GRI Field
Propylene	0.2021	0.02400000 g/bhp-hr	GRI Field

Propane	0.8085	0.09600000 g/bhp-hr	GRI Field

Unit Name: 7042GL

Hours of Operation: 8,760 Yearly

Rate Power: 1,142 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	1.8543	0.16830000 g/bhp-hr	GRI Literature
Benzene	0.0573	0.00520000 g/bhp-hr	GRI Literature
Toluene	0.0231	0.00210000 g/bhp-hr	GRI Literature
Xylenes(m,p,o)	0.0154	0.00140000 g/bhp-hr	GRI Literature
Total	1.9501		

Unit Name: 7042GSI

Hours of Operation: 8,760 Yearly

Rate Power: 1,467 hp

Fuel Type: FIELD GAS

Engine Type: 4-Stroke, Rich 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	0.5928	0.04188340 g/bhp-hr	GRI Field
Methanol	0.0944	0.00666670 g/bhp-hr	GRI Field
Benzene	0.3128	0.02210000 g/bhp-hr	GRI Field
Toluene	0.1005	0.00710000 g/bhp-hr	GRI Field
Xylenes(m,p,o)	0.0241	0.00170000 g/bhp-hr	GRI Field
Naphthalene	0.0039	0.00027540 g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0007	0.00005050 g/bhp-hr	GRI Field
Acenaphthylene	0.0003	0.00001890 g/bhp-hr	GRI Field
Acenaphthene	0.0002	0.00001090 g/bhp-hr	GRI Field
Dibenzofuran	0.0001	0.00000570 g/bhp-hr	GRI Field
Fluorene	0.0002	0.00001720 g/bhp-hr	GRI Field
Anthracene	0.0001	0.00000400 g/bhp-hr	GRI Field
Phenanthrene	0.0005	0.00003210 g/bhp-hr	GRI Field
Fluoranthene	0.0002	0.00001260 g/bhp-hr	GRI Field
Pyrene	0.0001	0.00000860 g/bhp-hr	GRI Field
Benz(a)anthracene	0.0000	0.00000180 g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(a)pyrene	0.0000	0.00000040 g/bhp-hr	GRI Field
Benzo(b)fluoranthene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(k)fluoranthene	0.0000	0.00000220 g/bhp-hr	GRI Field

Benzo(g,h,i)perylene	0.0000	0.00000070	g/bhp-hr	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.00000050	g/bhp-hr	GRI Field
Dibenz(a,h)anthracene	0.0000	0.00000020	g/bhp-hr	GRI Field
Total	1.1309			

Criteria Pollutants

CO	128.5586	9.08349210	g/bhp-hr	GRI Field
NMEHC	3.7359	0.26396820	g/bhp-hr	GRI Field
NOx	106.5232	7.52654670	g/bhp-hr	GRI Field

Other Pollutants

Methane	13.8699	0.98000000	g/bhp-hr	GRI Field
Ethylene	1.7927	0.12666670	g/bhp-hr	GRI Field
Ethane	4.3403	0.30666670	g/bhp-hr	GRI Field
Propylene	0.3397	0.02400000	g/bhp-hr	GRI Field
Propane	1.3587	0.09600000	g/bhp-hr	GRI Field

Turbine Exhaust Emissions Calculations

Unit Number: 15 & 16
Description: Solar MARS 90-T12000S (w/SoLoNOx burners)

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

Horsepower Calculations

6,445	ft above MSL	Elevation	
12,579	hp	Nameplate hp	Mfg. data
9,868	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (Nameplate hp x [29.9 - (ft above MSL / 1000)] / 29.9)
11,647	hp	Mfg. Site-rated hp	Mfg. data

Fuel Consumption

7,594	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
88.45	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x Mfg. site-rated hp / 1,000,000
98,275	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
774,799	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
860.89	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Rates, pph	tpy
NOX	13.45	58.92
CO	10.78	47.20
VOC	3.09	13.52

Emission rates taken from the Solar Data Sheet

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
SO2	3.40E-03	3.01E-01	1.32
PM	6.60E-03	5.84E-01	2.56
PM10	6.60E-03	5.84E-01	2.56
PM2.5	6.60E-03	5.84E-01	2.56

Emission factors taken from AP-42, Table 3.1-2a
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

845	°F	Stack exhaust temperature	Mfg. data
185,801	acfm	Stack flowrate	Calculated from mfg. data
4.95	ft	Stack exit diameter	Bypass stack drawing
19.24	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
160.92	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
41.50	ft	Stack height	Bypass stack drawing

GRI-HAPCalc® 3.0
Turbine Report

Facility ID:	**EL CEDRO**	**Notes:**
Operation Type:	**COMPRESSOR STATION**	
Facility Name:	**EL CEDRO COMPRESSOR STATION**	
User Name:	**Williams 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".

Turbine Unit

Unit Name: 90-T12000S

Hours of Operation:	8,760	Yearly
Rate Power:	11647	hp
Fuel Type:	NATURAL GAS	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
Formaldehyde	1.9031	0.01693680 g/bhp-hr	GRI Field
Acetaldehyde	1.9479	0.01733570 g/bhp-hr	GRI Field
1,3-Butadiene	0.0069	0.00006160 g/bhp-hr	GRI Field
Acrolein	0.0292	0.00026000 g/bhp-hr	GRI Field
Propional	0.0972	0.00086500 g/bhp-hr	GRI Field
Propylene Oxide	0.0140	0.00012480 g/bhp-hr	EPA
n-Nitrosodimethylamine	0.0001	0.00000100 g/bhp-hr	EPA
Benzene	0.0605	0.00053840 g/bhp-hr	GRI Field
Toluene	0.0462	0.00041100 g/bhp-hr	GRI Field
Ethylbenzene	0.0116	0.00010330 g/bhp-hr	EPA
Xylenes(m,p,o)	0.1398	0.00124410 g/bhp-hr	GRI Field
2,2,4-Trimethylpentane	0.1804	0.00160530 g/bhp-hr	GRI Field
n-Hexane	0.1692	0.00150580 g/bhp-hr	GRI Field
Phenol	0.0124	0.00011010 g/bhp-hr	GRI Field
n-Nitrosomorpholine	0.0001	0.00000100 g/bhp-hr	EPA
Naphthalene	0.0009	0.00000760 g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0001	0.00000130 g/bhp-hr	GRI Field
Biphenyl	0.0371	0.00033050 g/bhp-hr	GRI Field
Phenanthrene	0.0001	0.00000050 g/bhp-hr	GRI Field
Chrysene	0.0001	0.00000100 g/bhp-hr	GRI Field
Beryllium	0.0000	0.00000010 g/bhp-hr	GRI Field
Phosphorous	0.0073	0.00006520 g/bhp-hr	GRI Field
Chromium	0.0009	0.00000820 g/bhp-hr	GRI Field
Chromium	0.0006	0.00000560 g/bhp-hr	EPA
Manganese	0.0020	0.00001750 g/bhp-hr	GRI Field
Nickel	0.0007	0.00000610 g/bhp-hr	GRI Field
Cobalt	0.0002	0.00000160 g/bhp-hr	GRI Field

Arsenic	0.0001	0.00000060	g/bhp-hr	GRI Field
Selenium	0.0000	0.00000030	g/bhp-hr	GRI Field
Cadmium	0.0000	0.00000020	g/bhp-hr	GRI Field
Mercury	0.0003	0.00000270	g/bhp-hr	GRI Field
Lead	0.0004	0.00000340	g/bhp-hr	GRI Field
Total	4.6694			

Criteria Pollutants

PM	3.5785	0.03184680	g/bhp-hr	EPA
CO	236.8981	2.10828420	g/bhp-hr	GRI Field
NMHC	21.7852	0.19387800	g/bhp-hr	GRI Field
NMEHC	1.3540	0.01205010	g/bhp-hr	EPA
NOx	140.6997	1.25216290	g/bhp-hr	GRI Field
SO2	0.1154	0.00102720	g/bhp-hr	GRI Field

Other Pollutants

Methane	110.9262	0.98719230	g/bhp-hr	GRI Field
Acetylene	0.8051	0.00716540	g/bhp-hr	GRI Field
Ethylene	1.5680	0.01395450	g/bhp-hr	GRI Field
Ethane	16.8642	0.15008370	g/bhp-hr	GRI Field
Propane	1.7978	0.01600000	g/bhp-hr	GRI Field
Isobutane	0.5394	0.00480000	g/bhp-hr	GRI Field
Butane	0.5843	0.00520000	g/bhp-hr	GRI Field
Trimethylamine	0.0001	0.00000070	g/bhp-hr	EPA
Cyclopentane	0.1855	0.00165110	g/bhp-hr	GRI Field
Butyrald/Isobutyraldehyde	0.1506	0.00134000	g/bhp-hr	GRI Field
n-Pentane	9.1184	0.08115000	g/bhp-hr	GRI Field
Cyclohexane	0.6881	0.00612400	g/bhp-hr	GRI Field
Methylcyclohexane	0.9923	0.00883120	g/bhp-hr	GRI Field
n-Octane	0.3583	0.00318890	g/bhp-hr	GRI Field
1,3,5-Trimethylbenzene	0.3371	0.00300000	g/bhp-hr	GRI Field
n-Nonane	0.0598	0.00053260	g/bhp-hr	GRI Field
CO2	53,193.5357	473.39811550	g/bhp-hr	EPA
Vanadium	0.0001	0.00000070	g/bhp-hr	GRI Field
Copper	0.0023	0.00002050	g/bhp-hr	GRI Field
Molybdenum	0.0023	0.00002030	g/bhp-hr	GRI Field
Barium	0.0026	0.00002290	g/bhp-hr	GRI Field

Heater Exhaust Emissions Calculations

Unit Number: 20
Description: BS&B Heater

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

Fuel Consumption

0.50	MMBtu/hr	Capacity	Mfg. data
556	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
4,380	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
4.87	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
NOX	100	5.56E-02	2.43E-01
CO	84	4.67E-02	2.04E-01
VOC	5.5	3.06E-03	1.34E-02
SO2	0.6	3.33E-04	1.46E-03
PM	7.60	4.22E-03	1.85E-02
PM10	7.60	4.22E-03	1.85E-02
PM2.5	7.60	4.22E-03	1.85E-02
Lead	5.00E-04	2.78E-07	1.22E-06

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

Exhaust Parameters

600	°F	Exhaust temperature	Mfg. data
71.86	acfm	Stack flowrate	ft/sec x ft^2 x 60 sec/min
0.5	ft	Stack exit diameter	Harvest Four Corners, LLC
0.20	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
6.10	fps	Stack exit velocity	Estimate
16.67	ft	Stack height	Harvest Four Corners, LLC

Heater Exhaust Emissions Calculations

Unit Number: 28
Description: Pesco Heater

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

Fuel Consumption

0.70	MMBtu/hr	Capacity	Mfg. data
778	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
6,132	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
6.81	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	100	7.78E-02	3.41E-01
CO	84	6.53E-02	2.86E-01
VOC	5.5	4.28E-03	1.87E-02
SO2	0.6	4.67E-04	2.04E-03
PM	7.60	5.91E-03	2.59E-02
PM10	7.60	5.91E-03	2.59E-02
PM2.5	7.60	5.91E-03	2.59E-02
Lead	5.00E-04	3.89E-07	1.70E-06

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

Exhaust Parameters

600	°F	Exhaust temperature	Mfg. data
127.76	acfm	Stack flowrate	ft/sec x ft^2 x 60 sec/min
0.67	ft	Stack exit diameter	Harvest Four Corners, LLC
0.35	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
6.10	fps	Stack exit velocity	Estimate
14.25	ft	Stack height	Harvest Four Corners, LLC

GRI-HAPCalc® 3.0
External Combustion Devices Report

Facility ID:	**EL CEDRO**	**Notes:**
Operation Type:	**COMPRESSOR STATION**	
Facility Name:	**EL CEDRO COMPRESSOR STATION**	
User Name:	**Williams 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".

External Combustion Devices

Unit Name: BS&B

Hours of Operation:	8,760	Yearly
Heat Input:	0.50	MMBtu/hr
Fuel Type:	NATURAL GAS	
Device Type:	HEATER	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
7,12-Dimethylbenz(a)anthracene	0.0000	0.0000000157 lb/MMBtu	EPA
Formaldehyde	0.0018	0.0008440090 lb/MMBtu	GRI Field
Methanol	0.0021	0.0009636360 lb/MMBtu	GRI Field
Acetaldehyde	0.0016	0.0007375920 lb/MMBtu	GRI Field
1,3-Butadiene	0.0007	0.0003423350 lb/MMBtu	GRI Field
Benzene	0.0016	0.0007480470 lb/MMBtu	GRI Field
Toluene	0.0022	0.0010163310 lb/MMBtu	GRI Field
Ethylbenzene	0.0046	0.0021128220 lb/MMBtu	GRI Field
Xylenes(m,p,o)	0.0029	0.0013205140 lb/MMBtu	GRI Field
2,2,4-Trimethylpentane	0.0062	0.0028417580 lb/MMBtu	GRI Field
n-Hexane	0.0031	0.0014070660 lb/MMBtu	GRI Field
Phenol	0.0000	0.0000001070 lb/MMBtu	GRI Field
Styrene	0.0046	0.0020788960 lb/MMBtu	GRI Field
Naphthalene	0.0000	0.0000005100 lb/MMBtu	GRI Field
2-Methylnaphthalene	0.0000	0.0000001470 lb/MMBtu	GRI Field
Acenaphthylene	0.0000	0.0000000670 lb/MMBtu	GRI Field
Biphenyl	0.0000	0.0000004730 lb/MMBtu	GRI Field
Acenaphthene	0.0000	0.0000000900 lb/MMBtu	GRI Field
Fluorene	0.0000	0.0000000800 lb/MMBtu	GRI Field
Anthracene	0.0000	0.0000000870 lb/MMBtu	GRI Field
Phenanthrene	0.0000	0.0000000600 lb/MMBtu	GRI Field
Fluoranthene	0.0000	0.0000000900 lb/MMBtu	GRI Field
Pyrene	0.0000	0.0000000830 lb/MMBtu	GRI Field
Benz(a)anthracene	0.0000	0.0000000870 lb/MMBtu	GRI Field
Chrysene	0.0000	0.0000001170 lb/MMBtu	GRI Field
Benzo(a)pyrene	0.0000	0.0000000700 lb/MMBtu	GRI Field

Benzo(b)fluoranthene	0.0000	0.0000001500 lb/MMBtu	GRI Field
Benzo(k)fluoranthene	0.0000	0.0000007600 lb/MMBtu	GRI Field
Benzo(g,h,i)perylene	0.0000	0.0000002600 lb/MMBtu	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.0000001200 lb/MMBtu	GRI Field
Dibenz(a,h)anthracene	0.0000	0.0000001030 lb/MMBtu	GRI Field
Lead	0.0000	0.0000004902 lb/MMBtu	EPA
Total	0.0314		

Criteria Pollutants

VOC	0.0118	0.0053921569 lb/MMBtu	EPA
PM	0.0163	0.0074509804 lb/MMBtu	EPA
PM, Condensible	0.0122	0.0055882353 lb/MMBtu	EPA
PM, Filterable	0.0041	0.0018627451 lb/MMBtu	EPA
CO	0.0709	0.0323636360 lb/MMBtu	GRI Field
NMHC	0.0187	0.0085294118 lb/MMBtu	EPA
NOx	0.2125	0.0970167730 lb/MMBtu	GRI Field
SO2	0.0013	0.0005880000 lb/MMBtu	EPA

Other Pollutants

Dichlorobenzene	0.0000	0.0000011765 lb/MMBtu	EPA
Methane	0.0230	0.0105212610 lb/MMBtu	GRI Field
Acetylene	0.0307	0.0140000000 lb/MMBtu	GRI Field
Ethylene	0.0021	0.0009476310 lb/MMBtu	GRI Field
Ethane	0.0058	0.0026312210 lb/MMBtu	GRI Field
Propylene	0.0051	0.0023454550 lb/MMBtu	GRI Field
Propane	0.0023	0.0010686280 lb/MMBtu	GRI Field
Isobutane	0.0032	0.0014640770 lb/MMBtu	GRI Field
Butane	0.0030	0.0013766990 lb/MMBtu	GRI Field
Cyclopentane	0.0025	0.0011304940 lb/MMBtu	GRI Field
Pentane	0.0076	0.0034671850 lb/MMBtu	GRI Field
n-Pentane	0.0031	0.0014221310 lb/MMBtu	GRI Field
Cyclohexane	0.0020	0.0009183830 lb/MMBtu	GRI Field
Methylcyclohexane	0.0048	0.0022011420 lb/MMBtu	GRI Field
n-Octane	0.0063	0.0028538830 lb/MMBtu	GRI Field
1,2,3-Trimethylbenzene	0.0075	0.0034224540 lb/MMBtu	GRI Field
1,2,4-Trimethylbenzene	0.0075	0.0034224540 lb/MMBtu	GRI Field
1,3,5-Trimethylbenzene	0.0075	0.0034224540 lb/MMBtu	GRI Field
n-Nonane	0.0080	0.0036604170 lb/MMBtu	GRI Field
CO2	257.6471	117.6470588235 lb/MMBtu	EPA

Unit Name: PESCO

Hours of Operation: 8,760 Yearly

Heat Input: 0.70 MMBtu/hr

Fuel Type: NATURAL GAS

Device Type: HEATER

Emission Factor Set: FIELD > EPA > LITERATURE

Additional EF Set: -NONE-

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set

HAPs

3-Methylchloranthrene	0.0000	0.0000000018	lb/MMBtu	EPA
7,12-Dimethylbenz(a)anthracene	0.0000	0.0000000157	lb/MMBtu	EPA
Formaldehyde	0.0026	0.0008440090	lb/MMBtu	GRI Field
Methanol	0.0030	0.0009636360	lb/MMBtu	GRI Field
Acetaldehyde	0.0023	0.0007375920	lb/MMBtu	GRI Field
1,3-Butadiene	0.0010	0.0003423350	lb/MMBtu	GRI Field
Benzene	0.0023	0.0007480470	lb/MMBtu	GRI Field
Toluene	0.0031	0.0010163310	lb/MMBtu	GRI Field
Ethylbenzene	0.0065	0.0021128220	lb/MMBtu	GRI Field
Xylenes(m,p,o)	0.0040	0.0013205140	lb/MMBtu	GRI Field
2,2,4-Trimethylpentane	0.0087	0.0028417580	lb/MMBtu	GRI Field
n-Hexane	0.0043	0.0014070660	lb/MMBtu	GRI Field
Phenol	0.0000	0.0000001070	lb/MMBtu	GRI Field
Styrene	0.0064	0.0020788960	lb/MMBtu	GRI Field
Naphthalene	0.0000	0.0000005100	lb/MMBtu	GRI Field
2-Methylnaphthalene	0.0000	0.0000001470	lb/MMBtu	GRI Field
Acenaphthylene	0.0000	0.0000000670	lb/MMBtu	GRI Field
Biphenyl	0.0000	0.0000004730	lb/MMBtu	GRI Field
Acenaphthene	0.0000	0.0000000900	lb/MMBtu	GRI Field
Fluorene	0.0000	0.0000000800	lb/MMBtu	GRI Field
Anthracene	0.0000	0.0000000870	lb/MMBtu	GRI Field
Phenanthrene	0.0000	0.0000000600	lb/MMBtu	GRI Field
Fluoranthene	0.0000	0.0000000900	lb/MMBtu	GRI Field
Pyrene	0.0000	0.0000000830	lb/MMBtu	GRI Field
Benz(a)anthracene	0.0000	0.0000000870	lb/MMBtu	GRI Field
Chrysene	0.0000	0.0000001170	lb/MMBtu	GRI Field
Benzo(a)pyrene	0.0000	0.0000000700	lb/MMBtu	GRI Field
Benzo(b)fluoranthene	0.0000	0.0000001500	lb/MMBtu	GRI Field
Benzo(k)fluoranthene	0.0000	0.0000007600	lb/MMBtu	GRI Field
Benzo(g,h,i)perylene	0.0000	0.0000002600	lb/MMBtu	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.0000001200	lb/MMBtu	GRI Field
Dibenz(a,h)anthracene	0.0000	0.0000001030	lb/MMBtu	GRI Field
Lead	0.0000	0.0000004902	lb/MMBtu	EPA
Total	0.0442			

Criteria Pollutants

VOC	0.0165	0.0053921569	lb/MMBtu	EPA
PM	0.0228	0.0074509804	lb/MMBtu	EPA
PM, Condensible	0.0171	0.0055882353	lb/MMBtu	EPA
PM, Filterable	0.0057	0.0018627451	lb/MMBtu	EPA
CO	0.0992	0.0323636360	lb/MMBtu	GRI Field
NMHC	0.0262	0.0085294118	lb/MMBtu	EPA
NOx	0.2975	0.0970167730	lb/MMBtu	GRI Field
SO2	0.0018	0.0005880000	lb/MMBtu	EPA

Other Pollutants

Dichlorobenzene	0.0000	0.0000011765	lb/MMBtu	EPA
Methane	0.0323	0.0105212610	lb/MMBtu	GRI Field
Acetylene	0.0429	0.0140000000	lb/MMBtu	GRI Field
Ethylene	0.0029	0.0009476310	lb/MMBtu	GRI Field
Ethane	0.0081	0.0026312210	lb/MMBtu	GRI Field
Propylene	0.0072	0.0023454550	lb/MMBtu	GRI Field
Propane	0.0033	0.0010686280	lb/MMBtu	GRI Field

Isobutane	0.0045	0.0014640770	lb/MMBtu	GRI Field
Butane	0.0042	0.0013766990	lb/MMBtu	GRI Field
Cyclopentane	0.0035	0.0011304940	lb/MMBtu	GRI Field
Pentane	0.0106	0.0034671850	lb/MMBtu	GRI Field
n-Pentane	0.0044	0.0014221310	lb/MMBtu	GRI Field
Cyclohexane	0.0028	0.0009183830	lb/MMBtu	GRI Field
Methylcyclohexane	0.0067	0.0022011420	lb/MMBtu	GRI Field
n-Octane	0.0088	0.0028538830	lb/MMBtu	GRI Field
1,2,3-Trimethylbenzene	0.0105	0.0034224540	lb/MMBtu	GRI Field
1,2,4-Trimethylbenzene	0.0105	0.0034224540	lb/MMBtu	GRI Field
1,3,5-Trimethylbenzene	0.0105	0.0034224540	lb/MMBtu	GRI Field
n-Nonane	0.0112	0.0036604170	lb/MMBtu	GRI Field
CO2	360.7059	117.6470588235	lb/MMBtu	EPA

Compressor Blowdown Emissions Calculations

Unit Number: SSM (associated with the Units 1-5 compressors)
Description: Compressor & Piping Associated With Station

Throughput

5	# of units	Number of units	Harvest Four Corners, LLC
125	events/yr/unit	Blowdowns per year per unit	Harvest Four Corners, LLC
23,000	scf/event	Gas loss per blowdown	Harvest Four Corners, LLC
14,375,000	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	3.174E-04	2.28
Benzene	4.118E-07	2.96E-03
Ethylbenzene	0.000E+00	0.00E+00
n-Hexane	1.136E-06	8.16E-03
Isooctane	0.000E+00	0.00E+00
Toluene	1.457E-06	1.05E-02
Xylene	5.597E-07	4.02E-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	8.9772	44.01	1.041E-02
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.0566	28.01	4.179E-05
Methane	89.7679	16.04	3.795E-02
Ethane	0.9558	30.07	7.575E-04
Propane	0.1715	44.09	1.993E-04
Isobutane	0.0262	58.12	4.014E-05
n-Butane	0.0266	58.12	4.075E-05
Isopentane	0.0073	72.15	1.388E-05
n-Pentane	0.0056	72.15	1.065E-05
Cyclopentane	0.0001	70.14	1.849E-07
n-Hexane	0.0005	86.17	1.136E-06
Cyclohexane	0.0003	84.16	6.655E-07
Other hexanes	0.0009	86.18	2.044E-06
Heptanes	0.0007	100.20	1.849E-06
Methylcyclohexane	0.0008	98.19	2.070E-06
Isooctane	0.0000	100.21	0.000E+00
Benzene	0.0002	78.11	4.118E-07
Toluene	0.0006	92.14	1.457E-06
Ethylbenzene	0.0000	106.17	0.000E+00
Xylenes	0.0002	106.17	5.597E-07
C8+ Heavies	0.0008	110.00	2.319E-06
Total	99.9998		
Total VOC			3.174E-04

Gas stream composition obtained from El Cedro (Manzanares) extended gas analysis dated 02/07/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Compressor Blowdown Emissions Calculations

Unit Number: SSM (associated with the Units 6-10 compressors)
Description: Compressor & Piping Associated With Station

Throughput

5	# of units	Number of units	Harvest Four Corners, LLC
91	events/yr/unit	Blowdowns per year per unit	Harvest Four Corners, LLC
8,810	scf/event	Gas loss per blowdown	Harvest Four Corners, LLC
4,008,550	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	1.503E-02	30.13
Benzene	3.397E-05	6.81E-02
Ethylbenzene	1.679E-06	3.37E-03
n-Hexane	2.855E-04	5.72E-01
Isooctane	1.664E-05	3.34E-02
Toluene	7.577E-05	1.52E-01
Xylene	2.323E-05	4.66E-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	1.4996	44.01	1.740E-03
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.1786	28.01	1.319E-04
Methane	80.7532	16.04	3.414E-02
Ethane	7.4024	30.07	5.867E-03
Propane	3.5417	44.09	4.116E-03
Isobutane	0.7647	58.12	1.171E-03
n-Butane	4.6213	58.12	7.079E-03
Isopentane	0.3987	72.15	7.582E-04
n-Pentane	0.2746	72.15	5.222E-04
Cyclopentane	0.0034	70.14	6.286E-06
n-Hexane	0.1257	86.17	2.855E-04
Cyclohexane	0.0470	84.16	1.043E-04
Other hexanes	0.0853	86.18	1.938E-04
Heptanes	0.0996	100.20	2.630E-04
Methylcyclohexane	0.0892	98.19	2.309E-04
Isooctane	0.0063	100.21	1.664E-05
Benzene	0.0165	78.11	3.397E-05
Toluene	0.0312	92.14	7.577E-05
Ethylbenzene	0.0006	106.17	1.679E-06
Xylenes	0.0083	106.17	2.323E-05
C8+ Heavies	0.0523	110.00	1.516E-04
Total	100.0002		
Total VOC			1.503E-02

Gas stream composition obtained from El Cedro (Trunk G) extended gas analysis dated 02/07/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Turbine & Compressor Blowdown Emissions Calculations

Unit Number: SSM (associated with the Units 15 & 16 compressors)
Description: Turbine, Compressor & Piping Associated With Station

Throughput

2	# of units	Number of units	Harvest Four Corners, LLC
175	events/yr/unit	Blowdowns per year per unit	Harvest Four Corners, LLC
4,800	scf/event	Gas loss per blowdown (compressor)	Harvest Four Corners, LLC
7,000	scf/event	Gas loss per blowdown (turbine)	Harvest Four Corners, LLC
4,130,000	scf/yr	Annual gas loss	# of units x events/yr/unit x [scf/event (compressor) + scf/event (turbine)]

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	3.174E-04	6.55E-01
Benzene	4.118E-07	8.50E-04
Ethylbenzene	0.000E+00	0.00E+00
n-Hexane	1.136E-06	2.35E-03
Isooctane	0.000E+00	0.00E+00
Toluene	1.457E-06	3.01E-03
Xylene	5.597E-07	1.16E-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	8.9772	44.01	1.041E-02
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.0566	28.01	4.179E-05
Methane	89.7679	16.04	3.795E-02
Ethane	0.9558	30.07	7.575E-04
Propane	0.1715	44.09	1.993E-04
Isobutane	0.0262	58.12	4.014E-05
n-Butane	0.0266	58.12	4.075E-05
Isopentane	0.0073	72.15	1.388E-05
n-Pentane	0.0056	72.15	1.065E-05
Cyclopentane	0.0001	70.14	1.849E-07
n-Hexane	0.0005	86.17	1.136E-06
Cyclohexane	0.0003	84.16	6.655E-07
Other hexanes	0.0009	86.18	2.044E-06
Heptanes	0.0007	100.20	1.849E-06
Methylcyclohexane	0.0008	98.19	2.070E-06
Isooctane	0.0000	100.21	0.000E+00
Benzene	0.0002	78.11	4.118E-07
Toluene	0.0006	92.14	1.457E-06
Ethylbenzene	0.0000	106.17	0.000E+00
Xylenes	0.0002	106.17	5.597E-07
C8+ Heavies	0.0008	110.00	2.319E-06
Total	99.9998		
Total VOC			3.174E-04

Gas stream composition obtained from El Cedro (Manzanares) extended gas analysis dated 02/07/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Equipment Leaks Emissions Calculations

Unit Number: F1 (Manzanares components)
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 TOC Emission Rates, pph	tpy
Valves	630	0.0045	0.0099	6.24	27.32
Connectors	643	0.0002	0.0004	0.28	1.24
Pump Seals	0	0.0024	0.0053	0.00	0.00
Compressor Seals	52	0.0088	0.0194	1.01	4.41
Pressure Relief Valves	49	0.0088	0.0194	0.95	4.16
Open-Ended Lines	163	0.0020	0.0044	0.72	3.14
Total				**9.19**	**40.26**

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	8.9772	44.010				
Hydrogen sulfide	0.0000	34.070				
Nitrogen	0.0566	28.013				
Methane	89.7679	16.043	1440.146	97.246		
Ethane	0.9558	30.070	28.741	1.941		
Propane	0.1715	44.097	7.563	0.511	0.05	2.06E-01
Isobutane	0.0262	58.123	1.523	0.103	9.45E-03	4.14E-02
n-Butane	0.0266	58.123	1.546	0.104	9.60E-03	4.20E-02
Isopentane	0.0073	72.150	0.527	0.036	3.27E-03	1.43E-02
n-Pentane	0.0056	72.150	0.404	0.027	2.51E-03	1.10E-02
Cyclopentane	0.0001	70.134	0.007	0.000	4.35E-05	1.91E-04
n-Hexane	0.0005	86.177	0.043	0.003	2.67E-04	1.17E-03
Cyclohexane	0.0003	84.161	0.025	0.002	1.57E-04	6.86E-04
Other hexanes	0.0009	86.177	0.078	0.005	4.81E-04	2.11E-03
Heptanes	0.0007	100.204	0.070	0.005	4.35E-04	1.91E-03
Methylcyclohexane	0.0008	98.188	0.079	0.005	4.88E-04	2.14E-03
Isooctane	0.0000	114.231	0.000	0.000	0.00E+00	0.00E+00
Benzene	0.0002	78.114	0.016	0.001	9.70E-05	4.25E-04
Toluene	0.0006	92.141	0.055	0.004	3.43E-04	1.50E-03
Ethylbenzene	0.0000	106.167	0.000	0.000	0.00E+00	0.00E+00
Xylenes	0.0002	106.167	0.021	0.001	1.32E-04	5.77E-04
C8+ Heavies	0.0008	114.231	0.091	0.006	5.67E-04	2.48E-03
Total	99.9998		1480.935			
Total VOC				0.813	7.48E-02	3.28E-01

Gas stream composition obtained from El Cedro (Manzanares) extended gas analysis dated 02/07/2020
Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Weight Percent of TOC (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Uncontrolled Emission Rates (pph) = Total Uncontrolled TOC Emission Rate (pph) x (% / 100)
Uncontrolled Emission Rates (tpy) = Total Uncontrolled TOC Emission Rate (tpy) x (% / 100)

Equipment Leaks Emissions Calculations

Unit Number: F1 (Manzanares components)
Description: Valves, Connectors, Seals & Lines

Number of Compression Units at the Facility: 7
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	308	413	0	28	42	77	0	28	63
Components from dehydrators	0	0	0	0	0	0	0	0	0
Total	429	486	0	52	49	125	3	38	75
Adjusted Total	630	643	0	52	49	163			

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 an evaluation of the Sim Mesa Compressor Station (two stage compression)

Equipment Leaks Emissions Calculations

Unit Number: F1 (Trunk G components)
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 TOC Emission Rates, pph	tpy
Valves	504	0.0045	0.0099	4.99	21.85
Connectors	491	0.0002	0.0004	0.22	0.95
Pump Seals	0	0.0024	0.0053	0.00	0.00
Compressor Seals	44	0.0088	0.0194	0.85	3.73
Pressure Relief Valves	37	0.0088	0.0194	0.72	3.14
Open-Ended Lines	133	0.0020	0.0044	0.59	2.56
Total				**7.36**	**32.23**

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	1.4996	44.010				
Hydrogen sulfide	0.0000	34.070				
Nitrogen	0.1786	28.013				
Methane	80.7532	16.043	1295.524	62.021		
Ethane	7.4024	30.070	222.590	10.656		
Propane	3.5417	44.097	156.178	7.477	0.55	2.41
Isobutane	0.7647	58.123	44.447	2.128	1.57E-01	0.69
n-Butane	4.6213	58.123	268.604	12.859	9.46E-01	4.14
Isopentane	0.3987	72.150	28.766	1.377	1.01E-01	4.44E-01
n-Pentane	0.2746	72.150	19.812	0.948	6.98E-02	3.06E-01
Cyclopentane	0.0034	70.134	0.238	0.011	8.40E-04	3.68E-03
n-Hexane	0.1257	86.177	10.832	0.519	3.82E-02	1.67E-01
Cyclohexane	0.0470	84.161	3.956	0.189	1.39E-02	6.10E-02
Other hexanes	0.0853	86.177	7.351	0.352	2.59E-02	1.13E-01
Heptanes	0.0996	100.204	9.980	0.478	3.52E-02	1.54E-01
Methylcyclohexane	0.0892	98.188	8.758	0.419	3.09E-02	1.35E-01
Isooctane	0.0063	114.231	0.720	0.034	2.54E-03	1.11E-02
Benzene	0.0165	78.114	1.289	0.062	4.54E-03	1.99E-02
Toluene	0.0312	92.141	2.875	0.138	1.01E-02	4.44E-02
Ethylbenzene	0.0006	106.167	0.064	0.003	2.24E-04	9.83E-04
Xylenes	0.0083	106.167	0.881	0.042	3.10E-03	1.36E-02
C8+ Heavies	0.0523	114.231	5.974	0.286	2.10E-02	9.22E-02
Total	100.0002		2088.840			
Total VOC				27.323	2.01	8.81

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Gas stream composition obtained from El Cedro (Trunk G) extended gas analysis dated 02/07/2020
Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Weight Percent of TOC (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Uncontrolled Emission Rates (pph) = Total Uncontrolled TOC Emission Rate (pph) x (% / 100)
Uncontrolled Emission Rates (tpy) = Total Uncontrolled TOC Emission Rate (tpy) x (% / 100)

Equipment Leaks Emissions Calculations

Unit Number: F1 (Trunk G components)
Description: Valves, Connectors, Seals & Lines

Number of Compression Units at the Facility: 5
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	220	295	0	20	30	55	0	20	45
Components from dehydrators	0	0	0	0	0	0	0	0	0
Total	341	368	0	44	37	103	3	30	57
Adjusted Total	504	491	0	44	37	133			

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 an evaluation of the Sim Mesa Compressor Station (two stage compression)

Malfunction Emissions Data and Calculations

Unit Number: M1
Description: Malfunctions

Emission Rates

Pollutants	Weight Percents, %	Uncontrolled Emission Rates, tpy
VOC		10.00
Benzene	2.260E-01	2.26E-02
Ethylbenzene	1.117E-02	1.12E-03
n-Hexane	1.899E+00	1.90E-01
Isooctane	1.107E-01	1.11E-02
Toluene	5.040E-01	5.04E-02
Xylene	1.545E-01	1.54E-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	1.4996	44.01		
Hydrogen sulfide	0.0000	34.07		
Nitrogen	0.1786	28.01		
Methane	80.7532	16.04		
Ethane	7.4024	30.07		
Propane	3.5417	44.09	1.5615	2.738E+01
Isobutane	0.7647	58.12	0.4444	7.792E+00
n-Butane	4.6213	58.12	2.6859	4.709E+01
Isopentane	0.3987	72.15	0.2877	5.043E+00
n-Pentane	0.2746	72.15	0.1981	3.474E+00
Cyclopentane	0.0034	70.14	0.0024	4.181E-02
n-Hexane	0.1257	86.17	0.1083	1.899E+00
Cyclohexane	0.0470	84.16	0.0396	6.935E-01
Other hexanes	0.0853	86.18	0.0735	1.289E+00
Heptanes	0.0996	100.20	0.0998	1.750E+00
Methylcyclohexane	0.0892	98.19	0.0876	1.536E+00
Isooctane	0.0063	100.21	0.0063	1.107E-01
Benzene	0.0165	78.11	0.0129	2.260E-01
Toluene	0.0312	92.14	0.0287	5.040E-01
Ethylbenzene	0.0006	106.17	0.0006	1.117E-02
Xylenes	0.0083	106.17	0.0088	1.545E-01
C8+ Heavies	0.0523	110.00	0.0575	1.009E+00
Total	100.0002			
Total VOC			5.7037	

Gas stream composition obtained from El Cedro (Trunk G) extended gas analysis dated 02/07/2020
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: G-12 Pig Receiver

Throughput

200	events/yr	Blowdowns per year	Harvest Four Corners, LLC
1,000	scf/event	Gas loss per blowdown	Harvest Four Corners, LLC
200,000	scf/yr	Annual gas loss	events/yr x scf/event

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	9.633E-03	9.63E-01
Benzene	4.941E-06	4.94E-04
Ethylbenzene	1.119E-06	1.12E-04
n-Hexane	2.464E-04	2.46E-02
Isooctane	1.004E-05	1.00E-03
Toluene	5.391E-05	5.39E-03
Xylene	1.063E-05	1.06E-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	1.0334	44.01	1.199E-03
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.2947	28.01	2.176E-04
Methane	83.3290	16.04	3.523E-02
Ethane	8.6116	30.07	6.825E-03
Propane	3.6567	44.09	4.249E-03
Isobutane	0.7113	58.12	1.090E-03
n-Butane	1.2286	58.12	1.882E-03
Isopentane	0.3696	72.15	7.029E-04
n-Pentane	0.2568	72.15	4.884E-04
Cyclopentane	0.0042	70.14	7.765E-06
n-Hexane	0.1085	86.17	2.464E-04
Cyclohexane	0.0361	84.16	8.008E-05
Other hexanes	0.1681	86.18	3.818E-04
Heptanes	0.0745	100.20	1.968E-04
Methylcyclohexane	0.0582	98.19	1.506E-04
Isooctane	0.0038	100.21	1.004E-05
Benzene	0.0024	78.11	4.941E-06
Toluene	0.0222	92.14	5.391E-05
Ethylbenzene	0.0004	106.17	1.119E-06
Xylenes	0.0038	106.17	1.063E-05
C8+ Heavies	0.0263	110.00	7.625E-05
Total	100.0002		
Total VOC			9.633E-03

Gas stream composition obtained from Trunk L extended gas analysis dated 02/06/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Pig Receiver Emissions Calculations

Unit Number: PR2
Description: 11-S Pig Receiver

Throughput

400	events/yr	Blowdowns per year	Harvest Four Corners, LLC
3,000	scf/event	Gas loss per blowdown	Harvest Four Corners, LLC
1,200,000	scf/yr	Annual gas loss	events/yr x scf/event

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	1.503E-02	9.02
Benzene	3.397E-05	2.04E-02
Ethylbenzene	1.679E-06	1.01E-03
n-Hexane	2.855E-04	1.71E-01
Isooctane	1.664E-05	9.98E-03
Toluene	7.577E-05	4.55E-02
Xylene	2.323E-05	1.39E-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	1.4996	44.01	1.740E-03
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.1786	28.01	1.319E-04
Methane	80.7532	16.04	3.414E-02
Ethane	7.4024	30.07	5.867E-03
Propane	3.5417	44.09	4.116E-03
Isobutane	0.7647	58.12	1.171E-03
n-Butane	4.6213	58.12	7.079E-03
Isopentane	0.3987	72.15	7.582E-04
n-Pentane	0.2746	72.15	5.222E-04
Cyclopentane	0.0034	70.14	6.286E-06
n-Hexane	0.1257	86.17	2.855E-04
Cyclohexane	0.0470	84.16	1.043E-04
Other hexanes	0.0853	86.18	1.938E-04
Heptanes	0.0996	100.20	2.630E-04
Methylcyclohexane	0.0892	98.19	2.309E-04
Isooctane	0.0063	100.21	1.664E-05
Benzene	0.0165	78.11	3.397E-05
Toluene	0.0312	92.14	7.577E-05
Ethylbenzene	0.0006	106.17	1.679E-06
Xylenes	0.0083	106.17	2.323E-05
C8+ Heavies	0.0523	110.00	1.516E-04
Total	100.0002		
Total VOC			1.503E-02

Gas stream composition obtained from El Cedro (Trunk G) extended gas analysis dated 02/07/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Storage Tank Emissions Calculations

Unit Number: T501 & T91025
Description: Produced Water Tank

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

Throughput

200	bbl/turnover	Tank capacity	Harvest Four Corners, LLC
76.57	turnover/yr	Turnovers per year	Harvest Four Corners, LLC
15,314	bbl/yr	Annual liquid throughput	bbl/turnover x turnover/yr

Emission Rates

Pollutant	Emission Factor, lb/bbl	Uncontrolled, Emission Rate, tpy
VOC	0.262	2.01
Benzene	0.007	5.36E-02
Ethylbenzene	0.0007	5.36E-03
n-Hexane	0.022	1.68E-01
Toluene	0.009	6.89E-02
Xylene	0.006	4.59E-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

Storage Tank Emissions Calculations

Unit Number: T91024
Description: Produced Water Tank

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

Throughput

300	bbl/turnover	Tank capacity	Harvest Four Corners, LLC
76.57	turnover/yr	Turnovers per year	Harvest Four Corners, LLC
22,971	bbl/yr	Annual liquid throughput	bbl/turnover x turnover/yr

Emission Rates

Pollutant	Emission Factor, lb/bbl	Uncontrolled, Emission Rate, tpy
VOC	0.262	3.01
Benzene	0.007	8.04E-02
Ethylbenzene	0.0007	8.04E-03
n-Hexane	0.022	2.53E-01
Toluene	0.009	1.03E-01
Xylene	0.006	6.89E-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

Storage Tank Emissions Calculations

Unit Number: BGT-1
Description: Produced Water Tank

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

Throughput

120	bbl/turnover	Tank capacity	Harvest Four Corners, LLC
113.33	turnover/yr	Turnovers per year	Harvest Four Corners, LLC
13,600	bbl/yr	Annual liquid throughput	bbl/turnover x turnover/yr

Emission Rates

Pollutant	Emission Factor, lb/bbl	Uncontrolled, Emission Rate, tpy
VOC	0.262	1.78
Benzene	0.007	4.76E-02
Ethylbenzene	0.0007	4.76E-03
n-Hexane	0.022	1.50E-01
Toluene	0.009	6.12E-02
Xylene	0.006	4.08E-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

Storage Tank Emissions Data and Calculations

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

Emission Rates

Source/Pollutants	Working/Breathing Losses, ppy	Working/Breathing Losses, tpy	Flash Losses, tpy	Uncontrolled Emission Rates, tpy
T19019				
VOC	5,326.12	2.66	6.10	8.77
Benzene	163.09	8.15E-02	2.36E-02	1.05E-01
Ethylbenzene	0.06	3.00E-05	3.99E-04	4.29E-04
n-Hexane	1,115.95	5.58E-01	4.25E-01	9.83E-01
Isooctane	3.04	1.52E-03	0.00E+00	1.52E-03
Toluene	84.07	4.20E-02	1.90E-02	6.11E-02
Xylene	0.56	2.80E-04	2.28E-03	2.56E-03
T19020				
VOC	3,130.74	1.57	3.66	5.22
Benzene	95.87	4.79E-02	1.42E-02	6.21E-02
Ethylbenzene	0.03	1.50E-05	2.39E-04	2.54E-04
n-Hexane	655.97	3.28E-01	2.55E-01	5.83E-01
Isooctane	1.79	8.95E-04	0.00E+00	8.95E-04
Toluene	49.42	2.47E-02	1.14E-02	3.61E-02
Xylene	0.33	1.65E-04	1.37E-03	1.53E-03
T19021				
VOC	3,157.72	1.58	3.66	5.24
Benzene	95.87	4.79E-02	1.42E-02	6.21E-02
Ethylbenzene	0.03	1.50E-05	2.39E-04	2.54E-04
n-Hexane	655.97	3.28E-01	2.55E-01	5.83E-01
Isooctane	1.79	8.95E-04	0.00E+00	8.95E-04
Toluene	49.42	2.47E-02	1.14E-02	3.61E-02
Xylene	0.33	1.65E-04	1.37E-03	1.53E-03
T19028				
VOC	4,306.67	2.15	4.70	6.85
Benzene	131.87	6.59E-02	1.82E-02	8.41E-02
Ethylbenzene	0.05	2.50E-05	3.07E-04	3.32E-04
n-Hexane	902.35	4.51E-01	3.27E-01	7.78E-01
Isooctane	2.46	1.23E-03	0.00E+00	1.23E-03
Toluene	67.98	3.40E-02	1.46E-02	4.86E-02
Xylene	0.46	2.30E-04	1.75E-03	1.98E-03
Combined Total				
VOC	15,921.25	7.96	18.12	26.08
Benzene	486.70	2.43E-01	7.01E-02	3.13E-01
Ethylbenzene	0.17	8.50E-05	1.18E-03	1.27E-03
n-Hexane	3,330.24	1.67E+00	1.26E+00	2.93
Isooctane	9.08	4.54E-03	0.00E+00	4.54E-03
Toluene	250.89	1.25E-01	5.65E-02	1.82E-01
Xylene	1.68	8.40E-04	6.77E-03	7.61E-03

The plant will handle a maximum of 13,560,000 gallons of unstabilized condensate per year.

The stabilizer will capture the vapors from at least 13,559,000 gallons per year. The stabilized condensate from the stabilizer will be transferred to the condensate tanks (T91019, T91020, T91021 & T91028) for storage.

The remaining 42,000 gallons of unstabilized condensate will go directly to the same tanks. All 42,000 gallons will flash on entering the tanks and those emissions will be vented to the atmosphere.

Working/breathing losses are calculated using TANKS 4.0.9d. The throughputs for each tank are estimated as the total throughput multiplied by the usable volume of each tank divided by the usable volume of the entire tank battery.

Flash emissions are calculated using VMGSim. For the purpose of the calculations, it is assumed the flash emissions will be distributed among the four condensate storage tanks according to the useable volume.

Storage Tank Emissions Data and Calculations

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

Tank Throughputs

Total Condensate Throughput:	13,560,000	gal/yr
Flashed Condensate Throughput:	1,000	bbl/yr
Flashed Condensate Throughput:	42,000	gal/yr
Stabilized Condensate Throughput:	13,559,000	gal/yr

Tank Number	Useable Volume, gal	Useable Volume, %	Total Throughput, gal/yr
T91019	21,173	33.69	4,567,895
T91020	12,690	20.19	2,737,760
T91021	12,690	20.19	2,737,760
T91028	16,300	25.93	3,516,586
Total	62,853	100.00	13,560,000

Because the tanks are manifolded together, the useable volumes for Units T91019 & T91028 are less than the design capacities of the tanks.
Useable Volume (%) = 100 x Useable Volume (gal) / Total Useable Volume (gal)
Total Throughput (gal/yr) = Total Condensate Throughput (gal/yr) x Useable Volume (% / 100)

Flashed Condensate Composition

Pollutant	Flashed Condensate (%)	Stabilizer Condensate (%)	Combined Average (%)
iso-Butane	2.5431	0.0848	0.08493
n-Butane	5.9243	0.0957	0.09608
iso-Pentane	6.3800	0.2445	0.24495
n-Pentane	6.8349	2.6108	2.61111
Cyclopentane	0.0000	0.0019	0.00190
n-Hexane	19.6808	11.5588	11.55940
Cyclohexane	4.4955	21.9072	21.90592
Hexanes	0.0000	0.0000	0.00000
Heptanes	22.0174	22.6863	22.68625
Octanes	19.9502	12.2882	12.28877
Nonanes	3.8478	2.4030	2.40311
Decanes	1.5563	0.2929	0.29299
Methylcyclohexane	0.0000	18.0034	18.00207
2,2,4-Trimethylpentane	0.0000	0.0991	0.09909
Benzene	1.1517	2.7339	2.73378
Ethylbenzene	0.2290	0.0101	0.01012
Toluene	3.5264	4.8637	4.86360
m+p-Xylene	0.0000	0.0806	0.08059
o-Xylene	1.8628	0.0352	0.03533
Total	100.0000	100.0000	100.00000

The flashed condensate composition was calculated from the VMGSim results (see table below)
The stabilizer condensate composition was calculated from the stabilizer gas analysis dated 02/14/2020 (see table below)
The combined average composition is a throughput weighted average of the flashed and stabilizer condensate compositions (based on the stabilized condensate and flashed condensate throughputs identified above)

Storage Tank Emissions Data and Calculations

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

	Flashed Condensate			Stabilized Condensate	
Pollutant	pph	Wt%	TANKS 4 Wt%	Wt%	TANKS 4 Wt%
Carbon Dioxide	0.0007	0.0027	--	0.0006	--
H2S	0.0000	0.0000	--	0.0000	--
Nitrogen	0.0000	0.0000	--	0.0059	--
Methane	0.0024	0.0087	--	0.0509	--
Ethane	0.0464	0.1706	--	0.0495	--
Propane	0.4551	1.6720	--	0.0444	--
iso-Butane	0.4399	1.6161	2.5431	0.0091	0.0848
n-Butane	1.3602	4.9972	5.9243	0.0200	0.0957
iso-Pentane	1.7366	6.3800	6.3800	0.2445	0.2445
n-Pentane	1.8604	6.8349	6.8349	2.6108	2.6108
Cyclopentane	0.0000	0.0000	0.0000	0.0019	0.0019
n-Hexane	5.3570	19.6808	19.6808	11.5588	11.5588
Cyclohexane	1.2236	4.4955	4.4955	21.9072	21.9072
Hexanes	0.0000	0.0000	0.0000	0.0000	0.0000
Heptanes	5.9930	22.0174	22.0174	22.6863	22.6863
Octanes	5.4303	19.9502	19.9502	12.2882	12.2882
Nonanes	1.0473	3.8478	3.8478	2.403	2.4030
Decanes	0.4236	1.5563	1.5563	0.2929	0.2929
Methylcyclohexane	0.0000	0.0000	0.0000	18.0034	18.0034
2,2,4-Trimethylpentane	0.0000	0.0000	0.0000	0.0991	0.0991
Benzene	0.3135	1.1517	1.1517	2.7339	2.7339
Ethylbenzene	0.0623	0.2290	0.2290	0.0101	0.0101
Toluene	0.9599	3.5264	3.5264	4.8637	4.8637
m+p-Xylene	0.0000	0.0000	0.0000	0.0806	0.0806
o-Xylene	0.5070	1.8628	1.8628	0.0352	0.0352
Total	27.2192	100.0000	100.0000	100.0000	100.0000

The flashed condensate composition (pph) was obtained from the VMGSim results
Flashed condensate (Wt%) = 100 x Pollutant (pph) / Total Pollutant (pph)
The stabilizer condensate composition (Wt%) was obtained from the stabilizer gas analysis dated 02/14/2020
The TANKS 4 Wt% was determined by equally distributing the non-VOC Wt% emissions between iso-butane and n-butane

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

Identification

User Identification:	El Cedro T91019 (Condensate)(New)
City:	Navajo Dam
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	21,000 Gallon Condensate Storage Tank

Tank Dimensions

Shell Height (ft):	16.00
Diameter (ft):	15.50
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	19,761.25
Turnovers:	231.15
Net Throughput(gal/yr):	4,567,895.00
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

El Cedro T91019 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, 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	1.4353	1.0186	1.9868	83.3598			93.88	
2,2,4-Trimethylpentane (isooctane)						0.7338	0.4989	1.0546	114.2300	0.0010	0.0006	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4274	0.9846	2.0237	78.1100	0.0273	0.0306	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.9357	23.3576	37.8083	58.1230	0.0010	0.0226	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4738	1.0254	2.0729	84.1600	0.2191	0.2533	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.9596	3.6370	6.6394	70.1300	0.0000	0.0001	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.0029	0.0001	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0001	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.2269	0.1353	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.1156	0.2095	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						43.3083	34.4026	53.8185	58.1230	0.0008	0.0289	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0024	0.0228	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6886	0.4673	0.9913	98.1800	0.1800	0.0973	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.0240	0.0015	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.1229	0.0171	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0261	0.1645	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0486	0.0158	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0012	0.0001	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)

El Cedro T91019 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	1,468.5199
Vapor Space Volume (cu ft):	1,728.6931
Vapor Density (lb/cu ft):	0.0212
Vapor Space Expansion Factor:	0.1867
Vented Vapor Saturation Factor:	0.5893
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,728.6931
Tank Diameter (ft):	15.5000
Vapor Space Outage (ft):	9.1615
Tank Shell Height (ft):	16.0000
Average Liquid Height (ft):	7.0000
Roof Outage (ft):	0.1615
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1615
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	7.7500
Vapor Density	
Vapor Density (lb/cu ft):	0.0212
Vapor Molecular Weight (lb/lb-mole):	83.3598
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
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:	0.1867
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	0.9683
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.0186
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	1.9868
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:	0.5893
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.4353
Vapor Space Outage (ft):	9.1615
Working Losses (lb):	3,857.5997
Vapor Molecular Weight (lb/lb-mole):	83.3598
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Annual Net Throughput (gal/yr.):	4,567,895.0000
Annual Turnovers:	231.1500
Turnover Factor:	0.2965
Maximum Liquid Volume (gal):	19,761.2500
Maximum Liquid Height (ft):	14.0000
Tank Diameter (ft):	15.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	5,326.1196

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

Emissions Report for: Annual

El Cedro T91019 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	3,857.60	1,468.52	5,326.12
Isobutane	111.34	42.38	153.72
Butane (-n)	87.06	33.14	120.21
Isopentane	87.97	33.49	121.45
Pentane (-n)	634.74	241.64	876.38
Cyclopentane	0.29	0.11	0.39
Hexane (-n)	808.26	307.69	1,115.95
Cyclohexane	977.28	372.03	1,349.31
Heptane (-n)	521.91	198.68	720.60
Octane (-n)	65.82	25.06	90.87
Nonane (-n)	5.70	2.17	7.87
Decane (-n)	0.35	0.13	0.48
Methylcyclohexane	375.22	142.84	518.05
2,2,4-Trimethylpentane (isooctane)	2.20	0.84	3.04
Benzene	118.12	44.97	163.09
Ethylbenzene	0.04	0.02	0.06
Toluene	60.89	23.18	84.07
Xylenes (mixed isomers)	0.41	0.16	0.56

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

Identification

User Identification:	El Cedro T91020 & T91021 (Condensate)(New)
City:	Navajo Dam
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	12,000 Gallon Condensate Storage Tank

Tank Dimensions

Shell Height (ft):	15.00
Diameter (ft):	12.00
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	11,844.42
Turnovers:	231.14
Net Throughput(gal/yr):	2,737,760.00
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

El Cedro T91020 & T91021 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, 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	1.4353	1.0186	1.9868	83.3598			93.88	
2,2,4-Trimethylpentane (isooctane)						0.7338	0.4989	1.0546	114.2300	0.0010	0.0006	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4274	0.9846	2.0237	78.1100	0.0273	0.0306	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.9357	23.3576	37.8083	58.1230	0.0010	0.0226	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4738	1.0254	2.0729	84.1600	0.2191	0.2533	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.9596	3.6370	6.6394	70.1300	0.0000	0.0001	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.0029	0.0001	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0001	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.2269	0.1353	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.1156	0.2095	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						43.3083	34.4026	53.8185	58.1230	0.0008	0.0289	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0024	0.0228	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6886	0.4673	0.9913	98.1800	0.1800	0.0973	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.0240	0.0015	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.1229	0.0171	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0261	0.1645	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0486	0.0158	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0012	0.0001	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)

El Cedro T91020 & T91021 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	818.6535
Vapor Space Volume (cu ft):	918.9159
Vapor Density (lb/cu ft):	0.0212
Vapor Space Expansion Factor:	0.1867
Vented Vapor Saturation Factor:	0.6180
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	918.9159
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	8.1250
Tank Shell Height (ft):	15.0000
Average Liquid Height (ft):	7.0000
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):	0.0212
Vapor Molecular Weight (lb/lb-mole):	83.3598
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
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:	0.1867
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	0.9683
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.0186
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	1.9868
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:	0.6180
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.4353
Vapor Space Outage (ft):	8.1250
Working Losses (lb):	2,312.0895
Vapor Molecular Weight (lb/lb-mole):	83.3598
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Annual Net Throughput (gal/yr.):	2,737,760.0000
Annual Turnovers:	231.1400
Turnover Factor:	0.2965
Maximum Liquid Volume (gal):	11,844.4200
Maximum Liquid Height (ft):	14.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	3,130.7430

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

Emissions Report for: Annual

El Cedro T91020 & T91021 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	2,312.09	818.65	3,130.74
Isobutane	66.73	23.63	90.36
Butane (-n)	52.18	18.48	70.66
Isopentane	52.72	18.67	71.39
Pentane (-n)	380.44	134.70	515.14
Cyclopentane	0.17	0.06	0.23
Hexane (-n)	484.44	171.53	655.97
Cyclohexane	585.74	207.40	793.14
Heptane (-n)	312.81	110.76	423.57
Octane (-n)	39.45	13.97	53.42
Nonane (-n)	3.42	1.21	4.63
Decane (-n)	0.21	0.07	0.28
Methylcyclohexane	224.89	79.63	304.52
2,2,4-Trimethylpentane (isooctane)	1.32	0.47	1.79
Benzene	70.80	25.07	95.87
Ethylbenzene	0.03	0.01	0.03
Toluene	36.49	12.92	49.42
Xylenes (mixed isomers)	0.25	0.09	0.33

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

Identification	
User Identification:	El Cedro T91028 (Condensate)(New)
City:	Navajo Dam
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	21,000 Gallon Condensate Storage Tank
Tank Dimensions	
Shell Height (ft):	20.00
Diameter (ft):	13.50
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	14,990.59
Turnovers:	234.59
Net Throughput(gal/yr):	3,516,586.00
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

El Cedro T91028 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, 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	1.4353	1.0186	1.9868	83.3598			93.88	
2,2,4-Trimethylpentane (isooctane)						0.7338	0.4989	1.0546	114.2300	0.0010	0.0006	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4274	0.9846	2.0237	78.1100	0.0273	0.0306	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.9357	23.3576	37.8083	58.1230	0.0010	0.0226	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4738	1.0254	2.0729	84.1600	0.2191	0.2533	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.9596	3.6370	6.6394	70.1300	0.0000	0.0001	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.0029	0.0001	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0001	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.2269	0.1353	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.1156	0.2095	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						43.3083	34.4026	53.8185	58.1230	0.0008	0.0289	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0024	0.0228	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6886	0.4673	0.9913	98.1800	0.1800	0.0973	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.0240	0.0015	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.1229	0.0171	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0261	0.1645	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0486	0.0158	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0012	0.0001	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)

El Cedro T91028 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	1,355.9695
Vapor Space Volume (cu ft):	1,880.9335
Vapor Density (lb/cu ft):	0.0212
Vapor Space Expansion Factor:	0.1867
Vented Vapor Saturation Factor:	0.5001
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,880.9335
Tank Diameter (ft):	13.5000
Vapor Space Outage (ft):	13.1406
Tank Shell Height (ft):	20.0000
Average Liquid Height (ft):	7.0000
Roof Outage (ft):	0.1406
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1406
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.7500
Vapor Density	
Vapor Density (lb/cu ft):	0.0212
Vapor Molecular Weight (lb/lb-mole):	83.3598
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
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:	0.1867
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	0.9683
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.0186
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	1.9868
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:	0.5001
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.4353
Vapor Space Outage (ft):	13.1406
Working Losses (lb):	2,950.7011
Vapor Molecular Weight (lb/lb-mole):	83.3598
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Annual Net Throughput (gal/yr.):	3,516,586.0000
Annual Turnovers:	234.5900
Turnover Factor:	0.2945
Maximum Liquid Volume (gal):	14,990.5900
Maximum Liquid Height (ft):	14.0000
Tank Diameter (ft):	13.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	4,306.6706

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

Emissions Report for: Annual

El Cedro T91028 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	2,950.70	1,355.97	4,306.67
Isobutane	85.16	39.14	124.30
Butane (-n)	66.60	30.60	97.20
Isopentane	67.29	30.92	98.21
Pentane (-n)	485.52	223.12	708.63
Cyclopentane	0.22	0.10	0.32
Hexane (-n)	618.24	284.11	902.35
Cyclohexane	747.53	343.52	1,091.05
Heptane (-n)	399.22	183.46	582.67
Octane (-n)	50.34	23.14	73.48
Nonane (-n)	4.36	2.00	6.37
Decane (-n)	0.27	0.12	0.39
Methylcyclohexane	287.00	131.89	418.90
2,2,4-Trimethylpentane (isooctane)	1.68	0.77	2.46
Benzene	90.35	41.52	131.87
Ethylbenzene	0.03	0.02	0.05
Toluene	46.57	21.40	67.98
Xylenes (mixed isomers)	0.31	0.14	0.46

Simulation Report

Symmetry

File Name: El Cedro Trunk G Unstabilized Condensate Emissions
Company: Virtual Materials Group
Customer:
Project:
Job No:
Prepared By:
Report Date: Tuesday, February 11, 2020
Unit Set: Field

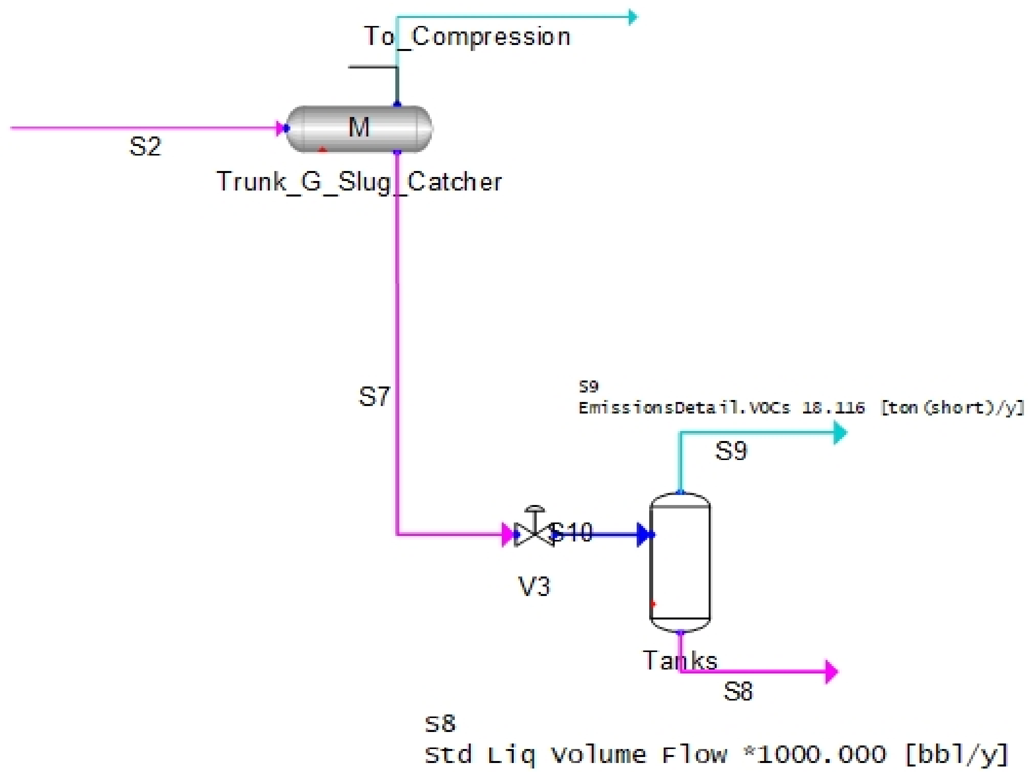
File: U:\Plant Models\El Cedro Trunk G Unstabilized Condensate Emissions.vsym

Symmetry

Main Flowsheet

*Bold face throughout the report denotes specified values.

*Italic face throughout the report denotes recycle values.


To_Compression
M
S2
Trunk_G_Slug_Catcher
S7
S9
EmissionsDetail.VOCs 18.116 [ton(short)/y]
S9
S10
V3
Tanks
S8
S8
Std Liq Volume Flow *1000.000 [bbl/y]

Truck Loading (Condensate) Emissions Calculations

Unit Number: 38
Description: Truck Loading

Emission Factor

0.6		Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
1.4353	psia	True vapor pressure of liquid, P	TANKS 4.0 output file
83.3598	lb/lb-mole	Molecular weight of vapors, M	TANKS 4.0 output file
67.36	°F	Temperature of liquid	TANKS 4.0 output file
527.03	°R	Temperature of liquid, T	°F + 459.67
1.70	lb/10^3 gal	Emission factor, L	AP-42, Section 5.2, Equation 1

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

Production Rate

8.82	lb/10^3 gal	Maximum hourly production rate	Harvest Four Corners, LLC
13,560.00	lb/10^3 gal	Maximum annual production rate	Harvest Four Corners, LLC

Steady-State Emission Rates

Pollutant	Uncontrolled Emission Rates, pph	tpy
VOC	14.97	11.51

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	3.06	4.58E-01	3.52E-01
Ethylbenzene	1.13E-03	1.69E-04	1.30E-04
n-Hexane	20.95	3.14	2.41
Isooctane	5.71E-02	8.54E-03	6.57E-03
Toluene	1.58	2.36E-01	1.82E-01
Xylenes	1.05E-02	1.57E-03	1.21E-03

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)

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

Identification	
User Identification:	El Cedro T20 (Gasoline)
City:	Navajo Dam
State:	New Mexico
Company:	Williams Four Corners LLC
Type of Tank:	Horizontal Tank
Description:	500 Gallon Gasoline Storage Tank
Tank Dimensions	
Shell Length (ft):	5.00
Diameter (ft):	4.00
Volume (gallons):	500.00
Turnovers:	12.00
Net Throughput(gal/yr):	6,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N
Paint Characteristics	
Shell Color/Shade:	Gray/Light
Shell Condition	Good
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

El Cedro T20 (Gasoline) - Horizontal Tank
Navajo Dam, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 13)	All	64.94	53.24	76.64	58.39	7.6119	6.1130	9.3880	62.0000			92.00	Option 4: RVP=13, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

El Cedro T20 (Gasoline) - Horizontal Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	540.4915
Vapor Space Volume (cu ft):	40.0203
Vapor Density (lb/cu ft):	0.0838
Vapor Space Expansion Factor:	0.7975
Vented Vapor Saturation Factor:	0.5534
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	40.0203
Tank Diameter (ft):	4.0000
Effective Diameter (ft):	5.0475
Vapor Space Outage (ft):	2.0000
Tank Shell Length (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0838
Vapor Molecular Weight (lb/lb-mole):	62.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.6119
Daily Avg. Liquid Surface Temp. (deg. R):	524.6094
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.0642
Tank Paint Solar Absorptance (Shell):	0.5400
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.7975
Daily Vapor Temperature Range (deg. R):	46.7976
Daily Vapor Pressure Range (psia):	3.2750
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.6119
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	6.1130
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	9.3880
Daily Avg. Liquid Surface Temp. (deg R):	524.6094
Daily Min. Liquid Surface Temp. (deg R):	512.9100
Daily Max. Liquid Surface Temp. (deg R):	536.3088
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.5534
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	7.6119
Vapor Space Outage (ft):	2.0000
Working Losses (lb):	67.4196
Vapor Molecular Weight (lb/lb-mole):	62.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.6119
Annual Net Throughput (gal/yr.):	6,000.0000

Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	4.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	607.9111

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

Emissions Report for: Annual

El Cedro T20 (Gasoline) - Horizontal Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 13)	67.42	540.49	607.91

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

Identification

User Identification:	El Cedro Tank 35 (Methanol)
City:	Blanco
State:	New Mexico
Company:	Williams Four Corners, LLC
Type of Tank:	Horizontal Tank
Description:	1,100 Gallon Methanol Tank

Tank Dimensions

Shell Length (ft):	12.00
Diameter (ft):	4.00
Volume (gallons):	1,100.00
Turnovers:	12.00
Net Throughput(gal/yr):	13,200.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Light
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

El Cedro Tank 35 (Methanol) - Horizontal Tank
Blanco, 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
Methyl alcohol	All	64.94	53.24	76.64	58.39	1.6820	1.1617	2.3895	32.0400			32.04	Option 2: A=7.897, B=1474.08, C=229.13

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

El Cedro Tank 35 (Methanol) - Horizontal Tank
Blanco, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	57.1772
Vapor Space Volume (cu ft):	96.0487
Vapor Density (lb/cu ft):	0.0096
Vapor Space Expansion Factor:	0.2008
Vented Vapor Saturation Factor:	0.8487
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	96.0487
Tank Diameter (ft):	4.0000
Effective Diameter (ft):	7.8196
Vapor Space Outage (ft):	2.0000
Tank Shell Length (ft):	12.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0096
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.6820
Daily Avg. Liquid Surface Temp. (deg. R):	524.6094
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.0642
Tank Paint Solar Absorptance (Shell):	0.5400
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2008
Daily Vapor Temperature Range (deg. R):	46.7976
Daily Vapor Pressure Range (psia):	1.2278
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.6820
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.1617
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	2.3895
Daily Avg. Liquid Surface Temp. (deg R):	524.6094
Daily Min. Liquid Surface Temp. (deg R):	512.9100
Daily Max. Liquid Surface Temp. (deg R):	536.3088
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.8487
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.6820
Vapor Space Outage (ft):	2.0000
Working Losses (lb):	16.9368
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.6820
Annual Net Throughput (gal/yr.):	13,200.0000

Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	4.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	74.1140

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

Emissions Report for: Annual

El Cedro Tank 35 (Methanol) - Horizontal Tank
Blanco, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	16.94	57.18	74.11

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

Identification

User Identification:	El Cedro Tank 36 (Methanol)
City:	Blanco
State:	New Mexico
Company:	Williams Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	12,600 Gallon Methanol Tank

Tank Dimensions

Shell Height (ft):	17.00
Diameter (ft):	12.00
Liquid Height (ft) :	15.00
Avg. Liquid Height (ft):	8.00
Volume (gallons):	12,600.00
Turnovers:	12.00
Net Throughput(gal/yr):	151,200.00
Is Tank Heated (y/n):	N

Paint Characteristics

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

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

El Cedro Tank 36 (Methanol) - Vertical Fixed Roof Tank
Blanco, 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
Methyl alcohol	All	64.94	53.24	76.64	58.39	1.6820	1.1617	2.3895	32.0400			32.04	Option 2: A=7.897, B=1474.08, C=229.13

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

El Cedro Tank 36 (Methanol) - Vertical Fixed Roof Tank
Blanco, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	399.1775
Vapor Space Volume (cu ft):	1,032.0132
Vapor Density (lb/cu ft):	0.0096
Vapor Space Expansion Factor:	0.2008
Vented Vapor Saturation Factor:	0.5514
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,032.0132
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	9.1250
Tank Shell Height (ft):	17.0000
Average Liquid Height (ft):	8.0000
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):	0.0096
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.6820
Daily Avg. Liquid Surface Temp. (deg. R):	524.6094
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.0642
Tank Paint Solar Absorptance (Shell):	0.5400
Tank Paint Solar Absorptance (Roof):	0.5400
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2008
Daily Vapor Temperature Range (deg. R):	46.7976
Daily Vapor Pressure Range (psia):	1.2278
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.6820
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.1617
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	2.3895
Daily Avg. Liquid Surface Temp. (deg R):	524.6094
Daily Min. Liquid Surface Temp. (deg R):	512.9100
Daily Max. Liquid Surface Temp. (deg R):	536.3088
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.5514
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.6820

Vapor Space Outage (ft):	9.1250
Working Losses (lb):	194.0032
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.6820
Annual Net Throughput (gal/yr.):	151,200.0000
Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	12,600.0000
Maximum Liquid Height (ft):	15.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	593.1807

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

Emissions Report for: Annual

El Cedro Tank 36 (Methanol) - Vertical Fixed Roof Tank
Blanco, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	194.00	399.18	593.18

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

Identification

User Identification:	El Cedro T49 (Surfatron DN-100)
City:	Navajo Dam
State:	New Mexico
Company:	Williams Four Corners LLC
Type of Tank:	Horizontal Tank
Description:	65 Gallon Surfatron DN-100 Storage Tank

Tank Dimensions

Shell Length (ft):	5.00
Diameter (ft):	3.00
Volume (gallons):	65.00
Turnovers:	12.00
Net Throughput(gal/yr):	780.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

El Cedro T49 (Surfatron DN-100) - Horizontal Tank
Navajo Dam, New Mexico

		Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp	Vapor Pressure (psia)			Vapor Mol.	Liquid Mass	Vapor Mass	Mol.	Basis for Vapor Pressure
Mixture/Component	Month	Avg.	Min.	Max.	(deg F)	Avg.	Min.	Max.	Weight.	Fract.	Fract.	Weight	Calculations
Surfatron DN-100	All	67.36	53.93	80.79	59.23	0.7416	0.5339	0.9747	79.6438			112.39	
1,2,4-Trimethylbenzene						0.0273	0.0160	0.0451	120.1900	0.3000	0.0156	120.19	Option 2: A=7.04383, B=1573.267, C=208.56
Isopropyl alcohol						0.6258	0.3835	0.9914	60.0900	0.0500	0.0595	60.09	Option 2: A=8.1177, B=1580.92, C=219.61
Isopropyl benzene						0.0631	0.0382	0.1009	120.2000	0.0500	0.0060	120.20	Option 2: A=6.93666, B=1460.793, C=207.78
Jet naphtha (JP-4)						1.5209	1.1180	1.9396	80.0000	0.4500	0.8681	120.00	Option 1: VP60 = 1.3 VP70 = 1.6
Naphthalene						0.0034	0.0019	0.0060	128.2000	0.0500	0.0003	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Toluene						0.4136	0.2726	0.6120	92.1300	0.0500	0.0393	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0500	0.0111	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)

El Cedro T49 (Surfatron DN-100) - Horizontal Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	10.9648
Vapor Space Volume (cu ft):	22.5114
Vapor Density (lb/cu ft):	0.0104
Vapor Space Expansion Factor:	0.1353
Vented Vapor Saturation Factor:	0.9443
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	22.5114
Tank Diameter (ft):	3.0000
Effective Diameter (ft):	4.3713
Vapor Space Outage (ft):	1.5000
Tank Shell Length (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0104
Vapor Molecular Weight (lb/lb-mole):	79.6438
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.7416
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
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1353
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	0.4408
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.7416
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.5339
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.9747
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:	0.9443
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.7416
Vapor Space Outage (ft):	1.5000
Working Losses (lb):	1.0970
Vapor Molecular Weight (lb/lb-mole):	79.6438
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.7416
Annual Net Throughput (gal/yr.):	780.0000

Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	3.0000
Working Loss Product Factor:	1.0000

Total Losses (lb):	12.0618

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

Emissions Report for: Annual

El Cedro T49 (Surfatron DN-100) - Horizontal Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Surfatron DN-100	1.10	10.96	12.06
Naphthalene	0.00	0.00	0.00
Xylenes (mixed isomers)	0.01	0.12	0.13
Isopropyl benzene	0.01	0.07	0.07
Toluene	0.04	0.43	0.47
Isopropyl alcohol	0.07	0.65	0.72
1,2,4-Trimethylbenzene	0.02	0.17	0.19
Jet naphtha (JP-4)	0.95	9.52	10.47

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

Identification

User Identification:	El Cedro T52 (Corrosion Inhibitor)
City:	Navajo Dam
State:	New Mexico
Company:	Williams Four Corners LLC
Type of Tank:	Horizontal Tank
Description:	325 Gallon Corrosion Inhibitor Storage Tank

Tank Dimensions

Shell Length (ft):	5.00
Diameter (ft):	3.25
Volume (gallons):	325.00
Turnovers:	12.00
Net Throughput(gal/yr):	3,900.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

El Cedro T52 (Corrosion Inhibitor) - Horizontal Tank
Navajo Dam, 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
Corrision Inhibitor	All	67.36	53.93	80.79	59.23	1.1783	0.7953	1.6922	44.8406			77.18	
1,2,4-Trimethylbenzene						0.0273	0.0160	0.0451	120.1900	0.4500	0.0179	120.19	Option 2: A=7.04383, B=1573.267, C=208.56
Jet naphtha (JP-4)						1.5209	1.1180	1.9396	80.0000	0.3000	0.4443	120.00	Option 1: VP60 = 1.3 VP70 = 1.6
Methyl alcohol						1.8115	1.1881	2.6951	32.0400	0.2000	0.5292	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0500	0.0085	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)

El Cedro T52 (Corrosion Inhibitor) - Horizontal Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations

Standing Losses (lb):	14.5741
Vapor Space Volume (cu ft):	26.4196
Vapor Density (lb/cu ft):	0.0093
Vapor Space Expansion Factor:	0.1782
Vented Vapor Saturation Factor:	0.9079
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	26.4196
Tank Diameter (ft):	3.2500
Effective Diameter (ft):	4.5498
Vapor Space Outage (ft):	1.6250
Tank Shell Length (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0093
Vapor Molecular Weight (lb/lb-mole):	44.8406
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.1783
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
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1782
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	0.8969
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.1783
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.7953
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	1.6922
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:	0.9079
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.1783
Vapor Space Outage (ft):	1.6250
Working Losses (lb):	4.9061
Vapor Molecular Weight (lb/lb-mole):	44.8406
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.1783
Annual Net Throughput (gal/yr.):	3,900.0000

Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	3.2500
Working Loss Product Factor:	1.0000
Total Losses (lb):	19.4802

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

Emissions Report for: Annual

El Cedro T52 (Corrosion Inhibitor) - Horizontal Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Corrision Inhibitor	4.91	14.57	19.48
1,2,4-Trimethylbenzene	0.09	0.26	0.35
Jet naphtha (JP-4)	2.18	6.48	8.66
Methyl alcohol	2.60	7.71	10.31
Xylenes (mixed isomers)	0.04	0.12	0.17

Heater Exhaust Emissions Calculations

Unit Number: 37
Description: Exotherm Stabilizer Reboiler

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

Fuel Consumption

0.80	MMBtu/hr	Capacity	Mfg. data
889	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
7,008	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
7.79	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	100	8.89E-02	3.89E-01
CO	84	7.47E-02	3.27E-01
VOC	5.5	4.89E-03	2.14E-02
SO2	0.6	5.33E-04	2.34E-03
PM	7.60	6.76E-03	2.96E-02
PM10	7.60	6.76E-03	2.96E-02
PM2.5	7.60	6.76E-03	2.96E-02
Lead	5.00E-04	4.44E-07	1.95E-06

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

Exhaust Parameters

600	°F	Exhaust temperature	Mfg. data
71.86	acfm	Stack flowrate	ft/sec x ft^2 x 60 sec/min
0.50	ft	Stack exit diameter	Harvest Four Corners, LLC
0.20	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
6.10	fps	Stack exit velocity	Estimate
18.00	ft	Stack height	Harvest Four Corners, LLC

Heater Exhaust Emissions Calculations

Unit Number: 39 & 45
Description: Water Tank Heater & Tech Shop Heater

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

Fuel Consumption

0.25	MMBtu/hr	Capacity	Mfg. data
278	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
2,190	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
2.43	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
NOX	100	2.78E-02	1.22E-01
CO	84	2.33E-02	1.02E-01
VOC	5.5	1.53E-03	6.69E-03
SO2	0.6	1.67E-04	7.30E-04
PM	7.60	2.11E-03	9.25E-03
PM10	7.60	2.11E-03	9.25E-03
PM2.5	7.60	2.11E-03	9.25E-03
Lead	5.00E-04	1.39E-07	6.08E-07

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

Heater Exhaust Emissions Calculations

Unit Number: 40-44
Description: Tech Shop Heater, Maintenance Shop Heaters (3X) & Generator Building Heater

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

Fuel Consumption

0.125	MMBtu/hr	Capacity	Mfg. data
139	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
1,095	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
1.22	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
NOX	100	1.39E-02	6.08E-02
CO	84	1.17E-02	5.11E-02
VOC	5.5	7.64E-04	3.35E-03
SO2	0.6	8.33E-05	3.65E-04
PM	7.60	1.06E-03	4.62E-03
PM10	7.60	1.06E-03	4.62E-03
PM2.5	7.60	1.06E-03	4.62E-03
Lead	5.00E-04	6.94E-08	3.04E-07

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

Truck Loading (Produced Water) Emissions Calculations

Unit Number: 46
Description: Truck Loading

Emission Factor

0.6		Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
0.4581	psia (maximum)	True vapor pressure of liquid, P	Estimated using Antoine's Equation (see calculations below)
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
77	°F (maximum)	Temperature of liquid	Estimated (see calculations below)
65	°F (average)	Temperature of liquid	Estimated (see calculations below)
536.67	°R (maximum)	Temperature of liquid, T	°F + 459.67
524.67	°R (average)	Temperature of liquid, T	°F + 459.67
0.11	lb/10^3 gal (maximum)	Emission factor, L	AP-42, Section 5.2, Equation 1
0.08	lb/10^3 gal (average)	Emission factor, L	AP-42, Section 5.2, Equation 1

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

Production Rate

3.36	10^3 gal/hr	Maximum hourly production rate	Harvest Four Corners, LLC
2,822.40	10^3 gal/yr	Maximum annual production rate	Harvest Four Corners, LLC

Steady-State Emission Rates

Pollutant	Uncontrolled Emission Rates, pph	tpy
VOC	3.86E-01	1.10E-01

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	Mass Fraction	Uncontrolled Emission Rates, pph	tpy
Benzene	0.0267	1.03E-04	2.95E-05
Ethylbenzene	0.0027	1.03E-05	2.95E-06
n-Hexane	0.0840	3.24E-04	9.27E-05
Toluene	0.0344	1.33E-04	3.79E-05
m-Xylene	0.0229	8.85E-05	2.53E-05

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 (pph) = VOC Emission Rate (pph) x HAP Mass Fraction
Emission Rates (tpy) = VOC Emission Rate (tpy) x HAP Mass Fraction

Truck Loading (Produced Water) Emissions Calculations

Unit Number: 46
Description: Truck Loading

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).

Maximum:			**Average:**		
Temperature =	77	°F	Temperature =	65	°F
log P = A - (B / (C + T))			log P = A - (B / (C + T))		
A = 8.07131			A = 8.07131		
B = 1730.63			B = 1730.63		
C = 233.426			C = 233.426		
T =	25.00	°C	T =	18.33	°C
P = mmHg			P = mmHg		
P = 10^(A - (B / (C + T))			P = 10^(A - (B / (C + T))		
P =	23.69	mmHg	P =	15.75	mmHg
P =	0.4581	psi	P =	0.3045	psi

Note: 760 mmHg = 14.7 psia

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)

Greenhouse Gas Emissions

The carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) exhaust emissions for the engines, turbines, heaters and reboiler were calculated using emission factors from 40 Code of Federal Regulations (CFR), Part C, Tables C-1 & C-2 and the respective engine, turbine, heater and reboiler higher heating value (HHV) design heat rates. Except for the emergency generator engine (Unit 19), emissions were calculated assuming the units all operate 8,760 hours per year. Emissions from the emergency generator engine were calculated using 500 hours per year of operation.

The CO_2 and CH_4 emissions from blowdown of the turbines, compressors, pig receivers 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 WFC engineering. The composition of the gas was determined from extended gas analyses. The annual number of blowdown events were estimated based on historical operations.

The CO_2 and CH_4 emissions from valves, connectors, open-ended lines and pressure relief valves were calculated using the Subpart W methodology applicable to these source types. The component count was determined from the number of compressors and dehydrators permitted to operate at the station, using an equation derived by WFC that is representative of their facilities. Emission factors were obtained from Table W-1A of Subpart W (Western U.S. – Gas Service). The facility CO_2 and CH_4 contents were taken from an extended gas analysis. Emissions were calculated assuming the equipment operates 8,760 hours per year.

Based on the gas release rate 10.0 tons of VOC per year, CO_2 and CH_4, malfunction emissions were calculated using facility gas composition.

Green House Gas Emissions Data and Calculations

Sources	Facility Total Emissions				
	CO_2, tpy	CH_4, tpy	N_2O, tpy	GHG, tpy	CO_2e, tpy
Engine & Turbine Exhaust Emissions (w/o Unit 18a)	171,666.17	3.24	3.24E-01	171,669.73	171843.47
Engine & Turbine Exhaust Emissions (w/o Unit 18)	167,786.08	3.16	3.16E-01	167,789.55	167959.36
Blowdown Emissions	101.00	443.58	--	544.58	11190.48
Reciprocating Compressor Venting Emissions	93.31	554.36	--	647.67	13952.22
Centrifugal Compressor Venting Emissions	83.31	304.10	--	387.41	7685.74
Heater & Boiler Exhaust Emissions	1,775.30	3.35E-02	3.35E-03	1,775.34	1777.13
Equipment Leak Emissions	5.25	28.99	--	34.24	729.93
Natural Gas Pneumatic Device Venting Emissions	1.85	6.73	--	8.57	170.00
Natural Gas Driven Pneumatic Pump Venting Emissions	6.07E-01	2.21	--	2.82	55.83
Malfunction Emissions	328.07	1195.65	--	1523.72	30219.28
Storage Tank Emissions	8.06E-02	7.66E-01	--	8.46E-01	19.23
Total #1	174,054.95	2,539.64	3.27E-01	176,594.91	237,643.31
Total #2	170,174.86	2,539.56	3.20E-01	172,714.74	233,759.21

Total #1 assumes Harvest Four Corners, LLC choses to operate Unit 18.
Total #2 assumes Harvest Four Corners, LLC choses to operate Unit 18a.

Engine & Turbine Exhaust Emissions

Unit Numbers	Description	Emission Factors			Emission Rates		
		CO_2, kg/MMBtu	CH_4, kg/MMBtu	N_2O, kg/MMBtu	CO_2, tpy	CH_4, tpy	N_2O, tpy
1	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
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
4	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
5	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
6	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
7	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
8	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
9	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
10	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
15	Solar MARS 90-T12000S	53.06	1.00E-03	1.00E-04	50,367.37	9.49E-01	9.49E-02
16	Solar MARS 90-T12000S	53.06	1.00E-03	1.00E-04	50,367.37	9.49E-01	9.49E-02
17	Waukesha L7042G	53.06	1.00E-03	1.00E-04	4,209.59	7.93E-02	7.93E-03
18	Waukesha L7042GSI	53.06	1.00E-03	1.00E-04	6,453.57	1.22E-01	1.22E-02
or 18a	Waukesha F2895GSIU	53.06	1.00E-03	1.00E-04	2,573.47	4.85E-02	4.85E-03
19	Waukesha F2895GSIU	53.06	1.00E-03	1.00E-04	163.75	3.09E-03	3.09E-04
	Total #1				171,666.17	3.24	3.24E-01
	Total #2				167,786.08	3.16	3.16E-01

The emissions factors are taken from 40 CFR 98, Subpart C, Tables C-1 & C-2
Emission Rates (tpy) = kg/MMBtu x 2.2 lb/kg x MMBtu/yr / 2,000 lb/ton
Total #1 assumes Harvest Four Corners, LLC choses to operate Unit 18.
Total #2 assumes Harvest Four Corners, LLC choses to operate Unit 18a.

Green House Gas Emissions Data and Calculations

Unit Numbers	Description	Fuel Types	Operating Times, hr/yr	LHV Design Heat Rates, MMBtu/hr	HHV Design Heat Rates, MMBtu/hr	HHV Fuel Usages, MMBtu/yr
1	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
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
4	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
5	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
6	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
7	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
8	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
9	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
10	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
15	Solar MARS 90-T12000S	Nat. Gas	8,760	88.66	98.51	862,957
16	Solar MARS 90-T12000S	Nat. Gas	8,760	88.66	98.51	862,957
17	Waukesha L7042G	Nat. Gas	8,760	7.41	8.23	72,124
18	Waukesha L7042GSI	Nat. Gas	8,760	11.36	12.62	110,571
or 18a	Waukesha F2895GSIU	Nat. Gas	8,760	4.53	5.03	44,092
19	Waukesha F2895GSIU	Nat. Gas	500	5.05	5.61	2,806

The fuel types and operating times are provided by Harvest Four Corners, LLC
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

Blowdown Emissions

Unit Numbers	Description	Total Gas Losses, scf/yr	CO_2 Emission Factors, lb/scf	CH_4 Emission Factors, lb/scf	Emission Rates CO_2, tpy	Emission Rates CH_4, tpy
SSM	SSM (Units 1-5)	14,375,000	0.0104	0.0380	74.85	272.78
SSM	SSM (Units 6-10)	4,008,550	0.0017	0.0341	3.49	68.43
SSM	SSM (Units 15 & 16)	4,130,000	0.0104	0.0380	21.50	78.37
PR1	G-12 Pig Receiver	200,000	0.0012	0.0352	1.20E-01	3.52
PR2	11-S Pig Receiver	1,200,000	0.0017	0.0341	1.04	20.48
	Total				101.00	443.58

The annual blowdown volumes are calculated from data provided by Harvest Four Corners, LLC
The CO_2 & CH_4 emission factors for SSM (Units 1-5) and SSM (Units 15 & 16) were calculated from the Manzanares extended gas analysis
The CO_2 & CH_4 emission factors for SSM (Units 6-10) and 11-S Pig Receiver were calculated from the Trunk G extended gas analysis
The CO_2 & CH_4 emission factors for G-12 Pig Receiver were calculated from the Trunk L extended gas analysis
Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Reciprocating Compressor Venting Emissions

Green House Gas Emissions Data and Calculations

Unit Numbers	Description	Emission Rates CO2, tpy	CH4, tpy
1-5	Blowdown Valve Leakage	7.64	27.88
1-5	Rod Packing Emissions	72.32	263.95
1-5	Isolation Valve Leakage	0.00E+00	0.00E+00
6-10	Blowdown Valve Leakage	1.28	25.08
6-10	Rod Packing Emissions	12.08	237.45
6-10	Isolation Valve Leakage	0.00E+00	0.00E+00
	Total	93.31	554.36

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
1-5	Blowdown Valve Leakage	5	33.5	8,760	8.98	89.77	0.0526	0.0192
1-5	Rod Packing Emissions	5	317.2	8,760	8.98	89.77	0.0526	0.0192
1-5	Isolation Valve Leakage	5	10.5	0	8.98	89.77	0.0526	0.0192
6-10	Blowdown Valve Leakage	5	33.5	8,760	1.50	80.75	0.0526	0.0192
6-10	Rod Packing Emissions	5	317.2	8,760	1.50	80.75	0.0526	0.0192
6-10	Isolation Valve Leakage	5	10.5	0	1.50	80.75	0.0526	0.0192

The number of compressors and operatrig times are provided by Harvest Four Corners, LLC
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 CO2 & CH4 mole percents for Units 1-5 are taken from the Manzanares extended gas analysis
The CO2 & CH4 mole percents for Units 6-10 are taken from the Trunk G extended gas analysis
The CO2 & CH4 densities (kg/scf) are taken from Subpart W, Paragraph 98.233(v)

Centrifugal Compressor Venting Emissions

Unit Numbers	Description	Emission Rates CO2, tpy	CH4, tpy
15 & 16	Blowdown Valve Leakage	15.27	55.72
15 & 16	Oil Degassing Vents	68.05	248.38
15 & 16	Isolation Valve Leakage	0.00E+00	0.00E+00
	Total	83.31	304.10

Operating mode - includes blowdown valve leakage (wet and dry seal) and the oil degassing vents (wet seal)
Non-operating depressurized mode - includes isolation valve leakage (wet & dry seal) through open blowdown vents (without blind flanges)
A combination of equations W-22 & W-36 (Subpart W) is used to calculate centrifugal 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

Green House Gas Emissions Data and Calculations

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
15 & 16	Blowdown Valve Leakage	2	167.4	8,760	8.98	89.77	0.0526	0.0192
15 & 16	Oil Degassing Vents	2	746.2	8,760	8.98	89.77	0.0526	0.0192
15 & 16	Isolation Valve Leakage	2	10.8	0	8.98	89.77	0.0526	0.0192

The number of compressors and operating times are provided by Harvest Four Corners, LLC

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 CO2 & CH4 mole percents for Units 15 & 16 are taken from the Manzanares extended gas analysis

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

Heater & Boiler Exhaust Emissions

Unit Numbers	Description	Emission Factors			Emission Rates		
		CO2, kg/MMBtu	CH4, kg/MMBtu	N2O, kg/MMBtu	CO2, tpy	CH4, tpy	N2O, tpy
20	Sivals Heater	53.06	1.00E-03	1.00E-04	284.05	5.35E-03	5.35E-04
28	Pesco Heater	53.06	1.00E-03	1.00E-04	397.67	7.49E-03	7.49E-04
37	Stabilizer Reboiler	53.06	1.00E-03	1.00E-04	454.48	8.57E-03	8.57E-04
39	Water Tank Heater	53.06	1.00E-03	1.00E-04	142.02	2.68E-03	2.68E-04
40	Tech Shop Heater	53.06	1.00E-03	1.00E-04	71.01	1.34E-03	1.34E-04
41	Maintenance Shop Heater	53.06	1.00E-03	1.00E-04	71.01	1.34E-03	1.34E-04
42	Maintenance Shop Heater	53.06	1.00E-03	1.00E-04	71.01	1.34E-03	1.34E-04
43	Maintenance Shop Heater	53.06	1.00E-03	1.00E-04	71.01	1.34E-03	1.34E-04
44	Generator Building Heater	53.06	1.00E-03	1.00E-04	71.01	1.34E-03	1.34E-04
45	Tech Shop Heater	53.06	1.00E-03	1.00E-04	142.02	2.68E-03	2.68E-04
	Total				1,775.30	3.35E-02	3.35E-03

The emissions factors are taken from 40 CFR 98, Subpart C, Tables C-1 & C-2

Emission Rates (tpy) = kg/MMBtu x 2.2 lb/kg x MMBtu/yr / 2,000 lb/ton

Unit Numbers	Description	Fuel Types	Operating Times, hr/yr	LHV Design Heat Rates, MMBtu/hr	HHV Design Heat Rates, MMBtu/hr	HHV Fuel Usages, MMBtu/yr
20	Sivals Heater	Nat. Gas	8,760	0.500	0.556	4,867
28	Pesco Heater	Nat. Gas	8,760	0.700	0.778	6,813
37	Stabilizer Reboiler	Nat. Gas	8,760	0.800	0.889	7,787
39	Water Tank Heater	Nat. Gas	8,760	0.250	0.278	2,433
40	Tech Shop Heater	Nat. Gas	8,760	0.125	0.139	1,217
41	Maintenance Shop Heater	Nat. Gas	8,760	0.125	0.139	1,217
42	Maintenance Shop Heater	Nat. Gas	8,760	0.125	0.139	1,217
43	Maintenance Shop Heater	Nat. Gas	8,760	0.125	0.139	1,217
44	Generator Building Heater	Nat. Gas	8,760	0.125	0.139	1,217
45	Tech Shop Heater	Nat. Gas	8,760	0.250	0.278	2,433

The fuel type and operating times are provided by Harvest Four Corners, LLC

The LHV design heat rates are taken from manufacturers data

HHV Design Heat Rates (MMBtu/hr) = LHV Design Heat Rate (MMBtu/hr) / 0.9 LHV/HHV

HHV Fuel Usages (MMBtu/yr) = HHV Design Heat Rate (MMBtu/hr) x hr/yr

Green House Gas Emissions Data and Calculations

Equipment Leaks Emissions

Unit Numbers	Description	Emission Rates CO2, tpy	CH4, tpy
1-5, 15 & 16	Valves	3.48	12.69
1-5, 15 & 16	Connectors	4.98E-01	1.82
1-5, 15 & 16	Open-Ended Lines	2.30E-01	8.41E-01
1-5, 15 & 16	Pressure Relief Valves	4.31E-01	1.57
6-10	Valves	4.64E-01	9.13
6-10	Connectors	6.36E-02	1.25
6-10	Open-Ended Lines	3.14E-02	6.17E-01
6-10	Pressure Relief Valves	5.44E-02	1.07
	Total	5.25	28.99

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
1-5, 15 & 16	Valves	630	0.121	8.98	89.77	8,760	0.0526	0.0192
1-5, 15 & 16	Connectors	643	0.017	8.98	89.77	8,760	0.0526	0.0192
1-5, 15 & 16	Open-Ended Lines	163	0.031	8.98	89.77	8,760	0.0526	0.0192
1-5, 15 & 16	Pressure Relief Valves	49	0.193	8.98	89.77	8,760	0.0526	0.0192
6-10	Valves	504	0.121	1.50	80.75	8,760	0.0526	0.0192
6-10	Connectors	491	0.017	1.50	80.75	8,760	0.0526	0.0192
6-10	Open-Ended Lines	133	0.031	1.50	80.75	8,760	0.0526	0.0192
6-10	Pressure Relief Valves	37	0.193	1.50	80.75	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 CO2 & CH4 mole percents for components associated with Units 1-5, 15 & 16 are taken from the Manzanares extended gas analysis

The CO2 & CH4 mole percents for components associated with Units 6-10 are taken from the Trunk G extended gas analysis

The operating times are provided by Harvest Four Corners, LLC (default is the entire year)

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

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	3	13.5	8,760	1.85	6.73
NA	Continuous Low Bleed Pneumatic Devices	0	1.39	8,760	0.00E+00	0.00E+00
	Total				1.85	6.73

The number of devices and operating times are provided by Harvest Four Corners, LLC

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

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)

Green House Gas Emissions Data and Calculations

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	8.98	89.77	5.262E-05	4.790E-04	1	25
NA	Continuous Low Bleed Pneumatic Devices	8.98	89.77	5.262E-05	4.790E-04	1	25
NA	Intermittent Bleed Pneumatic Devices	8.98	89.77	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

Natural Gas Driven Pneumatic Pump Venting Emissions

Emission Rates

Unit Number	Description	Number of Pumps, #	Emission Factor, scf/hr/pump	Operating Time, hr/yr	Emission Rates	
					CO2, tpy	CH4, tpy
NA	Pneumatic Pump Venting	1	13.3	8,760	6.07E-01	2.21

The number of pumps are provided by Harvest Four Corners, LLC
The emission factor is taken from Subpart W, Table W-1A (Western U.S. - Gas Service)
The operating time is provided by Harvest Four Corners, LLC (default is the entire year)
Equation W-2 (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 Rate (tpy) = # x scf/hr/pump x (CO2 Content (mole %) / 100) x CO2 Conversion Factor (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 Rate (tpy) = # x scf/hr/pump x (CH4 Content (mole %) / 100) x CH4 Conversion Factor (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 Number	Description	CO2 Content, mole %	CH4 Content, mole %	CO2 Conversion Factor, tonne CO2e /scf	CH4 Conversion Factor, tonne CO2e /scf	CO2 Global Warming Potential, tonne CO2e /tonne CO2	CH4 Global Warming Potential, tonne CO2e /tonne CH4
NA	Pneumatic Pump Venting	8.98	89.77	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 operating time is provided by Harvest Four Corners, LLC (the default is the entire year)
The global warming potentials are taken from 40 CFR Part 98, Table A-1

Malfunction Emissions

Unit Number	Description	Emission Rates		
		VOC, tpy	CO2, tpy	CH4, tpy
M1	Malfunctions	10.00	328.07	1,195.65

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

Unit Number	Description	Total Component Weight, lb/lb-mole	VOC Component Weight, lb/lb-mole	CO2 Weight % of Total, %	CH4 Weight % of Total, %
M1	Malfunctions	18.77	0.12	21.05	76.70

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

Green House Gas Emissions Data and Calculations

Storage Tank Emissions

Unit Number	Description	Emission Rates	
		CO_2, tpy	CH_4, tpy
T91019	Condensate	2.72E-02	2.58E-01
T91020	Condensate	1.63E-02	1.55E-01
T91021	Condensate	1.63E-02	1.55E-01
T91028	Condensate	2.09E-02	1.99E-01
	Total	8.06E-02	7.66E-01

The emission rates are taken from HYSYS output files, as applicable

Gas Stream Compositions

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of Total, %	Emission Factors, lb/scf
Carbon Dioxide	8.9772	44.01	3.95	21.0451	0.0104
Hydrogen Sulfide	0.0000	34.07	0.00	0.0000	0.0000
Nitrogen	0.0566	28.01	0.02	0.0844	0.0000
Methane	89.7679	16.04	14.40	76.6980	0.0380
Ethane	0.9558	30.07	0.29	1.5309	0.0008
Propane	0.1715	44.09	0.08	0.4028	0.0002
IsoButane	0.0262	58.12	0.02	0.0811	0.0000
Normal Butane	0.0266	58.12	0.02	0.0824	0.0000
IsoPentane	0.0073	72.15	0.01	0.0281	0.0000
Normal Pentane	0.0056	72.15	0.00	0.0215	0.0000
Cyclopentane	0.0001	70.14	0.00	0.0004	0.0000
n-Hexane	0.0005	86.17	0.00	0.0023	0.0000
Cyclohexane	0.0003	84.16	0.00	0.0013	0.0000
Other Hexanes	0.0009	86.18	0.00	0.0041	0.0000
Heptanes	0.0007	100.20	0.00	0.0037	0.0000
Methylcyclohexane	0.0008	98.19	0.00	0.0042	0.0000
2,2,4-Trimethylpentane	0.0000	100.21	0.00	0.0000	0.0000
Benzene	0.0002	78.11	0.00	0.0008	0.0000
Toluene	0.0006	92.14	0.00	0.0029	0.0000
Ethylbenzene	0.0000	106.17	0.00	0.0000	0.0000
Xylenes	0.0002	106.17	0.00	0.0011	0.0000
C8+ heavies	0.0008	110.00	0.00	0.0047	0.0000
Total	99.9998		18.77	100.0000	0.0495
VOC			0.12	--	0.0003

Gas stream composition obtained from El Cedro (Manzanares) extended gas analysis dated 02/07/2020
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

Green House Gas Emissions Data and Calculations

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of Total, %	Emission Factors, lb/scf
Carbon Dioxide	1.4996	44.01	0.66	3.5155	0.0017
Hydrogen Sulfide	0.0000	34.07	0.00	0.0000	0.0000
Nitrogen	0.1786	28.01	0.05	0.2665	0.0001
Methane	80.7532	16.04	12.95	68.9958	0.0341
Ethane	7.4024	30.07	2.23	11.8567	0.0059
Propane	3.5417	44.09	1.56	8.3178	0.0041
IsoButane	0.7647	58.12	0.44	2.3674	0.0012
Normal Butane	4.6213	58.12	2.69	14.3070	0.0071
IsoPentane	0.3987	72.15	0.29	1.5323	0.0008
Normal Pentane	0.2746	72.15	0.20	1.0553	0.0005
Cyclopentane	0.0034	70.14	0.00	0.0127	0.0000
n-Hexane	0.1257	86.17	0.11	0.5770	0.0003
Cyclohexane	0.0470	84.16	0.04	0.2107	0.0001
Other Hexanes	0.0853	86.18	0.07	0.3916	0.0002
Heptanes	0.0996	100.20	0.10	0.5316	0.0003
Methylcyclohexane	0.0892	98.19	0.09	0.4665	0.0002
2,2,4-Trimethylpentane	0.0063	100.21	0.01	0.0336	0.0000
Benzene	0.0165	78.11	0.01	0.0687	0.0000
Toluene	0.0312	92.14	0.03	0.1531	0.0001
Ethylbenzene	0.0006	106.17	0.00	0.0034	0.0000
Xylenes	0.0083	106.17	0.01	0.0469	0.0000
C8+ heavies	0.0523	110.00	0.06	0.3064	0.0002
Total	100.0002		21.59	115.0167	0.0569
VOC			5.70	--	0.0150

Gas stream composition obtained from El Cedro (Trunk G) extended gas analysis dated 02/07/2020
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

Green House Gas Emissions Data and Calculations

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of Total, %	Emission Factors, lb/scf
Carbon Dioxide	1.0334	44.01	0.45	2.4226	0.0012
Hydrogen Sulfide	0.0000	34.07	0.00	0.0000	0.0000
Nitrogen	0.2947	28.01	0.08	0.4397	0.0002
Methane	83.3290	16.04	13.37	71.1966	0.0352
Ethane	8.6116	30.07	2.59	13.7936	0.0068
Propane	3.6567	44.09	1.61	8.5879	0.0042
IsoButane	0.7113	58.12	0.41	2.2021	0.0011
Normal Butane	1.2286	58.12	0.71	3.8036	0.0019
IsoPentane	0.3696	72.15	0.27	1.4205	0.0007
Normal Pentane	0.2568	72.15	0.19	0.9869	0.0005
Cyclopentane	0.0042	70.14	0.00	0.0157	0.0000
n-Hexane	0.1085	86.17	0.09	0.4980	0.0002
Cyclohexane	0.0361	84.16	0.03	0.1618	0.0001
Other Hexanes	0.1681	86.18	0.14	0.7717	0.0004
Heptanes	0.0745	100.20	0.07	0.3976	0.0002
Methylcyclohexane	0.0582	98.19	0.06	0.3044	0.0002
2,2,4-Trimethylpentane	0.0038	100.21	0.00	0.0203	0.0000
Benzene	0.0024	78.11	0.00	0.0100	0.0000
Toluene	0.0222	92.14	0.02	0.1090	0.0001
Ethylbenzene	0.0004	106.17	0.00	0.0023	0.0000
Xylenes	0.0038	106.17	0.00	0.0215	0.0000
C8+ heavies	0.0263	110.00	0.03	0.1541	0.0001
Total	100.0002		20.15	107.3198	0.0531
VOC			3.65	--	0.0096

Gas stream composition obtained from Trunk L extended gas analysis dated 02/06/2020

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.

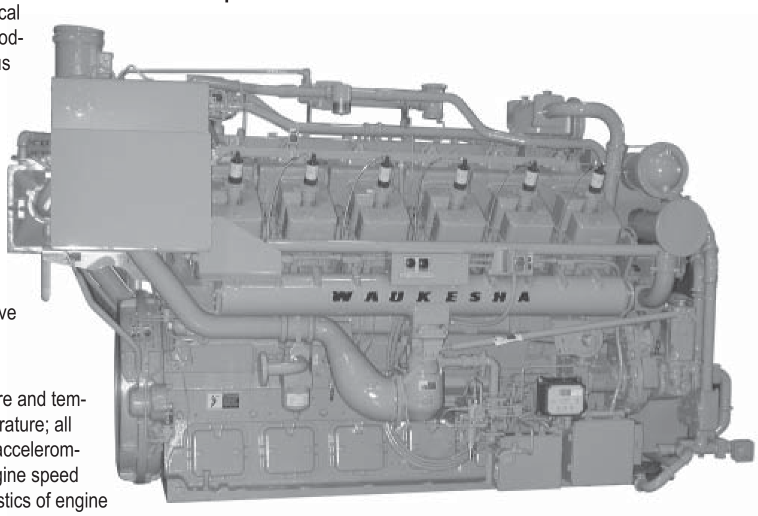
WATER CIRCULATING SYSTEM, AUXILIARY CIRCUIT – Belt driven water circulating high capacity pump for intercooler and lube oil cooler. See S6543-38 performance curve for use with standard 10" diameter crankshaft pulley. Includes thermostatic valve.

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/ft³ (35.3 MJ/nm³) SLHV value, with a 91 Waukesha Knock Index®.

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

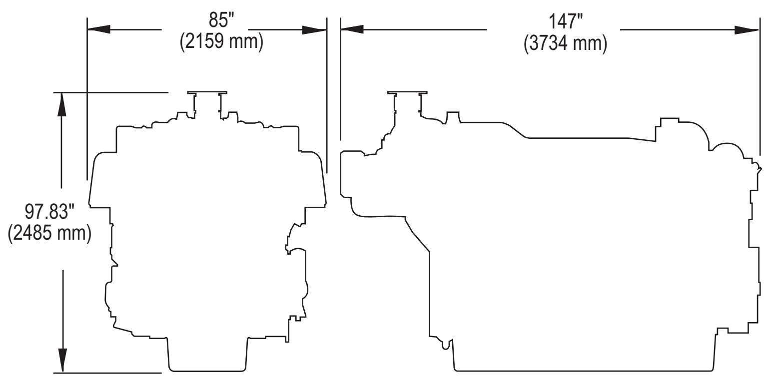
PERFORMANCE: L7042GL VHP® GAS ENGINES

NO_x Settings	English	130° F ICW 1200	130° F ICW 1000	85° F ICW 1200	85° F ICW 1000
	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 1200	54° C ICW 1000	29° C ICW 1200	29° C ICW 1000
	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/nm³)	0.62	0.62	0.62	0.62
	CO (g/nm³)	1.09	1.09	1.09	1.09
	NMHC (g/nm³)	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/ft³ (35.38 MJ/m³ [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/ft³ 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.

DRESSER Waukesha

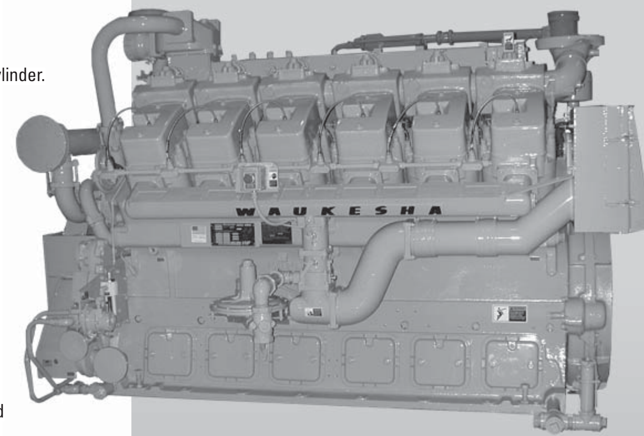
L7042G

STANDARD EQUIPMENT

AIR CLEANER – Two, dry type with rain shield and service indicator.
BARRING DEVICE – Manual.
BEARINGS – Heavy duty, replaceable, precision type.
BREATHER – Closed system.
CONNECTING RODS – Drop forged steel, rifle drilled.
CONTROL SYSTEM – Pneumatic. Includes pilot operated valves for air start and prelube. Engine mounted control panel with two push button valves. Pilot operated air start valves omitted when starter is not furnished by Waukesha. Includes engine On/Off push button. One mounted on either side of the engine.
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 wet type cylinder liners, chrome plated on outer diameter. Induction hardened.
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.
ENGINE ROTATION – Counterclockwise when facing flywheel.
ENGINE MONITOR DEVICES – Engine thermocouples, K–type, are wired to a common junction box for jacket water temperature, lube oil temperature and intake manifold temperature. Magnetic pickup wired for customer supplied tachometer. Lube oil pressure and intake manifold pressure sensing lines are terminated in a common bulk head.
EXHAUST OUTLET – Single vertical at rear. Flexible stainless steel connection with 8" (203 mm) pipe flange.
FLYWHEEL – Approx. WR^2 = 155000 lb-in^2; 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.
FUEL SYSTEM – Dual, natural gas, 4" (102 mm) updraft. Two Fisher Model S–201, 2" (51 mm) gas regulators, 13 psi (89 kPa) maximum inlet pressure.
FLYWHEEL HOUSING – No. 00 SAE.
GOVERNOR – Woodward UG–8 LD hydraulic lever type, with friction type speed control. Mounted on right hand side.
IGNITION – Waukesha Custom Engine Control Ignition Module. Electronic digital ignition system. 24V DC power required.
LEVELING BOLTS
LIFTING EYES – Requires 9.5 ton Working Load Limit (W.L.L.) anchor shackles.
LUBRICATION – Full pressure. Gear type pump. Full flow filter, 36 gallon (136 litres) capacity, not mounted. Includes lube oil strainer (mounted on engine) and flexible connections (shipped loose). 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. Not mounted.
OIL PAN – Base type. 90 gallon (340 litres) capacity including filter and cooler.
PAINT – Oilfield orange primer.
PISTONS – Aluminum with floating pin. Standard 10:1 compression ratio. Oil cooled.
SHIPPING SKID – For domestic truck or rail.
VIBRATION DAMPER – Viscous type. Guard included with remote mounted radiator or no radiator.
WATER CIRCULATING SYSTEM, AUXILIARY CIRCUIT – For oil cooler. Pump is belt driven from crankshaft pulley.
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.

VHP® Series Gas Engine

732 - 1025 BHP
(546 - 764 kWb)



Engine shown with options.

Model L7042G

Naturally Aspirated, Twelve Cylinder, Four-Cycle Gas Fueled 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
10:1

Jacket Water System Capacity
107 gal. (405 L)

Lube Oil Capacity
90 gal. (340 L)

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

Dry Weight
21,000 lb. (9525 kg)

POWER RATINGS: L7042G VHP® SERIES GAS ENGINE

Model	I.C. Water Inlet Temp. °F (°C) (Tcra)	C.R.	Brake Horsepower (kWb Output) 800 rpm	900 rpm	1000 rpm	1200 rpm
L7042G	85° (29°)	10:1	732 (546)	818 (610)	896 (668)	1025 (764)

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/ft³ (35.3 MJ/nm³) SLHV, with a 91 WKI®.

For conditions or fuels other than standard, contact the Dresser Waukesha Application Engineering Department.

PERFORMANCE: L7042G VHP® SERIES GAS ENGINE

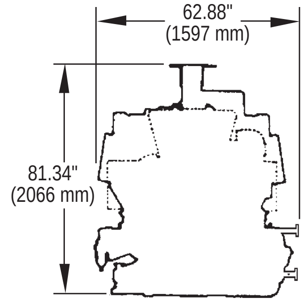
English 130° F I.C. Water Temperature

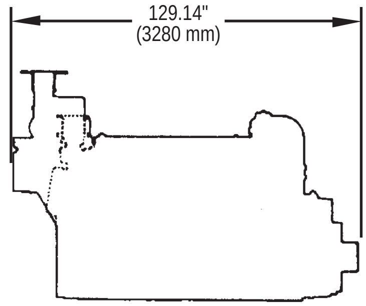
Catalyst Settings		
RPM	1200	1000
Power (Bhp)	1025	896
BSFC (Btu/bhp-hr)	7225	7135
NOx (grams/bhp-hr)	16.0	16.0
CO (grams/bhp-hr)	13.0	13.0
NMHC (grams/bhp-hr)	0.25	0.25

Metric 54° C I.C. Water Temperature

Catalyst Settings		
RPM	1200	1000
Power (kWb)	764	668
BSFC (kJ/kW-hr)	10225	10095
NOx (g/nm³)	5.9	5.9
CO (g/nm³)	4.8	4.8
NMHC (g/nm³)	0.1	0.1

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/ft³ (35.38 MJ/m³ [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 Dresser Waukesha Application Engineering Department.
4) Fuel consumption based on ISO 3046/1-1995 with a +5% tolerance for commercial quality natural gas having a 900 Btu/ft³ saturated low heat valve





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Dresser Waukesha
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DRESSER® Waukesha

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jmartindale@emittechnologies.com

Prepared For:
Mike Johnson
WILLIAMS FIELD SERVICES

QUOTE: QUO-11395-S0H2

INFORMATION PROVIDED BY WAUKESHA

Engine:	L7042G
Horsepower:	1025
RPM:	1200
Compression Ratio:	10.0
Exhaust Flow Rate:	4392 CFM
Exhaust Temperature:	1058 °F
Reference:	6124-5
Fuel:	Natural Gas
Annual Operating Hours:	8760

Uncontrolled Emissions

	g/bhp-hr	Lb/Hr	Tons/Year
NOx:	13.00	29.38	128.67
CO:	9.00	20.34	89.08
THC:	2.00	4.52	19.80
NMHC	0.30	0.68	2.97
NMNEHC:	0.15	0.34	1.48
HCHO:	0.05	0.11	0.49
O2:	0.30 %		

POST CATALYST EMISSIONS

	g/bhp-hr	Lb/Hr	Tons/Year
NOx:	<1.10	<2.49	<10.89
CO:	<2.00	<4.52	<19.80
VOC:	<0.11	<0.25	<1.10
HCHO:	<0.01	<0.03	<0.12

CONTROL EQUIPMENT

Catalyst Housing

Model:	ELS-3550-1212F-4CE0-241
Manufacturer:	EMIT Technologies, Inc
Element Size:	Rectangle 24" x 15" x 3.5"
Housing Type:	4 Element Capacity
Catalyst Installation:	Accessible Housing
Construction:	10 gauge Carbon Steel
Sample Ports:	9 (0.5" NPT)
Inlet Connections:	12" Flat Face Flange
Outlet Connections:	12" Flat Face Flange
Configuration:	End In / Side Out
Silencer:	Integrated
Silencer Grade:	Critical
Insertion Loss:	25-30 dBA

Catalyst Element

Model:	RT-2415-T
Catalyst Type:	NSCR, Standard Precious Group Metals
Substrate Type:	BRAZED
Manufacturer:	EMIT Technologies, Inc
Element Quantity:	2
Element Size:	Rectangle 24" x 15" x 3.5"

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jmartindale@emittechnologies.com

WARRANTY

EMIT Technologies, Inc. warrants that the goods supplied will be free from defects in workmanship by EMIT Technologies, Inc. for a period of two (2) years from date of shipment. EMIT Technologies, Inc. will not be responsible for any defects which result from improper use, neglect, failure to properly maintain or which are attributable to defects, errors or omissions in any drawings, specifications, plans or descriptions, whether written or oral, supplied to EMIT Technologies, Inc. by Buyer.

Catalyst performance using an EMIT Air/Fuel ratio controller is dependent upon properly defined set-points, variable with engine and fuel gas composition. Air/fuel ratio controller performance is guaranteed, but not limited, to fuel gas with a HHV content of 1400 BTU/SCF.

Catalyst performance will be guaranteed for a period of 1 year from installation, or 8760 operating hours, whichever comes first. The catalyst shall be operated with an automatic air/fuel ratio controller. The performance guarantee shall not cover the effects of excessive ash masking due to operation at low load, improper engine maintenance, or inappropriate lubrication oil. The performance guarantee shall not cover the effects of continuous engine misfires (cylinder or ignition) exposing the catalyst to excessive exothermic reaction temperatures. In most cases, excluding thermal deactivation, catalyst performance is redeemable by means of proper washing (refer to EMIT Catalyst/Silencer Housing Manual for element wash information, or contact a local EMIT Sales representative).

The exhaust temperature operating range at the converter inlet is a minimum of 600°F for oxidation catalyst and 750 ˚F for NSCR catalyst, and a maximum of 1250°F.

If a properly functioning, high temperature shut down switch is not installed, thermal deactivation of catalyst at sustained temperatures above 1250˚F is not covered. If excessive exposure to over oxygenation of NSCR catalyst occurs due to improperly functioning or non-existent Air/Fuel ratio control, then deactivation of catalyst is not warranted.

The catalyst conversion efficiencies (% reduction) will be guaranteed for engine loads of 50 to 100 percent. Standard Oxidation Catalyst conversion efficiencies (% reduction) will be guaranteed for fuel gas containing less than 1.5% mole fraction of non-methane, non-ethane hydrocarbons. Applications where fuel gas exceeds this level will require a Premium Oxidation Catalyst to maintain guaranteed VOC conversion efficiencies.

Engine lubrication oil shall contain less than 0.5 wt% Sulfated Ash with a maximum allowable specific oil consumption of 0.7 g/bhp-hr. The catalyst shall be limited to a maximum ash loading of 0.022 lb/ft3. Phosphorous and zinc additives are limited to 0.03 wt%. New or Reconstructed engines must operate for a minimum of 100 hours prior to catalyst installation, otherwise the warranty is void.

The catalyst must not be exposed to the following know poisoning agents, including: antimony, arsenic, chromium, copper, iron, lead, lithium, magnesium, mercury, nickel, phosphorous, potassium, silicon, sodium, sulfur, tin, and zinc. Total poison concentrations in the fuel gas must be limited to 0.25 ppm or less for catalyst to function properly.

Shipment - Promised shipping dates are approximate lead times from the point of manufacture and are not guaranteed. EMIT Technologies, Inc. will not be liable for any loss, damage or delay in manufacture or delivery resulting from any cause beyond its control including, but not limited to a period equal to the time lost by reason of that delay. All products will be crated as per best practice to prevent any damage during shipment. Unless otherwise specified, Buyer will pay for any special packing and shipping requirements. Acceptance of goods by common carrier constitutes delivery to Buyer. EMIT Technologies, Inc. shall not be responsible for goods damaged or lost in transit.

Terms: Credit is extended to purchaser for net 30 time period. If payment is not received in the net 30 timeframe, interest on the unpaid balance will accrue at a rate of 1.5% per month from the invoice date.

Order Cancellation Terms: Upon cancellation of an order once submittal of a Purchase Order has occurred, the customer will pay a 25% restocking fee for Catalyst Housings, Catalyst Elements, and Air/Fuel Ratio Controllers; 50% restocking fee for Cooler Top Solutions, Exhaust System Accessories, and other Custom Built Products; 100% of all associated shipping costs incurred by EMIT; 100% of all project expenses incurred by EMIT for Field Services.

DRESSER Waukesha L7042GSI

STANDARD EQUIPMENT

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

AIR FUEL RATIO CONTROL (AFR) – Integrated ESM® - AFR catalyst rich-burn control, main fuel gas regulator actuators, exhaust O_2 sensor(s), and post turbocharger exhaust thermocouple. Factory mounted and tested. AFR maintains emissions through load and speed changes. The ESM AFR meets Canadian Standards Association Class 1, Division 2, Group D hazardous location requirements. Note: For dual fuel applications, ESM AFR system will control the primary fuel source only.

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.

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 wet type bainitic cast iron 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.

ELECTRONIC SERVICE PROGRAM (ESP) – Microsoft® Windows-based program provided on CD-ROM for programming and interface to ESM. Includes E-Help for troubleshooting any ESM faults. Serial harness is provided for connection of a customer supplied laptop to the ECU RS-232 port.

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.

ENGINE ROTATION – Counterclockwise when facing flywheel.

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

FLYWHEEL – Approx. WR^2 = 155000 lb-in^2; 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. Two natural gas, 4" (102 mm) updraft carburetors and two mounted Mooney Flowgrid 250, 2" (51 mm) gas regulators, 30 – 60 psi (207 – 414 kPa) fuel inlet pressure required. 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 – Ignition Power Module (IPM) controlled by ESM, with spark timing. 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. MICROSPIN® bypass filter, engine 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.

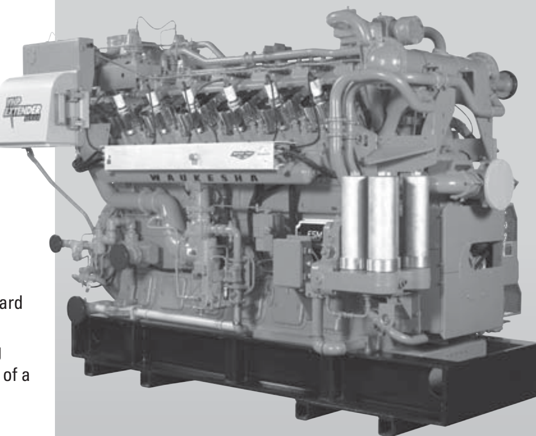
VIBRATION DAMPER – Viscous type. Guard included with remote mounted radiator or no radiator.

WATER CIRCULATING SYSTEM, AUXILIARY CIRCUIT – Belt driven water circulating high capacity pump for intercooler and lube oil cooler. See S6543-36 performance curve for use with standard 10 diameter crankshaft pulley.

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.

VHP® Series Gas Engine Extender Series®

987 - 1547 BHP
(736 - 1154 kWb)



Engine shown with options.

Model L7042GSI with ESM

Turbocharged and Intercooled, Twelve Cylinder, Four-Cycle Gas Fueled 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
8:1

Jacket Water System Capacity
107 gal. (405 L)

Lube Oil Capacity
190 gal. (719 L)

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

Dry Weight
21,000 lb.
(9525 kg)

POWER RATINGS: L7042GSI VHP® GAS ENGINE

Model	I.C. Water Inlet Temp. °F (°C) (Tcra)	C.R.	Brake Horsepower (kWb Output) 800 rpm	900 rpm	1000 rpm	1200 rpm
L7042GSI	85° (29°)	8:1	1031 (769)	1160 (865)	1289 (961)	1547 (1154)
	130° (54°)	8:1	987 (736)	1110 (828)	1233 (920)	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, with a 91 WKI®.

For conditions or fuels other than standard, contact the Dresser Waukesha Application Engineering Department.

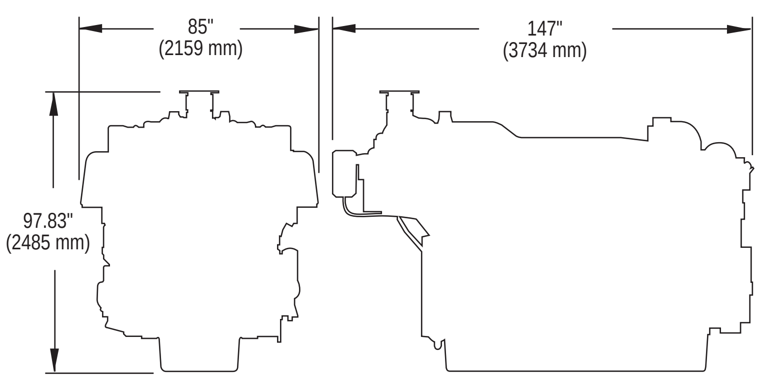
PERFORMANCE: L7042GSI VHP® GAS ENGINE

English 130° F I.C. Water Temperature		1200	1000
Catalyst Settings	RPM	1200	1000
	Power (Bhp)	1480	1233
	BSFC (Btu/bhp-hr)	7675	7440
	NOx (grams/bhp-hr)	16.0	16.0
	CO (grams/bhp-hr)	13.0	13.0
	NMHC (grams/bhp-hr)	0.25	0.25

Metric 54° C I.C. Water Temperature		1200	1000
Catalyst Settings	RPM	1200	1000
	Power (kWb)	1104	920
	BSFC (kJ/kW-hr)	10860	10525
	NOx (g/nm^3)	5.9	5.9
	CO (g/nm^3)	4.8	4.8
	NMHC (g/nm^3)	0.1	0.1

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 Dresser Waukesha Application 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

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.



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DRESSER® Waukesha

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jmartindale@emittechnologies.com

Prepared For:
Mike Johnson
WILLIAMS FIELD SERVICES

QUOTE: QUO-12840-G1T1

INFORMATION PROVIDED BY WAUKESHA

Engine:	L7042GSI
Horsepower:	1480
RPM:	1200
Compression Ratio:	8.0
Exhaust Flow Rate:	7056 CFM
Exhaust Temperature:	1126 °F
Reference:	6124-63
Fuel:	Natural Gas
Annual Operating Hours:	8760

Uncontrolled Emissions

	g/bhp-hr	Lb/Hr	Tons/Year
NOx:	13.00	42.42	185.79
CO:	9.00	29.37	128.62
THC:	2.00	6.53	28.58
NMHC	0.30	0.98	4.29
NMNEHC:	0.15	0.49	2.14
HCHO:	0.05	0.16	0.71
O2:	0.30 %		

POST CATALYST EMISSIONS

	g/bhp-hr	Lb/Hr	Tons/Year
NOx:	<0.80	<2.60	<11.40
CO:	<1.53	<5.00	<21.90
VOC:	<0.08	<0.25	<1.10
HCHO:	<0.01	<0.04	<0.17

CONTROL EQUIPMENT

Catalyst Housing

Model:	ELS-3550-1212F-4CE0-241
Manufacturer:	EMIT Technologies, Inc
Element Size:	Rectangle 24" x 15" x 3.5"
Housing Type:	4 Element Capacity
Catalyst Installation:	Accessible Housing
Construction:	10 gauge Carbon Steel
Sample Ports:	9 (0.5" NPT)
Inlet Connections:	12" Flat Face Flange
Outlet Connections:	12" Flat Face Flange
Configuration:	End In / Side Out
Silencer:	Integrated
Silencer Grade:	Critical
Insertion Loss:	25-30 dBA

Catalyst Element

Model:	RT-2415-T
Catalyst Type:	NSCR, Standard Precious Group Metals
Substrate Type:	BRAZED
Manufacturer:	EMIT Technologies, Inc
Element Quantity:	2
Element Size:	Rectangle 24" x 15" x 3.5"

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WARRANTY

EMIT Technologies, Inc. warrants that the goods supplied will be free from defects in workmanship by EMIT Technologies, Inc. for a period of two (2) years from date of shipment. EMIT Technologies, Inc. will not be responsible for any defects which result from imprope use, neglect, failure to properly maintain or which are attributable to defects, errors or omissions in any drawings, specifications, plans or descriptions, whether written or oral, supplied to EMIT Technologies, Inc. by Buyer.

Catalyst performance using an EMIT Air/Fuel ratio controller is dependent upon properly defined set-points, variable with engine and fuel gas composition. Air/fuel ratio controller performance is guaranteed, but not limited, to fuel gas with a HHV content of 1400 BTU/SCF.

Catalyst performance will be guaranteed for a period of 1 year from installation, or 8760 operating hours, whichever comes first. The catalyst shall be operated with an automatic air/fuel ratio controller. The performance guarantee shall not cover the effects of excessive ash masking due to operation at low load, improper engine maintenance, or inappropriate lubrication oil. The performance guarantee shall not cover the effects of continuous engine misfires (cylinder or ignition) exposing the catalyst to excessive exothermic reaction temperatures. In most cases, excluding thermal deactivation, catalyst performance is redeemable by means of proper washing (refer to EMIT Catalyst/Silencer Housing Manual for element wash information, or contact a local EMIT Sales representative).

The exhaust temperature operating range at the converter inlet is a minimum of 600°F for oxidation catalyst and 750 ˚F for NSCR catalyst, and a maximum of 1250°F.

If a properly functioning, high temperature shut down switch is not installed, thermal deactivation of catalyst at sustained temperatures above 1250˚F is not covered. If excessive exposure to over oxygenation of NSCR catalyst occurs due to improperly functioning or non-existent Air/Fuel ratio control, then deactivation of catalyst is not warranted.

The catalyst conversion efficiencies (% reduction) will be guaranteed for engine loads of 50 to 100 percent. Standard Oxidation Catalyst conversion efficiencies (% reduction) will be guaranteed for fuel gas containing less than 1.5% mole fraction of non-methane, non-ethane hydrocarbons. Applications where fuel gas exceeds this level will require a Premium Oxidation Catalyst to maintain guaranteed VOC conversion efficiencies.

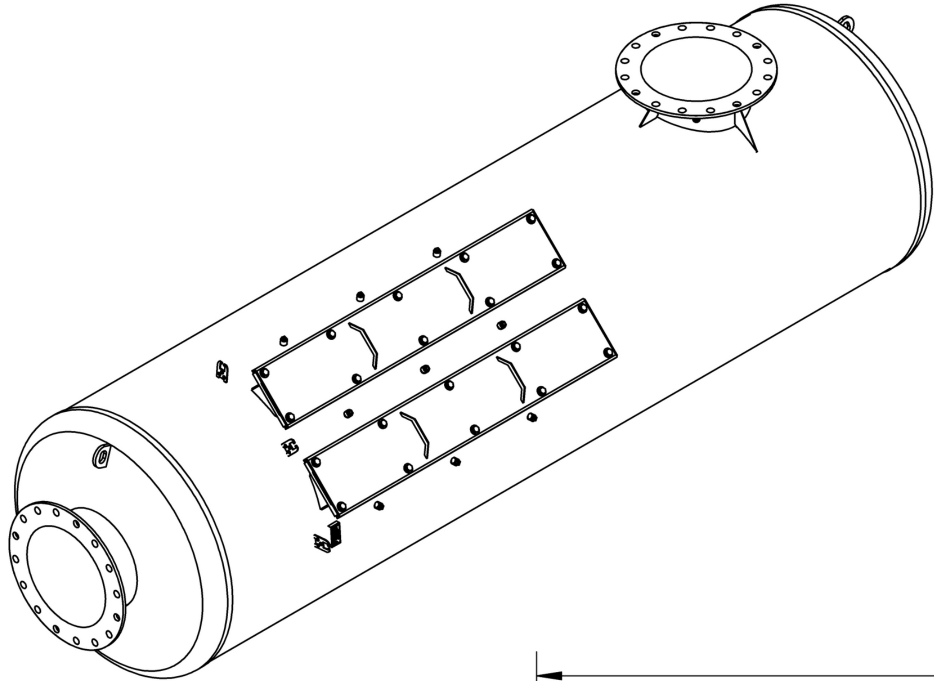
Engine lubrication oil shall contain less than 0.5 wt% Sulfated Ash with a maximum allowable specific oil consumption of 0.7 g/bhp-hr. The catalyst shall be limited to a maximum ash loading of 0.022 lb/ft3. Phosphorous and zinc additives are limited to 0.03 wt%. New or Reconstructed engines must operate for a minimum of 100 hours prior to catalyst installation, otherwise the warranty is void.

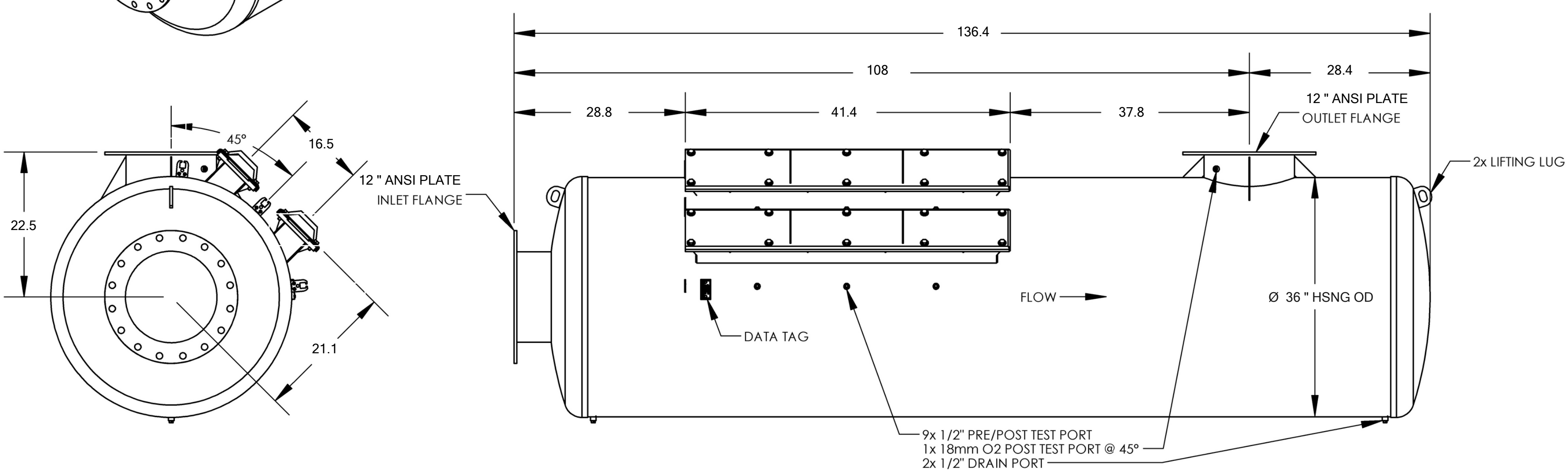
The catalyst must not be exposed to the following know poisoning agents, including: antimony, arsenic, chromium, copper, iron, lead, lithium, magnesium, mercury, nickel, phosphorous, potassium, silicon, sodium, sulfur, tin, and zinc. Total poison concentrations in the fuel gas must be limited to 0.25 ppm or less for catalyst to function properly.

Shipment - Promised shipping dates are approximate lead times from the point of manufacture and are not guaranteed. EMIT Technologies, Inc. will not be liable for any loss, damage or delay in manufacture or delivery resulting from any cause beyond its control including, but not limited to a period equal to the time lost by reason of that delay. All products will be crated as per best practice to prevent any damage during shipment. Unless otherwise specified, Buyer will pay for any special packing and shipping requirements. Acceptance of goods by common carrier constitutes delivery to Buyer. EMIT Technologies, Inc. shall not be responsible for goods damaged or lost in transit.

Terms: Credit is extended to purchaser for net 30 time period. If payment is not received in the net 30 timeframe, interest on the unpaid balance will accrue at a rate of 1.5% per month from the invoice date.

Order Cancellation Terms: Upon cancellation of an order once submittal of a Purchase Order has occurred, the customer will pay a 25% restocking fee for Catalyst Housings, Catalyst Elements, and Air/Fuel Ratio Controllers; 50% restocking fee for Cooler Top Solutions Exhaust System Accessories, and other Custom Built Products; 100% of all associated shipping costs incurred by EMIT; 100% of all project expenses incurred by EMIT for Field Services.





	CASE NUMBER	EJN	CUSTOMER	DO NOT SCALE DRAWING DIMENSIONS ARE IN INCHES TWO DECIMAL ± THREE DECIMAL ±
	CHM		ENGINE	
NOTES 35.5 IN. CATALYST HOUSING, CRITICAL GRADE SILENCER, 12 & 12 IN. FLANGES.	**PROPRIETARY AND CONFIDENTIAL** THIS DRAWING AND SPECIFICATIONS ARE THE PROPERTY OF EMIT TECHNOLOGIES AND SHALL NOT BE REPRODUCED, DISTRIBUTED, DISCLOSED OR USED FOR MANUFACTURE OR SALE WITHOUT THE PERMISSION OF EMIT TECHNOLOGIES.		COOLER	MATERIAL CARBON STEEL
			LOCATION	DRAWN BY
			SITE NAME	CHECKED BY
DIMENSIONS NOT TO SCALE			UNIT NUMBER	DATE

EMIT TECHNOLOGIES

P.O. Box 6785 Ph. 307-673-0883
Sheridan, WY 82801 Fax 307-675-5977

DESCRIPTION:
ELS-3550-1212F-4CE0-241

SIZE	ITEM NO.	REV.
A		BB

SCALE:1:X WEIGHT: SHEET 1 OF 1

AT-GL 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			
AT25GL	Standard	1.0	2.25	1.0	8.0	0.06	9.8	28.0:1	16.8:1	1.74
AT27GL	Standard	1.5	1.7	0.5	5.0	0.06	9.8	28.0:1	16.8:1	1.74
	Ultra Lean	1.25	1.5	0.4	3.5	0.05	11.2	32.0:1	19.2:1	2.00

‡ The AT-GL emission levels are based on 900 – 1000 rpm operation. For information at all other speeds contact Waukesha's Sales Engineering Department.

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
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
	Standard (Best Economy)	23.0	2.0	0.20	0.8	0.02	1.35	17.0:1	10.2:1	1.06
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
	Standard (Best Economy)	22.0	3.0	0.35	2.4	0.02	1.35	17.0:1	10.2:1	1.06
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	8.0	24.7:1	14.8:1	1.54
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 Sales Engineering Department.

NOTE: The above 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 your local Waukesha representative or Waukesha's Sales Engineering Department for emission values which can be obtained on a case-by-case basis for specific ratings, fuels, and site conditions.***

Prepared For:
Michael Hannan
Williams

Date: September 19, 2017

APPLICATION INFORMATION

DRIVER

Make:	Waukesha
Model:	F2895GSI
Horsepower:	607
RPM:	1200
Compression Ratio:	8.2
Exhaust Flow Rate:	2829
Exhaust Temperature:	1083
Reference:	N/A
Fuel:	Custom
Annual Operating Hours:	8760

UNCONTROLLED EMISSIONS DATA

	g/bhp-hr	lb/hr	Tons/Year
NO_x:	13.00	17.40	76.20
CO:	9.00	12.04	52.75
THC:	2.00	2.68	11.72
NMHC:	0.30	0.40	1.76
NMNEHC:	N/A	N/A	N/A
HCHO:	0.05	0.07	0.29
Oxygen:	0.30%		

CATALYST ELEMENT

Model:	RT-2415-T
Catalyst Type:	NSCR, Standard Precious Metals Group
Substrate Type:	Brazed
Element Size:	Rectangle, 24" x 15" x 3.5"
Element Quantity:	2

POST CATALYST EMISSIONS DATA

	g/bhp-hr	lb/hr	Tons/Year
NO_x:	< 0.50	0.67	2.93
CO	< 2.00	2.68	11.72
VOC	< 0.20	0.27	1.17

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

WARRANTY

EMIT Technologies,Inc. warrants that the goods supplied will be free from defects in workmanship by EMIT Technologies, Inc. for a period of one (1) year from date of shipment. EMIT Technologies, Inc. will not be responsible for any defects which result from improper use, neglect, failure to properly maintain or which are attributable to defects, errors or omissions in any drawings, specifications, plans or descriptions, whether written or oral, supplied to EMIT Technologies, Inc. by Buyer.

Catalyst performance using an EMIT Air/Fuel ratio controller is dependent upon properly defined set-points, variable with engine and fuel gas composition. Air/fuel ratio controller performance is guaranteed, but not limited, to fuel gas with an HHV content of 1400 BTU/SCF.

Catalyst performance will be guaranteed for a period of 1 year from installation, or 8760 operating hours, whichever comes first. The catalyst shall be operated with an automatic air/fuel ratio controller. The performance guarantee shall not cover the effects of excessive ash masking due to operation at low load, improper engine maintenance, or inappropriate lubrication oil. The performance guarantee shall not cover the effects of continuous engine misfires (cylinder or ignition) exposing the catalyst to excessive exothermic reaction temperatures.

Unless otherwise stated the exhaust temperature operating range at the converter inlet is 600°F minimum for oxidation catalyst and 750°F for NSCR catalyst and 1250°F maximum.

If a high temperature shut down switch is not installed, thermal deactivation of catalyst at temperatures above 1300 °F is not covered.

The catalyst conversion efficiencies (% reduction) will be guaranteed for engine loads of 50 to 100 percent.

Engine lubrication oil shall contain less than 0.6% ash (by weight) with a maximum allowable specific oil consumption of 0.01 gal/bhp-hr. The maximum ash loading on the catalyst shall be limited to 350 g/m3. Phosphorous and zinc additives are limited to 0.03% (by weight).

The catalyst must not be exposed to the following known poisoning agents, including: iron, nickel, sodium, chromium, arsenic, zinc, lead, phosphorous, silicon, potassium, magnesium, copper, tin, and mercury. Total poison concentrations in the gas are limited to 0.3 ppm.

Shipment - Promised shipping dates are approximate and are not guaranteed and are from the point of manufacture. EMIT Technologies,Inc. will not be liable for any loss, damage or delay in manufacture or delivery resulting from any cause beyond its control including, but not limited to a period equal to the time lost by reason of that delay. All products will be crated as per best practice to prevent any damage during shipment. Unless otherwise specified, Buyer will pay for any special packing and shipping requirements. Acceptance of goods by common carrier constitutes delivery to Buyer. EMIT Technologies,Inc. shall not be responsible for goods damaged or lost in transit.

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HEAT REJECTION AND OPERATING DATA MODEL F2895GSI 130° F (54° C) INTERCOOLER WATER TEMPERATURE STOICHIOMETRIC AIR/FUEL RATIO								
	BMEP (PSI)	ENGINE SPEED - RPM						
		600	700	800	900	1000	1100	1200
POWER (BHP)	172	377	440	503	566	628	691	754
	152	334	390	446	501	557	613	668
	138	304	354	405	455	506	557	607
	125	274	320	365	411	457	502	548
	100	219	256	292	329	365	402	438
	75	164	192	219	247	274	301	329
	50	110	128	146	164	183	201	219
BRAKE SPEC FUEL CONS. (BTU/BHP-HR)	172	7285	7336	7386	7447	7507	7609	7711
	152	7419	7468	7516	7574	7632	7734	7836
	138	7538	7584	7631	7687	7743	7845	7947
	125	7677	7722	7766	7820	7873	7976	8078
	100	8036	8075	8113	8161	8208	8311	8414
	75	8634	8663	8692	8729	8767	8870	8973
	50	9830	9839	9849	9866	9884	9988	10092
FUEL CONSUMPTION (BTU/HR x 1000)	172	2745	3230	3715	4215	4720	5265	5815
	152	2480	2915	3350	3800	4250	4745	5235
	138	2290	2690	3090	3505	3920	4370	4825
	125	2105	2470	2840	3215	3595	4010	4430
	100	1760	2065	2370	2685	3000	3345	3690
	75	1420	1665	1905	2155	2405	2675	2950
	50	1078	1259	1439	1625	1805	2010	2215
HEAT TO JACKET WATER (BTU/HR x 1000)	172	854	1007	1160	1304	1447	1570	1695
	152	781	920	1060	1190	1321	1435	1550
	138	729	858	988	1110	1232	1338	1445
	125	678	799	919	1032	1145	1245	1345
	100	585	688	790	887	984	1072	1161
	75	492	577	662	743	823	900	976
	50	399	466	533	598	663	727	791
HEAT TO LUBE OIL (BTU/HR x 1000)	172	101	118	135	151	167	184	200
	152	96	112	127	143	159	174	190
	138	92	107	122	137	152	167	182
	125	88	103	117	132	146	161	175
	100	81	95	108	122	135	148	161
	75	75	87	99	112	124	136	148
	50	68	79	90	101	113	124	134
HEAT TO INTERCOOLER (BTU/HR x 1000)	172	25	38	51	75	99	134	168
	152	16	26	36	52	68	94	120
	138	11	19	27	39	51	72	92
	125	7	14	20	29	37	54	70
	100	1	5	9	14	18	28	38
	75	-4	-1	1	4	7	12	17
	50	-10	-7	-4	-2	0	2	5

HEAT REJECTION AND OPERATING DATA
MODEL F2895GSI
130° F (54° C) INTERCOOLER WATER TEMPERATURE
STOICHIOMETRIC AIR/FUEL RATIO

	BMEP (PSI)	ENGINE SPEED - RPM 600	700	800	900	1000	1100	1200
HEAT TO RADIATION (BTU/HR x 1000)	172	226	236	245	257	269	296	322
	152	206	217	228	244	261	284	308
	138	194	205	217	234	252	275	299
	125	185	196	207	225	243	266	289
	100	171	181	191	207	224	247	271
	75	159	168	177	191	206	227	249
	50	147	155	163	178	192	207	222
TOTAL ENERGY IN EXHAUST (BTU/HR x 1000)	172	632	751	871	1005	1138	1337	1535
	152	535	645	756	883	1010	1181	1351
	138	479	581	683	801	920	1075	1231
	125	431	524	617	726	834	977	1120
	100	352	428	504	591	679	799	920
	75	277	335	393	461	528	623	718
	50	196	237	279	327	375	439	503
EXHAUST TEMP AFTER TURBINE (±50° F)	172	955	977	999	1016	1033	1079	1125
	152	905	934	963	990	1016	1058	1101
	138	876	908	939	969	999	1041	1083
	125	852	884	917	948	979	1022	1065
	100	812	844	876	906	937	983	1029
	75	772	804	835	864	893	939	985
	50	726	759	792	823	855	893	931
INDUCTION AIR FLOW (SCFM)	172	520	615	705	800	895	1000	1105
	152	465	550	630	715	800	895	985
	138	430	505	580	655	735	820	905
	125	395	460	530	600	670	750	825
	100	325	380	440	495	555	620	680
	75	260	305	350	395	440	490	540
	50	195	230	260	295	325	365	400
EXHAUST GAS FLOW (LBS/HR)	172	2375	2795	3210	3645	4080	4555	5030
	152	2130	2500	2875	3265	3650	4075	4500
	138	1955	2300	2640	2995	3350	3735	4125
	125	1790	2100	2415	2735	3060	3410	3765
	100	1485	1740	2000	2265	2525	2820	3110
	75	1185	1390	1590	1800	2005	2235	2465
	50	890	1040	1190	1340	1495	1660	1830

NOTES:

1. *All data are based on standard conditions of 29.54 inches Hg. (100 kPa) barometric pressure, 77° F (25° C) ambient and induction air temperature, 30% relative humidity (0.3 inches Hg. / 1 kPa water vapor pressure) and 180° F (82° C) engine jacket water outlet temperature.*
2. *Data are average values at the standard conditions and will vary for individual engines and with operating and ambient conditions. An adequate reserve should be used for cooling system or heat recovery calculations. See also Cooling System Guidelines S-6699-7.*
3. *For heat rejection changes due to engine jacket water outlet temperature different from standard (Note 1), refer to S-7613-3.*
4. *Exhaust flow (English):* $ACFM = \dfrac{(\text{Exh. flow, lb/hr}) \times (\text{Exh. temp. °F} + 460°)}{2250}$
5. *Stoichiometric, Lambda = 1.0, air/fuel ratio.*
6. *Reference C-238-8.*

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer **Williams**	Engine Model **MARS 90-12000S** **CS/MD 59F MATCH**
Job ID **El Cedro 12000S**	
Inquiry Number	Fuel Type: **SD NATURAL GAS** Water Injection: **NO**
Run By: **David A Pocengal** Date Run: **24-Feb-14**	Engine Emissions Data **REV. 0.0**

1 | **11647 HP 100.0% Load** | **Elev. 6450 ft** | **Rel. Humidity 60.0%** | **Temperature 0 Deg. F**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
PPMvd at 15% O2	38.00	50.00	25.00
ton/yr	58.92	47.20	13.52
lbm/MMBtu (Fuel LHV)	0.152	0.122	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	1.55	1.24	0.36
lbm/hr	13.45	10.78	3.09
g/(Hp-hr) (gas turbine shaft pwr)	0.52	0.42	0.12

2 | **10686 HP 100.0% Load** | **Elev. 6450 ft** | **Rel. Humidity 60.0%** | **Temperature 32.0 Deg. F**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
PPMvd at 15% O2	38.00	50.00	25.00
ton/yr	54.49	43.65	12.50
lbm/MMBtu (Fuel LHV)	0.152	0.122	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	1.56	1.25	0.36
lbm/hr	12.44	9.97	2.85
g/(Hp-hr) (gas turbine shaft pwr)	0.53	0.42	0.12

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer		Engine Model
Williams		MARS 90-12000S CS/MD 59F MATCH
Job ID: El Cedro 12000S		Fuel Type: SD NATURAL GAS — Water Injection: NO
Inquiry Number:		
Run By: David A Pocengal	Date Run: 24-Feb-14	Engine Emissions Data: REV. 0.0

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
3 — 9590 HP, 100.0% Load, Elev. 6450 ft, Rel. Humidity 60.0%, Temperature 59.0 Deg. F			
PPMvd at 15% O2	38.00	50.00	25.00
ton/yr	49.91	39.98	11.45
lbm/MMBtu (Fuel LHV)	0.151	0.121	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	1.59	1.28	0.37
lbm/hr	11.39	9.13	2.61
g/(Hp-hr) (gas turbine shaft pwr)	0.54	0.43	0.12
4 — 8565 HP, 100.0% Load, Elev. 6450 ft, Rel. Humidity 60.0%, Temperature 80.0 Deg. F			
PPMvd at 15% O2	38.00	50.00	25.00
ton/yr	45.80	36.69	10.51
lbm/MMBtu (Fuel LHV)	0.150	0.120	0.034
lbm/(MW-hr) (gas turbine shaft pwr)	1.64	1.31	0.38
lbm/hr	10.46	8.38	2.40
g/(Hp-hr) (gas turbine shaft pwr)	0.55	0.44	0.13

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar’s typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer **Williams**	Engine Model **MARS 90-12000S** **CS/MD 59F MATCH**
Job ID **El Cedro 12000S**	
Inquiry Number	Fuel Type **SD NATURAL GAS** — Water Injection **NO**
Run By **David A Pocengal** — Date Run **24-Feb-14**	Engine Emissions Data **REV. 0.0**

5	7485 HP 100.0% Load	Elev. 6450 ft	Rel. Humidity 60.0%	Temperature 100.0 Deg. F

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
PPMvd at 15% O2	38.00	50.00	25.00
ton/yr	41.45	33.20	9.51
lbm/MMBtu (Fuel LHV)	0.147	0.118	0.034
lbm/(MW-hr) (gas turbine shaft pwr)	1.70	1.36	0.39
lbm/hr	9.46	7.58	2.17
g/(Hp-hr) (gas turbine shaft pwr)	0.57	0.46	0.13

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Solar Turbines
A Caterpillar Company

PREDICTED ENGINE PERFORMANCE

Customer *Williams*	Model **MARS 90-12000S**
	Package Type **CS/MD**
Job ID **El Cedro 12000S**	Match **59F MATCH**
Run By **David A Pocengal** — Date Run **24-Feb-14**	Fuel System **GAS**
Engine Performance Code **REV. 4.11.1.12.6** — Engine Performance Data **REV. 0.1**	Fuel Type **SD NATURAL GAS**

DATA FOR NOMINAL PERFORMANCE

Elevation	feet	6450
Inlet Loss	in H2O	4.0
Exhaust Loss	in H2O	4.0
Accessory on GP Shaft	HP	27.8

		1	2	3	4	5
Engine Inlet Temperature	deg F	0	32.0	59.0	80.0	100.0
Relative Humidity	%	60.0	60.0	60.0	60.0	60.0
Driven Equipment Speed	RPM	9079	8915	8730	8539	8326
Specified Load	HP	FULL	FULL	FULL	FULL	FULL
Net Output Power	HP	11647	10686	9590	8565	7485
Fuel Flow	mmBtu/hr	88.44	81.98	75.48	69.87	64.18
Heat Rate	Btu/HP-hr	7594	7672	7871	8158	8575
Therm Eff	%	33.507	33.167	32.326	31.191	29.673
Engine Exhaust Flow	lbm/hr	264142	249977	233644	218008	200722
PT Exit Temperature	deg F	845	859	878	898	923
Exhaust Temperature	deg F	845	859	878	898	923

Fuel Gas Composition (Volume Percent)

Methane (CH4)	92.79
Ethane (C2H6)	4.16
Propane (C3H8)	0.84
N-Butane (C4H10)	0.18
N-Pentane (C5H12)	0.04
Hexane (C6H14)	0.04
Carbon Dioxide (CO2)	0.44
Hydrogen Sulfide (H2S)	0.0001
Nitrogen (N2)	1.51

Fuel Gas Properties

LHV (Btu/Scf)	939.2	Specific Gravity	0.5970	Wobbe Index at 60F	1215.6

This performance was calculated with a basic inlet and exhaust system. Special equipment such as low noise silencers, special filters, heat recovery systems or cooling devices will affect engine performance. Performance shown is "Expected" performance at the pressure drops stated, not guaranteed.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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:

$$L_L = 12.46 \frac{SPM}{T} \tag{1}$$

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)

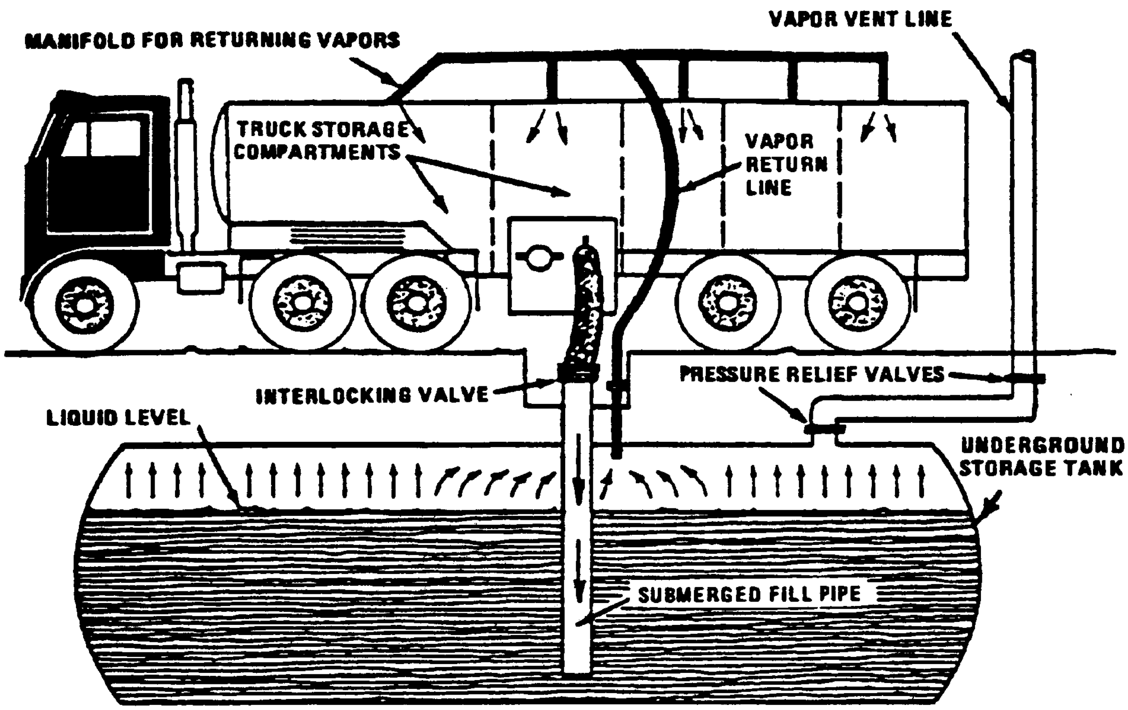

Figure 5.2-5. Tank truck unloading into a service station underground storage tank and practicing "vapor balance" form of emission control.

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.

GAS ANALYSIS SERVICE

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

Analysis No: HM200008
Cust No: 33700-10420

Well/Lease Information

Customer Name:	HARVEST MIDSTREAM	Source:	Manzanares Inlet
Well Name:	El Cedro Station Manzanares Inlet	Well Flowing:	Y
County/State:	Rio Arriba NM	Pressure:	270 PSIG
Location:		Flow Temp:	45 DEG. F
Lease/PA/CA:		Ambient Temp:	40 DEG. F
Formation:		Flow Rate:	95 MCF/D
Cust. Stn. No.:		Sample Method:	Purge & Fill
		Sample Date:	02/07/2020
		Sample Time:	11.00 AM
		Sampled By:	Ryan Antonson
Heat Trace:	N	Sampled by (CO):	Harves Mid
Remarks:	Calculated Molecular Weight = 18.7762		

Analysis

Component:	Mole%:	Unormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.0566	0.0585	0.0060	0.00	0.0005
CO2	8.9772	9.2850	1.5350	0.00	0.1364
Methane	89.7679	92.8460	15.2500	906.66	0.4972
Ethane	0.9558	0.9886	0.2560	16.92	0.0099
Propane	0.1715	0.1774	0.0470	4.32	0.0026
Iso-Butane	0.0262	0.0271	0.0090	0.85	0.0005
N-Butane	0.0266	0.0275	0.0080	0.87	0.0005
Neopentane 2,2 dmc3	0.0000	0.0000	0.0000	0.00	0.0000
I-Pentane	0.0073	0.0076	0.0030	0.29	0.0002
N-Pentane	0.0056	0.0058	0.0020	0.22	0.0001
Neohexane	0.0000	N/R	0.0000	0.00	0.0000
2-3-Dimethylbutane	0.0001	N/R	0.0000	0.00	0.0000
Cyclopentane	0.0001	N/R	0.0000	0.00	0.0000
2-Methylpentane	0.0005	N/R	0.0000	0.02	0.0000
3-Methylpentane	0.0002	N/R	0.0000	0.01	0.0000
C6	0.0005	0.0054	0.0000	0.02	0.0000
Methylcyclopentane	0.0001	N/R	0.0000	0.00	0.0000
Benzene	0.0002	N/R	0.0000	0.01	0.0000
Cyclohexane	0.0003	N/R	0.0000	0.01	0.0000
2-Methylhexane	0.0001	N/R	0.0000	0.01	0.0000
3-Methylhexane	0.0001	N/R	0.0000	0.01	0.0000
2-2-4-Trimethylpentane	0.0000	N/R	0.0000	0.00	0.0000
i-heptanes	0.0001	N/R	0.0000	0.01	0.0000
Heptane	0.0004	N/R	0.0000	0.02	0.0000

Methylcyclohexane	0.0008	N/R	0.0000	0.04	0.0000
Toluene	0.0006	N/R	0.0000	0.03	0.0000
2-Methylheptane	0.0002	N/R	0.0000	0.01	0.0000
4-Methylheptane	0.0001	N/R	0.0000	0.01	0.0000
i-Octanes	0.0001	N/R	0.0000	0.01	0.0000
Octane	0.0002	N/R	0.0000	0.01	0.0000
Ethylbenzene	0.0000	N/R	0.0000	0.00	0.0000
m, p Xylene	0.0002	N/R	0.0000	0.01	0.0000
o Xylene (& 2,2,4 tmc7)	0.0000	N/R	0.0000	0.00	0.0000
i-C9	0.0001	N/R	0.0000	0.01	0.0000
C9	0.0001	N/R	0.0000	0.01	0.0000
i-C10	0.0000	N/R	0.0000	0.00	0.0000
C10	0.0000	N/R	0.0000	0.00	0.0000
i-C11	0.0000	N/R	0.0000	0.00	0.0000
C11	0.0000	N/R	0.0000	0.00	0.0000
C12P	0.0000	N/R	0.0000	0.00	0.0000
Total	100.00	103.429	17.116	930.38	0.6483

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

COMPRESSIBLITY FACTOR	(1/Z):	1.0023	CYLINDER #:	1332
BTU/CU.FT IDEAL:		932.5	CYLINDER PRESSURE:	283 PSIG
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):		934.7	ANALYSIS DATE:	02/12/2020
BTU/CU.FT (WET) CORRECTED FOR (1/Z):		918.4	ANALYIS TIME:	02:21:07 AM
DRY BTU @ 15.025:		953.4	ANALYSIS RUN BY:	PATRICIA KING
REAL SPECIFIC GRAVITY:		0.6495		

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: 02/14/2020**
GC Method: C12+BTEX Gas

HARVEST MIDSTREAM

WELL ANALYSIS COMPARISON

Lease: El Cedro Station Manzanares Inlet   Manzanares Inlet   02/14/2020

Stn. No.:   33700-10420

Mtr. No.:

Smpl Date:	02/07/2020
Test Date:	02/12/2020
Run No:	HM200008
Nitrogen:	0.0566
CO2:	8.9772
Methane:	89.7679
Ethane:	0.9558
Propane:	0.1715
I-Butane:	0.0262
N-Butane:	0.0266
2,2 dmc3:	0.0000
I-Pentane:	0.0073
N-Pentane:	0.0056
Neohexane:	0.0000
2-3-	0.0001
Cyclopentane:	0.0001
2-Methylpentane:	0.0005
3-Methylpentane:	0.0002
C6:	0.0005
Methylcyclopentane:	0.0001
Benzene:	0.0002
Cyclohexane:	0.0003
2-Methylhexane:	0.0001
3-Methylhexane:	0.0000
2-2-4-	0.0000
i-heptanes:	0.0001
Heptane:	0.0004
Methylcyclohexane:	0.0008
Toluene:	0.0006
2-Methylheptane:	0.0002
4-Methylheptane:	0.0001
i-Octanes:	0.0001
Octane:	0.0002
Ethylbenzene:	0.0000
m, p Xylene:	0.0002
o Xylene (& 2,2,4	0.0000
i-C9:	0.0001
C9:	0.0001
i-C10:	0.0000
C10:	0.0000
i-C11:	0.0000
C11:	0.0000
C12P:	0.0000
BTU:	934.7
GPM:	17.1180
SPG:	0.6495

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

Analysis No: HM200007
Cust No: 33700-10000

Well/Lease Information

Customer Name:	HARVEST MIDSTREAM	Source:	Inlet Piping
Well Name:	EL CEDRO TRUNK G INLET	Well Flowing:	Y
County/State:	RIO ARRIBA NM	Pressure:	35 PSIG
Location:		Flow Temp:	45 DEG. F
Lease/PA/CA:		Ambient Temp:	40 DEG. F
Formation:		Flow Rate:	40 MCF/D
Cust. Stn. No.:		Sample Method:	Purge & Fill
		Sample Date:	02/07/2020
		Sample Time:	11.00 AM
		Sampled By:	RYAN ANTONSON
Heat Trace:	N	Sampled by (CO):	HARVEST MID.
Remarks:	Calculated Molecular Weight = 21.6155		

Analysis

Component:	Mole%:	Unormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.1786	0.1882	0.0200	0.00	0.0017
CO2	1.4996	1.5806	0.2570	0.00	0.0228
Methane	80.7532	85.1155	13.7400	815.61	0.4473
Ethane	7.4024	7.8023	1.9870	131.00	0.0769
Propane	3.5417	3.7330	0.9790	89.11	0.0539
Iso-Butane	0.7647	0.8060	0.2510	24.87	0.0153
N-Butane	1.0735	1.1315	0.3400	35.02	0.0215
Neopentane 2,2 dmc3	3.5478	3.7394	1.3680	141.37	0.0884
I-Pentane	0.3987	0.4202	0.1460	15.95	0.0099
N-Pentane	0.2746	0.2894	0.1000	11.01	0.0068
Neohexane	0.0028	N/R	0.0010	0.13	0.0001
2-3-Dimethylbutane	0.0032	N/R	0.0010	0.15	0.0001
Cyclopentane	0.0034	N/R	0.0010	0.13	0.0001
2-Methylpentane	0.0217	N/R	0.0090	1.03	0.0006
3-Methylpentane	0.0433	N/R	0.0180	2.06	0.0013
C6	0.1257	0.5959	0.0520	5.98	0.0037
Methylcyclopentane	0.0143	N/R	0.0050	0.64	0.0004
Benzene	0.0165	N/R	0.0050	0.62	0.0004
Cyclohexane	0.0470	N/R	0.0160	2.11	0.0014
2-Methylhexane	0.0197	N/R	0.0090	1.07	0.0007
3-Methylhexane	0.0181	N/R	0.0080	0.99	0.0006
2-2-4-Trimethylpentane	0.0063	N/R	0.0030	0.39	0.0002
i-heptanes	0.0126	N/R	0.0050	0.67	0.0004
Heptane	0.0492	N/R	0.0230	2.71	0.0017

Methylcyclohexane	0.0892	N/R	0.0360	4.65	0.0030
Toluene	0.0312	N/R	0.0100	1.40	0.0010
2-Methylheptane	0.0163	N/R	0.0080	1.01	0.0006
4-Methylheptane	0.0082	N/R	0.0040	0.51	0.0003
i-Octanes	0.0079	N/R	0.0040	0.48	0.0003
Octane	0.0172	N/R	0.0090	1.07	0.0007
Ethylbenzene	0.0006	N/R	0.0000	0.03	0.0000
m, p Xylene	0.0076	N/R	0.0030	0.39	0.0003
o Xylene (& 2,2,4 tmc7)	0.0007	N/R	0.0000	0.04	0.0000
i-C9	0.0011	N/R	0.0010	0.07	0.0000
C9	0.0013	N/R	0.0010	0.09	0.0001
i-C10	0.0002	N/R	0.0000	0.01	0.0000
C10	0.0001	N/R	0.0000	0.01	0.0000
i-C11	0.0000	N/R	0.0000	0.00	0.0000
C11	0.0000	N/R	0.0000	0.00	0.0000
C12P	0.0000	N/R	0.0000	0.00	0.0000
Total	100.00	105.402	19.420	1292.37	0.7629

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

COMPRESSIBLITY FACTOR	(1/Z):	1.0039
BTU/CU.FT IDEAL:		1295.4
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):		1300.4
BTU/CU.FT (WET) CORRECTED FOR (1/Z):		1277.8
DRY BTU @ 15.025:		1326.4
REAL SPECIFIC GRAVITY:		0.7656

CYLINDER #:	1511
CYLINDER PRESSURE:	38 PSIG
ANALYSIS DATE:	02/12/2020
ANALYIS TIME:	01:25:30 AM
ANALYSIS RUN BY:	PATRICIA KING

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: 02/14/2020**
GC Method: C12+BTEX Gas

HARVEST MIDSTREAM

WELL ANALYSIS COMPARISON

Lease: EL CEDRO TRUNK G INLET   Inlet Piping   02/14/2020

Stn. No.:   33700-10000

Mtr. No.:

Smpl Date:	02/07/2020	08/29/2018
Test Date:	02/12/2020	10/30/2018
Run No:	HM200007	HM180001
Nitrogen:	0.1786	0.1900
CO2:	1.4996	1.4628
Methane:	80.7532	84.3319
Ethane:	7.4024	7.6724
Propane:	3.5417	3.4190
I-Butane:	0.7647	0.7273
N-Butane:	1.0735	0.9448
2,2 dmc3:	3.5478	0.0000
I-Pentane:	0.3987	0.3692
N-Pentane:	0.2746	0.2521
Neohexane:	0.0028	0.0160
2-3-	0.0032	0.0030
Cyclopentane:	0.0034	0.0031
2-Methylpentane:	0.0217	0.0201
3-Methylpentane:	0.0433	0.0447
C6:	0.1257	0.1118
Methylcyclopentane:	0.0143	0.0878
Benzene:	0.0165	0.0169
Cyclohexane:	0.0470	0.0432
2-Methylhexane:	0.0197	0.0177
3-Methylhexane:	0.0000	0.0000
2-2-4-	0.0063	0.0073
i-heptanes:	0.0126	0.0121
Heptane:	0.0492	0.0488
Methylcyclohexane:	0.0892	0.0866
Toluene:	0.0312	0.0319
2-Methylheptane:	0.0163	0.0156
4-Methylheptane:	0.0082	0.0086
i-Octanes:	0.0079	0.0085
Octane:	0.0172	0.0151
Ethylbenzene:	0.0006	0.0007
m, p Xylene:	0.0076	0.0071
o Xylene (& 2,2,4	0.0007	0.0007
i-C9:	0.0011	0.0015
C9:	0.0013	0.0017
i-C10:	0.0002	0.0007
C10:	0.0001	0.0008
i-C11:	0.0000	0.0000
C11:	0.0000	0.0000
C12P:	0.0000	0.0000
BTU:	1300.4	1190.8
GPM:	18.0730	18.6600
SPG:	0.7656	0.6940

GAS ANALYSIS SERVICE

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

Analysis No: HM200006
Cust No: 33700-10085

Well/Lease Information

Customer Name:	HARVEST MIDSTREAM	Source:	PIPE RACK
Well Name:	TRUNK L CDP	Well Flowing:	
County/State:		Pressure:	60 PSIG
Location:		Flow Temp:	45 DEG. F
Lease/PA/CA:		Ambient Temp:	31 DEG. F
Formation:		Flow Rate:	40 MCF/D
Cust. Stn. No.:		Sample Method:	Purge & Fill
		Sample Date:	02/06/2020
		Sample Time:	11.00 AM
		Sampled By:	DAN WEYRANCH
Heat Trace:		Sampled by (CO):	HARVEST MID
Remarks:	Calculated Molecular Weight = 20.18		

Analysis

Component:	Mole%:	Unormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.2947	0.2961	0.0330	0.00	0.0029
CO2	1.0334	1.0383	0.1770	0.00	0.0157
Methane	83.3290	83.7266	14.1700	841.62	0.4616
Ethane	8.6116	8.6527	2.3100	152.40	0.0894
Propane	3.6567	3.6741	1.0100	92.00	0.0557
Iso-Butane	0.7113	0.7147	0.2330	23.13	0.0143
N-Butane	1.0062	1.0110	0.3180	32.83	0.0202
Neopentane 2,2 dmc3	0.2224	0.2235	0.0860	8.86	0.0055
I-Pentane	0.3696	0.3714	0.1360	14.79	0.0092
N-Pentane	0.2568	0.2580	0.0930	10.29	0.0064
Neohexane	0.0179	N/R	0.0070	0.85	0.0005
2-3-Dimethylbutane	0.0041	N/R	0.0020	0.19	0.0001
Cyclopentane	0.0042	N/R	0.0010	0.16	0.0001
2-Methylpentane	0.0274	N/R	0.0110	1.30	0.0008
3-Methylpentane	0.0462	N/R	0.0190	2.19	0.0014
C6	0.1085	0.5108	0.0450	5.16	0.0032
Methylcyclopentane	0.0725	N/R	0.0260	3.26	0.0021
Benzene	0.0024	N/R	0.0010	0.09	0.0001
Cyclohexane	0.0361	N/R	0.0120	1.62	0.0010
2-Methylhexane	0.0151	N/R	0.0070	0.82	0.0005
3-Methylhexane	0.0134	N/R	0.0060	0.73	0.0005
2-2-4-Trimethylpentane	0.0038	N/R	0.0020	0.24	0.0001
i-heptanes	0.0103	N/R	0.0040	0.55	0.0004
Heptane	0.0357	N/R	0.0170	1.96	0.0012

Methylcyclohexane	0.0582	N/R	0.0230	3.04	0.0020
Toluene	0.0222	N/R	0.0070	0.99	0.0007
2-Methylheptane	0.0080	N/R	0.0040	0.50	0.0003
4-Methylheptane	0.0044	N/R	0.0020	0.27	0.0002
i-Octanes	0.0032	N/R	0.0020	0.19	0.0001
Octane	0.0081	N/R	0.0040	0.51	0.0003
Ethylbenzene	0.0004	N/R	0.0000	0.02	0.0000
m, p Xylene	0.0034	N/R	0.0010	0.18	0.0001
o Xylene (& 2,2,4 tmc7)	0.0004	N/R	0.0000	0.02	0.0000
i-C9	0.0012	N/R	0.0010	0.08	0.0001
C9	0.0007	N/R	0.0000	0.05	0.0000
i-C10	0.0006	N/R	0.0000	0.04	0.0000
C10	0.0001	N/R	0.0000	0.01	0.0000
i-C11	0.0000	N/R	0.0000	0.00	0.0000
C11	0.0000	N/R	0.0000	0.00	0.0000
C12P	0.0000	N/R	0.0000	0.00	0.0000
Total	100.00	100.477	18.770	1200.95	0.6968

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

COMPRESSIBLITY FACTOR (1/Z):	1.0033	CYLINDER #:	10
BTU/CU.FT IDEAL:	1203.7	CYLINDER PRESSURE:	60 PSIG
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):	1207.7	ANALYSIS DATE:	02/12/2020
BTU/CU.FT (WET) CORRECTED FOR (1/Z):	1186.7	ANALYIS TIME:	11:19:41 AM
DRY BTU @ 15.025:	1231.9	ANALYSIS RUN BY:	PATRICIA KING
REAL SPECIFIC GRAVITY:	0.6988		

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: 02/14/2020**
GC Method: C12+BTEX Gas

HARVEST MIDSTREAM

WELL ANALYSIS COMPARISON

Lease: TRUNK L CDP PIPE RACK 02/14/2020

Stn. No.: 33700-10085

Mtr. No.:

Smpl Date:	02/06/2020	12/26/2018
Test Date:	02/12/2020	12/27/2018
Run No:	HM200006	HM180018
Nitrogen:	0.2947	0.3129
CO2:	1.0334	0.9707
Methane:	83.3290	82.0921
Ethane:	8.6116	9.3910
Propane:	3.6567	4.0670
I-Butane:	0.7113	0.7823
N-Butane:	1.0062	1.1752
2,2 dmc3:	0.2224	0.0087
I-Pentane:	0.3696	0.4143
N-Pentane:	0.2568	0.2944
Neohexane:	0.0179	0.0145
2-3-	0.0041	0.0117
Cyclopentane:	0.0042	0.0122
2-Methylpentane:	0.0274	0.0789
3-Methylpentane:	0.0462	0.0348
C6:	0.1085	0.0930
Methylcyclopentane:	0.0725	0.0673
Benzene:	0.0024	0.0134
Cyclohexane:	0.0361	0.0305
2-Methylhexane:	0.0151	0.0116
3-Methylhexane:	0.0000	0.0000
2-2-4-	0.0038	0.0027
i-heptanes:	0.0103	0.0075
Heptane:	0.0357	0.0255
Methylcyclohexane:	0.0582	0.0440
Toluene:	0.0222	0.0153
2-Methylheptane:	0.0080	0.0051
4-Methylheptane:	0.0044	0.0029
i-Octanes:	0.0032	0.0018
Octane:	0.0081	0.0043
Ethylbenzene:	0.0004	0.0002
m, p Xylene:	0.0034	0.0018
o Xylene (& 2,2,4	0.0004	0.0002
i-C9:	0.0012	0.0004
C9:	0.0007	0.0003
i-C10:	0.0006	0.0001
C10:	0.0001	0.0002
i-C11:	0.0000	0.0000
C11:	0.0000	0.0001
C12P:	0.0000	0.0001
BTU:	1207.7	1220.7
GPM:	18.7070	18.9130
SPG:	0.6988	0.7062

Client	Gas Analysis Services	9753-2020021912.1	
Sample Id.	El Cedro	Sample Pressure (psig)	55
Sample Source	Stabilizer Outlet	Sample Temp. (°F)	40
Sample Type	Spot	Atm Temp. (°F)	29
Meter #	N/A	Sample Date	2/14/2020
Sampled By	CS	Report Date	2/21/2020

ASTM D 6729 - Hydrocarbon PIANO

Oxygenates		**Mol %**	**Vol. %**	**Wt. %**
methanol	X	0.0000	0.0000	0.0000
ethanol	X	0.0000	0.0000	0.0000
Light Fractions (C1-C5)				
nitrogen		0.0196	0.0052	0.0059
carbon dioxide		0.0014	0.0006	0.0006
methane	P	0.2976	0.1214	0.0509
ethane	P	0.1545	0.0995	0.0495
propane	P	0.0944	0.0626	0.0444
iso-butane	I	0.0147	0.0116	0.0091
n-butane	p	0.0323	0.0245	0.0200
cyclopentane	N	0.0026	0.0018	0.0019
iso-pentane	I	0.3179	0.2799	0.2445
n-pentane	p	3.3944	2.9625	2.6108
Hexanes (C6's)				
n-hexane	P	12.5811	12.5524	11.5588
2,2-dimethylbutane	I	0.4716	0.4777	0.4332
2,3-dimethylbutane	I	0.8675	0.8616	0.7970
2-methylpentane	I	4.3108	4.3405	3.9606
3-methylpentane	I	5.7700	5.7135	5.3012
benzene	A	3.2832	2.2259	2.7339
methylcyclopentane	N	5.7077	4.8930	5.1210
cyclohexane	N	7.0112	5.7790	6.2905
1-hexene	O	0.0008	0.0008	0.0008
t-2-hexene	O	0.0018	0.0017	0.0016
2-methyl-2-pentene	O	0.0001	0.0001	0.0001
c-3-methyl-2-pentene	O	0.0005	0.0005	0.0004
c-2-hexene	O	0.0001	0.0001	0.0001
1-methylcyclopentene	O	0.0008	0.0006	0.0007

Client	Gas Analysis Services	9753-2020021912.1
Sample Id.	El Cedro	

ASTM D 6729 - Hydrocarbon PIANO

Heptanes (C7's)		Mol %	Vol. %	Wt. %
n-heptane	P	10.4056	11.6331	11.1154
2,2-dimethylpentane	I	0.0178	0.0202	0.0190
2,4-dimethylpentane	I	0.0934	0.1061	0.0998
2,2,4-trimethylbutane	I	0.0044	0.0049	0.0048
2,2,3-trimethylbutane	I	0.0053	0.0059	0.0057
3,3-dimethylpentane	I	0.0222	0.0245	0.0238
2-methylhexane	I	3.9149	4.4012	4.1819
2,3-dimethylpentane	I	0.2714	0.2934	0.2899
3-methylhexane	I	5.2985	5.8959	5.6599
3-ethylpentane	I	0.0000	0.0000	0.0000
toluene	A	4.9515	4.0147	4.8637
1,1-dimethylcyclopentane	N	0.1023	0.0987	0.1071
1c,3-dimethylcyclopentane	N	0.2091	0.1958	0.2189
1t,3-dimethylcyclopentane	N	0.1602	0.1500	0.1676
1t,2-dimethylcyclopentane	N	0.2447	0.2291	0.2561
methylcyclohexane	N	17.1989	16.7327	18.0034
ethylcyclopentane	N	0.5072	0.5072	0.5309
1-heptene	O	0.0006	0.0006	0.0006
2,4-dimethyl-1-pentene	O	0.0007	0.0008	0.0007
t-3-heptene	O	0.0018	0.0019	0.0019
c-3-heptene	O	0.0004	0.0004	0.0004
t-2-heptene	O	0.0003	0.0003	0.0003
t-3-methyl-2-hexene	O	0.0002	0.0002	0.0002
c-2-heptene	O	0.0013	0.0014	0.0014
Octanes (C8's)				
n-octane	P	4.2085	5.2173	5.1250
3-methylheptane	I	1.8284	2.2603	2.2266
2,3,3-trimethylpentane	I	0.0489	0.0609	0.0596
3,3-dimethylhexane	I	0.0169	0.0205	0.0206
2,3-dimethylhexane	I	0.2046	0.2548	0.2492
2,2,3-trimethylpentane	I	0.1068	0.1345	0.1300
2,4-dimethylhexane & 2,5 dimethylhexane	I	0.2224	0.2765	0.2709

Client | Gas Analysis Services | 9753-2020021912.1
Sample Id. | El Cedro

ASTM D 6729 - Hydrocarbon PIANO

C8's (Continued)		Mol %	Vol. %	Wt. %
2-methylheptane & 4-methylheptane	I	2.2511	2.8106	2.7413
3-methyl-3-ethylpentane & 3,4-dimethylhexane	I	0.2669	0.3235	0.3251
2,2,4-trimethylpentane (isooctane)	I	0.0814	0.1027	0.0991
ethylbenzene	A	0.0089	0.0083	0.0101
m+p-xylene	A	0.0712	0.0667	0.0806
o-xylene	A	0.0311	0.0287	0.0352
1c,3-dimethylcyclohexane	N	0.0249	0.0267	0.0298
1c,2t,4-trimethylcyclopentane	N	0.1112	0.1190	0.1330
1t,2c,3-trimethylcyclopentane	N	0.0623	0.0666	0.0745
1,1,3-trimethylcyclopentane	N	0.0356	0.0381	0.0426
1c,2t,3-trimethylcyclopentane	N	0.0756	0.0809	0.0905
1t,4-dimethylcyclohexane	N	0.0489	0.0535	0.0585
1,1-dimethylcyclohexane	N	0.0623	0.0686	0.0745
3c-ethylmethylcyclopentane	N	0.0093	0.0107	0.0112
2t-ethylmethylcyclopentane & 3t-ethylmethylcyclopentane	N	0.0133	0.0153	0.0160
1,1-methylethylcyclopentane	N	0.0667	0.0763	0.0798
1t,2-dimethylcyclohexane	N	0.1246	0.1340	0.1490
isopropylcyclopentane	N	0.0098	0.0108	0.0117
1c,2-dimethylcyclohexane	N	0.0258	0.0278	0.0309
n-propylcyclopentane	N	0.1646	0.1690	0.1969
2-methyl-3-ethylpentane	O	0.0011	0.0013	0.0013
2-ethylhexene-1	O	0.0000	0.0000	0.0000
1-octene	O	0.0004	0.0005	0.0005
Ungrouped C8's	U	0.1157	0.1338	0.1392

Client	Gas Analysis Services	9753-2020021912.1	
Sample Id.	El Cedro		

Nonanes (C9's)		**Mol %**	**Vol. %**	**Wt. %**
n-nonane	P	0.5783	0.7758	0.7783
2,2,3-trimethylhexane	I	0.0267	0.0365	0.0365
2,4-dimethylheptane	I	0.0400	0.0560	0.0547
4,4-dimethylheptane	I	0.1112	0.1555	0.1521
2,5-dimethylheptane	I	0.1246	0.1741	0.1703
3,5-dimethylheptane	I	0.0245	0.0342	0.0335
2,6-dimethylheptane	I	0.0178	0.0249	0.0243
2,3-dimethylheptane	I	0.1112	0.1555	0.1521
3,4-dimethylheptane	I	0.0311	0.0435	0.0426
2-methyloctane & 4-methyloctane	I	0.3426	0.4694	0.4684
3-methyloctane	I	0.1691	0.2317	0.2311
3-ethylheptane	I	0.0036	0.0050	0.0049
isopropylbenzene	A	0.0067	0.0071	0.0086
n-propylbenzene	A	0.0032	0.0034	0.0040
m-ethyltoluene	A	0.0005	0.0006	0.0007
p-ethyltoluene	A	0.0002	0.0002	0.0002
1,3,5-trimethylbenzene	A	0.0008	0.0008	0.0010
o-ethyltoluene	A	0.0005	0.0006	0.0007
1,2,4-trimethylbenzene	A	0.0019	0.0020	0.0025
1,2,3-trimethylbenzene	A	0.0002	0.0002	0.0002
2,3-dihydroindene	A	0.0008	0.0007	0.0010
1,1,2-trimethylcyclohexane	N	0.0048	0.0058	0.0065
isobutylcyclopentane	N	0.0030	0.0036	0.0040
1,1,4-trimethylcyclohexane	N	0.0356	0.0428	0.0479
isopropylcyclohexane	N	0.0111	0.0134	0.0150
n-butylcyclopentane	N	0.0667	0.0803	0.0898
1c,2t,3c-trimethylcyclohexane	N	0.0160	0.0193	0.0216
1,1,3-trimethylcyclohexane	N	0.0036	0.0043	0.0048
1c,2t,4t-trimethylcyclohexane	N	0.0147	0.0177	0.0198
1c,3c,5c-trimethylcyclohexane	N	0.0125	0.0150	0.0168
c-nonene-2 & t-nonene-2	O	0.0012	0.0015	0.0016
t-nonene-2	O	0.0012	0.0016	0.0016
t-3-nonene & c-3-nonene	O	0.0000	0.0000	0.0000
Ungrouped C9's	U	0.0044	0.0056	0.0059

Client	Gas Analysis Services	9753-2020021912.1	
Sample Id.	El Cedro		

ASTM D 6729 - Hydrocarbon PIANO

Decanes (C10's)		**Mol %**	**Vol. %**	**Wt. %**
n-decane	P	0.0934	0.1389	0.1417
2,4-dimethyloctane	I	0.0018	0.0028	0.0027
2,2-dimethyloctane	I	0.0031	0.0048	0.0047
2,5-dimethyloctane & 2,6-dimethyloctane	I	0.0338	0.0524	0.0513
3,3-dimethyloctane	I	0.0018	0.0028	0.0027
3,6-dimethyloctane	I	0.0005	0.0008	0.0007
3-methyl-5-ethylheptane	I	0.0006	0.0008	0.0009
4-methylnonane & 5-methylnonane	I	0.0017	0.0027	0.0026
2-methylnonane	I	0.0041	0.0064	0.0063
3-methylnonane	I	0.0007	0.0010	0.0010
3-ethyloctane	I	0.0002	0.0003	0.0003
tert-butylbenzene	A	0.0005	0.0006	0.0008
isobutylbenzene	A	0.0009	0.0011	0.0013
sec-butylbenzene	A	0.0003	0.0004	0.0004
1,3-methyl-i-propylbenzene	A	0.0004	0.0005	0.0006
1,2-methyl-i-propylbenzene	A	0.0001	0.0001	0.0001
1,3-diethylbenzene	A	0.0002	0.0003	0.0003
1,3-methyl-n-propylbenzene	A	0.0004	0.0004	0.0005
1,4-diethylbenzene	A	0.0008	0.0010	0.0011
1,4-methyl-n-propylbenzene	A	0.0003	0.0003	0.0004
1,3-dimethyl-5-ethylbenzene	A	0.0006	0.0007	0.0009
1,2-diethylbenzene & n-butylbenzene	A	0.0010	0.0012	0.0015
1,2-methyl-n-propylbenzene	A	0.0006	0.0007	0.0009
1,4-dimethyl-2-ethylbenzene	A	0.0002	0.0002	0.0002
1,2-dimethyl-3-ethylbenzene	A	0.0002	0.0002	0.0002
1,2,4,5-tetramethylbenzene	A	0.0004	0.0005	0.0006
1,2,3,5-tetramethylbenzene	A	0.0000	0.0000	0.0000
5-methylindan	A	0.0010	0.0011	0.0014
4-methylindan	A	0.0004	0.0005	0.0006
2-methyllindan	A	0.0002	0.0002	0.0003
tetrahydronaphthalene	A	0.0001	0.0001	0.0002

Client	Gas Analysis Services	9753-2020021912.1		
Sample Id.	El Cedro			

C10's Continued		**Mol %**	**Vol. %**	**Wt. %**
isobutylcyclohexane & t-butylcyclohexane	N	0.0005	0.0007	0.0007
1t-methyl-2-n-propylcyclohexane	N	0.0002	0.0003	0.0004
sec-butylcyclohexane	N	0.0003	0.0004	0.0004
n-butylcyclohexane	N	0.0001	0.0002	0.0002
2,3-dimethyloctene-2	O	0.0001	0.0002	0.0002
Ungrouped C10's	U	0.0007	0.0010	0.0011
Undecanes & Dodecanes (C11's & C12's)				
n-undecane	P	0.0012	0.0019	0.0019
1,4-methyl-t-butylbenzene	A	0.0001	0.0001	0.0002
1,2-ethyl-i-propylbenzene	A	0.0001	0.0001	0.0001
1,2-methyl-t-butylbenzene	A	0.0004	0.0005	0.0007
1,2-ethyl-n-propylbenzene	A	0.0001	0.0001	0.0001
1,3-methyl-n-butylbenzene	A	0.0003	0.0004	0.0005
sec-pentlybenzene	A	0.0005	0.0007	0.0008
n-pentylbenzene	A	0.0004	0.0005	0.0007
1,3-di-i-propylbenzene	A	0.0002	0.0003	0.0004
1,2-di-i-propylbenzene & 1,4-di-i-propylbenzene	A	0.0003	0.0004	0.0004
1,4-ethyl-t-butylbenzene & 1-t-butyl-3,5-dimethylbenzene	A	0.0001	0.0002	0.0002
1,3-di-n-propylbenzene	A	0.0006	0.0008	0.0010
dodecene-1	O	0.0002	0.0004	0.0004
C12+	U	0.0245	0.0445	0.0553
TOTAL		100.0000	100.0000	100.0000

SCF/Gal (C1-C5 Vapor)	1.0453
Specific Gravity	0.7156
Molecular Weight	93.8018
Vapor Pressure (psia)	18.61
Specific Gravity (C10+ Fraction)	0.7554
Molecular Weight (C10+ Fraction)	151.5734

Client	Gas Analysis Services	9753-2020021912.1	
Sample Id.	El Cedro		

PIANO

Whole Composition		**Mol %**	**Vol. %**	**Wt. %**
Oxygenates	X	0.0000	0.0000	0.0000
Paraffins	P	31.8414	33.5899	31.4969
Iso-Paraffins	I	27.4586	30.1424	28.5964
Aromatics	A	8.3723	6.3740	7.7598
Naphthenes	N	32.1480	29.6882	31.9243
Olefins	O	0.0136	0.0149	0.0148
Ungrouped	U	0.1453	0.1848	0.2015

PIANO

Less Unclassified Hydrocarbons				
Oxygenates	X	0.0000	0.0000	0.0000
Paraffins	P	31.8944	33.6540	31.5625
Iso-Paraffins	I	27.5043	30.1999	28.6560
Aromatics	A	8.3862	6.3862	7.7759
Naphthenes	N	32.2015	29.7449	31.9908
Olefins	O	0.0136	0.0150	0.0148

BTEX summary				
benzene	A	3.2832	2.2259	2.7339
toluene	A	4.9515	4.0147	4.8637
ethylbenzene	A	0.0089	0.0083	0.0101
m+p-xylene	A	0.0712	0.0667	0.0806
o-xylene	A	0.0311	0.0287	0.0352

Composition Summary			
Oxygenates	0.0000	0.0000	0.0000
Light Fractions (C1-C5)	4.3294	3.5697	3.0377
Hexanes (C6's)	40.0072	36.8475	36.1999
Heptanes (C7's)	43.4126	44.3191	45.5534
Octanes (C8's)	10.2995	12.5980	12.5133
Nonanes (C9's)	1.7701	2.3882	2.4027
Decanes (C10's)	0.1523	0.2267	0.2302
Undecanes & Dodecanes (C11's & C12's)	0.0290	0.0509	0.0628

Client	Gas Analysis Services	9753-2020021912.1
Sample Id.	El Cedro	

Composition Summary Cont.	Mol %	Vol. %	Wt. %
Nitrogen (N2)	0.0196	0.0052	0.0059
Methane (CH4)	0.2976	0.1214	0.0509
Carbon Dioxide (CO2)	0.0014	0.0006	0.0006
Ethane (C2H6)	0.1545	0.0995	0.0495
Propane (C3H8)	0.0944	0.0626	0.0444
Iso Butane (C4H10)	0.0147	0.0116	0.0091
N Butane (C4H10)	0.0323	0.0245	0.0200
Iso Pentane (C5H12)	0.3179	0.2799	0.2445
N Pentane (C5H12)	3.3944	2.9625	2.6108
Hexanes	24.1455	22.0710	21.9091
n-hexane	12.5811	12.5524	11.5588
2,2,4 trimethylpentane	0.0814	0.1027	0.0991
benzene	3.2832	2.2259	2.7339
Heptanes	38.4612	40.3044	40.6897
toluene	4.9515	4.0147	4.8637
Octanes	10.1068	12.3916	12.2883
ethylbenzene	0.0089	0.0083	0.0101
xylenes	0.1023	0.0954	0.1158
Nonanes	1.7701	2.3882	2.4027
Decanes+	0.1813	0.2776	0.2930
TOTAL	100.0000	100.0000	100.0000

Physical Properties Calculated	Sample	C10+ Fraction
Specific Gravity (60°F)	0.7156	0.7554
API Gravity (60°F)	66.22	55.83
Molecular Weight	93.8018	151.5734
lbs/gal (vacuum)	5.9724	6.3038
lbs/gal (air)	5.9664	6.2975
SCF/gal (Vapor)	22.6628	15.0873

Pressure Base - 14.696

Color Visual	Prime White
Shrink Factor	0.9878
Flash Factor (cf/brl)	19.60

Client	Gas Analysis Services	9753-2020021912.1
Sample Id.	El Cedro	

Emmision Report

	Uncontroll	Controlled
	Tons/yr	Tons/yr
H2S	0.0000	0.0000
O2	0.0000	0.0000
CO2	0.0130	0.0130
N2	0.8570	0.8570
C1	2.4640	0.1232
C2	0.4240	0.0212
C3	0.1090	0.0055
iC4	0.0090	0.0004
nC4	0.0140	0.0007
iC5	0.0620	0.0031
NC5	0.4940	0.0247
C6	1.2690	0.0635
Benzene	0.1270	0.0063
Toluene	0.0640	0.0032
E-Benzene	0.0000	0.0000
Xylenes	0.0000	0.0000
N-C6	0.6710	0.0336
2,2,4 TMP	0.0020	0.0001
TOTAL VOCs	5.71	0.2855
TOTAL	6.58	1.1555

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-$(CF_2)_4$CH(OH)-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."

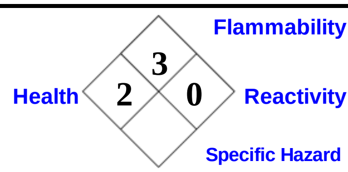
Baker Petrolite

Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Product Name	**CGO49 CORROSION INHIBITOR**	**Code**	CGO49
Supplier	Baker Petrolite A Baker Hughes Company 12645 W. Airport Blvd. (77478) P.O. Box 5050 Sugar Land, TX 77487-5050 For Product Information/MSDSs Call: 800-231-3606 (8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400	**Version**	4.0
Material Uses	Corrosion Inhibitor	**Effective Date**	**6/10/2004**
24 Hour Emergency Numbers	CHEMTREC 800-424-9300 (U.S. 24 hour) Baker Petrolite 800-231-3606 (001)281-276-5400 CANUTEC 613-996-6666 (Canada 24 hours) CHEMTREC Int'l 01-703-527-3887 (International 24 hour)	**Print Date**	6/10/2004

National Fire Protection Association (U.S.A.)



Section 2. Composition and Information on Ingredients

Name	CAS #	% by Weight	Exposure Limits
1-Dodecanethiol	112-55-0	0.1-1	**ACGIH TLV (United States, 2004). Sensitizer skin** TWA: 0.1 ppm 8 hour(s).
Light aromatic naphtha	64742-95-6	10-30	Not available.
1,2,4-Trimethylbenzene	95-63-6	10-30	Not available.
1,2,3-Trimethylbenzene	526-73-8	1-5	Not available.
1,3,5-Trimethylbenzene	108-67-8	5-10	Not available.
Xylene	1330-20-7	1-5	**ACGIH (United States).** TWA: 434 mg/m^3 STEL: 651 mg/m^3 TWA: 100 ppm STEL: 150 ppm **OSHA (United States).** TWA: 100 ppm STEL: 150 ppm TWA: 435 mg/m^3 STEL: 655 mg/m^3
Methanol	67-56-1	10-30	**ACGIH (United States). Skin** TWA: 262 mg/m^3 8 hour(s). STEL: 328 mg/m^3 15 minute(s). TWA: 200 ppm 8 hour(s). STEL: 250 ppm 15 minute(s).

Continued on Next Page

			OSHA (United States). Skin TWA: 200 ppm 8 hour(s). STEL: 250 ppm 15 minute(s). TWA: 260 mg/m^3 8 hour(s). STEL: 325 mg/m^3 15 minute(s).

While 1,2,4-trimethylbenzene does not have exposure limits, trimethylbenzene (mixed isomers)(CAS No. 25551-13-7) has TWA value of 25 ppm for both ACGIH and OSHA (revoked limit).

Section 3. Hazards Identification

Physical State and Appearance	State: Liquid., Color: Light Amber., Odor: Mercaptan.
CERCLA Reportable Quantity	Xylene 1007 gal. Methanol 2586 gal.
Hazard Summary	WARNING. May cause chronic effects. Flammable liquid. Vapors can form an ignitable or explosive mixture with air. Can form explosive mixtures at temperatures at or above the flash point. Vapors can flow along surfaces to a distant ignition source and flash back. Static discharges can cause ignition or explosion when container is not bonded. May be irritating to eyes, skin and respiratory tract. May be toxic by skin absorption. May cause central nervous system (CNS) effects if inhaled.
Routes of Exposure	Skin (Permeator), Skin (Contact), Eyes, Inhalation.
Potential Acute Health Effects	
Eyes	May be severely irritating to the eyes.
Skin	May be severely irritating to the skin. May cause burns on prolonged contact. May be toxic if absorbed through the skin.
Inhalation	May cause central nervous system (CNS) effects if inhaled. May be severely irritating to the lungs.
Ingestion	Not considered a likely route of exposure, however, may be toxic if swallowed.
Medical Conditions aggravated by Exposure	Exposure to this product may aggravate medical conditions involving the following: blood system, kidneys, nervous system, liver, gastrointestinal tract, respiratory tract, skin/epithelium, eyes.
See Toxicological Information (section 11)	
Additional Hazard Identification Remarks	May be harmful if ingested. This product may be aspirated into the lungs during swallowing or vomiting of swallowed material. Aspiration into the lungs may produce chemical pneumonitis, pulmonary edema, and hemorrhaging. Repeated or prolonged contact may cause dermatitis (inflammation) and defatting of the skin (dryness). Draize Test Eye (Rabbit): Moderate Irritant. Draize Test Skin (Rabbit): Extreme Irritant.

Section 4. First Aid Measures

Eye Contact	Flush eyes with plenty of water for 15 minutes, occasionally lifting upper and lower eyelids. Get medical attention immediately.
Skin Contact	Remove contaminated clothing and shoes immediately. Wash affected area with soap and mild detergent and large amounts of lukewarm, gently flowing water until no evidence of chemical remains (for at least 20-60 minutes). Get medical attention if irritation occurs.
Inhalation	Remove to fresh air. Oxygen may be administered if breathing is difficult. If not breathing, administer artificial respiration and seek medical attention. Get medical attention if symptoms appear.

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Ingestion	Get medical attention immediately. If swallowed, do not induce vomiting unless directed to do so by medical personnel. Wash out mouth with water if person is conscious. Never induce vomiting or give anything by mouth to a victim who is unconscious or having convulsions.
Notes to Physician	Not available.
Additional First Aid Remarks	Not available.

Section 5. Fire Fighting Measures

Flammability of the Product	Flammable liquid. Vapors can form an ignitable or explosive mixture with air. Can form explosive mixtures at temperatures at or above the flash point. Vapors can flow along surfaces to a distant ignition source and flash back. Static discharges can cause ignition or explosion when container is not bonded.
OSHA Flammability Class	IB
Autoignition temperature	Not available.
Flash Points	Closed cup: 11°C (51.8°F). (SFCC)
Flammable Limits	L.E.L. Not available. U.E.L. Not available.
Products of Combustion	These products are carbon oxides (CO, CO_2) nitrogen oxides (NO, NO_2...) Sulfur oxides (SO_2, SO_3...).
Fire Hazards in Presence of Various Substances	Open Flames/Sparks/Static. Heat.
Fire Fighting Media and Instructions	In case of fire, use foam, dry chemicals, or CO_2 fire extinguishers. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and public waterways. Note that flammable vapors may form an ignitable mixture with air. Vapors may travel considerable distances and flash back if ignited.
Protective Clothing (Fire)	Do not enter fire area without proper personal protective equipment, including NIOSH approved self-contained breathing apparatus.
Special Remarks on Fire Hazards	Not available.

Section 6. Accidental Release Measures

Spill	Put on appropriate personal protective equipment. Keep personnel removed and upwind of spill. Shut off all ignition sources; no flares, smoking, or flames in hazard area. Approach release from upwind. Shut off leak if it can be done safely. Contain spilled material. Keep out of waterways. Dike large spills and use a non-sparking or explosion-proof means to transfer material to an appropriate container for disposal. For small spills add absorbent (soil may be used in the absence of other suitable materials) scoop up material and place in a sealed, liquid-proof container. Note that flammable vapors may form an ignitable mixture with air. Vapors may travel considerable distances from spill and flash back, if ignited. Waste must be disposed of in accordance with federal, state and local environmental control regulations.
Other Statements	If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.
Additional Accidental Release Measures Remarks	Not available.

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Section 7. Handling and Storage

Handling and Storage	Put on appropriate personal protective equipment. Avoid contact with eyes, skin, and clothing. Avoid breathing vapors or spray mists. Use only with adequate ventilation. Store in a dry, cool and well ventilated area. Keep away from heat, sparks and flame. Keep away from incompatibles. Keep container tightly closed and dry. To avoid fire or explosion, ground container equipment and personnel before handling product.
Additional Handling and Storage Remarks	Not available.

Section 8. Exposure Controls/Personal Protection

Engineering Controls Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors or particles below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection

Personal Protective Equipment recommendations are based on anticipated known manufacturing and use conditions. These conditions are expected to result in only incidental exposure. A thorough review of the job tasks and conditions by a safety professional is recommended to determine the level of personal protective equipment appropriate for these job tasks and conditions.

Eyes	Chemical safety goggles.
Body	Wear long sleeves to prevent repeated or prolonged skin contact.
Respiratory	Respirator use is not expected to be necessary under normal conditions of use. In poorly ventilated areas, emergency situations or if exposure levels are exceeded, use NIOSH approved full face respirator.
Hands	Chemical resistant gloves.
Feet	Chemical resistant boots or overshoes.
Other information	Nitrile or neoprene gloves.

Additional Exposure Control Remarks Not available.

Section 9. Typical Physical and Chemical Properties

Physical State and Appearance	Liquid.	**Odor**	Mercaptan.
pH	Not available.	**Color**	Light Amber.
Specific gravity	0.854 - 0.866 @ 16°C (60°F)		
Density	7.11 - 7.21 lbs/gal @ 16°C (60°F)		
Vapor Density	>1 (Air = 1)		
Vapor Pressure	142.2 - mmHg @ 22°C (72°F)		
Evaporation Rate	Not Available or Not Applicable for Solids.		
VOC	Not available.		
Viscosity	7 - 8 cps @ 16°C (61°F)		
Pour Point	-40ºC (-40ºF)		
Solubility (Water)	Dispersible		
Boiling Point	Not available.		
Physical Chemical Comments	Not available.		

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Section 10. Stability and Reactivity

Stability and Reactivity	The product is stable.
Conditions of Instability	Not available.
Incompatibility with Various Substances	Oxidizing material.
Hazardous Decomposition Products	Not applicable.
Hazardous Polymerization	Hazardous polymerization is not expected to occur.
Special Stability & Reactivity Remarks	Not available.

Section 11. Toxicological Information

Component Toxicological Information

Acute Animal Toxicity

1-Dodecanethiol	Not available.
Light aromatic naphtha	ORAL (LD50): Acute: 2900 mg/kg [Rat]. 8400 mg/kg [Rat].
1,2,4-Trimethylbenzene	ORAL (LD50): Acute: 5000 mg/kg [Rat]. VAPOR (LC50): Acute: 18000 mg/m^3 4 hour(s) [Rat].
1,2,3-Trimethylbenzene	Not available.
1,3,5-Trimethylbenzene	VAPOR (LC50): Acute: 24000 mg/m^3 4 hour(s) [Rat].
Xylene	ORAL (LD50): Acute: 4300 mg/kg [Rat]. 3523 mg/kg [Male rat]. DERMAL (LD50): Acute: >1700 mg/kg [Rabbit]. VAPOR (LC50): Acute: 5000 ppm 4 hour(s) [Rat].
Methanol	ORAL (LD50): Acute: 5628 mg/kg [Rat]. 7300 mg/kg [Mouse]. DERMAL (LD50): Acute: 15800 mg/kg [Rabbit]. VAPOR (LC50): Acute: 64000 ppm 4 hour(s) [Rat].

Chronic Toxicity Data

1) 1-Dodecanethiol

1-Dodecanetriol is a component of this product. Workers exposed to a mixture of 1-dodecanethiol with polychloroprene latexes have shown a significant increase in frequency of chromosomal aberrations in the peripheral blood. [HSDB]

2) Light aromatic naphtha

Solvent naphtha (petroleum), light aromatic is a component of this product. Solvent naphtha (petroleum), light aromatic may cause damage to the peripheral nerves, resulting in numbness or tingling of the extremities with chronic (long term) exposure to high concentrations. (Micromedex) Rats exposed for 4 months to 1700 ppm of a solvent similar to this product showed evidence of mild damage to the liver, lungs and kidneys. These effects were not seen in rats exposed for one year to 350 ppm of another similar solvent. Rats exposed to vapors of a similar solvent during pregnancy showed embryo/fetotoxicity at concentrations producing maternal toxicity.

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In response to a TSCA test rule, several studies of a solvent similar to this product were completed. Mutagenicity studies and a rat inhalation neurotoxicity study were negative. In a mouse developmental effects study, reduced fetal body weight was seen but no teratogenicity. A rat reproductive effects study demonstrated toxicity but little effect on reproductive parameters. (Vendor MSDS)

3) 1,2,4-Trimethylbenzene

Not available.

4) 1,2,3-Trimethylbenzene

Not available.

5) 1,3,5-Trimethylbenzene

1,3,5-Trimethylbenzene (Mysitylene) is a component of this product. Chronic asthmatic-like bronchitis may be a delayed chronic hazard (EPA, 1985; Laham, 1987; HSDB, 1997). Nervousness, tension, and anxiety have been noted in chronically exposed workers with exposure to a mixture of solvents including mesitylene (HSDB, 1997). Elevated alkaline phosphates and SGOT(liver enzymes) levels have been noted in chronic animal inhalation studies (Clayton & Clayton, 1994). These effects have not been reported in exposed humans. (Reprotext)

Thrombocytopenia (a lack of platelets in the blood) with bleeding from the gums and nose and mild anemia may occur with chronic exposure to mesitylene as a component of the commercial solvent mixture, "Fleet-X-DV-99" (Plunkett, 1976; Finkel, 1983; HSDB, 1997). Coagulation (clotting of the blood) times were delayed by about 40% in a group of workers chronically exposed to a mixture of solvents containing about 30% mesitylene (Laham, 1987). These hematological disorders may have been due to a contaminant, such as benzene (Hathaway et al, 1996). Thrombocytosis (an increase of platelets in the blood) and thrombocytopenia have been noted in rabbits (Clayton & Clayton, 1994). (Reprotext)

1,3,5-Trimethylbenzene has been positive in a mutagenicity assay (Lewis, 1992). (Reprotext)

6) Xylene

Xylene (mixed isomers) is a component of this product. Effects of chronic exposure to xylene are similar to those of acute exposure, but may be more severe. Chronic inhalation reportedly was associated with headache, tremors, apprehension, memory loss, weakness, dizziness, loss of appetite, nausea, ringing in the ears, irritability, thirst, anemia, mucosal bleeding, enlarged liver, and hyperplasia, but not destruction of the bone marrow (Clayton & Clayton, 1994; ILO, 1983). Some earlier reports of effects of chronic exposure to xylene have been questioned, as exposures were not limited to xylene alone.

Effects on the blood have been reported from chronic exposure to as little as 50 mg/m3 (Pap & Varga, 1987). Repeated exposure can damage bone marrow, causing low blood cell count and can damage the liver and kidneys (NJ Department of Health, Hazardous Substance Fact Sheet). Chronic xylene exposure (usually mixed with other solvents) has produced irreversible damage to the CNS (ILO, 1983). CNS effects may be exacerbated by ethanol abuse (Savolainen, 1980). Xylene may damage hearing or enhance sensitivity to noise in chronic occupational exposures (Morata et al, 1994), probably from neurotoxic mechanism. Tolerance to xylene can occur over the work week and disappear over the weekend. (ACGIH, 1992).

Inhalation exposure has produced fetotoxicity and postnatal developmental toxicity in laboratory animals. (API, 1978, Kensington, MD, EPA/OTS Document No. 878210350 and Hass, U., et al, 1995, Neurotoxicology and Teratology 17: 341-349 and 1997, Neurotoxicology 18: 547-552)

7) Methanol

Methanol is a component of this product. Because methanol is eliminated from the body more slowly than ethanol, it can have cumulative toxicity with repeated exposures (ACGIH, 1992).

Acute dermal, oral, and inhalation exposure to methanol can cause optic nerve effects, diminished vision, and brain effects (necrosis and hemorrhaging). (Bennett, I.L. et al, 1953)

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Ingestion of methanol can cause Central Nervous System depression, blurred vision and blindness, and gastrointestinal effects. (Clayton, G.D. and Clayton, F.E., 1982, Patty's Industrial Hygiene and Toxicology, Vol2C) Dermal exposure to methanol can cause Central Nervous System depression, blurred vision, and gastrointestinal effects. (Downie, A et al, 1992, Occupational Medicine, 42, pp 47-9) Chronic inhalation of methanol can cause Central Nervous System depression, blurred vision, and gastrointestinal effects. (Frederick, L.J. et al, 1984, AIHA Journal, 45, pp 51-5)

Methanol has produced in vivo mutagenicity in animal studies. (Pereira, M.A. et al, 1982) and (Ward, J. B. et al, 1983)

Methanol was mutagenic in yeast (RTECS). Methanol has caused chromosome aberrations in yeast (RTECS) and grasshoppers (Saha & Khudabaksh, 1974).

Methanol has caused birth defects in rats exposed by the oral (Infurna et al, 1981) and inhalation (Nelson et al, 1984; Nelson et al, 1985) routes. Exencephaly (a defect in the skull bone structure that leaves the brain exposed) and cleft palate (a fissure or unformed bone structure in the roof of the mouth (palate), lip, or facial area, occurring during the embryonic stage of development) were increased in fetal mice exposed to methanol at an airborne concentration of 5,000 ppm or higher for 7 hours/day on days 6 to 15 of gestation.

Embryotoxicity and fetotoxicity were seen with maternal exposure to airborne concentrations of 7,500 ppm and above, and reduced fetal weights with concentrations of 10,000 ppm or greater. The NOAEL was 1,000 ppm. Effects similar to those seen in the 10,000 ppm dosage group were also seen in offspring of mice given a dose of 4 g/kg orally (Rogers et al, 1993).

Product Toxicological Information

Acute Animal Toxicity	ORAL (LD50): Acute: 10600 mg/kg [Rat]. DERMAL (LD50): Acute: >2000 mg/kg [Rabbit].
Target Organs	blood system, kidneys, nervous system, liver, gastrointestinal tract, respiratory tract, skin/epithelium, eyes.
Other Adverse Effects	Not available.

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Biodegradable/OECD	Not available.
Toxicity of the Products of Biodegradation	Not available.
Special Remarks	Not available.

Section 13. Disposal Considerations

Responsibility for proper waste disposal rests with the generator of the waste. Dispose of any waste material in accordance with all applicable federal, state and local regulations. Note that these regulations may also apply to empty containers, liners and rinsate. Processing, use, dilution or contamination of this product may cause its physical and chemical properties to change.

Additional Waste Remarks	Not available.

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Section 14. Transport Information

DOT Classification	FLAMMABLE LIQUID, N.O.S. (Contains: Methanol, Light aromatic naphtha), 3, UN1993, II	
DOT Reportable Quantity	Xylene 1007 gal. Methanol 2586 gal.	
Marine Pollutant	Not applicable.	
Additional DOT information	Not available.	
Emergency Response Guide Page Number	128	

Section 15. Regulatory Information

HCS Classification		Target organ effects. Flammable liquid. Irritant.
U.S. Federal Regulations		
	Environmental Regulations	Extremely Hazardous Substances: Not applicable to any components in this product. SARA 313 Toxic Chemical Notification and Release Reporting: 1,2,4-Trimethylbenzene; Xylene; Methanol; SARA 302/304 Emergency Planning and Notification substances: Not applicable to any components in this product. Hazardous Substances (CERCLA 302): Xylene 1007 gal.; Methanol 2586 gal.; SARA 311/312 MSDS distribution - chemical inventory - hazard identification: fire; immediate health hazard; delayed health hazard; Clean Water Act (CWA) 307 Priority Pollutants: Not applicable to any components in this product. Clean Water Act (CWA) 311 Hazardous Substances: Xylene; Clean Air Act (CAA) 112(r) Accidental Release Prevention Substances: Not applicable to any components in this product.
	Threshold Planning Quantity (TPQ)	Not applicable.
	TSCA Inventory Status	All components are included or are exempted from listing on the US Toxic Substances Control Act Inventory. This product contains the following components that are subject to the reporting requirements of TSCA Section 12(b) if exported from the United States: Xylene; Naphthalene.
State Regulations		State specific information is available upon request from Baker Petrolite.
International Regulations		
	Canada	Not all components are included on the Canadian Domestic Substances List.
	WHMIS (Canada)	B-2, D-1B, D-2A, D-2B
	European Union	Not all components are included on the European Inventory of Existing Commercial Chemical Substances or the European List of Notified Chemical Substances.

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	International inventory status information is available upon request from Baker Petrolite for the following countries: Australia, China, Korea (TCCL), Philippines (RA6969), or Japan.
Harmonized Tariff Code	Not available.
Other Regulatory Information	No further regulatory information is available.

Section 16. Other Information

Other Special Considerations	123 10/10/02 - Changes to Sections 2 and 9. 04/28/04 - Changes to Sections 2 and 15. 06/10/04 - Changes to Sections 8 and 15.

Material Safety Data Sheet
Surfatron® DN-100

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	Surfatron® DN-100
Product use	Surfactant
Manufacturer	Champion Technologies, Inc. P.O. Box 450499 Houston, TX, 77245 USA
Telephone	1-281-431-2561 (Champion)
In case of emergency	1-800-424-9300 (CHEMTREC) 1-703-527-3887 (CHEMTREC - International)

2. HAZARDS IDENTIFICATION

Physical state	liquid
Color	Clear. Brown.
Odor	Hydrocarbon.
Emergency overview	DANGER! Flammable. Harmful. Irritant. Keep away from heat, sparks and flame. Contains material which may cause cancer. See toxicological information (section 11)

Potential health effects

Inhalation	Harmful by inhalation. Irritating to respiratory system.
Ingestion	Harmful if swallowed. Irritating to mouth, throat and stomach.
Skin	Irritating to skin.
Eyes	Irritating to eyes.
Chronic effects	No known significant effects or critical hazards.
Medical conditions aggravated by over-exposure	Frequent or prolonged contact with product may defat and dry the skin, leading to discomfort and dermatitis.

See toxicological information (section 11)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS no.	wt. %
Organic Acid Salt	Proprietary	10 - 30
Benzene, tetrapropylene-	25265-78-5	1 - 5
Naphthalene	91-20-3	1 - 5
Xylene	1330-20-7	1 - 5
Cumene	98-82-8	1 - 5
Diethylbenzene	25340-17-4	1 - 5
Toluene	108-88-3	1 - 5
1,3,5-Trimethylbenzene	108-67-8	1 - 5
Isopropyl Alcohol	67-63-0	1 - 5

Heavy aromatic solvent naphtha	64742-94-5	5 - 10
1,2,4-Trimethylbenzene	95-63-6	10 - 30
Light aromatic solvent naphtha	64742-95-6	30 - 60
Petroleum naphtha	64741-68-0	30 - 60

4. FIRST AID MEASURES

Eye contact Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.

Skin contact Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Ingestion Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention. Never give anything by mouth to an unconscious person.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Notes to physician No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. FIRE-FIGHTING MEASURES

Flash point 74 °F (23.3 °C), Pensky-Martens. Closed cup

Flammability of the product Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

Extinguishing media

Suitable Use dry chemical, CO2, water spray (fog) or foam.

Not suitable Do not use water jet.

Special exposure hazards Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. This material is toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous combustion products carbon dioxide, carbon monoxide

Special protective equipment for fire-fighters Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Special remarks on fire hazards Not available.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions Avoid contact of spilled material with soil and prevent runoff entering surface waterways. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Methods for cleaning up

Small spill Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. HANDLING AND STORAGE

Handling Use only with adequate ventilation. Put on appropriate personal protective equipment (see section 8). Wear appropriate respirator when ventilation is inadequate. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Do not get in eyes or on skin or clothing. Avoid breathing vapor or mist. Avoid release to the environment. Do not enter storage areas and confined spaces unless adequately ventilated. Eliminate all ignition sources. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container. Workers should wash hands and face before eating, drinking and smoking.

Storage Store in accordance with local regulations. Store in a segregated and approved area. Keep container in a well-ventilated area. Store in the original container or an approved alternative made from a compatible material. Keep tightly closed when not in use. Separate from oxidizing materials. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection

Hands Use chemical-resistant, impervious gloves.

Eyes Safety eyewear should be used when there is a likelihood of exposure.

Body Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Occupational exposure limits

Component	Source	Type	PPM	MG/M3	Notes
Naphthalene					
	OSHA PEL	TWA	10 ppm	50 mg/m3	

	NIOSH REL	TWA	10 ppm	50 mg/m3	
	NIOSH REL	STEL	15 ppm	75 mg/m3	
	ACGIH TLV	TWA	10 ppm	52 mg/m3	
	ACGIH TLV	STEL	15 ppm	79 mg/m3	
Xylene					
	OSHA PEL	TWA	100 ppm	435 mg/m3	
	ACGIH TLV	TWA	100 ppm	434 mg/m3	
	ACGIH TLV	STEL	150 ppm	651 mg/m3	
Cumene					
	OSHA PEL	TWA	50 ppm	245 mg/m3	SKIN
	NIOSH REL	TWA	50 ppm	245 mg/m3	SKIN
	ACGIH TLV	TWA	50 ppm		
Diethylbenzene					
	AIHA WEEL	TWA	5 ppm		
Toluene					
	OSHA PEL Z2	TWA	200 ppm		
	OSHA PEL Z2	CEIL	300 ppm		
	OSHA PEL Z2	CEIL	500 ppm		
	NIOSH REL	TWA	100 ppm	375 mg/m3	
	NIOSH REL	STEL	150 ppm	560 mg/m3	
	ACGIH TLV	TWA	20 ppm		
1,3,5-Trimethylbenzene					
	NIOSH REL	TWA	25 ppm	125 mg/m3	
	ACGIH TLV	TWA	25 ppm	123 mg/m3	
Isopropyl Alcohol					
	OSHA PEL	TWA	400 ppm	980 mg/m3	
	NIOSH REL	TWA	400 ppm	980 mg/m3	
	NIOSH REL	STEL	500 ppm	1,225 mg/m3	
	ACGIH TLV	TWA	200 ppm		
	ACGIH TLV	STEL	400 ppm		
1,2,4-Trimethylbenzene					
	NIOSH REL	TWA	25 ppm	125 mg/m3	
	ACGIH TLV	TWA	25 ppm	123 mg/m3	

SKIN - Skin absorption can contribute significantly to overall exposure.

Engineering measures Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Emergency baths, showers, or other equipment appropriate for the potential level of exposure should be located close to the workstation location.

Environmental exposure controls Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state liquid

Color Clear. Brown.

Odor Hydrocarbon.

Odor threshold Not available.

Boiling/condensation point	Not available.
Pour point	-40 °F (-40.0 °C)
Flash point	74 °F (23.3 °C), Pensky-Martens. Closed cup
Flammable limits	Lower: Not available. Upper: Not available.
Auto-ignition temperature	Not available.
pH	7.0 - 9.0
Evaporation rate	Not available.
Solubility	oil
Vapor density	Not available.
Relative density	0.9411 - 0.9811 @ 60 °F (15.6 °C)
Vapor pressure	Not available.
Viscosity	Dynamic: 50 - 150 cPs @ 75 °F (23.9 °C)
Octanol/water partition coefficient (LogPow)	Not available.

Note: Typical values only - not to be interpreted as sales specifications

10. STABILITY AND REACTIVITY

Stability	The product is stable.
Hazardous polymerization	Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Avoid release to the environment. Refer to special instructions/safety data sheet.
Materials to avoid	oxidizing materials
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Substance	Test type	Species	Dose	Exposure
Naphthalene				
	LD50 Oral	Mouse	316 mg/kg	-
	LD50 Oral	Rat	490 mg/kg	-
	LD50 Oral	Guinea pig	1,200 mg/kg	-
	LC50 inhalation	Rat	340 mg/m3	1 h
	LD50 Dermal	Rabbit	2,000 mg/kg	-
	LD50 Dermal	Rat	2,500 mg/kg	-
Xylene				
	LD50 Oral	Mouse	2,119 mg/kg	-
	LD50 Oral	Rat	4,300 mg/kg	-
	LC50 inhalation	Rat	5000 ppm	4 h
	LD50 Dermal	Rabbit	1,700 mg/kg	-
Cumene				

	LD50 Oral	Rat	1,400 mg/kg	-
	LD50 Oral	Mouse	12,750 mg/kg	-
	LC50 inhalation	Mouse	15.3 g/m3	2 h
	LC50 inhalation	Rat	39 g/m3	4 h
	LD50 Dermal	Rabbit	12,300 mg/kg	-
Toluene				
	LD50 Oral	Rat	636 mg/kg	-
	LC50 inhalation	Rat	8000 ppm	4 h
	LC50 inhalation	Mouse	30,000 mg/m3	2 h
	LD50 Dermal	Rabbit	14,100 mg/kg	-
1,3,5-Trimethylbenzene				
	LD50 Oral	Rat	5,000 mg/kg	-
	LC50 inhalation	Rat	24,000 mg/m3	4 h
Isopropyl Alcohol				
	LD50 Oral	Mouse	3,600 mg/kg	-
	LD50 Oral	Rat	5,000 mg/kg	-
	LD50 Oral	Rabbit	6,410 mg/kg	-
	LC50 inhalation	Rat	72,600 mg/m3	-
	LD50 Dermal	Rabbit	12,800 mg/kg	-
Heavy aromatic solvent naphtha				
	LC50 inhalation	Rat	590 mg/m3	4 h
	LD50 Dermal	Rabbit	2,000 mg/kg	-
1,2,4-Trimethylbenzene				
	LD50 Oral	Rat	5,000 mg/kg	-
	LD50 Oral	Mouse	6,900 mg/kg	-
	LC50 inhalation	Rat	18,000 mg/m3	4 h
Light aromatic solvent naphtha				
	LD50 Oral	Rat	8,400 mg/kg	-
Petroleum naphtha				
	LD50 Oral	Rat	4,800 mg/kg	-
	LC50 inhalation	Rat	> 5 g/m3	4 h

Conclusion/Summary Not available.

Chronic toxicity

Conclusion/Summary Not available.

Irritation/Corrosion

Conclusion/Summary

Skin Not available.
Eyes Not available.
Respiratory Not available.

Sensitizer

Conclusion/Summary

Skin Not available.
Respiratory Not available.

Carcinogenicity

Conclusion/Summary Not available.

Component	IARC	NTP	OSHA
Naphthalene	2B	Possible	

2B - IARC Group 2B, possibly carcinogenic to humans
Possible - NTP reasonably anticipated to be carcinogenic

Mutagenicity

Conclusion/Summary Not available.

Teratogenicity

Conclusion/Summary Not available.

Reproductive toxicity

Conclusion/Summary Not available.

12. ECOLOGICAL INFORMATION

Environmental effects Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Aquatic ecotoxicity

Conclusion/Summary Not available.

Other adverse effects No known significant effects or critical hazards.

13. DISPOSAL CONSIDERATIONS

Waste disposal The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. TRANSPORT INFORMATION

Refer to the bill of lading or container label for DOT or other transportation hazard classification. Additionally, be aware that shipping descriptions may vary based on mode of transport, shipment volume or weight, container size or type, and/or origin and destination. Consult your company's Hazardous Materials / Dangerous Goods expert or your legal counsel for information specific to your situation.

15. REGULATORY INFORMATION

HCS Classification

Component	Classification
Petroleum naphtha	Harmful.
Light aromatic solvent naphtha	Harmful.
Organic Acid Salt	Harmful., Irritant.
1,2,4-Trimethylbenzene	Harmful., Irritant., Occupational exposure limits
Heavy aromatic solvent naphtha	Harmful.
Isopropyl Alcohol	Irritant., Occupational exposure limits
1,3,5-Trimethylbenzene	Irritant., Occupational exposure limits
Toluene	Harmful., Irritant., Target organ effects, Occupational exposure limits
Diethylbenzene	Irritant., Occupational exposure limits
Cumene	Harmful., Irritant., Occupational exposure limits
Xylene	Harmful., Irritant., Occupational exposure limits
Naphthalene	Carcinogen, Harmful., Occupational exposure limits
Benzene, tetrapropylene-	Irritant.

U.S. Federal regulations

CERCLA - Reportable quantity:

SUBSTANCE	REPORTABLE QUANTITY
Naphthalene	100 lbs

Xylene	100 lbs
Cumene	5000 lbs
Toluene	1000 lbs

SUBSTANCE	PRODUCT REPORTABLE QUANTITY
Xylene	8,226 lb, 1,031 gal US

Product spills equal to or exceeding the threshold above trigger the reporting requirements under CERCLA for the listed hazardous substance. Report the spill or release to the National Response Center (NRC) at (800) 424-8802.

TSCA 12(b) one-time export:
The following components are listed: Naphthalene.

SARA Title III Section 302 Extremely hazardous substances (40 CFR Part 355):
None of the components are listed.

SARA CERCLA: Hazardous substances:
None of the components are listed.

SARA 311/312 MSDS distribution - chemical inventory - hazard identification:
Immediate (acute) health hazard, Delayed (chronic) health hazard, Fire hazard

Clean Water Act (CWA) 307:
The following components are listed: Toluene. Naphthalene. Ethylbenzene. Benzene.

Clean Water Act (CWA) 311:
The following components are listed: Toluene. Xylene. Naphthalene. Potassium hydroxide. Ethylbenzene. Benzene.

Clean Air Act (CAA) 112 accidental release prevention:
None of the components are listed.

Clean Air Act (CAA) 112 regulated flammable substances:
None of the components are listed.

Clean Air Act (CAA) 112 regulated toxic substances:
None of the components are listed.

SARA 313 - Supplier notification

Component	CAS no.	wt. %
Naphthalene	91-20-3	1 - 5
Xylene	1330-20-7	1 - 5
Cumene	98-82-8	1 - 5
Toluene	108-88-3	1 - 5
Isopropyl Alcohol	67-63-0	1 - 5
1,2,4-Trimethylbenzene	95-63-6	10 - 30

State regulations

Massachusetts Substances: The following components are listed: 1,3,5-Trimethylbenzene. Toluene. Cumene. Xylene. Naphthalene. Isopropyl Alcohol. 1,2,4-Trimethylbenzene.
New Jersey Hazardous Substances: The following components are listed: 1,3,5-Trimethylbenzene. Toluene. Diethylbenzene. Cumene. Xylene. Naphthalene. Isopropyl Alcohol. 1,2,4-Trimethylbenzene.
Pennsylvania RTK Hazardous Substances: The following components are listed: 1,3,5-Trimethylbenzene. Toluene. Cumene. Xylene. Naphthalene. Isopropyl Alcohol. 1,2,4-Trimethylbenzene.

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Component	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Toluene	No.	Yes.	No.	13000 µg/day
	No.	Yes.	No.	7000 µg/day
Naphthalene	Yes.	No.	5.8 µg/day	No.

Ethylbenzene	Yes.	No.	No.	No.
Benzene	Yes.	Yes.	6.4 µg/day	No.
	Yes.	Yes.	No.	24 µg/day
	Yes.	Yes.	No.	49 µg/day
	Yes.	Yes.	13 µg/day	No.

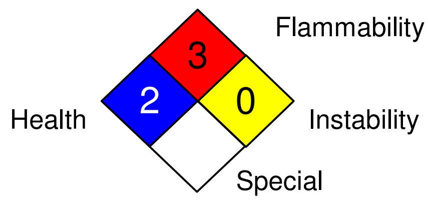
International regulations

United States inventory (TSCA 8b): All components are listed or exempted.

Canada inventory (DSL): At least one component is not listed in DSL but all such components are listed in NDSL.

16. OTHER INFORMATION

National Fire Protection Association (U.S.A.):



Date of issue	07/13/2009
Date of previous issue	07/13/2009
Version	3.0
Prepared by	Product Stewardship

Disclaimer

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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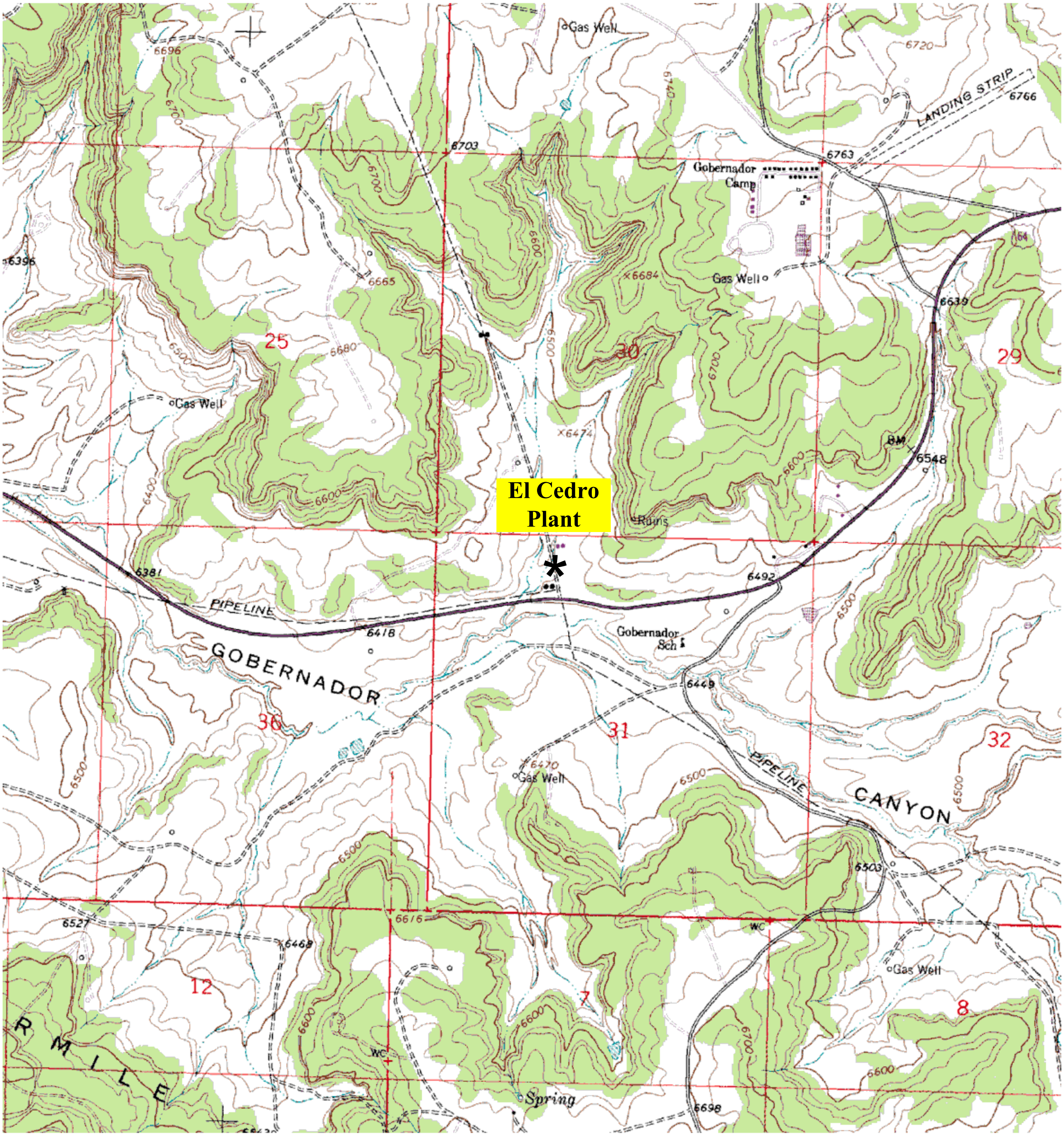
Section 8

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 map is provided in this section. Please see the following page.



Source: USGS Fourmile Canyon, New Mexico Quadrangle

0 2000
Scale (Feet)

Figure 1 Site Vicinity / Topographic Map

El Cedro Plant

Section 31, Township 29N Range 5W

Rio Arriba County, New Mexico

Section 9

Proof of Public Notice

(for NSR applications submitting under 20.2.72 or 20.2.74 NMAC)
(This proof is required by: 20.2.72.203.A.14 NMAC "Documentary Proof of applicant's public notice")

☐ **I have read the AQB "Guidelines for Public Notification for Air Quality Permit Applications"**
This document provides detailed instructions about public notice requirements for various permitting actions. It also provides public notice examples and certification forms. Material mistakes in the public notice will require a re-notice before issuance of the permit.

Unless otherwise allowed elsewhere in this document, the following items document proof of the applicant's Public Notification. Please include this page in your proof of public notice submittal with checkmarks indicating which documents are being submitted with the application.

New Permit and **Significant Permit Revision** public notices must include all items in this list.

Technical Revision public notices require only items 1, 5, 9, and 10.

Per the Guidelines for Public Notification document mentioned above, include:

1. ☑ A copy of the certified letter receipts with post marks (20.2.72.203.B NMAC).
2. ☑ A list of the places where the public notice has been posted in at least four publicly accessible and conspicuous places, including the proposed or existing facility entrance. (e.g: post office, library, grocery, etc.).
3. ☑ A copy of the property tax record (20.2.72.203.B NMAC).
4. ☑ A sample of the letters sent to the owners of record.
5. ☑ A sample of the letters sent to counties, municipalities, and Indian tribes.
6. ☑ A sample of the public notice posted and a verification of the local postings.
7. ☑ A table of the noticed citizens, counties, municipalities and tribes and to whom the notices were sent in each group.
8. ☑ A copy of the public service announcement (PSA) sent to a local radio station and documentary proof of submittal.
9. ☑ A copy of the classified or legal ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
10. ☑ A copy of the display ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
11. ☑ A map with a graphic scale showing the facility boundary and the surrounding area in which owners of record were notified by mail. This is necessary for verification that the correct facility boundary was used in determining distance for notifying land owners of record.

Landowners around the El Cedro Compressor Station were identified using the Rio Arriba County Assessor's Office GIS mapping site and their EagleWeb parcel ownership data. Table 1 identifies the land owners within 1/2 mile of the plant who received a public notice letter.

Table 1

Land Owners Within 1/2 Mile of the El Cedro Compressor Station Receiving Public Notice Letters	
Beatrice Espinosa	John & Patricia Irick
Bureau of Land Management	New Mexico State Land Office
Carrie Rousseau	Steven & Natalie Ellis
Dulce Board of Education	Tim Cummins
Gomez Family Property LLC	

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

Table 2

Counties, Municipalities & Tribes Within 10 Miles of the El Cedro Compressor Station	Public Notice Letter Sent To
Counties Rio Arriba	County Clerk
Municipalities None	NA
Indian Tribes Jicarilla Apache Tribe	Environmental Protection Office

HARVEST MIDSTREAM

PO Box 61229
Houston, TX 77208

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

March 20, 2020

CERTIFIED MAIL 7019 1640 0000 1955 7935
RETURN RECEIPT REQUESTED

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 March 20, 2020.

The exact location of the facility, known as the El Cedro Compressor Station, is latitude 36 deg, 41 min, 21.0 sec and longitude -107 deg, 24 min, 06.8 sec. The approximate location of this facility is 18 miles east southeast of Navajo Dam, New Mexico (drive east from Bloomfield, New Mexico on Highway 64 to mile marker 100.5, facility is on the left).

The proposed modifications are to increase condensate throughput to the storage tanks, increase produced water throughput to the storage tanks, increase truck loading throughput, and increase pig receiver throughput.

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)	106.0	319.0
Carbon Monoxide (CO)	149.0	446.0
Volatile Organic Compounds (VOCs)	53.0	253.0
Sulfur Dioxide (SO_2)	1.0	3.0
Particulate Matter Less Than 10 Microns (PM_{10})	3.0	11.0
Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)	3.0	11.0
Total Sum of all Hazardous Air Pollutants (HAPs)	14.0	42.0
Green House Gas Emissions as Total CO_2e	N/A	237,700.0

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,

Kijun Hong
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.

HARVEST MIDSTREAM

PO Box 61229
Houston, TX 77208

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

March 20, 2020

CERTIFIED MAIL 7019 1640 0000 1955 7805
RETURN RECEIPT REQUESTED

Rio Arriba County Clerk
Tierra Amarilla Court House
Post Office Box 158
Tierra Amarilla, New Mexico 87575

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 March 20, 2020.

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Sulfur Dioxide (SO_2)	1.0	3.0
Particulate Matter Less Than 10 Microns (PM_{10})	3.0	11.0
Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)	3.0	11.0
Total Sum of all Hazardous Air Pollutants (HAPs)	14.0	42.0
Green House Gas Emissions as Total CO_2e	N/A	237,700.0

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,

Kijun Hong
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.

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PAGOSA SPRINGS, CO 81147

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Certified Mail Fee	$3.55	0127
$	$2.85	15
Extra Services & Fees (check box, add fee as appropriate)		
☐ Return Receipt (hardcopy)	$ $0.00	
☐ Return Receipt (electronic)	$ $0.00	Postmark Here
☐ Certified Mail Restricted Delivery	$ $0.00	
☐ Adult Signature Required	$ $0.00	
☐ Adult Signature Restricted Delivery	$	
Postage $	$0.55	
Total Postage and Fees $	$6.95	03/20/2020

Postmark: MAR 20 2020 USPS

Sent To: Beatrice Espinosa

Street and Apt. No., or PO Box No.: Post Office Box 46

City, State, ZIP+4®: Pagosa Springs, Colorado 81147

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

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DULCE, NM 87528

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$	$0.00	15
Extra Services & Fees (check box, add fee as appropriate)		
☐ Return Receipt (hardcopy)	$	
☐ Return Receipt (electronic)	$ $0.00	Postmark Here
☐ Certified Mail Restricted Delivery	$ $0.00	
☐ Adult Signature Required	$ $0.00	
☐ Adult Signature Restricted Delivery	$	
Postage $	$0.55	03/20/2020
Total Postage and Fees $	$4.10	

Postmark: KAYSVILLE, UT 84037 MAR 20 2020 USPS

Sent To: Board of Education

Street and Apt. No., or PO Box No.: Post Office Box 547

City, State, ZIP+4®: Dulce, New Mexico 87528

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

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FARMINGTON, NM 87402

OFFICIAL USE

Certified Mail Fee	$3.55	0127
$	$2.85	15
Extra Services & Fees (check box, add fee as appropriate)		
☐ Return Receipt (hardcopy)	$ $0.00	
☐ Return Receipt (electronic)	$ $0.00	Postmark Here
☐ Certified Mail Restricted Delivery	$ $0.00	
☐ Adult Signature Required	$ $0.00	
☐ Adult Signature Restricted Delivery	$	
Postage $	$0.55	03/20/2020
Total Postage and Fees $	$6.95	

Postmark: KAYSVILLE MAR 20 2020

Sent To: Bureau of Land Management

Street and Apt. No., or PO Box No.: 6251 College Blvd., Suite A

City, State, ZIP+4®: Farmington, New Mexico 87402

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

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

ST THOMAS, VI 00801

OFFICIAL USE

Certified Mail Fee	$3.55	0127
$	$2.85	15
Extra Services & Fees (check box, add fee as appropriate)		
☐ Return Receipt (hardcopy)	$ $0.00	
☐ Return Receipt (electronic)	$ $0.00	Postmark Here
☐ Certified Mail Restricted Delivery	$ $0.00	
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☐ Adult Signature Restricted Delivery	$	
Postage $	$0.55	03/20/2020
Total Postage and Fees $	$6.95	

Postmark: KAYSVILLE UT 84037 MAR 20 2020 USPS

Sent To: Carrie Rousseau

Street and Apt. No., or PO Box No.: Post Office Box 11782

City, State, ZIP+4®: St. Thomas, Virgin Islands 8014780

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

7019 1640 0000 1955 7782

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AZTEC, NM 87410

OFFICIAL USE

Certified Mail Fee	$3.55	0127
$	$2.85	15
Extra Services & Fees (check box, add fee as appropriate)		
☐ Return Receipt (hardcopy)	$ $0.00	
☐ Return Receipt (electronic)	$ $0.00	Postmark Here
☐ Certified Mail Restricted Delivery	$ $0.00	
☐ Adult Signature Required	$ $0.00	
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Postage $	$0.55	03/20/2020
Total Postage and Fees $	$6.95	

Postmark: KAYSVILLE MAR 20 2020 USPS

Sent To: Gomez Family Property LLC

Street and Apt. No., or PO Box No.: 432 Parkland Drive

City, State, ZIP+4®: Aztec, New Mexico 87410

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

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DULCE, NM 87528

OFFICIAL USE

Certified Mail Fee	$3.55	0127
$	$2.85	15
Extra Services & Fees (check box, add fee as appropriate)		
☐ Return Receipt (hardcopy)	$ $0.00	
☐ Return Receipt (electronic)	$ $0.00	Postmark Here
☐ Certified Mail Restricted Delivery	$ $0.00	
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☐ Adult Signature Restricted Delivery	$	
Postage $	$0.55	03/20/2020
Total Postage and Fees $	$6.95	

Postmark: KAYSVILLE, UT 84037 MAR 20 2020

Sent To: Jicarilla Apache Nation

Street and Apt. No., or PO Box No.: Post Office Box 507

City, State, ZIP+4®: Dulce, New Mexico 87528

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

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BLANCO, NM 87412

OFFICIAL USE

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$ $2.85

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 $0.55

$

Total Postage and Fees $6.95

$

Postmark Here

0127 15

MAR 20 2020

03/20/2020

USPS

Sent To John + Patricia Irish

Street and Apt. No., or PO Box No. Post Office Box 620

City, State, ZIP+4® Blanco, New Mexico 87412

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

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SANTA FE, NM 87504

OFFICIAL USE

Certified Mail Fee $3.55

$ $2.85

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 $0.55

$

Total Postage and Fees $6.95

$

Postmark Here

0127 15

MAR 20 2020

03/20/2020

USPS

Sent To NM State Land Office

Street and Apt. No., or PO Box No. Post Office Box 1148

City, State, ZIP+4® Santa Fe, New Mexico 87504

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

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TIERRA AMARILLA, NM 87575

OFFICIAL USE

Certified Mail Fee $3.55

$ $2.85

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 $0.55

$

Total Postage and Fees $6.95

$

Postmark Here

0127 15

MAR 20 2020

03/20/2020

USPS

Sent To Rio Arriba County Clerk

Street and Apt. No., or PO Box No. Post Office Box 158

City, State, ZIP+4® Tierra Amarilla, New Mexico 87575

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

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NAVAJO DAM, NM 87419

OFFICIAL USE

Certified Mail Fee $3.55

$ $2.85

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 $0.55

$

Total Postage and Fees $6.95

$

Postmark Here

0127 15

MAR 20 2020

03/20/2020

USPS

Sent To Steven Ellis + Natalie Erdel-Jan

Street and Apt. No., or PO Box No. Post Office Box 6565

City, State, ZIP+4® Navajo Dam, New Mexico 87419

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

7019 1640 0000 1955 7959

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BLOOMFIELD, NM 87413

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$ $2.85

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 $0.55

$

Total Postage and Fees $6.95

$

Postmark Here

0127 15

MAR 2 2020

03/20/2020

Sent To Tim Cummins

Street and Apt. No., or PO Box No. Post Office Box 655

City, State, ZIP+4® Bloomfield, New Mexico 87413

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

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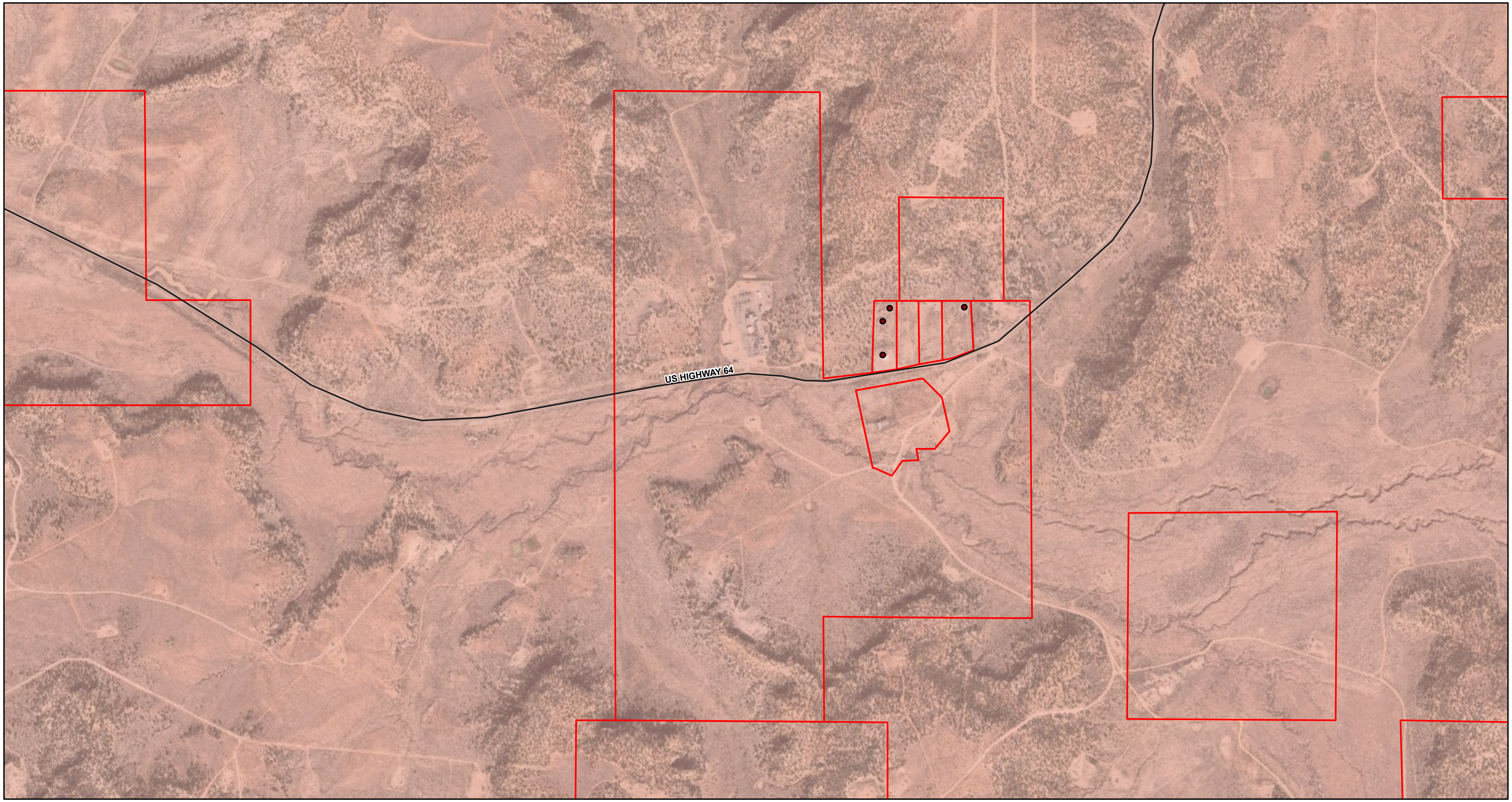
Rio Arriba County NM



3/20/2020, 1:10:47 PM

RIO_ARRIBA_COUNTY_MAP - Addresses

RIO_ARRIBA_COUNTY_MAP - Roads

RIO_ARRIBA_COUNTY_MAP - RAC_PARCELS

RIO_ARRIBA_COUNTY_MAP - Tax/School District Map

DIST 21

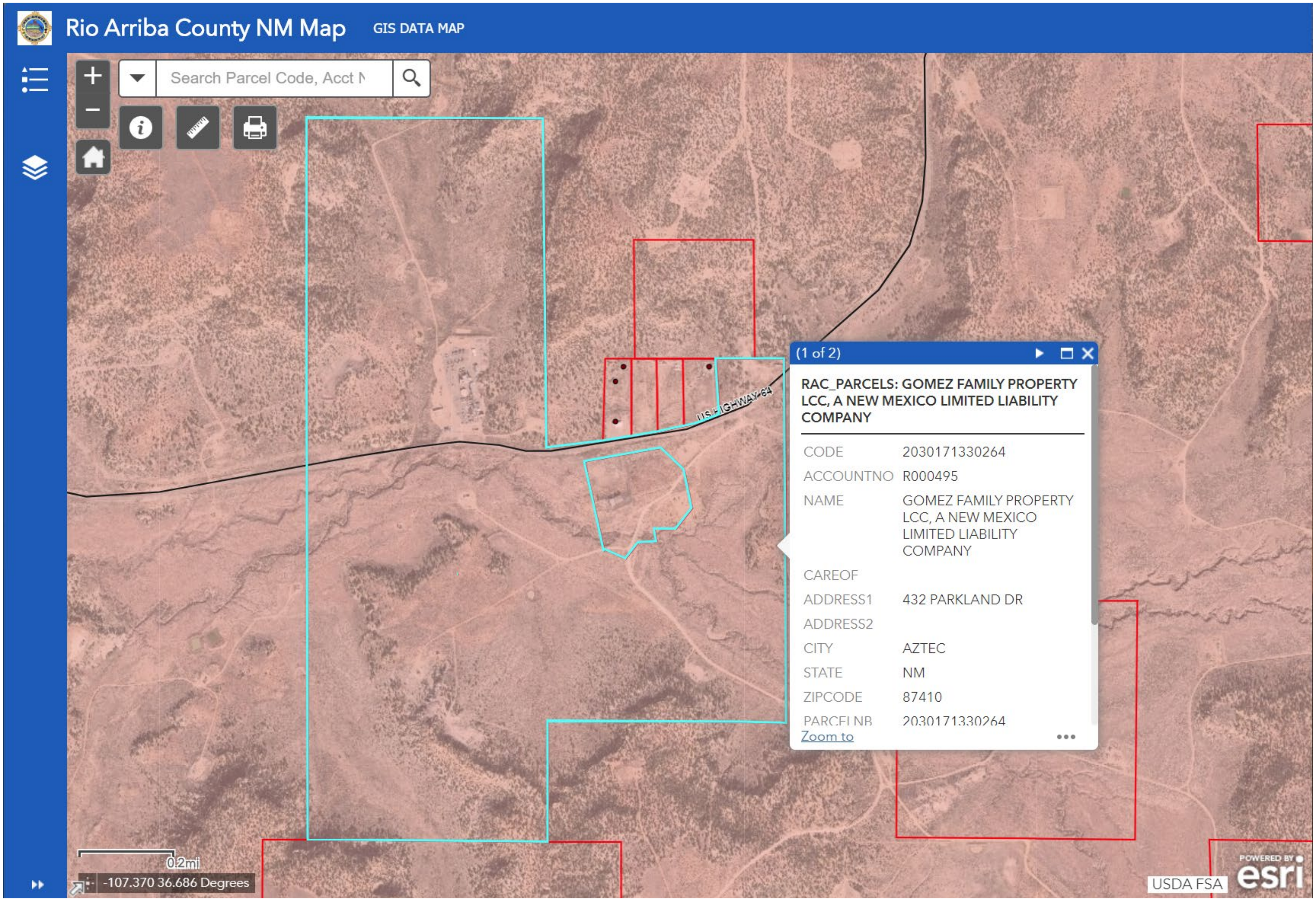
1:18,056

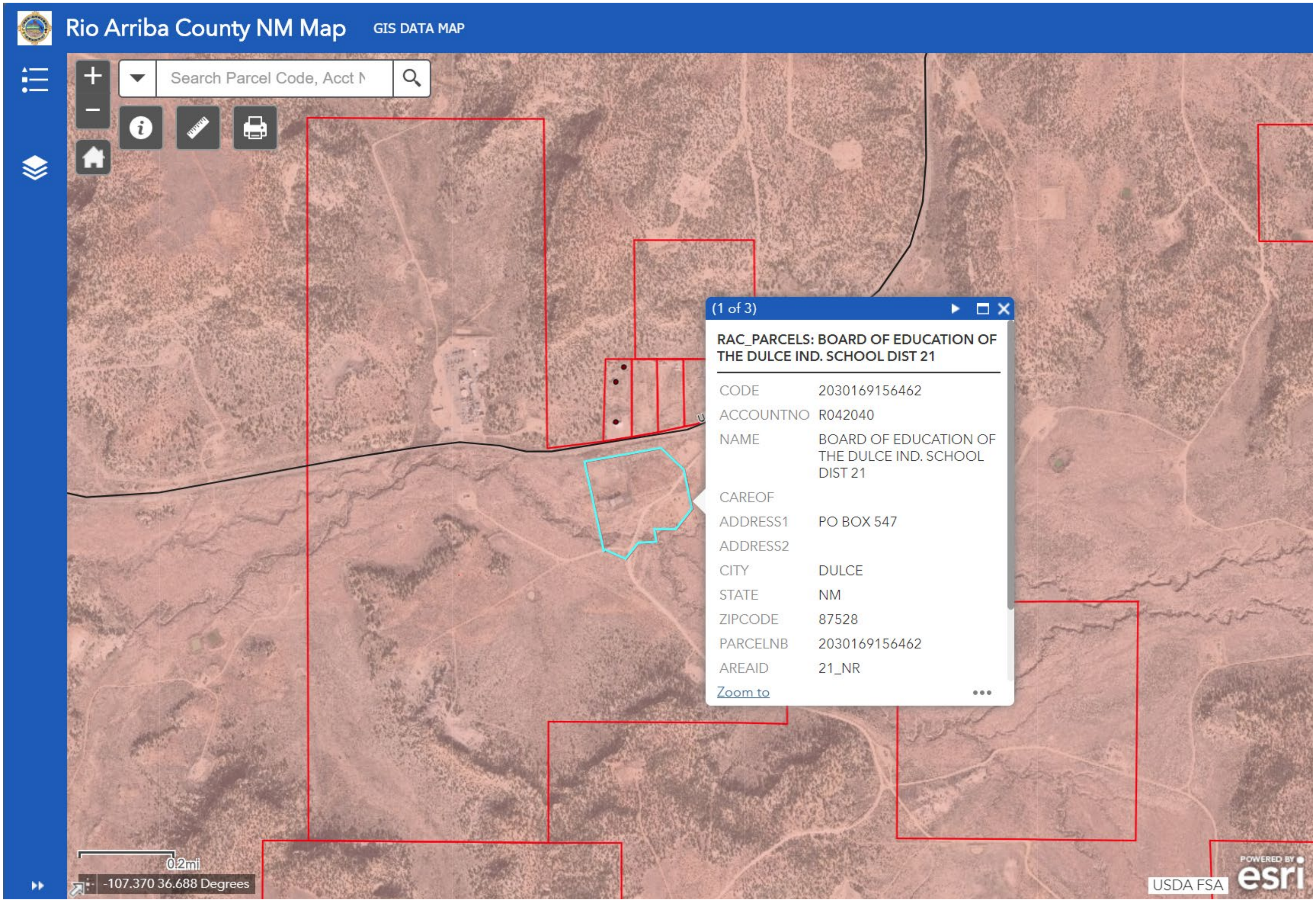
0 0.17 0.35 0.7 mi

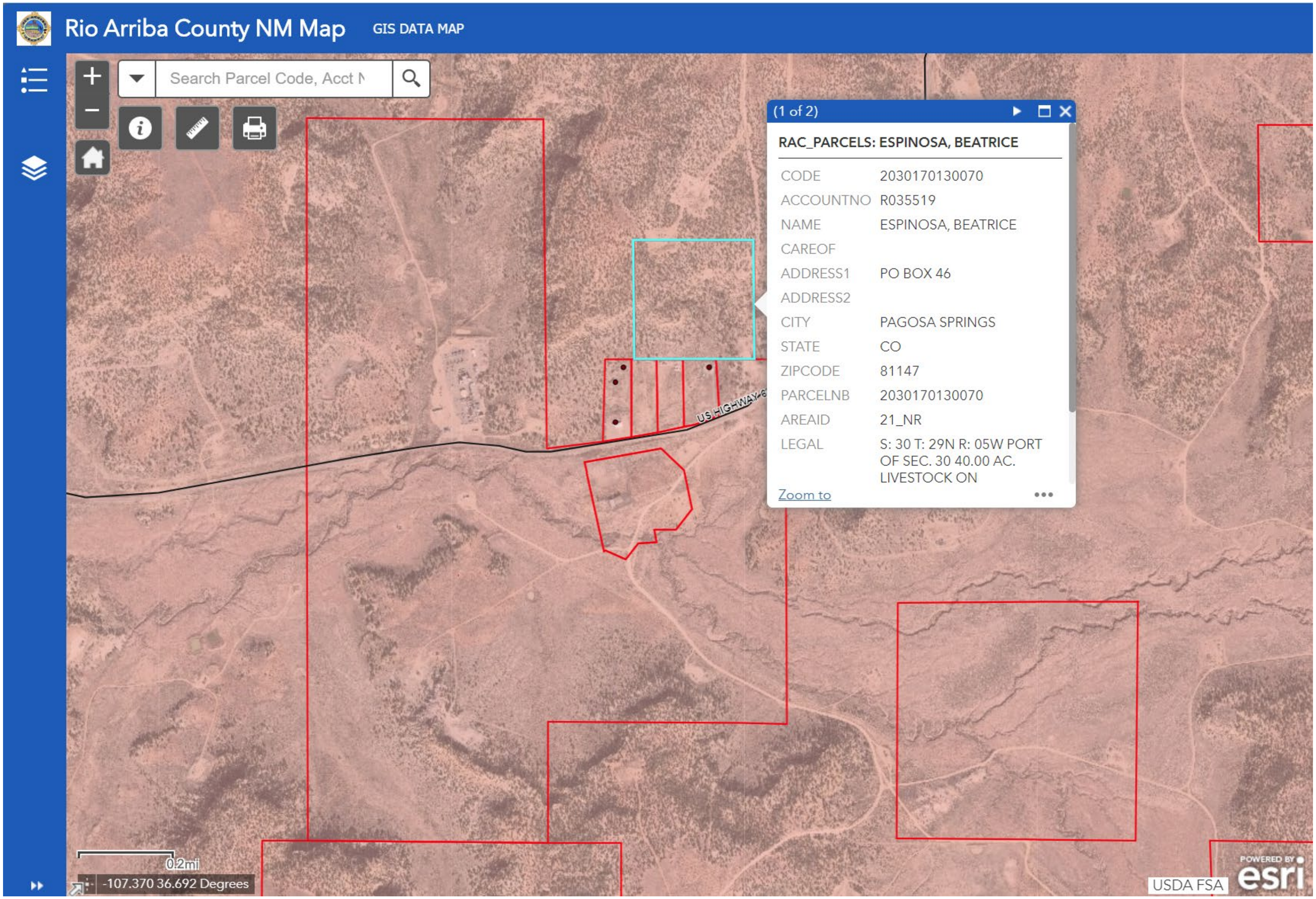
0 0.28 0.55 1.1 km

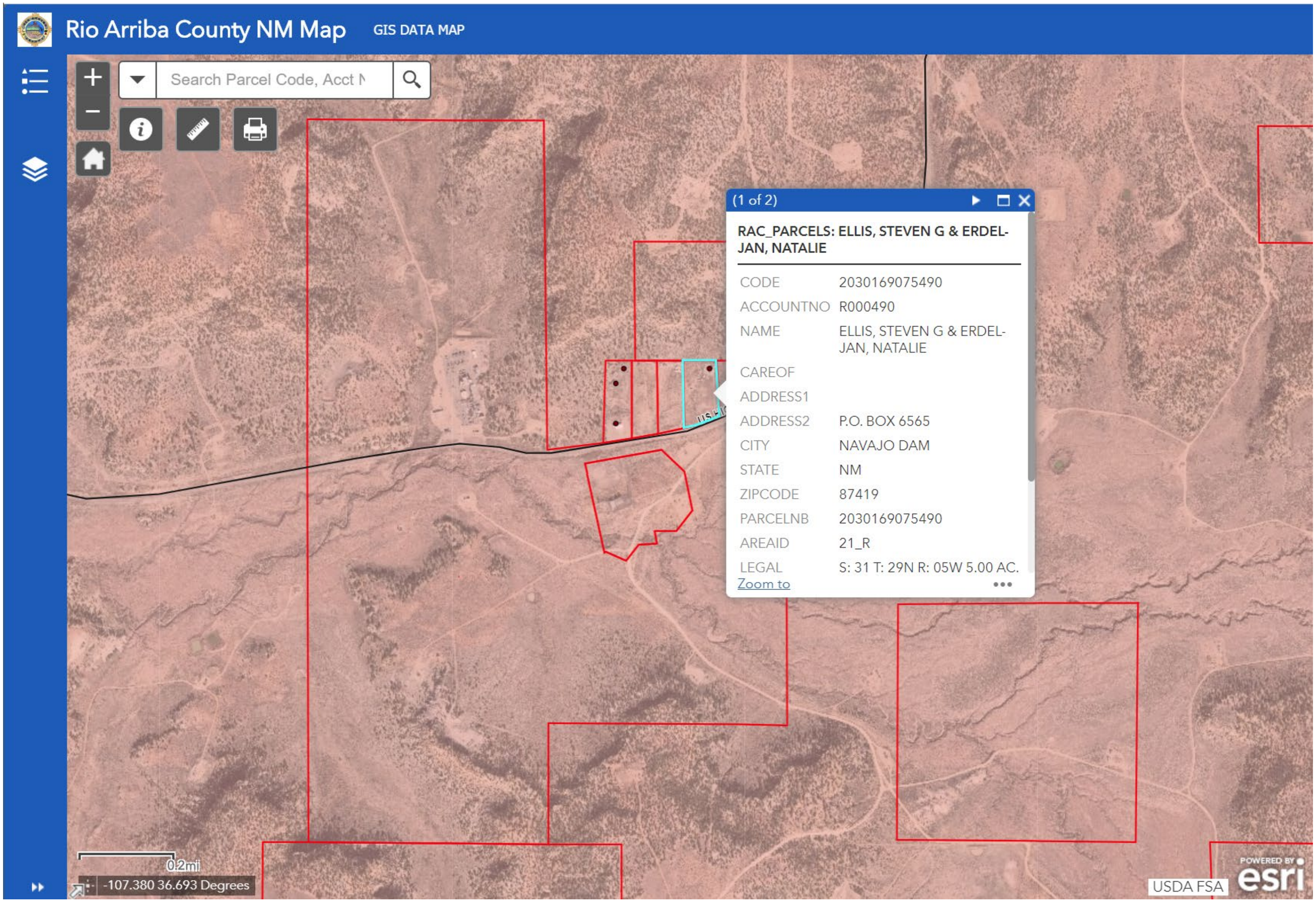
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Web AppBuilder for ArcGIS
USDA FSA |

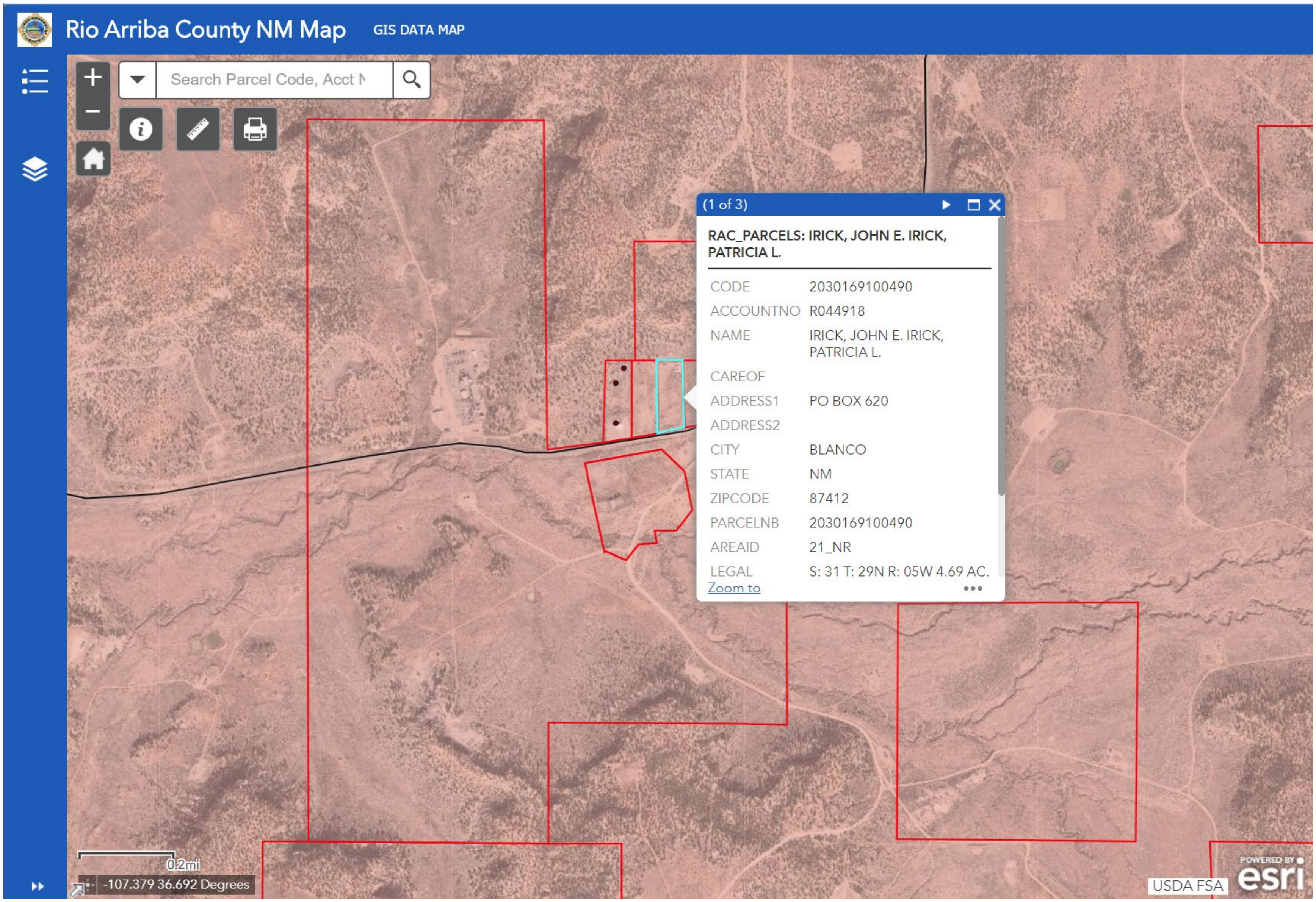

Rio Arriba County NM Map
GIS DATA MAP
Search Parcel Code, Acct N
US HIGHWAY 64
(1 of 2)
RAC_PARCELS: GOMEZ FAMILY PROPERTY LCC, A NEW MEXICO LIMITED LIABILITY COMPANY
CODE 2030171330264
ACCOUNTNO R000495
NAME GOMEZ FAMILY PROPERTY LCC, A NEW MEXICO LIMITED LIABILITY COMPANY
CAREOF
ADDRESS1 432 PARKLAND DR
ADDRESS2
CITY AZTEC
STATE NM
ZIPCODE 87410
PARCELNB 2030171330264
Zoom to
0.2mi
-107.370 36.686 Degrees
USDA FSA
POWERED BY esri

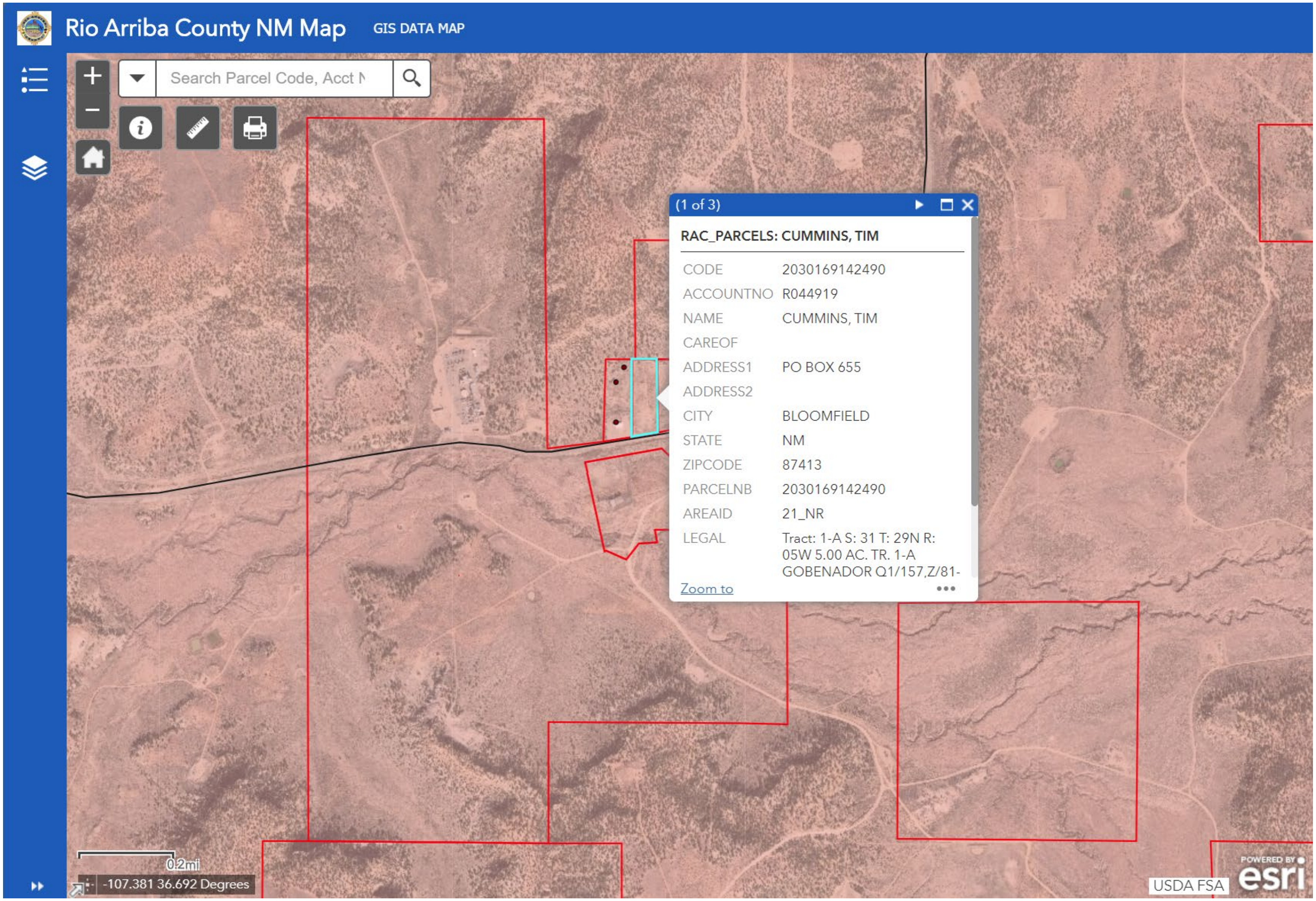

Rio Arriba County NM Map
GIS DATA MAP
Search Parcel Code, Acct N
(1 of 3)
RAC_PARCELS: BOARD OF EDUCATION OF THE DULCE IND. SCHOOL DIST 21
CODE 2030169156462
ACCOUNTNO R042040
NAME BOARD OF EDUCATION OF THE DULCE IND. SCHOOL DIST 21
CAREOF
ADDRESS1 PO BOX 547
ADDRESS2
CITY DULCE
STATE NM
ZIPCODE 87528
PARCELNB 2030169156462
AREAID 21_NR
Zoom to
0.2mi
-107.370 36.688 Degrees
USDA FSA
POWERED BY esri


Rio Arriba County NM Map
GIS DATA MAP
Search Parcel Code, Acct N
(1 of 2)
RAC_PARCELS: ESPINOSA, BEATRICE
CODE 2030170130070
ACCOUNTNO R035519
NAME ESPINOSA, BEATRICE
CAREOF
ADDRESS1 PO BOX 46
ADDRESS2
CITY PAGOSA SPRINGS
STATE CO
ZIPCODE 81147
PARCELNB 2030170130070
AREAID 21_NR
LEGAL S: 30 T: 29N R: 05W PORT OF SEC. 30 40.00 AC. LIVESTOCK ON
Zoom to
US HIGHWAY 6
0.2mi
-107.370 36.692 Degrees
USDA FSA
POWERED BY esri

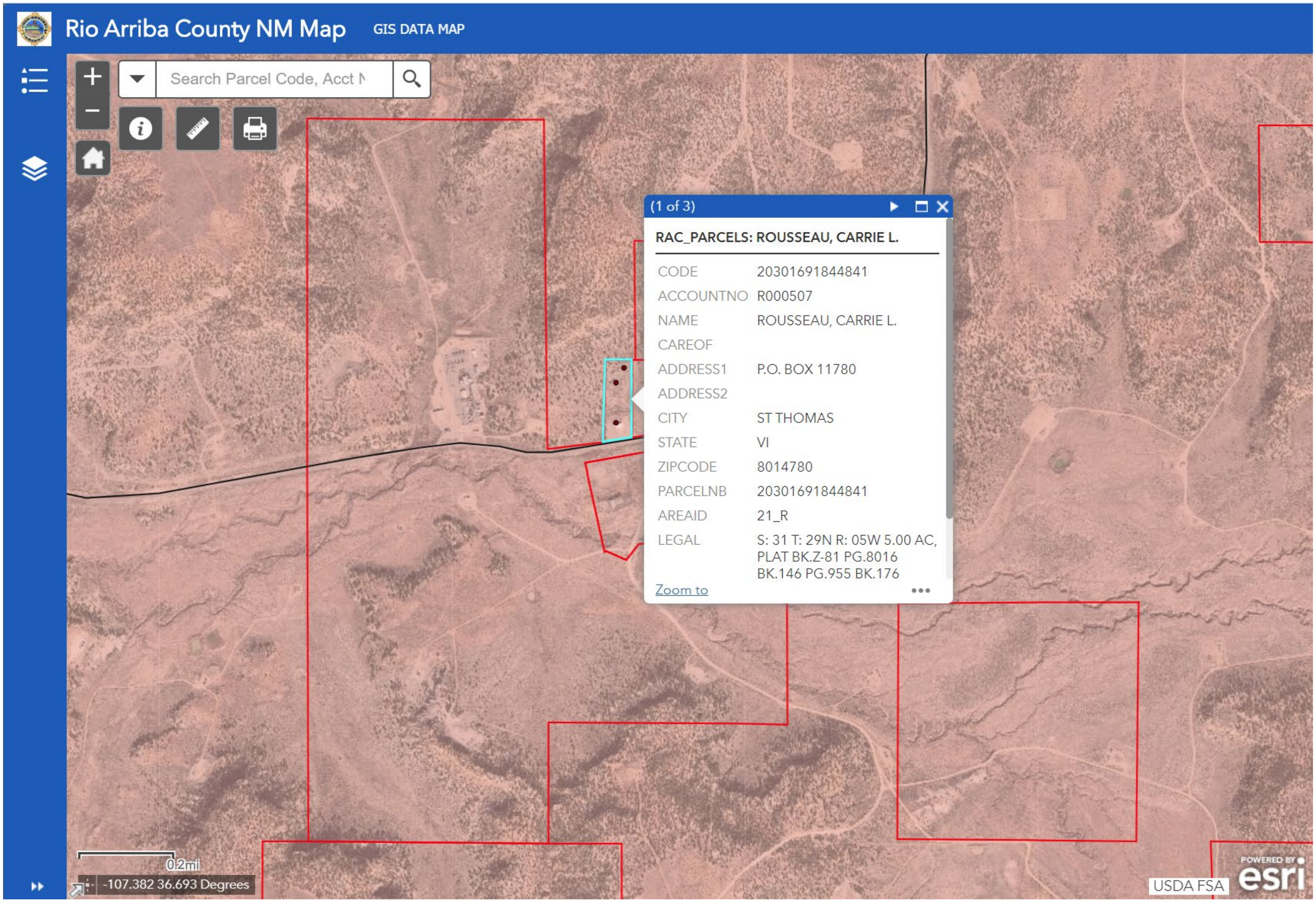


Rio Arriba County NM Map
GIS DATA MAP
Search Parcel Code, Acct N
(1 of 2)
RAC_PARCELS: ELLIS, STEVEN G & ERDEL-JAN, NATALIE
CODE 2030169075490
ACCOUNTNO R000490
NAME ELLIS, STEVEN G & ERDEL-JAN, NATALIE
CAREOF
ADDRESS1
ADDRESS2 P.O. BOX 6565
CITY NAVAJO DAM
STATE NM
ZIPCODE 87419
PARCELNB 2030169075490
AREAID 21_R
LEGAL S: 31 T: 29N R: 05W 5.00 AC.
Zoom to
0.2mi
-107.380 36.693 Degrees
USDA FSA
POWERED BY esri


Rio Arriba County NM Map
GIS DATA MAP
Search Parcel Code, Acct N
(1 of 3)
RAC_PARCELS: IRICK, JOHN E. IRICK, PATRICIA L.
CODE 2030169100490
ACCOUNTNO R044918
NAME IRICK, JOHN E. IRICK, PATRICIA L.
CAREOF
ADDRESS1 PO BOX 620
ADDRESS2
CITY BLANCO
STATE NM
ZIPCODE 87412
PARCELNB 2030169100490
AREAID 21_NR
LEGAL S: 31 T: 29N R: 05W 4.69 AC.
Zoom to
0.2mi
-107.379 36.692 Degrees
USDA FSA
POWERED BY esri



Rio Arriba County NM Map
GIS DATA MAP
Search Parcel Code, Acct N
(1 of 3)
RAC_PARCELS: CUMMINS, TIM
CODE 2030169142490
ACCOUNTNO R044919
NAME CUMMINS, TIM
CAREOF
ADDRESS1 PO BOX 655
ADDRESS2
CITY BLOOMFIELD
STATE NM
ZIPCODE 87413
PARCELNB 2030169142490
AREAID 21_NR
LEGAL Tract: 1-A S: 31 T: 29N R: 05W 5.00 AC. TR. 1-A GOBENADOR Q1/157,Z/81-
Zoom to
0.2mi
-107.381 36.692 Degrees
USDA FSA
POWERED BY esri



Rio Arriba County NM Map
GIS DATA MAP
Search Parcel Code, Acct N
(1 of 3)
RAC_PARCELS: ROUSSEAU, CARRIE L.
CODE 20301691844841
ACCOUNTNO R000507
NAME ROUSSEAU, CARRIE L.
CAREOF
ADDRESS1 P.O. BOX 11780
ADDRESS2
CITY ST THOMAS
STATE VI
ZIPCODE 8014780
PARCELNB 20301691844841
AREAID 21_R
LEGAL S: 31 T: 29N R: 05W 5.00 AC, PLAT BK.Z-81 PG.8016 BK.146 PG.955 BK.176
Zoom to
0.2mi
-107.382 36.693 Degrees
USDA FSA
POWERED BY esri

NOTICE

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 March 20, 2020.

The exact location of the facility, known as the El Cedro Compressor Station, is latitude 36 deg, 41 min, 21.0 sec and longitude -107 deg, 24 min, 06.8 sec. The approximate location of this facility is 18 miles east southeast of Navajo Dam, New Mexico (drive east from Bloomfield, New Mexico on Highway 64 to mile marker 100.5, facility is on the left).

The proposed modifications are to increase condensate throughput to the storage tanks, increase produced water throughput to the storage tanks, increase truck loading throughput, and increase pig receiver throughput.

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

	Pounds Per Hour	Tons Per Year
Nitrogen Oxides (NO_X)	106.0	319.0
Carbon Monoxide (CO)	149.0	446.0
Volatile Organic Compounds (VOCs)	53.0	253.0
Sulfur Dioxide (SO_2)	1.0	3.0
Particulate Matter Less Than 10 Microns (PM_{10})	3.0	11.0
Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)	3.0	11.0
Total Sum of all Hazardous Air Pollutants (HAPs)	14.0	42.0
Green House Gas Emissions as Total CO_2e	N/A	237,700.0

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.

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.

General Posting of Notices – Certification

I, Kijun Hong, the undersigned, certify that on March 19th, 2020, I posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in Rio Arriba and San Juan Counties, State of New Mexico on the following dates:

	Posting Location	Date of Posting
1.	El Cedro Facility Entrance	3/19/2020
2.	Blanco Post Office, Blanco NM 87412	3/19/2020
3.	Bloomfield Post Office, Bloomfield NM 87413	3/19/2020
4.	Bloomfield Public Library, Bloomfield NM 87413	3/19/2020

Signed this 19th day of March, 2020,

Signature — 3/19/2020 Date

Kijun Hong
Printed Name

Environmental Specialist
Title (Applicant or Relationship to Applicant)

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 El Cedro Compressor Station located 18 miles east southeast of Navajo Dam, New Mexico (drive east from Bloomfield, New Mexico on Highway 64 to mile marker 100.5, facility is on the left).

The proposed modifications are to increase condensate throughput to the storage tanks, increase produced water throughput to the storage tanks, increase truck loading throughput, and increase pig receiver throughput.

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

1. El Cedro Facility Entrance
2. Blanco NM Post Office
3. Bloomfield NM Post Office
4. Bloomfield NM 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 March 20, 2019, I submitted a public service announcement to Farmington Regional Radio that serves Rio Arriba County, State of New Mexico, in which the source is located and that Farmington Regional Radio did not respond.

Signed this 20th day of March, 2020,

James W. Newby
Signature

3/20/2020
Date

James W. Newby
Printed Name

Sr. Environmental Engineer, Cirrus Consulting, LLC
Title (Applicant or Relationship to Applicant)

General

General

Miscellaneous

Memory Garden section A lot 196, spaces 5 & 6, lot 210, space 12 $1,700 ea. 719-597-4067

Legal Notices

LEGAL NOTICE
REQUEST FOR PROPOSALS

Public notice is hereby given that the AZTEC MUNICIPAL SCHOOL DISTRICT, AZTEC NEW MEXICO, desires to procure the following:

Audit Services
Price Agreement
RFP 2020-05

Details and specifications are set forth in the solicitation documents, copies of which may be obtained from the Procurement Office 1118 W Aztec Blvd, Aztec, New Mexico 87410 (proposal receiving site) or www .aztecschools.com

Sealed proposals for such will be received at the Procurement Office until 3:30 PM (MST) on April 15, 2020. Envelopes are to be sealed and plainly marked with the title of RFP 2020-05 Audit Services, and the Opening Date of April 15, 2020. No FAXED PROPOSALS or ELECTRONIC proposal submissions, nor proposals submitted after the specified date and time will be considered and will be returned. The Aztec Municipal School District Procurement Committee reserves the right to accept or reject any or all proposals and to waive any formalities on minor inconsistencies.

Dated the 20th Day of March 2020
By: /S/ Monica Sosa, Chief Procurement Officer
Aztec Municipal School District
BID ISSUE DATE: March 20, 2020
#4117690, Daily Times, March 20-25, 2020.

Legal Notices

Legal Notices

STATE OF NEW MEXICO
COUNTY OF SAN JUAN
ELEVENTH JUDICIAL DISTRICT
NO. D-1116-CV-2019-00937

BOKF, N.A., Plaintiff,
v.
KEVIN R. PIERCE, RACHEL PIERCE, SPRINGLEAF FINANCIAL SERVICES, INC., A DELAWARE CORPORATION, Defendants.

NOTICE OF SALE

NOTICE IS HEREBY GIVEN that the undersigned Special Master will on April 16, 2020 at 2:00 PM, outside the front entrance of the San Juan County Courthouse, 103 South Oliver Drive, City of Aztec, County of San Juan, State of New Mexico, sell and convey to the highest bidder for cash all the right, title, and interest of the above-named defendants in and to the following described real estate located in said County and State:
A parcel of land designated as Lot 4 situated in the Northeast Quarter (NE/4) of Section Twenty-Nine (29) in Township Thirty (30) North of Range Thirteen (13) West, N.M.P.M., San Juan County, New Mexico and is more particularly described as follows:
Beginning at the Northeast corner of the herein described parcel of land which from the Northeast corner of Section 29, T-30-N, R-13-W, N.M.P.M., bears South 36°50' West 1091.6 feet;
THENCE North 89°47' West 206.36 feet to a point on the East right-of-way line of State Road No. 17;
THENCE South 16°59'15" West 103.74 feet;
THENCE South 89°47' East 205.48 feet;
THENCE North 17°27'07" East 104 feet to the point of beginning;
LESS AND EXCEPT that certain parcel of land from Hal C. Richman and Bonnie K. Richman to State Highway Department of New Mexico as described in Warranty Deed recorded in Book 1092, page 96 of the Records of said County, described as follows:
(5-9) A certain tract or parcel of land lying and being situate in the NE/4 of Sec. 29, T.30N., R.13W., NMPM, County of San Juan, State of New Mexico, being more particularly bounded and described as follows, to wit:
Beginning at the Northeast corner of said Sec. 29;
THENCE S.35°53'01" W. 1084.27 feet (S.36°50'W. 1091.6 feet, deed); THENCE S. 89°49'57" W. 204.05 feet (N. 89°47'W. 206.36 feet, deed) to a point on a 1.501° curve of the Easterly right of way of NMP-S105(1), County of San Juan, State of New Mexico and the TRUE POINT OF BEGINNING of the herein described Tract or Parcel of Land, and from which point a radial line to the radius point bears N. 74°28'43" W.; THENCE Southwesterly along said right of way curve (radius 3817.62 feet chord S.16°18'00"W., 103.74 feet) thru an arc of 01°33'25" to the right, a distance of 103.74 feet (S.16°59'15"W., 103.74 feet, deed); THENCE N.89°53'19" E. 17.72 feet (S.89°47"E., deed) to a point on a 0.991 curve of the Easterly right of way of NMP RS-1331 (5), County of San Juan, State of New Mexico, and from which point a radial line to the radius point bears N. 72°00'21"W.; THENCE Northeasterly along said right of way curve (radius 5784.58 feet, chord N.17°28'37" E., 104.41 feet) thru an arc of arc of 01°02'03" to the left, a distance of 104.41 feet; THENCE S.89°49'57"W. 19.97 feet (N.89°47'W., deed) to the TRUE POINT OF BEGINNING.
The address of the real property is 382 Hwy 170, Farmington, NM 87401. Plaintiff does not represent or warrant that the stated street address is the street address of the described property; if the street address does not match the legal description, then the property being sold herein is the property more particularly described above, not the property located at the street address; any prospective purchaser at the sale is given notice that it should verify the location and address of the property being sold. Said sale will be made pursuant to the judgment entered on February 20, 2020 in the above entitled and numbered cause, which was a suit to foreclose a mortgage held by the above Plaintiff and wherein Plaintiff was adjudged to have a lien against the above-described real estate in the sum of $53,743.38 plus interest from September 30, 2019 to the date of sale at the rate of 7.725% per annum, the costs of sale, including the Special Master's fee, publication costs, and Plaintiff's costs expended for taxes, insurance, and keeping the property in good repair. Plaintiff has the right to bid at such sale and submit its bid verbally or in writing. The Plaintiff may apply all or any part of its judgment to the purchase price in lieu of cash.
At the date and time stated above, the Special Master may postpone the sale to such later date and time as the Special Master may specify.
NOTICE IS FURTHER GIVEN that this sale may be subject to a bankruptcy filing, a pay off, a reinstatement or any other condition that would cause the cancellation of this sale. Further, if any of these conditions exist, at the time of sale, this sale will be null and void, the successful bidder's funds shall be returned, and the Special Master and the mortgagee giving this notice shall not be liable to the successful bidder for any damages.
NOTICE IS FURTHER GIVEN that the real property and improvements concerned with herein will be sold subject to any and all patent reservations, easements, all recorded and unrecorded liens not foreclosed herein, and all recorded and unrecorded special assessments and taxes that may be due. Plaintiff and its attorneys disclaim all responsibility for, and the purchaser at the sale takes the property subject to, the valuation of the property by the County Assessor as real or personal property, affixture of any mobile or manufactured home to the land, deactivation of title to a mobile or manufactured home on the property, if any, environmental contamination on the property, if any, and zoning violations concerning the property, if any.
NOTICE IS FURTHER GIVEN that the purchaser at such sale shall take title to the above-described real property subject to rights of redemption.

Margaret Lake
Special Master
Pro Legal Services, LLC
201 Eubank Blvd. NE, Suite A1
Albuquerque, NM 87123
(505)715-3711

Legal Notices

Legal Notices

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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 March 20, 2020.

The exact location of the facility, known as the El Cedro Compressor Station, is latitude 36 deg, 41 min, 21.0 sec and longitude -107 deg, 24 min, 06.8 sec. The approximate location of this facility is 18 miles east southeast of Navajo Dam, New Mexico (drive east from Bloomfield, New Mexico on Highway 64 to mile marker 100.5, facility is on the left).

The proposed modifications are to increase condensate throughput to the storage tanks, increase produced water throughput to the storage tanks, increase truck loading throughput, and increase pig receiver throughput.

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
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Particulate Matter Less Than 2.5 Microns (PM2.5)	3.0	11.0
Total Sum of all Hazardous Air Pollutants (HAPs)	14.0	17.4
Green House Gas Emissions as Total CO2e	N/A	237,700.0

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.
#4115587, Daily Times, March 20, 2020

March 20 - Prime Time

1 Comcast Farmington 2 Shiprock 3 Charter Durango/ Dolores 4 DISH 5 DirecTV

	1	2	3	4	5	6PM	6:30	7PM	7:30	8PM	8:30	9PM	9:30	10PM	10:30	11PM	11:30
CW KWGN 2	-	-	20	-	-	Bang	Bang	(:59) Channel 2 News at 7 (N)		Penn & Teller: Fool Us		Whose Line	Whose Line	Men	Men	News (N)	(:35) Family
CW KCNC 4	-	-	-	-	-	News (N)	News (N)	MacGyver Helman returns.		Hawaii Five-0: Ua 'eha ka 'ili.		Blue Bloods: Standards.		News (N)	Late Show Will Ferrell.		(:37) Corden
PBS KRMA 6	-	-	9	-	-	The PBS NewsHour (N)		Wash. Week	Arts District	Great Perf	TBA	Great Performan (N)		American Masters: The Highwaymen. Country supergroup.			
NBC KUSA 9	-	-	15	-	-	9NWS6P-NX	ET (N)	The Blacklist: Victoria. (N)		Dateline NBC: The Ranch. (N)				News (N)	Tonight Show BTS.		Late Night
NBC KOB 4	4	12	-	4	4	Eyewitness News 4 at 6	News 4 at 6:30 (N)	The Blacklist: Red tracks an art forger. (N)		Dateline NBC (N)				Eyewitness News 4 at 10	(:45) The Tonight Show Starring Jimmy Fallon BTS.		Late Night Keke Palmer.
PBS KNME 5	5	5	-	5	5	The PBS NewsHour (N)		New Mexico in Focus (N)		Washington Week (N)	Longevity Paradox with Steven Gundry, MD Healthy aging. (N)			Aging Backwards 3 with Miranda Esmonde-White (N)		Amanpour and Company (N)	
ABC KOAT 7	7	7	7	7	7	Action 7 News Live (N)	Entertainment Tonight (N)	Shark Tank A real-estate concept is pitched. (N)		(:01) 20/20 Investigative journalists report on various news stories from around the world.				News (N)	(:35) Nightline (N)	(:05) Jimmy Kimmel Live	
CBS KRQE 13	13	-	13	13	13	Jeopardy! (N)	Wheel of Fortune (N)	MacGyver: Murdoc + Helman. Helman returns.		Hawaii Five-0: Ua 'eha ka 'ili. Dangerous assassin.		Blue Bloods: Standards. Police treatment.		KRQE News 13 at 10 PM	Late Show with Stephen Colbert Will Ferrell.		Late Late Show
FOX KRQE2 13.2	2	-	-	2	16	News (N)	News (N)	WWE Friday Night SmackDown (Taped)				KRQE News 13 at 9 PM	News (N)	Jeopardy!	(:35) News (N)	(:05) DailyMailTV (N)	(:35) DailyMailTV (N)
CW KWBQ 19	12	-	-	19	19	Big Bang Theory	Big Bang Theory	Penn & Teller: Fool Us: Magic Is Bad. Lucy Darling.		Whose Line Is It Anyway?	Whose Line Is It Anyway?	Mom: Tush Push.	Mom: Corned Beef.	Two and a Half Men	Two and a Half Men	Seinfeld: Yada Yada.	Seinfeld: Bubble Boy.
MNT KASY 50	6	-	-	50	50	Family Feud	Family Feud	CSI: Miami: Killer Regrets.		CSI: Miami: By the Book.		News (N)	News (N)	Funny You	(:35) News (N)	Pawn Stars	Pawn Stars
A&E	52	-	30	118	265	Live PD: Rewind (N)		Live PD: Live PD - 03.30.19.						Live PD: Live PD - 03.30.19.			
AMC	37	-	47	131	254	I Am Legend ★★★ (2007, Science Fiction) Will Smith. 'PG-13'				The Book of Eli (2010, Drama) Denzel Washington. A nomad and a book. 'R'					The Walking Dead (TVMA)		Dispatches
CNN	323	3	29	200	202	Anderson Cooper 360° (N)		Anderson Cooper 360° (N)		Cuomo Prime Time (N)		Cuomo Prime Time (N)		Anderson Cooper 360°		Anderson Cooper 360°	
COM	47	-	60	107	249	South Park	South Park	South Park	South Park: Urinal Deuce.		South Park	South Park	South Park	South Park	South Park	South Park	South Park
DISC	16	6	66	182	278	Gold Rush: Proving Grounds. Mining in the Palmer goldfields. (N)						Outback Opal Hunters (N)		Gold Rush: Proving Grounds. Rich pay dirt.			
DISN	31	18	38	173	291	Jessie	(:35) Descendants 3 (2019, Family) Dove Cameron. 'NR'				Descendant	BUNK'D (N)	Unsittable (N)	Owl House	Raven	Disney Fam	Sydney
ESPN	30	10	27	140	206	(5:00) Fab Five		SportsCenter Special: NFL Free Agency.				SportsCenter		SportsCenter		SportsCenter	
FNC	18	-	49	205	360	Tucker Carlson Tonight (N)		Hannity (N)		The Ingraham Angle (N)		FOX News @ Night with Shannon Bream News reports. (N)				Coronavirus Pan (N)	
FREE	36	4	34	180	311	Family Guy	Family Guy	Family Guy	Family Guy	Family Guy	Family Guy	The 700 Club		Kung Fu Panda 2 ★★★ (2011, Comedy) Jack Black. 'PG'			
FSN	38	-	-	415	686	Football	Arizona Prep	Football	NBA Basketball: Los Angeles Clippers at Phoenix Suns (Replay)					Fight Sports World Class Championship Boxing: Usyk.			
FX	41	-	523	136	248	Kingsman: The Secret Service (2015, Action) Colin Firth. 'R'				Kingsman: The Golden Circle ★★★ (2017, Action) Taron Egerton. World taken hostage. 'R'						The Weekly	The Weekly
HALL	17	-	56	185	312	Picture a Perfect Christmas (2019) Merritt Patterson.				Golden	Golden	Golden	Golden	Golden	Golden	Frasier	Frasier
LIFE	23	-	32	108	252	Queens	(:33) Queens	(:03) Queens	(:33) Queens	(:03) Queens	(:33) Queens	(:03) Queens	(:33) Queens	(:01) Queens	(:34) Queens	(:04) Queens	(:34) Queens
NICK	34	8	35	170	299	Henry Danger		Dylan (TVY7)	Substitute	Friends	Friends	Friends	Friends	Friends	Friends	Friends	(:35) Friends
PARMT	22	17	43	241	241	Grown Ups	Sweet Home Alabama ★★½ (2002, Comedy) Reese Witherspoon. 'PG-13'					Grown Ups ★★½ (2010, Comedy) Adam Sandler. Teammates reunite. 'PG-13'					Sweet Home
TBS	15	11	17	139	247	(5:00) Battleship (2012) Taylor Kitsch. 'PG-13'			The Wolverine (2013, Action) Hugh Jackman. Enemy from the past. 'PG-13'					ELEAGUE: Street Fighter.		Jack the Giant Slayer 'PG-13'	
TCM	501	-	62	132	256	A Big Hand for the Little Lady ★★★ (1966) Henry Fonda. 'NR'				Frankie and Johnny (1966) Elvis Presley. 'NR'			(:45) Any Number Can Play (1949, Drama) Clark Gable. Casino owner. 'NR'				
TLC	20	-	25	183	280	90 Day Fiancé: Before the 90 Days: More to Love. (N)				90 Day (N)	90 Day Fiancé: Pillow Talk.		90 Day	90 Day Fiancé: Before the 90 Days: More to Love.			
TNT	43	20	26	138	245	Accountant	Suicide Squad ★★★ (2016, Action) Will Smith. Villains team-up. 'PG-13'					Tacoma FD	Tacoma FD	Batman vs Superman: Dawn of Justice ★★★ (2016) 'PG-13'			
UNI	26	-	5	41	41	Ringo Corazón de campeón.		Amor eterno Amor a prueba.		Sin miedo a la verdad		Noticiero (N)	Noticiero (N)	Contacto deportivo		Combate (Pregrabado)	
USA	40	22	45	105	242	Law & Order: SVU: Plastic.		Law & Order: SVU A suicide.		Law & Order: SVU		Family	Family	Family	Family	Family	Family
WGN-A	64	9	-	239	307	Man	Man	Man	Man	Man	Man	Man 5k race.	Man	Married	Married	Married	Married
ENCORE	518	21	444	341	536	(:04) Smokin' Aces ★★★ (2007, Crime) Ben Affleck. 'R'				From Hell (2001, Horror) Johnny Depp. Grisly murders. 'R'				The Haunting in Connecticut (2009) 'PG-13'			(:45) Drag Me
HBO	551	-	318	303	504	Hunter Killer (2018, Thriller) Gerard Butler. Russian coup. 'R'				(:10) Westworld: Parce Domine. (TVMA)			Along Came Polly (2004) Ben Stiller. 'PG-13'			Real Time with Bill Maher	
MAX	561	-	349	311	516	Night School (2018) 'PG-13'		Halloween ★★★ (2018) Jamie Lee Curtis. 'R'			(:50) Widows ★★★½ (2018, Drama) Viola Davis. Husbands' debt. 'R'					Strike Back	Strike Back
SHO	576	2	378	319	546	The Upside (2019) 'PG-13'		(:15) Faster ★★½ (2010, Action) Dwayne Johnson. 'R'				Black Mon.	Black Mon.	The Trade U.S. border. (N)		Unlocked ★★½ (2017) 'R'	
STARZ	534	-	421	351	526	(5:17) Live Free or Die Hard (2007) 'PG-13'			BrightBurn (2019, Horror) Elizabeth Banks. 'R'			Spider-Man: Far From Home (2019) Tom Holland. 'PG-13'				(:12) Outlander: Perpetual.	

Legal Notices Legal Notices Legal Notices

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Bloomfield, New Mexico 87413

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#4115587, Daily Times, March 20, 2020

50★States

News from across the USA

ALABAMA Gulf Shores: The state on Thursday ordered the closure of day cares, beaches and on-site dining in restaurants.

ALASKA Juneau: Alaska received a statewide waiver from work requirements for food stamp recipients, the state health commissioner said Wednesday, as new coronavirus cases in Alaska also were announced.

ARIZONA Phoenix: Arizona State University's Biodesign Institute hopes to dramatically increase available coronavirus testing by using robots that can process a high volume of samples simultaneously, with a goal of opening a drive-thru testing site for the public as early as Monday.

ARKANSAS Little Rock: The city on Thursday temporarily prohibited in-person service at restaurants and bars as the number of coronavirus cases in the state continued to rise. Little Rock Mayor Frank Scott announced the closure will take effect at 8 a.m. Friday.

CALIFORNIA Sacramento: As worries about the spread of the coronavirus confine millions of Californians to their homes, concern is growing about those who have no homes in which to shelter. Gov. Gavin Newsom estimates up to 60,000 homeless could end up infected. .

COLORADO Denver: The state is suspending in-person classes at all schools, ordering longer ski resort closures and prohibiting gatherings of more than 10 people in an effort to stem the spread of the coronavirus, Gov. Jared Polis said Wednesday.

CONNECTICUT New Canaan: A 91-year-old New Canaan man who was hospitalized with the coronavirus has died, becoming the state's second victim of the virus, a local official announced at a Town Council meeting Wednesday night.

DELAWARE Dover: The Legislature is shut down until further notice because of the new coronavirus outbreak, but the state's restaurant industry is toasting the governor's modification to restrictions on operations to allow alcohol sales for takeout and drive-thru services.

DISTRICT OF COLUMBIA Washington: Some D.C. restaurants are delivering alcohol to make up for lost profits, WUSA-TV reports. On Tuesday, the D.C. Council passed the COVID-19 Response Emergency Amendment Act of 2020 to help businesses and laid-off workers.

FLORIDA Tampa: Hillsborough Sheriff Chad Chronister announced he's ordered the release of 164 inmates who are accused of nonviolent crimes to help reduce the risk of the new coronavirus spreading in the jail.

GEORGIA Atlanta: The state's death toll from the coronavirus jumped to 10 on Thursday as health officials also reported a sizable increase in the number of confirmed infections statewide.

HAWAII Honolulu: Two cruise ships won't be allowed to disembark in the state after being turned away by other ports, even with no positive cases of coronavirus on either vessel, officials said Wednesday.

IDAHO Boise: Lt. Gov. Janice McGeachin has left the Statehouse and returned to Idaho Falls, leaving Senate President Pro-Tem Brent Hill to finish out presiding over the legislative session.

ILLINOIS Chicago: Anyone in the city with a confirmed case of COVID-19 or who is showing symptoms of the disease must stay indoors, health officials announced Thursday.

INDIANA Indianapolis: The governor on Thursday ordered all public and private schools across the state to remain closed to students until at least May 1.

IOWA Iowa City: Nine additional cases of COVID-19 were confirmed Wednesday in Iowa, bringing the state's total to 38.

KANSAS Topeka: Conservative Republican lawmakers moved Wednesday to limit their Democratic governor's emergency powers, including the ability to establish quarantine zones if the need arises.

KENTUCKY Frankfort: The governor has extended public assistance eligibility as a short-term cushion for people as the state copes with the economic fallout from the new coronavirus.

LOUISIANA Baton Rouge: The number of people known to be infected with the coronavirus jumped to 347 in figures the state posted Thursday, up from 280 a day earlier. The death toll stood at eight.

MAINE North Haven: This island community has rescinded its order banning visitors and seasonal residents because of the pandemic.

MARYLAND Maryland: Gov. Larry Hogan ordered enclosed malls and entertainment venues to shut down by 5 p.m. Thursday and waived weight limits on trucks needed to move supplies

MASSACHUSETTS Boston: Gov. Charlie Baker on Wednesday ordered all early education centers and family child care providers to close effective March 23.

MICHIGAN Detroit: The state signed off on $20 million in grants and loans to small businesses harmed by the coronavirus, while the number of cases tied to the outbreak rose Thursday, with three deaths recorded.

MINNESOTA St. Paul: New applications for unemployment insurance in the state for the week topped 50,000 on Wednesday as closures of bars, restaurants and other businesses to slow COVID-19's spread took a toll on the economy.

MISSISSIPPI Jackson: The state's public schools will be closed until at least April 17 to curb the spread of the new coronavirus, Gov. Tate Reeves said Thursday.

MISSOURI Kansas City: Anyone entering a Missouri Department of Corrections office or facility will undergo enhanced screening in an effort to slow the spread of the coronavirus, state officials say.

MONTANA Helena: Montana Secretary of State Corey Stapleton plans to wait for more information about the coronavirus outbreak before deciding whether to change the state's June 2 primary election date.

NEBRASKA Lincoln: There's been a run on toilet paper as Americans hunker down and isolate themselves at home. But some people in Nebraska are finding it – and stealing it – at Interstate 80 rest stops. As a result of the thefts, the state Transportation Department said, rest areas will be closed when an attendant is not present.

NEVADA Las Vegas: The city's airport was running Thursday with reduced operations after an air traffic controller tested positive for the coronavirus, temporarily closing the airport's control tower, the Federal Aviation Administration said.

NEW HAMPSHIRE Hopkinton: Three people who planned to attend political and religious events in the next few weeks are challenging a statewide emergency ban on gatherings of 50 people or more to prevent spread of the coronavirus, arguing that there is no emergency and that the governor is violating their constitutional rights.

NEW JERSEY Trenton: Nine people in the state have died from the coronavirus, Gov. Phil Murphy said Thursday, including three who lived in nursing home facilities.

NEW MEXICO Santa Fe: The state is bracing for the possible spread of coronavirus to some of America's most remote, impoverished communities, as hospitals prepare to convert operating rooms into acute respiratory care units.

NEW YORK Albany: Gov. Andrew Cuomo tightened work-from-home rules Thursday as confirmed cases continued to climb. New York has confirmed more than 4,000 cases statewide.

NORTH CAROLINA Raleigh: The governor said Thursday that the state has documented its first case of community spread of coronavirus as positive cases climbed to nearly 100. Overall, the state had 97 positive cases as of Thursday, up from about 60 the previous day, he said.

NORTH DAKOTA Fargo: Health officials said Thursday that the number of coronavirus cases in the state doubled in the prior 24 hours and that the state was prioritizing testing groups because of a shortage of nylon swabs.

OHIO Columbus: Gov. Mike DeWine has activated 300 members of the Ohio National Guard to help ensure needy communities get food, while the Ohio Department of Job and Family Services said it received 111,055 unemployment insurance benefit applications online in the past four days. .

OKLAHOMA Tulsa: A man in his 50s died, marking the state's first death linked to the coronavirus pandemic, health officials announced Thursday. The Tulsa County man tested positive for COVID-19 on Tuesday and died Wednesday, the Tulsa Health Department said.

OREGON Salem: A 250-bed medical station will be assembled at the Oregon State Fairgrounds to help address expected demand for treatment, Gov. Kate Brown said. Health authorities said Thursday that 13 more people have been diagnosed with the coronavirus. That brings the state's total to 88 cases.

PENNSYLVANIA Harrisburg: The state reported another big jump in confirmed coronavirus cases Thursday as Gov. Tom Wolf's administration sought to keep child care services open to families of health care workers and first responders on the front lines of fighting the outbreak. The state Department of Health reported that cases topped 180.

RHODE ISLAND Providence: Schools will be closed two more weeks, Gov. Gina Raimondo announced Wednesday. The Democrat says schools won't reopen until after April 3 at least.

SOUTH CAROLINA Columbia: The state House approved $45 million Thursday for health officials to fight the virus. The governor and Senate president were expected to take the almost unprecedented step of ratifying and signing the bill immediately.

SOUTH DAKOTA Sioux Falls: The state has obtained more supplies to run tests for COVID-19, Gov. Kristi Noem announced Thursday. She said the state lab would be prioritizing tests for people deemed to be at high risk for the coronavirus.

TENNESSEE Nashville: A death row inmate is seeking a stay of his execution in June due to the coronavirus pandemic. In a Tennessee Supreme Court filing Wednesday, attorneys for Oscar Smith wrote that the court can stay the execution for six months to let the outbreak run its course and let Smith's legal team conduct crucial work representing him.

TEXAS Houston: Cars lined up for more than a mile outside a hospital Thursday as the nation's fourth-largest city began drive-thru testing for the coronavirus, but officials warned they don't have enough kits or protective gear to meet demand. Gov. Greg Abbott ordered schools closed for more than 5 million students and shuttered restaurant dining rooms.

UTAH Salt Lake City: All of the public colleges and universities in the state have either canceled or postponed graduation ceremonies amid the pandemic, officials said.

VERMONT Montpelier: The state's Department of Labor has put in place new measures to accommodate the number of workers filing for unemployment as businesses have closed or reduced hours due to concerns about the new coronavirus.

VIRGINIA Richmond: State health officials on Thursday confirmed at least the second case of a person infected with the new coronavirus in an assisted living facility, this one in the Washington suburbs.

WASHINGTON Olympia: State health officials reported 13 new deaths from the coronavirus Wednesday, bringing the state tally of fatalities to 67 – the highest in the country. Also, Gov. Jay Inslee announced a 30-day statewide moratorium on residential evictions.

WEST VIRGINIA Charleston: Gov. Jim Justice loosened unemployment regulations Thursday for people whose jobs have been shuttered over concerns about the coronavirus.

WISCONSIN Madison: Absentee ballot requests for the state's April 7 presidential primary hit record territory Thursday thanks to concerns about COVID-19, with clerks processing more requests than ever before for a spring election.

WYOMING Cheyenne: State courts suspended all but the most pressing in-person proceedings Wednesday, while Gov. Mark Gordon overrode his own earlier remarks and fully endorsed federal guidelines to help control the coronavirus.

From USA TODAY Network and wire reports

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 March 20, 2020.

The exact location of the facility, known as the El Cedro Compressor Station, is latitude 36 deg, 41 min, 21.0 sec and longitude -107 deg, 24 min, 06.8 sec. The approximate location of this facility is 18 miles east southeast of Navajo Dam, New Mexico (drive east from Bloomfield, New Mexico on Highway 64 to mile marker 100.5, facility is on the left).

The proposed modifications are to increase condensate throughput to the storage tanks, increase produced water throughput to the storage tanks, increase truck loading throughput, and increase pig receiver throughput.

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)	106.0	319.0
Carbon Monoxide (CO)	149.0	446.0
Volatile Organic Compounds (VOCs)	53.0	253.0
Particulate Matter (PM)	1.0	3.0
Particulate Matter Less Than 10 Microns (PM10)	3.0	11.0
Particulate Matter Less Than 2.5 Microns (PM2.5)	3.0	11.0
Total Sum of all Hazardous Air Pollutants (HAPs)	14.0	42.0
Green House Gas Emissions as Total CO2e	N/A	237,700.0

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.

TX-GCI0392855-01

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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 El Cedro Compressor Station receives gas from two gathering systems: the San Juan Conventional (SJC) gathering system and Manzanares gathering system. The SJC stream is a high BTU gas, rich in heavier hydrocarbon components.

SJC Stream

The SJC gas must be compressed before it can be sent on to the Ignacio Plant. This is currently accomplished using six (6) reciprocating compressor packages, each driven by Waukesha 7042GL engines. Due to the high liquid hydrocarbon (condensate) content of the SJC stream, routine "pigging" is required. The hydrocarbon liquids captured by "pigging" are treated in a stabilizer unit and then transferred to storage tanks where they await transport to market.

Manzanares Stream

The Manzaneres gas must also be compressed before it is sent downstream. This is currently accomplished using seven (7) compressor packages, driven by two (2) Solar MARS 90-12000S turbines and five (5) Waukesha 7042GL engines.

Note: Two of the six reciprocating compressor packages identified for use with the SJC Stream are also included in the count of seven compressor packages identified for use with the Manzanares Stream. These two packages provide compression for both the SJC Stream and the Manzanares Stream, as required.

General

The El Cedro Compressor Station generates its own electrical power for use at the plant. It is permitted to operate two (2) generators: powered by one (1) Waukesha L7042G engine and one (1) Waukesha L7042GSI or F2895GSI engine. The plant is also equipped with one (1) emergency generator, driven by a Waukesha F2895GSI engine.

Fuel for the internal combustion engines, turbines and heaters is typically obtained from the Manzanares system.

It is estimated the plant will operate 24 hours per day, seven days per week, 52 weeks per year.

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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)**:**

El Cedro Compressor Station – compresses pipeline natural gas

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 not one of the listed 20.2.74.501 Table I – PSD Source Categories. The "project" emissions for this modification are not significant (see the attached netting analysis). The "project" emissions listed below only result from the changes described in this permit application (there are no emissions from other revisions or modifications to this facility, past or future). This project does not result in "de-bottlenecking" or other associated emissions resulting in higher emissions. The project emissions (before netting) for this project are as follows:

a. NOx: 0.0 TPY
b. CO: 0.0 TPY
c. VOC: 14.3 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: 0.0 TPY
k. GHG: 15.7 TPY

C. Netting is required, and the analysis is provided in this section.

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.

The following projects have taken place within the contemporaneous window for this project and are thus addressed:

- In February of 2019 an application was submitted to permit the option to replace Unit 18 with Unit 18a. This change of generators has no impact on any of the modifications proposed in this application.

- In May of 2019 an application was submitted to install a new produced water tank (Unit BGT-1). The purpose of this tank was to collect produced water (gravity drained) from the bottom of the existing condensate tanks after the contents of those tanks had been separated, stabilized and allowed to settle.

  The installation of this tank had no impact on the amount of produced water handled at the facility. It simply provided an alternative, and more efficient, method of collection. There was no change in emissions.

No other applications have been submitted in the last two years.

The required netting analysis is provided at the end of this section. The future potential emissions calculations are provided in Section 6. The documentation for those calculations is provided in Section 7. The 2018 and 2019 baseline actual emissions calculations and documentation are provided with the netting analysis in this section.

Note: The VMGSim Index and Main Flowsheets are provided in this section. To review the Material Stream data refer to the copy of the VMGSim output file on the CD submitted with this application.

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.

Input Data For 2018 & 2019 Actual Emissions Calculations

Baseline Actual Emissions

Baseline actual emissions were calculated using the two year period from January 1, 2018 through December 31, 2019

Condensate

When condensate arrives at El Cedro, a majority of the liquid passes through a stabilizer before it is sent to the storage tanks. This stabilizer heats the condensate to well above ambient temperature, recovering vapors that would flash in the tanks and routes this vapor back into the product line. Flash emissions are present in the storage tanks only when unstabilized condensate enters the tanks (during periods when the stabilizer is not in operation). HFC monitors the amount of unstablizied condensate entering the storage tanks and the total amount of condensate removed from the storage tanks.

Condensate Composition

Samples of the liquids entering the El Cedro facility were obtained on 01/03/2018, 01/30/2019 and 12/01/2019. As there were no changes to the facility during 2018, it was concluded the 01/03/2018 liquids sample was representative of condensate entering the facility during that entire year.

Beginning May of 2019, the facility stopped receiving condensate from the 11-S line and began receiving condensate from the Trunk S line. For this reason it was concluded that the 01/30/2019 liquids sample was representative of condensate entering the facility from 01/01/2019 through 04/30/2019. It was also concluded that the 12/01/2019 liquids sample was representative of condensate entering the facility from 05/01/2019 through 12/31/2019.

On 02/14/2020, HFC obtained a sample of the condensate exiting the stablizer. As this was the first time a sample of the stabilized condensate had been pulled (no other analyses are available) , it was used to represent stabilized condensate during both 2018 and 2019.

Condensate Throughput

The following table identifies the monthly and total condensate throughputs for the three time periods (based on the condensate sample dates) used to calculate the 2018 and 2019 actual emissions.

	January - December 2018		January - April 2019		May - December 2019	
Month	Total Condensate Throughput, bbl	Unstabilized Condensate Throughput, bbl	Total Condensate Throughput, bbl	Unstabilized Condensate Throughput, bbl	Total Condensate Throughput, bbl	Unstabilized Condensate Throughput, bbl
January	3,587	924	2,539	332	--	--
February	3,612	28	2,295	1,115	--	--
March	3,059	212	1,834	428	--	--
April	3,804	236	1,068	142	--	--
May	212	59	--	--	7,013	539
June	412	4	--	--	6,721	82
July	632	0	--	--	1,522	105
August	0	0	--	--	2,951	538
September	0	0	--	--	8,792	259
October	582	30	--	--	12,962	376
November	0	0	--	--	9,997	1,230
December	1,228	10	--	--	11,517	2,505
Total	17,128	1,502	7,736	2,017	61,475	5,635

Condensate Tank Emissions

For each of the three periods, working and breathing losses were calculated using TANKS 4 and the applicable total condensate throughput. Also, for each period, the composition of the liquids in the tanks were calculated using a throughput weighted average of the compostion of the stabilized condensate (from the 02/14/2020 analysis) and the composition of the flashed condensate (from the VMGSim output).

For each of the three periods, flash emissions from the tanks were calculated using VMGSim and the applicable unstabilized condensate throughput. For each period, the composition of the liquid entering the facility was obtained from the applicable liquids analysis (discussed above).

Input Data For 2018 & 2019 Actual Emissions Calculations

The following table provides a summary of the time periods, analyses, throughputs and separator pressures used to calculate flash emissions. Note that the separator pressures in the table are an average of those seen during the applicable time period. For more information, see the condensate tank emissions calculations.

Time Period	Date of Condensate Sample	Unstablized Condensate Throughput, bbl	Separator Pressure, psia
01/01/2018 - 12/31/2018	1/3/2018	1502	80.5
01/01/2019 - 04/30/2019	1/30/2019	2017	79.9
05/01/2019 - 12/31/2019	12/1/2019	5635	100

Truck Loading Emissions (Condensate)

Truck loading (condensate) emissions were calculated using AP-42 Section 5.2, Equation 1. The true vapor pressures, molecular weights and temperatures of the liquids were taken from the condensate tank working and breathing loss calculations (see TANKS 4 results). Since there were differences in the liquid compositions of the condensates during each of the three time periods (discussed in the Condensate Compositions section above), TANKS4 identified slightly different vapor pressures and molecular weights for each time period. Therefore, it was necessary to calculate loading losses for each of these same three time periods. Emissions were calculated using the total condensate throughput applicable to each time period. For more information, see the truck loading (condensate) emissions calculations.

Truck Loading Emissions (Produced Water)

Truck loading (produced water) emissions were calculated using AP-42 Section 5.2, Equation 1. The true vapor pressures were calculated using Antoine's equation. The molecular weight was taken from the TANKS 4 database. The temperatures of the water were estimated from the condensate tank working and breathing loss calculations (see TANKS 4 results). Emissions were calculated using the total produced water throughputs for each year. For more information, see the truck loading (produced water) emissions calculations.

Pig Receiver Emissions

Pigging emissions were calculated using the blowdown volumes associated with each event and emission factors identified from the applicable extended gas analyses. HFC monitors the number of pigging events and the associated blowdown volumes. Emission factors were generated from the extended gas analyses corresponding to the blowdown events. For more information, see the pig receiver emissions calculations.

2018 Pig Receiver Gas Analyses

Source	Time Period	Location	Sample Date
PR1 (G-16)	01/01/2018 - 11/30/2018	Trunk L	10/17/17
PR1 (G-16)	12/01/2018 - 12/31/2018	Trunk L	12/26/18

Source	Time Period	Location	Sample Date
PR2 (11-S)	01/01/2019 - 08/31/2019	Trunk G	08/22/17
PR2 (11-S)	09/30/2019 - 12/31/2019	Trunk G	09/28/18

2019 Pig Receiver Gas Analyses

Source	Time Period	Location	Sample Date
PR1 (G-16)	01/01/2019 - 12/31/2019	Trunk L	12/26/18

Source	Time Period	Location	Sample Date
PR2 (11-S)	01/01/2019 - 04/30/2019	Trunk G	09/28/18
PR2 (Trk S)	05/01/2019 - 12/31/2019	Trunk G	09/28/18

Input Data For 2018 & 2019 Actual Emissions Calculations

Produced Water Tank Emissions

Produced water tank emissions were calculated using the VOC emission factor from the CDPHE PS Memo 09-02 (Oil & Gas Produced Water Tank Batteries - Regulatory Definitions & Permitting Guidance). HFC monitors the volume of produced water hauled off-site (see table below). The total volumes of produced water (bottom row of table) were used to calculate actual emissions for each year. For more information, see the produced water tank emissions calculations.

	2018	2019
Month	Produced Water Throughput, bbl	Produced Water Throughput, bbl
January	220.00	320.00
February	160.00	480.00
March	80.00	560.00
April	0.00	480.00
May	240.00	1546.00
June	160.00	1370.00
July	0.00	1236.00
August	0.00	1680.00
September	0.00	400.00
October	0.00	0.00
November	80.00	0.00
December	320.00	0.00
Total	1260.00	8072.00

PSD Netting Analysis (VOC)

Company: **Harvest Four Corners, LLC**
Facility: **El Cedro Compressor Station**
Date/Rev: **March 2020 / Revision 0**

Unit Number	Description	2018 Actuals VOC, tpy	2019 Actuals VOC, tpy	2018-2019 Baseline Actuals VOC, tpy	Future Potential VOC, tpy	PSD Increase VOC, tpy	
38	Truck Loading (Condensate)	0.69	3.34	2.02	11.51	9.49	**Cell H27 (Criteria Total tab)**
46	Truck Loading (Produced H2O)	0.00	0.02	0.01	0.11	0.10	**Cell D35 (Truck Loading (Produced H2O) tab)**
PR1	Pig Receiver	0.21	0.30	0.25	0.96	0.71	**Cell H31 (Criteria Total tab)**
PR2	Pig Receiver	0.65	0.90	0.77	9.02	8.25	**Cell H32 (Criteria Total tab)**
T501	Produced Water Tank	0.05	0.30	0.17	2.01		**Cell H33 (Criteria Total tab)**
T91024	Produced Water Tank	0.07	0.45	0.26	3.01		**Cell H40 (Criteria Total tab)**
T91025	Produced Water Tank	0.05	0.30	0.17	2.01		**Cell H41 (Criteria Total tab)**
BGT-1	Produced Water Tank	0.00	0.00	0.00	1.78		**Cell H44 (Criteria Total tab)**
Total				0.61	8.80	8.19	
T19019	Condensate Tanks	1.22	2.29	1.76	2.66		**Cell H34 (Criteria Total tab)**
T19019 (flash)	Condensate Tanks	1.53	29.70	15.61	6.10		**Cell H35 (Criteria Total tab)**
T19020	Condensate Tanks	0.70	1.34	1.02	1.57		**Cell H36 (Criteria Total tab)**
T19020 (flash)	Condensate Tanks	0.92	17.80	9.36	3.66		**Cell H37 (Criteria Total tab)**
T19021	Condensate Tanks	0.70	1.34	1.02	1.58		**Cell H38 (Criteria Total tab)**
T19021 (flash)	Condensate Tanks	0.92	17.80	9.36	3.66		**Cell H39 (Criteria Total tab)**
T19028	Condensate Tanks	1.05	1.86	1.46	2.34		**Cell H42 (Criteria Total tab)**
T19028 (flash)	Condensate Tanks	1.18	22.86	12.02	4.53		**Cell H43 (Criteria Total tab)**
Total				51.61	26.09	-25.52	
TOTAL	Total			55.27	56.49	1.22	

Since the produced water and condensate tank emissions are both permitted under a facility total cap, the PSD increase for the both liquids is calculated as the total future potential minus the total 2018-2019 baseline actuals.

The cell number at the end of each row identifies the source of the future potential emission rate taken from the Calculations (New) workbook on the CD submitted with the appplication.

Truck Loading (Condensate) Emissions Calculations (2018 Actual)

Unit Number: 38
Description: Truck Loading

Emission Factor

0.6		Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
1.7068	psia	True vapor pressure of liquid, P	TANKS 4.0 output file
79.3142	lb/lb-mole	Molecular weight of vapors, M	TANKS 4.0 output file
67.36	°F	Temperature of liquid	TANKS 4.0 output file
527.03	°R	Temperature of liquid, T	°F + 459.67
1.92	$lb/10^3$ gal	Emission factor, L	AP-42, Section 5.2, Equation 1

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

Throughput

719.36	10^3 gal/yr	Annual production rate	Harvest Four Corners, LLC

VOC Emission Rates

Source	Pollutant	Emission Rate, tpy
Loading Rack	VOC	0.69

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

Truck Loading (Condensate) Emissions Calculations (1/1/2019 - 4/20/2019 Actual)

Unit Number: 38
Description: Truck Loading

Emission Factor

0.6	Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
2.3137 psia	True vapor pressure of liquid, P	Monthly average from TANKS 4.0 output file
71.6509 lb/lb-mole	Molecular weight of vapors, M	Monthly average from TANKS 4.0 output file
60.91 °F	Temperature of liquid	Monthly average from TANKS 4.0 output file
520.58 °R	Temperature of liquid, T	°F + 459.67
2.38 lb/10^3 gal	Emission factor, L	AP-42, Section 5.2, Equation 1

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

Throughput

324.91 10^3 gal/yr	Annual production rate	Harvest Four Corners, LLC

VOC Emission Rates

Source	Pollutant	Emission Rate, tpy
Loading Rack	VOC	0.39

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

Input Parameters

Month	Temperature °F	Pressure psia	Molecular Weight lb/lb-mole
January	53.71	1.9583	71.2089
February	57.85	2.1476	71.4673
March	62.95	2.4042	71.7745
April	69.11	2.7446	72.1527
Average	60.91	2.3137	71.6509

Truck Loading (Condensate) Emissions Calculations (5/1/2019 - 12/31/2019 Actual)

Unit Number: 38
Description: Truck Loading

Emission Factor

0.6		Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
2.0802	psia	True vapor pressure of liquid, P	Monthly average from TANKS 4.0 output file
77.9833	lb/lb-mole	Molecular weight of vapors, M	Monthly average from TANKS 4.0 output file
70.59	°F	Temperature of liquid	Monthly average from TANKS 4.0 output file
530.26	°R	Temperature of liquid, T	°F + 459.67
2.29	lb/10^3 gal	Emission factor, L	AP-42, Section 5.2, Equation 1

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

61474.94

Throughput

2,581.95	10^3 gal/yr	Annual production rate	Harvest Four Corners, LLC

VOC Emission Rates

Source	Pollutant	Emission Rate, tpy
Loading Rack	VOC	2.95

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

Input Parameters

Month	Temperature °F	Pressure psia	Molecular Weight lb/lb-mole
May	74.53	2.2336	78.1986
June	79.59	2.5001	78.4721
July	80.54	2.5534	78.5208
August	78.26	2.4284	78.3991
September	73.33	2.1737	78.1362
October	66.30	1.8491	77.7578
November	58.56	1.5381	77.3348
December	53.62	1.3654	77.0472
Average	70.59	2.0802	77.9833

Truck Loading (Produced Water) Emissions Calculations (2018 Actual)

Unit Number: 46
Description: Truck Loading

Emission Factor

0.6		Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
0.3305	psia	True vapor pressure of liquid, P	Estimated using Antoine's Equation (see calculations below)
18.02	lb/lb-mole	Molecular weight of water vapor, M	TANKS 4.0 Database (water)
67.36	°F	Temperature of liquid	TANKS 4.0 results
527.03	°R	Temperature of liquid, T	°F + 459.67
0.08	$lb/10^3$	Emission factor, L	AP-42, Section 5.2, Equation 1

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

Production Rate

52.92	10^3 gal/yr	Annual production rate	Harvest Four Corners, LLC

Steady-State Emission Rates

Source	Pollutant	Emission Rate, tpy
Loading Rack	VOC	2.24E-03

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

Vapor Pressure of Produced Water:

Because the produced water is assumed to be 99% 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 = 67.36 °F

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

A = 8.07131
B = 1730.63
C = 233.426
T = 19.64 °C
P = mmHg

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

P = 17.09 mmHg
P = 0.3305 psi

Note: 760 mmHg = 14.7 psia

Truck Loading (Produced Water) Emissions Calculations (2019 Actual)

Unit Number: 46
Description: Truck Loading

Emission Factor

0.6		Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
0.3693	psia	True vapor pressure of liquid, P	Estimated using Antoine's Equation (see calculations below)
18.02	lb/lb-mole	Molecular weight of water vapor, M	TANKS 4.0 Database (water)
70.59	°F	Temperature of liquid	TANKS 4.0 results
530.26	°R	Temperature of liquid, T	°F + 459.67
0.09	$lb/10^3$	Emission factor, L	AP-42, Section 5.2, Equation 1

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

Production Rate

339.02	10^3 gal/yr	Annual production rate	Harvest Four Corners, LLC

Steady-State Emission Rates

Source	Pollutant	Emission Rate, tpy
Loading Rack	VOC	1.59E-02

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

Vapor Pressure of Produced Water:

Because the produced water is assumed to be 99% 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 = 70.59 °F

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

A = 8.07131
B = 1730.63
C = 233.426
T = 21.44 °C
P = mmHg

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

P = 19.10 mmHg
P = 0.3693 psi

Note: 760 mmHg = 14.7 psia

Pig Receiver Emissions Calculations (2018 Actual)

Unit Number: PR1
Description: G-12 Pig Receiver

VOC Emission Rates

Source	Pollutant	Emission Rate, tpy
Pig Receivers	VOC	0.86

Emission rate is the sum of the G-16 & 11-S emissions

Source	Month	Number of Blowdowns	Blowdown Volume Mscf	VOC Content, lb/Mcf	VOC Emissions, tons
PR1 (G-16)	Jan-18	--	0.0000	10.732	0.0000
PR1 (G-16)	Feb-18	--	0.3621	10.732	0.0019
PR1 (G-16)	Mar-18	--	0.1723	10.732	0.0009
PR1 (G-16)	Apr-18	--	0.2442	10.732	0.0013
PR1 (G-16)	May-18	--	11.7928	10.732	0.0633
PR1 (G-16)	Jun-18	--	0.2416	10.732	0.0013
PR1 (G-16)	Jul-18	--	0.0000	10.732	0.0000
PR1 (G-16)	Aug-18	--	0.0820	10.732	0.0004
PR1 (G-16)	Sep-18	2	4.0000	10.732	0.0215
PR1 (G-16)	Oct-18	2	4.0000	10.732	0.0215
PR1 (G-16)	Nov-18	5	10.0000	10.732	0.0537
PR1 (G-16)	Dec-18	4	8.0000	10.241	0.0410
Total			38.8950		0.2067

Input data was provided by HFC
VOC Emissions (ton) = lb/Mcf x Mcf / 2,000 lb/ton

Source	Month	Number of Blowdowns	Blowdown Volume Mscf	VOC Content, lb/Mcf	VOC Emissions, tons
PR2 (11-S)	Jan-18	--	1.0000	8.876	0.0044
PR2 (11-S)	Feb-18	--	0.0000	8.876	0.0000
PR2 (11-S)	Mar-18	--	4.5982	8.876	0.0204
PR2 (11-S)	Apr-18	--	2.0920	8.876	0.0093
PR2 (11-S)	May-18	--	0.2535	8.876	0.0011
PR2 (11-S)	Jun-18	--	73.4308	8.876	0.3259
PR2 (11-S)	Jul-18	--	35.4986	8.876	0.1575
PR2 (11-S)	Aug-18	--	5.0000	8.876	0.0222
PR2 (11-S)	Sep-18	2	4.0000	8.546	0.0171
PR2 (11-S)	Oct-18	3	6.0000	8.546	0.0256
PR2 (11-S)	Nov-18	4	8.0000	8.546	0.0342
PR2 (11-S)	Dec-18	4	8.0000	8.546	0.0342
Total			147.8731		0.6520

Input data was provided by HFC
VOC Emissions (ton) = lb/Mcf x Mcf / 2,000 lb/ton

Pig Receiver Emissions Calculations (2019 Actual)

Unit Number: PR1
Description: G-12 Pig Receiver

VOC Emission Rates

Source	Pollutants,	Emission Rate, tpy
Pig Receivers	VOC	1.19

Emission rate is the sum of the G-16, 11-S & Trk S emissions

Source	Month	Number of Blowdowns	Blowdown Volume Mscf	VOC Content, lb/Mcf	VOC Emissions, tons
PR1(G-16)	Jan-19	4	8.0000	10.241	0.0410
PR1(G-16)	Feb-19	3	6.0000	10.241	0.0307
PR1(G-16)	Mar-19	3	6.0000	10.241	0.0307
PR1(G-16)	Apr-19	3	6.0000	10.241	0.0307
PR1(G-16)	May-19	3	6.0000	10.241	0.0307
PR1(G-16)	Jun-19	3	6.0000	10.241	0.0307
PR1(G-16)	Jul-19	3	6.0000	10.241	0.0307
PR1(G-16)	Aug-19	1	2.0000	10.241	0.0102
PR1(G-16)	Sep-19	0	0.0000	10.241	0.0000
PR1(G-16)	Oct-19	2	4.0000	10.241	0.0205
PR1(G-16)	Nov-19	2	4.0000	10.241	0.0205
PR1(G-16)	Dec-19	2	4.0000	10.241	0.0205
Total			58.0000		0.2970

Input data was provided by HFC
VOC Emissions (ton) = lb/Mcf x Mcf / 2,000 lb/ton

Source	Month	Number of Blowdowns	Blowdown Volume Mscf	VOC Content, lb/Mcf	VOC Emissions, tons
PR2 (11-S)	Jan-19	5.00	10.0000	8.546	0.0427
PR2 (11-S)	Feb-19	4.00	8.0000	8.546	0.0342
PR2 (11-S)	Mar-19	4.00	8.0000	8.546	0.0342
PR2 (11-S)	Apr-19	2.00	4.0000	8.546	0.0171
PR2 (Trk S)	May-19	12.00	24.0000	8.546	0.1026
PR2 (Trk S)	Jun-19	10.00	20.0000	8.546	0.0855
PR2 (Trk S)	Jul-19	20.00	40.0000	8.546	0.1709
PR2 (Trk S)	Aug-19	12.00	24.0000	8.546	0.1026
PR2 (Trk S)	Sep-19	9.00	18.0000	8.546	0.0769
PR2 (Trk S)	Oct-19	10.00	20.0000	8.546	0.0855
PR2 (Trk S)	Nov-19	8.00	16.0000	8.546	0.0684
PR2 (Trk S)	Dec-19	9.00	18.0000	8.546	0.0769
Total			210.0000		0.8974

Input data was provided by HFC
VOC Emissions (ton) = lb/Mcf x Mcf / 2,000 lb/ton

Pig Receiver Emissions Calculations (2019 Actual)

Unit Number: PR1
Description: G-12 Pig Receiver

Gas Compositions

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	0.8608	44.01	9.985E-04
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	1.4553	28.01	1.074E-03
Methane	80.7579	16.04	3.414E-02
Ethane	9.3076	30.07	7.377E-03
Propane	4.4356	44.09	5.155E-03
Isobutane	0.7668	58.12	1.175E-03
n-Butane	1.1616	58.12	1.779E-03
Isopentane	0.4229	72.15	8.042E-04
n-Pentane	0.3130	72.15	5.952E-04
Cyclopentane	0.0129	70.14	2.385E-05
n-Hexane	0.0930	86.17	2.112E-04
Cyclohexane	0.0308	84.16	6.832E-05
Other hexanes	0.2183	86.18	4.959E-04
Heptanes	0.0567	100.20	1.497E-04
Methylcyclohexane	0.0450	98.19	1.165E-04
2,2,4-Trimethylpentane	0.0029	100.21	7.660E-06
Benzene	0.0138	78.11	2.841E-05
Toluene	0.0180	92.14	4.371E-05
Ethylbenzene	0.0004	106.17	1.119E-06
Xylenes	0.0041	106.17	1.147E-05
C8+ Heavies	0.0226	110.00	6.552E-05
Total	100.0000		
Total VOC			1.0732E-02

Gas stream composition obtained from Trunk L extended gas analysis dated 10/17/2017
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Pig Receiver Emissions Calculations (2019 Actual)

Unit Number: PR1
Description: G-12 Pig Receiver

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	0.9707	44.01	1.126E-03
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.3129	28.01	2.310E-04
Methane	82.0921	16.04	3.471E-02
Ethane	9.3910	30.07	7.443E-03
Propane	4.0670	44.09	4.726E-03
Isobutane	0.7823	58.12	1.198E-03
n-Butane	1.1839	58.12	1.814E-03
Isopentane	0.4143	72.15	7.879E-04
n-Pentane	0.2944	72.15	5.599E-04
Cyclopentane	0.0122	70.14	2.255E-05
n-Hexane	0.0930	86.17	2.112E-04
Cyclohexane	0.0305	84.16	6.766E-05
Other hexanes	0.2072	86.18	4.707E-04
Heptanes	0.0556	100.20	1.468E-04
Methylcyclohexane	0.0440	98.19	1.139E-04
2,2,4-Trimethylpentane	0.0027	100.21	7.131E-06
Benzene	0.0134	78.11	2.759E-05
Toluene	0.0153	92.14	3.716E-05
Ethylbenzene	0.0002	106.17	5.597E-07
Xylenes	0.0020	106.17	5.597E-06
C8+ Heavies	0.0153	110.00	4.436E-05
Total	100.0000		
Total VOC			1.0241E-02

Gas stream composition obtained from Trunk L extended gas analysis dated 12/26/2018
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Pig Receiver Emissions Calculations (2019 Actual)

Unit Number: PR1
Description: G-12 Pig Receiver

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	1.2763	44.01	1.480E-03
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.5767	28.01	4.258E-04
Methane	84.0326	16.04	3.553E-02
Ethane	7.9049	30.07	6.265E-03
Propane	3.4687	44.09	4.031E-03
Isobutane	0.7051	58.12	1.080E-03
n-Butane	0.9518	58.12	1.458E-03
Isopentane	0.3481	72.15	6.620E-04
n-Pentane	0.2444	72.15	4.648E-04
Cyclopentane	0.0118	70.14	2.181E-05
n-Hexane	0.0773	86.17	1.756E-04
Cyclohexane	0.0288	84.16	6.389E-05
Other hexanes	0.1799	86.18	4.086E-04
Heptanes	0.0582	100.20	1.537E-04
Methylcyclohexane	0.0539	98.19	1.395E-04
2,2,4-Trimethylpentane	0.0029	100.21	7.660E-06
Benzene	0.0095	78.11	1.956E-05
Toluene	0.0193	92.14	4.687E-05
Ethylbenzene	0.0005	106.17	1.399E-06
Xylenes	0.0100	106.17	2.798E-05
C8+ Heavies	0.0392	110.00	1.137E-04
Total	99.9999		
Total VOC			8.876E-03

Gas stream composition obtained from Trunk G extended gas analysis dated 08/22/2017
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Pig Receiver Emissions Calculations (2019 Actual)

Unit Number: PR1
Description: G-12 Pig Receiver

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	1.4169	44.01	1.644E-03
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.1713	28.01	1.265E-04
Methane	84.9753	16.04	3.593E-02
Ethane	7.5136	30.07	5.955E-03
Propane	3.2637	44.09	3.793E-03
Isobutane	0.6692	58.12	1.025E-03
n-Butane	0.8782	58.12	1.345E-03
Isopentane	0.3331	72.15	6.335E-04
n-Pentane	0.2312	72.15	4.397E-04
Cyclopentane	0.0120	70.14	2.218E-05
n-Hexane	0.0881	86.17	2.001E-04
Cyclohexane	0.0338	84.16	7.498E-05
Other hexanes	0.1994	86.18	4.529E-04
Heptanes	0.0715	100.20	1.888E-04
Methylcyclohexane	0.0663	98.19	1.716E-04
2,2,4-Trimethylpentane	0.0041	100.21	1.083E-05
Benzene	0.0114	78.11	2.347E-05
Toluene	0.0226	92.14	5.489E-05
Ethylbenzene	0.0003	106.17	8.395E-07
Xylenes	0.0051	106.17	1.427E-05
C8+ Heavies	0.0328	110.00	9.510E-05
Total	99.9999		
Total VOC			8.546E-03

Gas stream composition obtained from Trunk G Inlet extended gas analysis dated 09/28/2018
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Produced Water Storage Tank Emissions Calculations (2018 Actual)

Unit Number: T501, T91024 & T91025
Description: Produced Water Tank

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

Throughput

1,260 bbl/yr Annual liquid throughput Harvest Four Corners, LLC

Tank Number	Volume, bbl	Percent of Total Tank Volume, %	Produced Water Throughput, bbl/yr
T501	200	28.57	360
T91024	300	42.86	540
T91025	200	28.57	360
Total	700	100.00	1,260

Percent of Total Tank Volume (%) = 100 x Volume (bbl) / Total Volume (bbl)
Produced Water Throughput (bbl/yr) = bbl/yr x (% / 100)

VOC Emission Rates

Source	Pollutant	Emission Factor, lb/bbl	Emission Rate, tpy
T501	VOC	0.262	0.05
T91024	VOC	0.262	0.07
T91025	VOC	0.262	0.05
Total			0.17

VOC emission factor was taken from the CDPHE PS Memo 09-02 (Oil & Gas Produced Water Tank Batteries - Regulatory Definitions & Permitting Guidance)
Emission Rate (tpy) = lb/bbl x bbl/yr / 2,000 lb/ton

Produced Water Storage Tank Emissions Calculations (2019 Actual)

Unit Number: T501, T91024 & T91025
Description: Produced Water Tank

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

Throughput

8,072 bbl/yr Annual liquid throughput Harvest Four Corners, LLC

Tank Number	Volume, bbl	Percent of Total Tank Volume, %	Produced Water Throughput, bbl/yr
T501	200	28.57	2,306
T91024	300	42.86	3,459
T91025	200	28.57	2,306
Total	700	71.43	8,072

Percent of Total Tank Volume (%) = 100 x Volume (bbl) / Total Volume (bbl)
Produced Water Throughput (bbl/yr) = bbl/yr x (% / 100)

VOC Emission Rates

Source	Pollutant	Emission Factor, lb/bbl	Emission Rate, tpy
T501	VOC	0.262	0.30
T91024	VOC	0.262	0.45
T91025	VOC	0.262	0.30
Total			1.06

VOC emission factor was taken from the CDPHE PS Memo 09-02 (Oil & Gas Produced Water Tank Batteries - Regulatory Definitions & Permitting Guidance)
Emission Rate (tpy) = lb/bbl x bbl/yr / 2,000 lb/ton

Condensate Storage Tank Emissions Calculations (2018 Actual)

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

Throughput

17,128	bbl/yr	Annual liquid throughput	Harvest Four Corners, LLC
1.0385	pph	Hourly flash emmisions	VMGSim Results
8,760	hr/yr	Operating time	Harvest Four Corners, LLC
4.55	tpy	Annual flash emissions	pph x hr/yr / 2,000 lb/ton

Tank Number	Usable Volume, bbl	Percent of Total Usable Tank Volume, %	Condensate Throughput, bbl/yr
T91019	21,173	33.69	5,770
T91020	12,690	20.19	3,458
T91021	12,690	20.19	3,458
T91028	16,300	25.93	4,442
Total	62,853	100.00	17,128

Because the tanks are manifolded together, the useable volumes associated with Units T91019 & T91028 are less than the design capacities of the tanks. See Condition A203.C of the existing permit.
This table distributes the annual liquid throughput to the tanks based on the Percent of Total Usable Tank Volume.
Percent of Total Usable Tank Volume (%) = 100 x Usable Volume (bbl) / Total Usable Volume (bbl)
Produced Water Throughput (bbl/yr) = bbl/yr x (% / 100)

VOC Emission Rates

Tank Number	Working/Breathing Losses, ppy	Working/Breathing Losses, tpy	Flash Emissions, tpy	Total Emission Rates, tpy
T19019	2,440.13	1.22	1.53	2.75
T19020	1,397.66	0.70	0.92	1.62
T19021	1,397.66	0.70	0.92	1.62
T19028	2,109.58	1.05	1.18	2.23
Total	7,345.03	3.67	4.55	8.22

Working/breathing losses were calculated using TANKS 4 and the calculated condensate throughput
Working/breathing Losses (tpy) = ppy / 2000 lb/ton
Flash emissions were calculated using VMGSim and emissions were distributed according to the usable volume of each tank
Flash Emissions (tpy) = bbl/yr x (% / 100)
Total Emission Rates (tpy) = Working/Breathing Losses (tpy) + Flash Emissions (tpy)

Condensate Storage Tank Emissions Calculations (2018 Actual)

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

Flashed Condensate Composition

Total Condensate Throughput:	17,128	bbl
Flashed Condensate Throughput:	1,502	bbl
Stabilized Condensate Throughput:	15,626	bbl

Pollutant	Flashed Condensate, Wt%	Stabilizer Condensate, Wt%	Combined Average, Wt%
iso-Butane	2.2825	0.0314	0.22877
n-Butane	3.9795	0.0423	0.38755
iso-Pentane	4.0306	0.2450	0.57693
n-Pentane	4.2283	2.6157	2.75711
Cyclopentane	0.0000	0.0019	0.00174
n-Hexane	9.7596	11.5805	11.42083
Cyclohexane	0.0000	21.9484	20.02364
Hexanes	0.0000	0.0000	0.00000
Heptanes	26.4815	22.7289	23.05799
Octanes	27.6845	12.3113	13.65940
Nonanes	6.2945	2.4075	2.74837
Decanes	4.6805	0.2935	0.67816
Methylcyclohexane	0.1302	18.0372	16.46690
Isooctane	0.0000	0.0993	0.09058
Benzene	1.0190	2.7390	2.58820
Ethylbenzene	0.3387	0.0101	0.03893
Toluene	5.6865	4.8728	4.94419
Xylene	3.4042	0.0353	0.33069
Total	100.0000	100.0000	100.00000

This table calculates a throughput weighted average condensate composition for use in TANKS 4 (based on the stabilized condensate and flashed condensate throughputs identified above)
The flashed condensate composition was calculated from the VMGSim results (see table below)
The stabilizer condensate composition was calculated from the stabilizer gas analysis dated 02/14/2020 (see table below)

Condensate Storage Tank Emissions Calculations (2018 Actual)

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

	Flashed Condensate			Stabilized Condensate		
Pollutant	VMGSim, Wt%	Normalized, Wt%	Adjusted, Wt%	Analysis, Wt%	Normalized, Wt%	Adjusted, Wt%
Propane	1.8997	1.9238	--	0.0444	0.0445	--
iso-Butane	1.3040	1.3206	2.2825	0.0091	0.0091	0.0314
n-Butane	2.9797	3.0176	3.9795	0.0200	0.0200	0.0423
iso-Pentane	3.9800	4.0306	4.0306	0.2445	0.2450	0.2450
n-Pentane	4.1752	4.2283	4.2283	2.6108	2.6157	2.6157
Cyclopentane	0.0000	0.0000	0.0000	0.0019	0.0019	0.0019
n-Hexane	9.6371	9.7596	9.7596	11.5588	11.5805	11.5805
Cyclohexane	0.0000	0.0000	0.0000	6.2905	6.3023	21.9484
Hexanes	0.0000	0.0000	0.0000	15.6167	15.6460	0.0000
Heptanes	26.1493	26.4815	26.4815	22.6863	22.7289	22.7289
Octanes	27.3372	27.6845	27.6845	12.2882	12.3113	12.3113
Nonanes	6.2155	6.2945	6.2945	2.403	2.4075	2.4075
Decanes	4.6218	4.6805	4.6805	0.2929	0.2935	0.2935
Methylcyclohexane	0.1285	0.1302	0.1302	18.0034	18.0372	18.0372
Isooctane	0.0000	0.0000	0.0000	0.0991	0.0993	0.0993
Benzene	1.0062	1.0190	1.0190	2.7339	2.7390	2.7390
Ethylbenzene	0.3344	0.3387	0.3387	0.0101	0.0101	0.0101
Toluene	5.6152	5.6865	5.6865	4.8637	4.8728	4.8728
Xylenes	3.3614	3.4042	3.4042	0.0352	0.0353	0.0353
Total	98.7454	100.0000	100.0000	99.8125	100.0000	100.0000

This table calculates the weight percent composition of the flashed and stablilzed condensate. These compositions are used in the table above to determine a weighted average condensate composition for use in TANKS 4.
The flashed condensate composition was obtained from the VMGSim results
The stabilized condensate composition was obtained from the 02/14/2020 liquids analysis
The weight percents were normalized since non-VOC components are not included
Propane was evenly distributed between iso-Butane and n-Butane

Condensate Storage Tank Emissions Calculations (1/1/2019 - 4/30/2019 Actual)

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

Throughput

7,736	bbl/yr	Annual liquid throughput	Harvest Four Corners, LLC
6.0967	pph	Hourly flash emmisions	VMGSim Results
2,880	hr/yr	Operating time	Harvest Four Corners, LLC
8.78	tpy	Annual flash emissions	pph x hr/yr / 2,000 lb/ton

Tank Number	Usable Volume, bbl	Percent of Total Usable Tank Volume, %	Condensate Throughput, bbl/yr
T91019	21,173	33.69	2,606
T91020	12,690	20.19	1,562
T91021	12,690	20.19	1,562
T91028	16,300	25.93	2,006
Total	62,853	100.00	7,736

Because the tanks are manifolded together, the useable volumes associated with Units T91019 & T91028 are less than the design capacities of the tanks. See Condition A203.C of the existing permit.
This table distributes the annual liquid throughput to the tanks based on the Percent of Total Usable Tank Volume.
Percent of Total Usable Tank Volume (%) = 100 x Usable Volume (bbl) / Total Usable Volume (bbl)
Produced Water Throughput (bbl/yr) = bbl/yr x (% / 100)

VOC Emission Rates

Tank Number	Working/Breathing Losses, ppy	Working/Breathing Losses, tpy	Flash Emissions, tpy	Total Emission Rates, tpy
T19019	1,087.01	0.54	2.96	3.50
T19020	629.67	0.31	1.77	2.09
T19021	629.67	0.31	1.77	2.09
T19028	910.39	0.46	2.28	2.73
	3,256.74	1.63	8.78	10.41

Working/breathing losses were calculated using TANKS 4 and the calculated condensate throughput
Working/breathing Losses (tpy) = ppy / 2000 lb/ton
Flash emissions were calculated using VMGSim and emissions were distributed according to the usable volume of each tank
Flash Emissions (tpy) = bbl/yr x (% / 100)
Total Emission Rates (tpy) = Working/Breathing Losses (tpy) + Flash Emissions (tpy)

Condensate Storage Tank Emissions Calculations (1/1/2019 - 4/30/2019 Actual)

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

Flashed Condensate Composition

Total Condensate Throughput:	7,736	bbl
Flashed Condensate Throughput:	2,017	bbl
Stabilized Condensate Throughput:	5,719	bbl

Pollutant	Flashed Condensate (%)	Stabilizer Condensate (%)	Combined Average (%)
iso-Butane	2.8511	0.0314	0.76656
n-Butane	4.9565	0.0423	1.32356
iso-Pentane	4.7141	0.2450	1.41018
n-Pentane	4.8498	2.6157	3.19821
Cyclopentane	0.0000	0.0019	0.00141
n-Hexane	13.4537	11.5805	12.06890
Cyclohexane	0.0000	21.9484	16.22578
Hexanes	0.0000	0.0000	0.00000
Heptanes	26.1512	22.7289	23.62122
Octanes	22.9649	12.3113	15.08899
Nonanes	4.0289	2.4075	2.83026
Decanes	7.8906	0.2935	2.27426
Methylcyclohexane	0.0000	18.0372	13.33439
2,2,4-Trimethylpentane	0.1236	0.0993	0.10561
Benzene	1.1186	2.7390	2.31655
Ethylbenzene	0.2488	0.0101	0.07235
Toluene	4.5990	4.8728	4.80145
Xylenes	2.0491	0.0353	0.56033
Total	100.0000	100.0000	100.00000

This table calculates a throughput weighted average condensate composition for use in TANKS 4 (based on the stabilized condensate and flashed condensate throughputs identified above)
The flashed condensate composition was calculated from the VMGSim results (see table below)
The stabilizer condensate composition was calculated from the stabilizer gas analysis dated 02/14/2020 (see table below)

Condensate Storage Tank Emissions Calculations (1/1/2019 - 4/30/2019 Actual)

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

	Flashed Condensate			Stabilized Condensate		
Pollutant	VMGSim, Wt%	Normalized, Wt%	Adjusted, Wt%	Analysis, Wt%	Normalized, Wt%	Adjusted, Wt%
Propane	2.4937	2.5264	--	0.0444	0.0445	--
iso-Butane	1.5674	1.5880	2.8511	0.0091	0.0091	0.0314
n-Butane	3.6455	3.6933	4.9565	0.0200	0.0200	0.0423
iso-Pentane	4.6530	4.7141	4.7141	0.2445	0.2450	0.2450
n-Pentane	4.7870	4.8498	4.8498	2.6108	2.6157	2.6157
Cyclopentane	0.0000	0.0000	0.0000	0.0019	0.0019	0.0019
n-Hexane	13.2794	13.4537	13.4537	11.5588	11.5805	11.5805
Cyclohexane	0.0000	0.0000	0.0000	6.2905	6.3023	21.9484
Hexanes	0.0000	0.0000	0.0000	15.6167	15.6460	0.0000
Heptanes	25.8125	26.1512	26.1512	22.6863	22.7289	22.7289
Octanes	22.6674	22.9649	22.9649	12.2882	12.3113	12.3113
Nonanes	3.9767	4.0289	4.0289	2.403	2.4075	2.4075
Decanes	7.7884	7.8906	7.8906	0.2929	0.2935	0.2935
Methylcyclohexane	0.0000	0.0000	0.0000	18.0034	18.0372	18.0372
Isooctane	0.1220	0.1236	0.1236	0.0991	0.0993	0.0993
Benzene	1.1041	1.1186	1.1186	2.7339	2.7390	2.7390
Ethylbenzene	0.2456	0.2488	0.2488	0.0101	0.0101	0.0101
Toluene	4.5395	4.5990	4.5990	4.8637	4.8728	4.8728
Xylenes	2.0225	2.0491	2.0491	0.0352	0.0353	0.0353
Total	98.7048	100.0000	100.0000	99.8125	100.0000	100.0000

This table calculates the weight percent composition of the flashed and stablilzed condensate. These compositions are used in the table above to determine a weighted average condensate composition for use in TANKS 4.
The flashed condensate composition was obtained from the VMGSim results
The stabilized condensate composition was obtained from the 02/14/2020 liquids analysis
The weight percents were normalized since non-VOC components are not included
Propane was evenly distributed between iso-Butane and n-Butane

Condensate Storage Tank Emissions Calculations (5/1/2019 - 12/31/2019 Actual)

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

Throughput

61,475	bbl/yr	Annual liquid throughput	Harvest Four Corners, LLC
33.2446	pph	Hourly flash emmisions	VMGSim Results
5,880	hr/yr	Operating time	Harvest Four Corners, LLC
97.74	tpy	Annual flash emissions	pph x hr/yr / 2,000 lb/ton

Tank Number	Usable Volume, bbl	Percent of Total Usable Tank Volume, %	Condensate Throughput, bbl/yr
T91019	21,173	33.69	20,709
T91020	12,690	20.19	12,412
T91021	12,690	20.19	12,412
T91028	16,300	25.93	15,943
Total	62,853	100.00	61,475

Because the tanks are manifolded together, the useable volumes associated with Units T91019 & T91028 are less than the design capacities of the tanks. See Condition A203.C of the existing permit.
This table distributes the annual liquid throughput to the tanks based on the Percent of Total Usable Tank Volume.
Percent of Total Usable Tank Volume (%) = 100 x Usable Volume (bbl) / Total Usable Volume (bbl)
Produced Water Throughput (bbl/yr) = bbl/yr x (% / 100)

VOC Emission Rates

Because the flash emissions in this netting analysis were determined using VMGSim (rather than ProMax), the calculated 2019 emissions from the condensate storage tanks exceed the permit limit of 95.0 tons per rolling 12-month period. Note: The previous owner of the facility (Williams) used ProMax for permitting and compliance demonstrations. Harvest prefers to use VMGSim.

Netting analyses do not allow credit for emissions that exceed a permit limit. Consequently, the 2019 emissions from the condensate storage tanks are limited to 95.0 tons per year.

Since emissions during the last eight months of the year are significantly higher than those during the first four months of the year, it was assumed that all emissions greater than 95.0 tons per year were associated with operations during the last eight months of the year.

Calculated Jan-Apr Emissions	10.41	tpy
Calculated May-Dec Emissions	104.16	tpy
Calculated Total 2019 Emissions	114.57	tpy
Permit Limit	95.00	tpy
Difference	19.57	tpy
Allowable May-Dec Emissions	84.59	tpy
Adjustment Factor	0.8121	%

The calculated May-Dec emissions must be multiplied by 0.8121 so that 2019 emissions will be limited to 95.0 tpy.

Tank Number	Calculated Working/ Breathing Losses, ppy	Adjusted Working/ Breathing Losses, tpy	Calculated Flash Emissions, tpy	Adjusted Flash Emissions, tpy	Total Emission Rates, tpy
T19019	4,309.87	1.75	32.92	26.74	28.49
T19020	2,532.57	1.03	19.73	16.03	17.05
T19021	2,532.57	1.03	19.73	16.03	17.05
T19028	3,465.25	1.41	25.35	20.59	21.99
	12,840.26	5.21	97.74	79.38	84.59

Working/breathing losses were calculated using TANKS 4 and the calculated condensate throughput
Adjusted Working/breathing Losses (tpy) = (ppy / 2000 lb/ton) x 0.8121
Flash emissions were calculated using VMGSim and emissions were distributed according to the usable volume of each tank
Calculated Flash Emissions (tpy) = bbl/yr x (% / 100)
Adjusted Flash Emissions (tpy) = Calculated Flash Emission (tpy) x 0.8121
Total Emission Rates (tpy) = Adjusted Working/Breathing Losses (tpy) + Adjusted Flash Emissions (tpy)

Condensate Storage Tank Emissions Calculations (5/1/2019 - 12/31/2019 Actual)

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

Flashed Condensate Composition

Total Condensate Throughput:	61,475	gal
Flashed Condensate Throughput:	5,635	gal
Stabilized Condensate Throughput:	55,840	gal

Pollutant	Flashed Condensate (%)	Stabilizer Condensate (%)	Combined Average (%)
iso-Butane	2.5123	0.0314	0.25877
n-Butane	5.9499	0.0423	0.58379
iso-Pentane	6.4361	0.2450	0.81246
n-Pentane	6.8797	2.6157	3.00656
Cyclopentane	0.0000	0.0019	0.00173
n-Hexane	19.6864	11.5805	12.32352
Cyclohexane	4.4939	21.9484	20.34842
Hexanes	0.0000	0.0000	0.00000
Heptanes	21.9828	22.7289	22.66053
Octanes	19.9080	12.3113	13.00762
Nonanes	3.8390	2.4075	2.53873
Decanes	1.5526	0.2935	0.40887
Methylcyclohexane	0.0000	18.0372	16.38387
2,2,4-Trimethylpentane	0.0000	0.0993	0.09019
Benzene	1.1518	2.7390	2.59355
Ethylbenzene	0.2285	0.0101	0.03014
Toluene	3.5204	4.8728	4.74887
Xylenes	1.8587	0.0353	0.20240
Total	100.0000	100.0000	100.00000

This table calculates a throughput weighted average condensate composition for use in TANKS 4 (based on the stabilized condensate and flashed condensate throughputs identified above)
The flashed condensate composition was calculated from the VMGSim results (see table below)
The stabilizer condensate composition was calculated from the stabilizer gas analysis dated 02/14/2020 (see table below)

Condensate Storage Tank Emissions Calculations (5/1/2019 - 12/31/2019 Actual)

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

	Flashed Condensate			Stabilized Condensate		
Pollutant	VMGSim, Wt%	Normalized, Wt%	Adjusted, Wt%	Analysis, Wt%	Normalized, Wt%	Adjusted, Wt%
Propane	1.7147	1.7178	--	0.0444	0.0445	--
iso-Butane	1.6504	1.6534	2.5123	0.0091	0.0091	0.0314
n-Butane	5.0817	5.0910	5.9499	0.0200	0.0200	0.0423
iso-Pentane	6.4244	6.4361	6.4361	0.2445	0.2450	0.2450
n-Pentane	6.8672	6.8797	6.8797	2.6108	2.6157	2.6157
Cyclopentane	0.0000	0.0000	0.0000	0.0019	0.0019	0.0019
n-Hexane	19.6506	19.6864	19.6864	11.5588	11.5805	11.5805
Cyclohexane	4.4858	4.4939	4.4939	6.2905	6.3023	21.9484
Hexanes	0.0000	0.0000	0.0000	15.6167	15.6460	0.0000
Heptanes	21.9429	21.9828	21.9828	22.6863	22.7289	22.7289
Octanes	19.8718	19.9080	19.9080	12.2882	12.3113	12.3113
Nonanes	3.8320	3.8390	3.8390	2.403	2.4075	2.4075
Decanes	1.5498	1.5526	1.5526	0.2929	0.2935	0.2935
Methylcyclohexane	0.0000	0.0000	0.0000	18.0034	18.0372	18.0372
Isooctane	0.0000	0.0000	0.0000	0.0991	0.0993	0.0993
Benzene	1.1497	1.1518	1.1518	2.7339	2.7390	2.7390
Ethylbenzene	0.2281	0.2285	0.2285	0.0101	0.0101	0.0101
Toluene	3.5140	3.5204	3.5204	4.8637	4.8728	4.8728
Xylenes	1.8553	1.8587	1.8587	0.0352	0.0353	0.0353
Total	99.8185	100.0000	100.0000	99.8125	100.0000	100.0000

This table calculates the weight percent composition of the flashed and stablilzed condensate. These compositions are used in the table above to determine a weighted average condensate composition for use in TANKS 4.
The flashed condensate composition was obtained from the VMGSim results
The stabilized condensate composition was obtained from the 02/14/2020 liquids analysis
The weight percents were normalized since non-VOC components are not included
Propane was evenly distributed between iso-Butane and n-Butane

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

Identification

User Identification:	El Cedro T91019 (Cond)(2018 PSD)
City:	Navajo Dam
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	21,000 Gallon Condensate Storage Tank

Tank Dimensions

Shell Height (ft):	16.00
Diameter (ft):	15.50
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	19,761.25
Turnovers:	12.26
Net Throughput(gal/yr):	242,340.00
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

El Cedro T91019 (Cond)(2018 PSD) - Vertical Fixed Roof Tank
Navajo Dam, 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	1.7068	1.2323	2.3258	79.3142			94.16	
2,2,4-Trimethylpentane (isooctane)						0.7338	0.4989	1.0546	114.2300	0.0009	0.0005	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4274	0.9846	2.0237	78.1100	0.0259	0.0257	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.9357	23.3576	37.8083	58.1230	0.0039	0.0807	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4738	1.0254	2.0729	84.1600	0.2002	0.2053	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.9596	3.6370	6.6394	70.1300	0.0000	0.0001	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.0068	0.0002	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0004	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.2306	0.1219	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.1142	0.1835	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						43.3083	34.4026	53.8185	58.1230	0.0023	0.0689	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0058	0.0476	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6886	0.4673	0.9913	98.1800	0.1647	0.0789	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.0275	0.0015	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.1366	0.0168	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0276	0.1540	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0494	0.0142	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0033	0.0003	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)

El Cedro T91019 (Cond)(2018 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	1,658.9995
Vapor Space Volume (cu ft):	1,728.6931
Vapor Density (lb/cu ft):	0.0239
Vapor Space Expansion Factor:	0.2009
Vented Vapor Saturation Factor:	0.5468
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,728.6931
Tank Diameter (ft):	15.5000
Vapor Space Outage (ft):	9.1615
Tank Shell Height (ft):	16.0000
Average Liquid Height (ft):	7.0000
Roof Outage (ft):	0.1615
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1615
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	7.7500
Vapor Density	
Vapor Density (lb/cu ft):	0.0239
Vapor Molecular Weight (lb/lb-mole):	79.3142
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.7068
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:	0.2009
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	1.0935
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.7068
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.2323
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	2.3258
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:	0.5468
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.7068
Vapor Space Outage (ft):	9.1615
Working Losses (lb):	781.1280
Vapor Molecular Weight (lb/lb-mole):	79.3142
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.7068
Annual Net Throughput (gal/yr.):	242,340.0000
Annual Turnovers:	12.2600
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	19,761.2500
Maximum Liquid Height (ft):	14.0000
Tank Diameter (ft):	15.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	2,440.1275

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

Emissions Report for: Annual

El Cedro T91019 (Cond)(2018 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	781.13	1,659.00	2,440.13
Butane (-n)	63.03	133.87	196.91
Isopentane	37.19	78.98	116.17
Pentane (-n)	120.30	255.50	375.80
Cyclopentane	0.05	0.10	0.15
Hexane (-n)	143.34	304.43	447.76
Cyclohexane	160.34	340.54	500.88
Heptane (-n)	95.21	202.22	297.44
Octane (-n)	13.13	27.89	41.02
Nonane (-n)	1.17	2.49	3.66
Decane (-n)	0.15	0.31	0.45
Methylcyclohexane	61.60	130.84	192.44
2,2,4-Trimethylpentane (isooctane)	0.36	0.77	1.13
Benzene	20.07	42.63	62.71
Ethylbenzene	0.03	0.06	0.09
Toluene	11.11	23.60	34.71
Xylenes (mixed isomers)	0.21	0.44	0.65
Isobutane	53.83	114.33	168.16

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

Identification		
User Identification:	El Cedro T91019 (Cond)(Jan-Apr 2019 PSD)	
City:	Navajo Dam	
State:	New Mexico	
Company:	Harvest Four Corners, LLC	
Type of Tank:	Vertical Fixed Roof Tank	
Description:	21,000 Gallon Condensate Storage Tank	
Tank Dimensions		
Shell Height (ft):		16.00
Diameter (ft):		15.50
Liquid Height (ft) :		14.00
Avg. Liquid Height (ft):		7.00
Volume (gallons):		19,761.25
Turnovers:		5.54
Net Throughput(gal/yr):		109,452.00
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

El Cedro T91019 (Cond)(Jan-Apr 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, 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	Jan	53.71	44.35	63.07	59.23	1.9583	1.5772	2.4104	71.2089			94.07	
2,2,4-Trimethylpentane (isooctane)						0.4955	0.3729	0.6503	114.2300	0.0011	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						0.9782	0.7441	1.2707	78.1100	0.0232	0.0153	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						23.2548	19.3861	27.6969	58.1230	0.0132	0.2076	58.12	Option 1: VP50 = 21.58 VP60 = 26.1
Cyclohexane						1.0189	0.7801	1.3155	84.1600	0.1623	0.1115	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						3.6168	2.8499	4.5028	70.1300	0.0000	0.0000	70.13	Option 1: VP50 = 3.287 VP60 = 4.177
Decane (-n)						0.0289	0.0234	0.0358	142.2900	0.0227	0.0004	142.29	Option 1: VP50 = .026411 VP60 = .033211
Ethylbenzene						0.0869	0.0616	0.1207	106.1700	0.0007	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.5053	0.3771	0.6699	100.2000	0.2362	0.0805	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.6204	1.2539	2.0711	86.1700	0.1207	0.1319	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						34.2625	28.9380	40.2917	58.1230	0.0077	0.1772	58.12	Option 1: VP50 = 31.98 VP60 = 38.14
Isopentane						8.6731	6.7519	10.7789	72.1500	0.0141	0.0825	72.15	Option 1: VP50 = 7.889 VP60 = 10.005
Methylcyclohexane						0.4641	0.3489	0.6098	98.1800	0.1333	0.0417	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0565	0.0451	0.0707	128.2600	0.0283	0.0011	128.26	Option 1: VP50 = .051285 VP60 = .065278
Octane (-n)						0.1246	0.0979	0.1586	114.2300	0.1509	0.0127	114.23	Option 1: VP50 = .112388 VP60 = .145444
Pentane (-n)						5.9341	4.7773	7.3140	72.1500	0.0320	0.1280	72.15	Option 3: A=27691, B=7.558
Toluene						0.2706	0.1990	0.3630	92.1300	0.0480	0.0088	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0722	0.0510	0.1006	106.1700	0.0056	0.0003	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Feb	57.85	46.68	69.01	59.23	2.1476	1.6659	2.7388	71.4673			94.07	
2,2,4-Trimethylpentane (isooctane)						0.5597	0.4008	0.7682	114.2300	0.0011	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.0998	0.7976	1.4917	78.1100	0.0232	0.0156	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						25.1265	20.2917	30.7956	58.1230	0.0132	0.2038	58.12	Option 1: VP50 = 21.58 VP60 = 26.1
Cyclohexane						1.1424	0.8348	1.5386	84.1600	0.1623	0.1136	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						3.9853	3.0303	5.1350	70.1300	0.0000	0.0000	70.13	Option 1: VP50 = 3.287 VP60 = 4.177
Decane (-n)						0.0317	0.0246	0.0409	142.2900	0.0227	0.0004	142.29	Option 1: VP50 = .026411 VP60 = .033211
Ethylbenzene						0.1007	0.0672	0.1475	106.1700	0.0007	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.5732	0.4061	0.7973	100.2000	0.2362	0.0830	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.8086	1.3382	2.4075	86.1700	0.1207	0.1338	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						36.8132	30.1937	44.4669	58.1230	0.0077	0.1730	58.12	Option 1: VP50 = 31.98 VP60 = 38.14
Isopentane						9.5492	7.2213	12.2807	72.1500	0.0141	0.0825	72.15	Option 1: VP50 = 7.889 VP60 = 10.005
Methylcyclohexane						0.5245	0.3751	0.7210	98.1800	0.1333	0.0429	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0623	0.0476	0.0813	128.2600	0.0283	0.0011	128.26	Option 1: VP50 = .051285 VP60 = .065278
Octane (-n)						0.1383	0.1039	0.1840	114.2300	0.1509	0.0128	114.23	Option 1: VP50 = .112388 VP60 = .145444
Pentane (-n)						6.5152	5.0465	8.3211	72.1500	0.0320	0.1277	72.15	Option 3: A=27691, B=7.558
Toluene						0.3086	0.2151	0.4346	92.1300	0.0480	0.0091	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0838	0.0557	0.1232	106.1700	0.0056	0.0003	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Mar	62.95	49.55	76.34	59.23	2.4042	1.7786	3.1986	71.7747			94.07	
2,2,4-Trimethylpentane (isooctane)						0.6481	0.4375	0.9375	114.2300	0.0011	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.2666	0.8678	1.8070	78.1100	0.0232	0.0160	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						27.6359	21.4068	35.0901	58.1230	0.0132	0.1994	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.3114	0.9064	1.8556	84.1600	0.1623	0.1160	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.4904	3.2525	6.0499	70.1300	0.0000	0.0000	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0357	0.0262	0.0486	142.2900	0.0227	0.0004	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1202	0.0747	0.1876	106.1700	0.0007	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21

Heptane (-n)						0.6676	0.4444	0.9828	100.2000	0.2362	0.0860	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.0649	1.4483	2.8823	86.1700	0.1207	0.1359	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						40.2095	31.7398	50.2023	58.1230	0.0077	0.1680	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						10.7494	7.7992	14.3084	72.1500	0.0141	0.0826	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6078	0.4096	0.8807	98.1800	0.1333	0.0442	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0705	0.0508	0.0975	128.2600	0.0283	0.0011	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1581	0.1112	0.2233	114.2300	0.1509	0.0130	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						7.2952	5.3952	9.7167	72.1500	0.0320	0.1272	72.15	Option 3: A=27691, B=7.558
Toluene						0.3617	0.2365	0.5389	92.1300	0.0480	0.0095	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1002	0.0620	0.1571	106.1700	0.0056	0.0003	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Apr	69.11	53.17	85.06	59.23	2.7446	1.9345	3.8218	72.1527			94.07	
2,2,4-Trimethylpentane (isooctane)						0.7704	0.4877	1.1781	114.2300	0.0011	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4958	0.9634	2.2511	78.1100	0.0232	0.0165	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						30.8482	23.0132	40.7084	58.1230	0.0132	0.1939	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.5427	1.0038	2.3003	84.1600	0.1623	0.1189	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						5.1458	3.5692	7.2987	70.1300	0.0000	0.0000	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0410	0.0286	0.0594	142.2900	0.0227	0.0004	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1480	0.0852	0.2470	106.1700	0.0007	0.0001	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7996	0.4971	1.2511	100.2000	0.2362	0.0897	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.4136	1.5974	3.5433	86.1700	0.1207	0.1384	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						44.5378	33.9333	57.6355	58.1230	0.0077	0.1622	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						12.3062	8.5600	16.8691	72.1500	0.0141	0.0824	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.7230	0.4568	1.1079	98.1800	0.1333	0.0458	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0815	0.0557	0.1204	128.2600	0.0283	0.0011	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1844	0.1229	0.2798	114.2300	0.1509	0.0132	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.3391	5.8623	11.6202	72.1500	0.0320	0.1267	72.15	Option 3: A=27691, B=7.558
Toluene						0.4359	0.2660	0.6896	92.1300	0.0480	0.0099	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1237	0.0708	0.2074	106.1700	0.0056	0.0003	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)

El Cedro T91019 (Cond)(Jan-Apr 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	103.4590	122.8275	184.1475	244.2975								
Vapor Space Volume (cu ft):	1,728.6931	1,728.6931	1,728.6931	1,728.6931								
Vapor Density (lb/cu ft):	0.0253	0.0276	0.0308	0.0349								
Vapor Space Expansion Factor:	0.1488	0.1876	0.2420	0.3149								
Vented Vapor Saturation Factor:	0.5126	0.4895	0.4614	0.4287								
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	1,728.6931	1,728.6931	1,728.6931	1,728.6931								
Tank Diameter (ft):	15.5000	15.5000	15.5000	15.5000								
Vapor Space Outage (ft):	9.1615	9.1615	9.1615	9.1615								
Tank Shell Height (ft):	16.0000	16.0000	16.0000	16.0000								
Average Liquid Height (ft):	7.0000	7.0000	7.0000	7.0000								
Roof Outage (ft):	0.1615	0.1615	0.1615	0.1615								
Roof Outage (Cone Roof)												
Roof Outage (ft):	0.1615	0.1615	0.1615	0.1615								
Roof Height (ft):	0.0000	0.0000	0.0000	0.0000								
Roof Slope (ft/ft):	0.0625	0.0625	0.0625	0.0625								
Shell Radius (ft):	7.7500	7.7500	7.7500	7.7500								
Vapor Density												
Vapor Density (lb/cu ft):	0.0253	0.0276	0.0308	0.0349								
Vapor Molecular Weight (lb/lb-mole):	71.2089	71.4673	71.7747	72.1527								
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.9583	2.1476	2.4042	2.7446								
Daily Avg. Liquid Surface Temp. (deg. R):	513.3754	517.5161	522.6180	528.7836								
Daily Average Ambient Temp. (deg. F):	34.2500	39.9500	46.8000	55.2000								
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731								
Liquid Bulk Temperature (deg. R):	518.9042	518.9042	518.9042	518.9042								
Tank Paint Solar Absorptance (Shell):	0.6800	0.6800	0.6800	0.6800								
Tank Paint Solar Absorptance (Roof):	0.6800	0.6800	0.6800	0.6800								
Daily Total Solar Insulation Factor (Btu/sqft day):	1,017.1676	1,321.1123	1,709.7680	2,169.4923								
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:	0.1488	0.1876	0.2420	0.3149								
Daily Vapor Temperature Range (deg. R):	37.4389	44.6660	53.5780	63.7711								
Daily Vapor Pressure Range (psia):	0.8333	1.0729	1.4200	1.8873								
Breather Vent Press. Setting Range(psia):	0.0600	0.0600	0.0600	0.0600								
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.9583	2.1476	2.4042	2.7446								
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.5772	1.6659	1.7786	1.9345								
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	2.4104	2.7388	3.1986	3.8218								
Daily Avg. Liquid Surface Temp. (deg R):	513.3754	517.5161	522.6180	528.7836								
Daily Min. Liquid Surface Temp. (deg R):	504.0156	506.3497	509.2235	512.8409								
Daily Max. Liquid Surface Temp. (deg R):	522.7351	528.6826	536.0125	544.7264								
Daily Ambient Temp. Range (deg. R):	25.1000	27.1000	29.2000	31.2000								
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:	0.5126	0.4895	0.4614	0.4287								
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.9583	2.1476	2.4042	2.7446								
Vapor Space Outage (ft):	9.1615	9.1615	9.1615	9.1615								

Working Losses (lb):	90.8506	99.9935	112.4223	129.0158
Vapor Molecular Weight (lb/lb-mole):	71.2089	71.4673	71.7747	72.1527
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.9583	2.1476	2.4042	2.7446
Net Throughput (gal/mo.):	27,363.0000	27,363.0000	27,363.0000	27,363.0000
Annual Turnovers:	5.5400	5.5400	5.5400	5.5400
Turnover Factor:	1.0000	1.0000	1.0000	1.0000
Maximum Liquid Volume (gal):	19,761.2500	19,761.2500	19,761.2500	19,761.2500
Maximum Liquid Height (ft):	14.0000	14.0000	14.0000	14.0000
Tank Diameter (ft):	15.5000	15.5000	15.5000	15.5000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	194.3096	222.8210	296.5699	373.3133

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

Emissions Report for: January, February, March, April

El Cedro T91019 (Cond)(Jan-Apr 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	432.28	654.73	1,087.01
2,2,4-Trimethylpentane (isooctane)	0.16	0.24	0.40
Benzene	6.87	10.47	17.34
Butane (-n)	86.68	130.62	217.30
Cyclohexane	49.87	75.90	125.78
Cyclopentane	0.01	0.02	0.04
Decane (-n)	0.19	0.29	0.48
Ethylbenzene	0.02	0.03	0.05
Heptane (-n)	36.85	56.27	93.13
Hexane (-n)	58.49	88.90	147.39
Isobutane	73.20	110.13	183.34
Isopentane	35.67	54.03	89.70
Methylcyclohexane	18.95	28.91	47.86
Nonane (-n)	0.47	0.71	1.18
Octane (-n)	5.60	8.51	14.11
Pentane (-n)	55.04	83.30	138.35
Toluene	4.05	6.19	10.24
Xylenes (mixed isomers)	0.13	0.20	0.33

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

Identification	
User Identification:	El Cedro T91019 (Cond)(May-Dec 2019 PSD)
City:	Navajo Dam
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	21,000 Gallon Condensate Storage Tank
Tank Dimensions	
Shell Height (ft):	16.00
Diameter (ft):	15.50
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	19,761.25
Turnovers:	44.02
Net Throughput(gal/yr):	869,778.00
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

El Cedro T91019 (Cond)(May-Dec 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, 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	May	74.53	57.29	91.76	59.23	2.2336	1.4926	3.2555	78.1986			93.50	
2,2,4-Trimethylpentane (isooctane)						0.8929	0.5507	1.3959	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.7241	1.0829	2.6505	78.1100	0.0259	0.0239	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						34.0075	24.8773	45.4212	58.1230	0.0058	0.1063	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						1.7725	1.1253	2.6985	84.1600	0.2035	0.1931	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						5.8180	3.9362	8.3450	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0466	0.0314	0.0690	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.1769	0.0987	0.3029	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.9337	0.5637	1.4984	100.2000	0.2266	0.1133	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.7580	1.7826	4.1311	86.1700	0.1232	0.1819	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						48.7581	36.4736	63.8223	58.1230	0.0026	0.0675	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						13.7991	9.4326	18.9475	72.1500	0.0081	0.0600	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.8386	0.5161	1.3138	98.1800	0.1638	0.0735	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0934	0.0615	0.1411	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2133	0.1365	0.3315	114.2300	0.1301	0.0149	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						9.3541	6.4353	13.2827	72.1500	0.0301	0.1505	72.15	Option 3: A=27691, B=7.558
Toluene						0.5112	0.3033	0.8283	92.1300	0.0475	0.0130	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1480	0.0821	0.2550	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Jun	79.59	61.66	97.52	59.23	2.5001	1.6568	3.6740	78.4721			93.50	
2,2,4-Trimethylpentane (isooctane)						1.0219	0.6248	1.6089	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.9632	1.2228	3.0385	78.1100	0.0259	0.0243	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						37.0260	26.9662	49.8519	58.1230	0.0058	0.1030	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						2.0123	1.2670	3.0843	84.1600	0.2035	0.1951	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						6.4647	4.3537	9.2698	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0521	0.0346	0.0788	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.2081	0.1150	0.3593	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						1.0763	0.6426	1.7438	100.2000	0.2266	0.1162	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						3.1158	1.9977	4.6975	86.1700	0.1232	0.1830	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						52.7846	39.3071	69.6013	58.1230	0.0026	0.0651	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						15.2192	10.4248	20.8414	72.1500	0.0081	0.0589	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.9604	0.5858	1.5153	98.1800	0.1638	0.0750	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.1048	0.0682	0.1622	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2413	0.1526	0.3849	114.2300	0.1301	0.0150	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						10.3938	7.0918	14.8630	72.1500	0.0301	0.1489	72.15	Option 3: A=27691, B=7.558
Toluene						0.5915	0.3476	0.9656	92.1300	0.0475	0.0134	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1745	0.0958	0.3030	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Jul	80.54	64.10	96.99	59.23	2.5534	1.7558	3.6340	78.5208			93.50	
2,2,4-Trimethylpentane (isooctane)						1.0478	0.6696	1.5882	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						2.0110	1.3069	3.0010	78.1100	0.0259	0.0243	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						37.6384	28.2337	49.4440	58.1230	0.0058	0.1025	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						2.0602	1.3521	3.0470	84.1600	0.2035	0.1955	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						6.6008	4.6123	9.1846	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0532	0.0367	0.0779	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.2145	0.1250	0.3538	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21

Heptane (-n)						1.1051	0.6907	1.7199	100.2000	0.2266	0.1168	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						3.1870	2.1264	4.6428	86.1700	0.1232	0.1832	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						53.5949	41.0149	69.0692	58.1230	0.0026	0.0647	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						15.4985	11.0391	20.6670	72.1500	0.0081	0.0587	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.9848	0.6280	1.4957	98.1800	0.1638	0.0752	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.1073	0.0726	0.1603	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2475	0.1630	0.3800	114.2300	0.1301	0.0150	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						10.5992	7.4808	14.7114	72.1500	0.0301	0.1486	72.15	Option 3: A=27691, B=7.558
Toluene						0.6076	0.3746	0.9522	92.1300	0.0475	0.0135	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1798	0.1042	0.2983	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Aug	78.26	63.11	93.42	59.23	2.4282	1.7152	3.3725	78.3991			93.50	
2,2,4-Trimethylpentane (isooctane)						0.9867	0.6511	1.4547	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.8980	1.2722	2.7579	78.1100	0.0259	0.0242	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						36.2347	27.7196	46.6978	58.1230	0.0058	0.1039	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						1.9470	1.3171	2.8054	84.1600	0.2035	0.1946	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						6.2952	4.5074	8.6115	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0506	0.0359	0.0718	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.1995	0.1208	0.3183	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						1.0372	0.6708	1.5659	100.2000	0.2266	0.1154	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						3.0185	2.0734	4.2883	86.1700	0.1232	0.1827	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						51.7290	40.3222	65.4874	58.1230	0.0026	0.0657	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						14.8469	10.7899	19.4932	72.1500	0.0081	0.0592	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.9271	0.6106	1.3694	98.1800	0.1638	0.0746	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.1018	0.0708	0.1472	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2340	0.1587	0.3469	114.2300	0.1301	0.0149	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						10.1125	7.3210	13.7233	72.1500	0.0301	0.1493	72.15	Option 3: A=27691, B=7.558
Toluene						0.5695	0.3634	0.8661	92.1300	0.0475	0.0133	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1672	0.1007	0.2681	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Sep	73.33	59.67	86.99	59.23	2.1737	1.5789	2.9408	78.1362			93.50	
2,2,4-Trimethylpentane (isooctane)						0.8645	0.5900	1.2379	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.6713	1.1571	2.3611	78.1100	0.0259	0.0239	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						33.2943	25.9490	42.0250	58.1230	0.0058	0.1070	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						1.7194	1.2005	2.4101	84.1600	0.2035	0.1926	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						5.6652	4.1473	7.5981	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0453	0.0330	0.0620	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.1701	0.1073	0.2622	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.9025	0.6054	1.3186	100.2000	0.2266	0.1126	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.6786	1.8968	3.7057	86.1700	0.1232	0.1817	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						47.8068	37.9342	59.3684	58.1230	0.0026	0.0681	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						13.4635	9.9343	17.4570	72.1500	0.0081	0.0602	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.8118	0.5530	1.1644	98.1800	0.1638	0.0732	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0906	0.0648	0.1259	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2067	0.1443	0.2937	114.2300	0.1301	0.0148	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						9.1214	6.7851	12.0820	72.1500	0.0301	0.1510	72.15	Option 3: A=27691, B=7.558
Toluene						0.4937	0.3267	0.7275	92.1300	0.0475	0.0129	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1423	0.0893	0.2203	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Oct	66.30	54.13	78.48	59.23	1.8491	1.3825	2.4398	77.7578			93.50	
2,2,4-Trimethylpentane (isooctane)						0.7125	0.5018	0.9924	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.3874	0.9901	1.9086	78.1100	0.0259	0.0234	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.3845	23.4461	36.3641	58.1230	0.0058	0.1116	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4335	1.0310	1.9576	84.1600	0.2035	0.1897	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.8471	3.6544	6.3229	70.1300	0.0000	0.0001	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0386	0.0292	0.0509	142.2900	0.0041	0.0001	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1347	0.0882	0.2009	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7369	0.5119	1.0435	100.2000	0.2266	0.1086	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.2492	1.6389	3.0343	86.1700	0.1232	0.1802	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						42.5656	34.5232	51.9016	58.1230	0.0026	0.0716	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.5968	8.7626	14.9078	72.1500	0.0081	0.0613	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6684	0.4700	0.9325	98.1800	0.1638	0.0712	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0765	0.0571	0.1023	128.2600	0.0254	0.0013	128.26	Option 1: VP60 = .065278 VP70 = .08309

Octane (-n)						0.1724	0.1260	0.2352	114.2300	0.1301	0.0146	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						7.8492	5.9915	10.1580	72.1500	0.0301	0.1535	72.15	Option 3: A=27691, B=7.558
Toluene						0.4006	0.2743	0.5730	92.1300	0.0475	0.0124	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1124	0.0733	0.1683	106.1700	0.0020	0.0001	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Nov	58.56	48.62	68.50	59.23	1.5381	1.2054	1.9450	77.3348			93.50	
2,2,4-Trimethylpentane (isooctane)						0.5713	0.4252	0.7573	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.1219	0.8443	1.4714	78.1100	0.0259	0.0229	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						25.4478	21.0434	30.5269	58.1230	0.0058	0.1168	58.12	Option 1: VP50 = 21.58 VP60 = 26.1
Cyclohexane						1.1648	0.8825	1.5181	84.1600	0.2035	0.1863	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.0486	3.1801	5.0802	70.1300	0.0000	0.0001	70.13	Option 1: VP50 = 3.287 VP60 = 4.177
Decane (-n)						0.0322	0.0257	0.0405	142.2900	0.0041	0.0001	142.29	Option 1: VP50 = .026411 VP60 = .033211
Ethylbenzene						0.1032	0.0722	0.1450	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.5856	0.4316	0.7855	100.2000	0.2266	0.1043	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.8427	1.4116	2.3767	86.1700	0.1232	0.1785	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						37.2511	31.2360	44.1049	58.1230	0.0026	0.0758	58.12	Option 1: VP50 = 31.98 VP60 = 38.14
Isopentane						9.6997	7.6109	12.1505	72.1500	0.0081	0.0619	72.15	Option 1: VP50 = 7.889 VP60 = 10.005
Methylcyclohexane						0.5355	0.3981	0.7107	98.1800	0.1638	0.0690	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0633	0.0498	0.0804	128.2600	0.0254	0.0013	128.26	Option 1: VP50 = .051285 VP60 = .065278
Octane (-n)						0.1407	0.1089	0.1818	114.2300	0.1301	0.0144	114.23	Option 1: VP50 = .112388 VP60 = .145444
Pentane (-n)						6.6196	5.2795	8.2295	72.1500	0.0301	0.1564	72.15	Option 3: A=27691, B=7.558
Toluene						0.3156	0.2293	0.4279	92.1300	0.0475	0.0118	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0859	0.0599	0.1211	106.1700	0.0020	0.0001	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Dec	53.62	44.87	62.37	59.23	1.3654	1.0971	1.6853	77.0472			93.50	
2,2,4-Trimethylpentane (isooctane)						0.4943	0.3791	0.6376	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						0.9759	0.7559	1.2468	78.1100	0.0259	0.0225	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						23.2171	19.5901	27.3360	58.1230	0.0058	0.1205	58.12	Option 1: VP50 = 21.58 VP60 = 26.1
Cyclohexane						1.0166	0.7922	1.2914	84.1600	0.2035	0.1838	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						3.6094	2.8906	4.4292	70.1300	0.0000	0.0001	70.13	Option 1: VP50 = 3.287 VP60 = 4.177
Decane (-n)						0.0289	0.0236	0.0352	142.2900	0.0041	0.0001	142.29	Option 1: VP50 = .026411 VP60 = .033211
Ethylbenzene						0.0866	0.0628	0.1178	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.5040	0.3835	0.6563	100.2000	0.2266	0.1015	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.6168	1.2725	2.0346	86.1700	0.1232	0.1771	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						34.2111	29.2209	39.8054	58.1230	0.0026	0.0787	58.12	Option 1: VP50 = 31.98 VP60 = 38.14
Isopentane						8.6554	6.8577	10.6040	72.1500	0.0081	0.0625	72.15	Option 1: VP50 = 7.889 VP60 = 10.005
Methylcyclohexane						0.4630	0.3546	0.5979	98.1800	0.1638	0.0674	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0564	0.0456	0.0695	128.2600	0.0254	0.0013	128.26	Option 1: VP50 = .051285 VP60 = .065278
Octane (-n)						0.1244	0.0993	0.1556	114.2300	0.1301	0.0144	114.23	Option 1: VP50 = .112388 VP60 = .145444
Pentane (-n)						5.9229	4.8369	7.2035	72.1500	0.0301	0.1583	72.15	Option 3: A=27691, B=7.558
Toluene						0.2698	0.2025	0.3553	92.1300	0.0475	0.0114	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0720	0.0520	0.0982	106.1700	0.0020	0.0001	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)

El Cedro T91019 (Cond)(May-Dec 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):					235.5691	266.6596	257.5281	224.6283	174.5903	136.2418	89.3807	72.1123
Vapor Space Volume (cu ft):					1,728.6931	1,728.6931	1,728.6931	1,728.6931	1,728.6931	1,728.6931	1,728.6931	1,728.6931
Vapor Density (lb/cu ft):					0.0305	0.0339	0.0346	0.0330	0.0297	0.0255	0.0214	0.0191
Vapor Space Expansion Factor:					0.3007	0.3358	0.3112	0.2770	0.2330	0.1894	0.1408	0.1172
Vented Vapor Saturation Factor:					0.4797	0.4517	0.4465	0.4589	0.4865	0.5269	0.5725	0.6013
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):					1,728.6931	1,728.6931	1,728.6931	1,728.6931	1,728.6931	1,728.6931	1,728.6931	1,728.6931
Tank Diameter (ft):					15.5000	15.5000	15.5000	15.5000	15.5000	15.5000	15.5000	15.5000
Vapor Space Outage (ft):					9.1615	9.1615	9.1615	9.1615	9.1615	9.1615	9.1615	9.1615
Tank Shell Height (ft):					16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000
Average Liquid Height (ft):					7.0000	7.0000	7.0000	7.0000	7.0000	7.0000	7.0000	7.0000
Roof Outage (ft):					0.1615	0.1615	0.1615	0.1615	0.1615	0.1615	0.1615	0.1615
Roof Outage (Cone Roof)												
Roof Outage (ft):					0.1615	0.1615	0.1615	0.1615	0.1615	0.1615	0.1615	0.1615
Roof Height (ft):					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Roof Slope (ft/ft):					0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
Shell Radius (ft):					7.7500	7.7500	7.7500	7.7500	7.7500	7.7500	7.7500	7.7500
Vapor Density												
Vapor Density (lb/cu ft):					0.0305	0.0339	0.0346	0.0330	0.0297	0.0255	0.0214	0.0191
Vapor Molecular Weight (lb/lb-mole):					78.1986	78.4721	78.5208	78.3991	78.1362	77.7578	77.3348	77.0472
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):					2.2336	2.5001	2.5534	2.4282	2.1737	1.8491	1.5381	1.3654
Daily Avg. Liquid Surface Temp. (deg. R):					534.1959	539.2606	540.2118	537.9329	532.9993	525.9743	518.2270	513.2920
Daily Average Ambient Temp. (deg. F):					64.1500	74.1500	78.4500	75.8000	68.5500	57.0000	44.2500	35.3000
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):					10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):					518.9042	518.9042	518.9042	518.9042	518.9042	518.9042	518.9042	518.9042
Tank Paint Solar Absorptance (Shell):					0.6800	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Tank Paint Solar Absorptance (Roof):					0.6800	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):					2,443.9308	2,567.6661	2,392.5331	2,185.3558	1,860.7886	1,499.1008	1,101.2442	915.6412
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:					0.3007	0.3358	0.3112	0.2770	0.2330	0.1894	0.1408	0.1172
Daily Vapor Temperature Range (deg. R):					68.9244	71.7124	65.7858	60.6172	54.6534	48.7029	39.7597	35.0018
Daily Vapor Pressure Range (psia):					1.7629	2.0172	1.8781	1.6573	1.3619	1.0573	0.7395	0.5882
Breather Vent Press. Setting Range(psia):					0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):					2.2336	2.5001	2.5534	2.4282	2.1737	1.8491	1.5381	1.3654
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):					1.4926	1.6568	1.7558	1.7152	1.5789	1.3825	1.2054	1.0971
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):					3.2555	3.6740	3.6340	3.3725	2.9408	2.4398	1.9450	1.6853
Daily Avg. Liquid Surface Temp. (deg R):					534.1959	539.2606	540.2118	537.9329	532.9993	525.9743	518.2270	513.2920
Daily Min. Liquid Surface Temp. (deg R):					516.9648	521.3325	523.7654	522.7786	519.3359	513.7986	508.2871	504.5415
Daily Max. Liquid Surface Temp. (deg R):					551.4270	557.1887	556.6583	553.0872	546.6626	538.1500	528.1669	522.0424
Daily Ambient Temp. Range (deg. R):					31.1000	31.7000	28.1000	26.4000	26.7000	28.0000	26.1000	24.4000
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:					0.4797	0.4517	0.4465	0.4589	0.4865	0.5269	0.5725	0.6013
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):					2.2336	2.5001	2.5534	2.4282	2.1737	1.8491	1.5381	1.3654
Vapor Space Outage (ft):					9.1615	9.1615	9.1615	9.1615	9.1615	9.1615	9.1615	9.1615

Working Losses (lb):	383.4993	430.7460	440.2052	417.9690	372.9107	315.6856	261.1699	230.9776
Vapor Molecular Weight (lb/lb-mole):	78.1986	78.4721	78.5208	78.3991	78.1362	77.7578	77.3348	77.0472
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.2336	2.5001	2.5534	2.4282	2.1737	1.8491	1.5381	1.3654
Net Throughput (gal/mo.):	108,722.2500	108,722.2500	108,722.2500	108,722.2500	108,722.2500	108,722.2500	108,722.2500	108,722.2500
Annual Turnovers:	44.0200	44.0200	44.0200	44.0200	44.0200	44.0200	44.0200	44.0200
Turnover Factor:	0.8482	0.8482	0.8482	0.8482	0.8482	0.8482	0.8482	0.8482
Maximum Liquid Volume (gal):	19,761.2500	19,761.2500	19,761.2500	19,761.2500	19,761.2500	19,761.2500	19,761.2500	19,761.2500
Maximum Liquid Height (ft):	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000
Tank Diameter (ft):	15.5000	15.5000	15.5000	15.5000	15.5000	15.5000	15.5000	15.5000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	619.0685	697.4056	697.7333	642.5974	547.5010	451.9274	350.5507	303.0900

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

Emissions Report for: May, June, July, August, September, October, November, December

El Cedro T91019 (Cond)(May-Dec 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	2,853.16	1,456.71	4,309.87
2,2,4-Trimethylpentane (isooctane)	1.22	0.63	1.85
Benzene	67.90	34.82	102.72
Butane (-n)	307.10	155.23	462.33
Cyclohexane	548.31	280.95	829.26
Cyclopentane	0.15	0.08	0.23
Decane (-n)	0.29	0.15	0.44
Ethylbenzene	0.08	0.04	0.12
Heptane (-n)	320.11	164.77	484.88
Hexane (-n)	517.77	264.87	782.64
Isobutane	195.86	98.79	294.65
Isopentane	171.42	87.19	258.61
Methylcyclohexane	208.18	106.97	315.14
Nonane (-n)	3.62	1.85	5.46
Octane (-n)	42.19	21.60	63.80
Pentane (-n)	431.87	219.65	651.52
Toluene	36.65	18.89	55.54
Xylenes (mixed isomers)	0.45	0.23	0.68

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

Identification		
User Identification:	El Cedro T91020 & T91021 (Cond)(2018 PSD)	
City:	Navajo Dam	
State:	New Mexico	
Company:	Harvest Four Corners, LLC	
Type of Tank:	Vertical Fixed Roof Tank	
Description:	12,000 Gallon Condensate Storage Tank	
Tank Dimensions		
Shell Height (ft):		15.00
Diameter (ft):		12.00
Liquid Height (ft) :		14.00
Avg. Liquid Height (ft):		7.00
Volume (gallons):		11,844.42
Turnovers:		12.26
Net Throughput(gal/yr):		145,236.00
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

El Cedro T91020 & T91021 (Cond)(2018 PSD) - Vertical Fixed Roof Tank
Navajo Dam, 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	1.7068	1.2323	2.3258	79.3142			94.16	
2,2,4-Trimethylpentane (isooctane)						0.7338	0.4989	1.0546	114.2300	0.0009	0.0005	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4274	0.9846	2.0237	78.1100	0.0259	0.0257	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.9357	23.3576	37.8083	58.1230	0.0039	0.0807	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4738	1.0254	2.0729	84.1600	0.2002	0.2053	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.9596	3.6370	6.6394	70.1300	0.0000	0.0001	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.0068	0.0002	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0004	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.2306	0.1219	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.1142	0.1835	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						43.3083	34.4026	53.8185	58.1230	0.0023	0.0689	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0058	0.0476	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6886	0.4673	0.9913	98.1800	0.1647	0.0789	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.0275	0.0015	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.1366	0.0168	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0276	0.1540	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0494	0.0142	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0033	0.0003	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)

El Cedro T91020 & T91021 (Cond)(2018 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	929.5258
Vapor Space Volume (cu ft):	918.9159
Vapor Density (lb/cu ft):	0.0239
Vapor Space Expansion Factor:	0.2009
Vented Vapor Saturation Factor:	0.5764
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	918.9159
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	8.1250
Tank Shell Height (ft):	15.0000
Average Liquid Height (ft):	7.0000
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):	0.0239
Vapor Molecular Weight (lb/lb-mole):	79.3142
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.7068
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:	0.2009
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	1.0935
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.7068
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.2323
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	2.3258
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:	0.5764
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.7068
Vapor Space Outage (ft):	8.1250
Working Losses (lb):	468.1353
Vapor Molecular Weight (lb/lb-mole):	79.3142
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.7068
Annual Net Throughput (gal/yr.):	145,236.0000
Annual Turnovers:	12.2600
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	11,844.4200
Maximum Liquid Height (ft):	14.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	1,397.6611

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

Emissions Report for: Annual

El Cedro T91020 & T91021 (Cond)(2018 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	468.14	929.53	1,397.66
Octane (-n)	7.87	15.63	23.50
Nonane (-n)	0.70	1.39	2.09
Decane (-n)	0.09	0.17	0.26
Methylcyclohexane	36.92	73.31	110.23
2,2,4-Trimethylpentane (isooctane)	0.22	0.43	0.65
Benzene	12.03	23.89	35.92
Ethylbenzene	0.02	0.04	0.05
Toluene	6.66	13.22	19.88
Xylenes (mixed isomers)	0.13	0.25	0.37
Isobutane	32.26	64.06	96.32
Butane (-n)	37.78	75.01	112.79
Isopentane	22.29	44.25	66.54
Pentane (-n)	72.10	143.16	215.25
Cyclopentane	0.03	0.06	0.08
Hexane (-n)	85.90	170.57	256.47
Cyclohexane	96.09	190.80	286.90
Heptane (-n)	57.06	113.30	170.37

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

Identification

User Identification:	El Cedro T91020 & T91021 (Cond)(Jan-Apr 2019 PSD)
City:	Navajo Dam
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	12,000 Gallon Condensate Storage Tank

Tank Dimensions

Shell Height (ft):	15.00
Diameter (ft):	12.00
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	11,844.42
Turnovers:	5.54
Net Throughput(gal/yr):	65,604.00
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

El Cedro T91020 & T91021 (Cond)(Jan-Apr 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, 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	Jan	53.71	44.35	63.07	59.23	1.9583	1.5772	2.4104	71.2089			94.07	
2,2,4-Trimethylpentane (isooctane)						0.4955	0.3729	0.6503	114.2300	0.0011	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						0.9782	0.7441	1.2707	78.1100	0.0232	0.0153	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						23.2548	19.3861	27.6969	58.1230	0.0132	0.2076	58.12	Option 1: VP50 = 21.58 VP60 = 26.1
Cyclohexane						1.0189	0.7801	1.3155	84.1600	0.1623	0.1115	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						3.6168	2.8499	4.5028	70.1300	0.0000	0.0000	70.13	Option 1: VP50 = 3.287 VP60 = 4.177
Decane (-n)						0.0289	0.0234	0.0358	142.2900	0.0227	0.0004	142.29	Option 1: VP50 = .026411 VP60 = .033211
Ethylbenzene						0.0869	0.0616	0.1207	106.1700	0.0007	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.5053	0.3771	0.6699	100.2000	0.2362	0.0805	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.6204	1.2539	2.0711	86.1700	0.1207	0.1319	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						34.2625	28.9380	40.2917	58.1230	0.0077	0.1772	58.12	Option 1: VP50 = 31.98 VP60 = 38.14
Isopentane						8.6731	6.7519	10.7789	72.1500	0.0141	0.0825	72.15	Option 1: VP50 = 7.889 VP60 = 10.005
Methylcyclohexane						0.4641	0.3489	0.6098	98.1800	0.1333	0.0417	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0565	0.0451	0.0707	128.2600	0.0283	0.0011	128.26	Option 1: VP50 = .051285 VP60 = .065278
Octane (-n)						0.1246	0.0979	0.1586	114.2300	0.1509	0.0127	114.23	Option 1: VP50 = .112388 VP60 = .145444
Pentane (-n)						5.9341	4.7773	7.3140	72.1500	0.0320	0.1280	72.15	Option 3: A=27691, B=7.558
Toluene						0.2706	0.1990	0.3630	92.1300	0.0480	0.0088	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0722	0.0510	0.1006	106.1700	0.0056	0.0003	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Feb	57.85	46.68	69.01	59.23	2.1476	1.6659	2.7388	71.4673			94.07	
2,2,4-Trimethylpentane (isooctane)						0.5597	0.4008	0.7682	114.2300	0.0011	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.0998	0.7976	1.4917	78.1100	0.0232	0.0156	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						25.1265	20.2917	30.7956	58.1230	0.0132	0.2038	58.12	Option 1: VP50 = 21.58 VP60 = 26.1
Cyclohexane						1.1424	0.8348	1.5386	84.1600	0.1623	0.1136	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						3.9853	3.0303	5.1350	70.1300	0.0000	0.0000	70.13	Option 1: VP50 = 3.287 VP60 = 4.177
Decane (-n)						0.0317	0.0246	0.0409	142.2900	0.0227	0.0004	142.29	Option 1: VP50 = .026411 VP60 = .033211
Ethylbenzene						0.1007	0.0672	0.1475	106.1700	0.0007	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.5732	0.4061	0.7973	100.2000	0.2362	0.0830	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.8086	1.3382	2.4075	86.1700	0.1207	0.1338	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						36.8132	30.1937	44.4669	58.1230	0.0077	0.1730	58.12	Option 1: VP50 = 31.98 VP60 = 38.14
Isopentane						9.5492	7.2213	12.2807	72.1500	0.0141	0.0825	72.15	Option 1: VP50 = 7.889 VP60 = 10.005
Methylcyclohexane						0.5245	0.3751	0.7210	98.1800	0.1333	0.0429	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0623	0.0476	0.0813	128.2600	0.0283	0.0011	128.26	Option 1: VP50 = .051285 VP60 = .065278
Octane (-n)						0.1383	0.1039	0.1840	114.2300	0.1509	0.0128	114.23	Option 1: VP50 = .112388 VP60 = .145444
Pentane (-n)						6.5152	5.0465	8.3211	72.1500	0.0320	0.1277	72.15	Option 3: A=27691, B=7.558
Toluene						0.3086	0.2151	0.4346	92.1300	0.0480	0.0091	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0838	0.0557	0.1232	106.1700	0.0056	0.0003	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Mar	62.95	49.55	76.34	59.23	2.4042	1.7786	3.1986	71.7747			94.07	
2,2,4-Trimethylpentane (isooctane)						0.6481	0.4375	0.9375	114.2300	0.0011	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.2666	0.8678	1.8070	78.1100	0.0232	0.0160	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						27.6359	21.4068	35.0901	58.1230	0.0132	0.1994	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.3114	0.9064	1.8556	84.1600	0.1623	0.1160	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.4904	3.2525	6.0499	70.1300	0.0000	0.0000	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0357	0.0262	0.0486	142.2900	0.0227	0.0004	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1202	0.0747	0.1876	106.1700	0.0007	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21

Heptane (-n)						0.6676	0.4444	0.9828	100.2000	0.2362	0.0860	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.0649	1.4483	2.8823	86.1700	0.1207	0.1359	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						40.2095	31.7398	50.2023	58.1230	0.0077	0.1680	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						10.7494	7.7992	14.3084	72.1500	0.0141	0.0826	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6078	0.4096	0.8807	98.1800	0.1333	0.0442	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0705	0.0508	0.0975	128.2600	0.0283	0.0011	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1581	0.1112	0.2233	114.2300	0.1509	0.0130	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						7.2952	5.3952	9.7167	72.1500	0.0320	0.1272	72.15	Option 3: A=27691, B=7.558
Toluene						0.3617	0.2365	0.5389	92.1300	0.0480	0.0095	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1002	0.0620	0.1571	106.1700	0.0056	0.0003	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Apr	69.11	53.17	85.06	59.23	2.7446	1.9345	3.8218	72.1527			94.07	
2,2,4-Trimethylpentane (isooctane)						0.7704	0.4877	1.1781	114.2300	0.0011	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4958	0.9634	2.2511	78.1100	0.0232	0.0165	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						30.8482	23.0132	40.7084	58.1230	0.0132	0.1939	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.5427	1.0038	2.3003	84.1600	0.1623	0.1189	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						5.1458	3.5692	7.2987	70.1300	0.0000	0.0000	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0410	0.0286	0.0594	142.2900	0.0227	0.0004	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1480	0.0852	0.2470	106.1700	0.0007	0.0001	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7996	0.4971	1.2511	100.2000	0.2362	0.0897	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.4136	1.5974	3.5433	86.1700	0.1207	0.1384	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						44.5378	33.9333	57.6355	58.1230	0.0077	0.1622	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						12.3062	8.5600	16.8691	72.1500	0.0141	0.0824	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.7230	0.4568	1.1079	98.1800	0.1333	0.0458	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0815	0.0557	0.1204	128.2600	0.0283	0.0011	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1844	0.1229	0.2798	114.2300	0.1509	0.0132	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.3391	5.8623	11.6202	72.1500	0.0320	0.1267	72.15	Option 3: A=27691, B=7.558
Toluene						0.4359	0.2660	0.6896	92.1300	0.0480	0.0099	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1237	0.0708	0.2074	106.1700	0.0056	0.0003	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)

El Cedro T91020 & T91021 (Cond)(Jan-Apr 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	58.2049	69.2927	104.2384	138.8337								
Vapor Space Volume (cu ft):	918.9159	918.9159	918.9159	918.9159								
Vapor Density (lb/cu ft):	0.0253	0.0276	0.0308	0.0349								
Vapor Space Expansion Factor:	0.1488	0.1876	0.2420	0.3149								
Vented Vapor Saturation Factor:	0.5425	0.5195	0.4913	0.4583								
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	918.9159	918.9159	918.9159	918.9159								
Tank Diameter (ft):	12.0000	12.0000	12.0000	12.0000								
Vapor Space Outage (ft):	8.1250	8.1250	8.1250	8.1250								
Tank Shell Height (ft):	15.0000	15.0000	15.0000	15.0000								
Average Liquid Height (ft):	7.0000	7.0000	7.0000	7.0000								
Roof Outage (ft):	0.1250	0.1250	0.1250	0.1250								
Roof Outage (Cone Roof)												
Roof Outage (ft):	0.1250	0.1250	0.1250	0.1250								
Roof Height (ft):	0.0000	0.0000	0.0000	0.0000								
Roof Slope (ft/ft):	0.0625	0.0625	0.0625	0.0625								
Shell Radius (ft):	6.0000	6.0000	6.0000	6.0000								
Vapor Density												
Vapor Density (lb/cu ft):	0.0253	0.0276	0.0308	0.0349								
Vapor Molecular Weight (lb/lb-mole):	71.2089	71.4673	71.7747	72.1527								
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.9583	2.1476	2.4042	2.7446								
Daily Avg. Liquid Surface Temp. (deg. R):	513.3754	517.5161	522.6180	528.7836								
Daily Average Ambient Temp. (deg. F):	34.2500	39.9500	46.8000	55.2000								
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731								
Liquid Bulk Temperature (deg. R):	518.9042	518.9042	518.9042	518.9042								
Tank Paint Solar Absorptance (Shell):	0.6800	0.6800	0.6800	0.6800								
Tank Paint Solar Absorptance (Roof):	0.6800	0.6800	0.6800	0.6800								
Daily Total Solar Insulation Factor (Btu/sqft day):	1,017.1676	1,321.1123	1,709.7680	2,169.4923								
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:	0.1488	0.1876	0.2420	0.3149								
Daily Vapor Temperature Range (deg. R):	37.4389	44.6660	53.5780	63.7711								
Daily Vapor Pressure Range (psia):	0.8333	1.0729	1.4200	1.8873								
Breather Vent Press. Setting Range(psia):	0.0600	0.0600	0.0600	0.0600								
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.9583	2.1476	2.4042	2.7446								
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.5772	1.6659	1.7786	1.9345								
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	2.4104	2.7388	3.1986	3.8218								
Daily Avg. Liquid Surface Temp. (deg R):	513.3754	517.5161	522.6180	528.7836								
Daily Min. Liquid Surface Temp. (deg R):	504.0156	506.3497	509.2235	512.8409								
Daily Max. Liquid Surface Temp. (deg R):	522.7351	528.6826	536.0125	544.7264								
Daily Ambient Temp. Range (deg. R):	25.1000	27.1000	29.2000	31.2000								
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:	0.5425	0.5195	0.4913	0.4583								
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.9583	2.1476	2.4042	2.7446								
Vapor Space Outage (ft):	8.1250	8.1250	8.1250	8.1250								

Working Losses (lb):	54.4546	59.9347	67.3844	77.3303
Vapor Molecular Weight (lb/lb-mole):	71.2089	71.4673	71.7747	72.1527
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.9583	2.1476	2.4042	2.7446
Net Throughput (gal/mo.):	16,401.0000	16,401.0000	16,401.0000	16,401.0000
Annual Turnovers:	5.5400	5.5400	5.5400	5.5400
Turnover Factor:	1.0000	1.0000	1.0000	1.0000
Maximum Liquid Volume (gal):	11,844.4200	11,844.4200	11,844.4200	11,844.4200
Maximum Liquid Height (ft):	14.0000	14.0000	14.0000	14.0000
Tank Diameter (ft):	12.0000	12.0000	12.0000	12.0000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	112.6594	129.2274	171.6228	216.1640

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

Emissions Report for: January, February, March, April

El Cedro T91020 & T91021 (Cond)(Jan-Apr 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	259.10	370.57	629.67
2,2,4-Trimethylpentane (isooctane)	0.10	0.14	0.23
Benzene	4.12	5.92	10.04
Butane (-n)	51.96	73.92	125.88
Cyclohexane	29.89	42.96	72.86
Cyclopentane	0.01	0.01	0.02
Decane (-n)	0.11	0.16	0.28
Ethylbenzene	0.01	0.02	0.03
Heptane (-n)	22.09	31.85	53.94
Hexane (-n)	35.06	50.32	85.38
Isobutane	43.88	62.33	106.20
Isopentane	21.38	30.58	51.96
Methylcyclohexane	11.36	16.36	27.72
Nonane (-n)	0.28	0.40	0.68
Octane (-n)	3.36	4.82	8.17
Pentane (-n)	32.99	47.15	80.14
Toluene	2.43	3.51	5.93
Xylenes (mixed isomers)	0.08	0.11	0.19

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

Identification	
User Identification:	El Cedro T91029 & T91021 (Cond)(May-Dec 2019 PSD)
City:	Navajo Dam
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	12,000 Gallon Condensate Storage Tank
Tank Dimensions	
Shell Height (ft):	15.00
Diameter (ft):	12.00
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	11,844.42
Turnovers:	44.02
Net Throughput(gal/yr):	521,304.00
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

El Cedro T91029 & T91021 (Cond)(May-Dec 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, 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	May	74.53	57.29	91.76	59.23	2.2336	1.4926	3.2555	78.1986			93.50	
2,2,4-Trimethylpentane (isooctane)						0.8929	0.5507	1.3959	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.7241	1.0829	2.6505	78.1100	0.0259	0.0239	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						34.0075	24.8773	45.4212	58.1230	0.0058	0.1063	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						1.7725	1.1253	2.6985	84.1600	0.2035	0.1931	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						5.8180	3.9362	8.3450	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0466	0.0314	0.0690	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.1769	0.0987	0.3029	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.9337	0.5637	1.4984	100.2000	0.2266	0.1133	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.7580	1.7826	4.1311	86.1700	0.1232	0.1819	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						48.7581	36.4736	63.8223	58.1230	0.0026	0.0675	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						13.7991	9.4326	18.9475	72.1500	0.0081	0.0600	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.8386	0.5161	1.3138	98.1800	0.1638	0.0735	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0934	0.0615	0.1411	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2133	0.1365	0.3315	114.2300	0.1301	0.0149	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						9.3541	6.4353	13.2827	72.1500	0.0301	0.1505	72.15	Option 3: A=27691, B=7.558
Toluene						0.5112	0.3033	0.8283	92.1300	0.0475	0.0130	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1480	0.0821	0.2550	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Jun	79.59	61.66	97.52	59.23	2.5001	1.6568	3.6740	78.4721			93.50	
2,2,4-Trimethylpentane (isooctane)						1.0219	0.6248	1.6089	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.9632	1.2228	3.0385	78.1100	0.0259	0.0243	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						37.0260	26.9662	49.8519	58.1230	0.0058	0.1030	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						2.0123	1.2670	3.0843	84.1600	0.2035	0.1951	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						6.4647	4.3537	9.2698	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0521	0.0346	0.0788	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.2081	0.1150	0.3593	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						1.0763	0.6426	1.7438	100.2000	0.2266	0.1162	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						3.1158	1.9977	4.6975	86.1700	0.1232	0.1830	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						52.7846	39.3071	69.6013	58.1230	0.0026	0.0651	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						15.2192	10.4248	20.8414	72.1500	0.0081	0.0589	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.9604	0.5858	1.5153	98.1800	0.1638	0.0750	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.1048	0.0682	0.1622	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2413	0.1526	0.3849	114.2300	0.1301	0.0150	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						10.3938	7.0918	14.8630	72.1500	0.0301	0.1489	72.15	Option 3: A=27691, B=7.558
Toluene						0.5915	0.3476	0.9656	92.1300	0.0475	0.0134	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1745	0.0958	0.3030	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Jul	80.54	64.10	96.99	59.23	2.5534	1.7558	3.6340	78.5208			93.50	
2,2,4-Trimethylpentane (isooctane)						1.0478	0.6696	1.5882	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						2.0110	1.3069	3.0010	78.1100	0.0259	0.0243	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						37.6384	28.2337	49.4440	58.1230	0.0058	0.1025	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						2.0602	1.3521	3.0470	84.1600	0.2035	0.1955	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						6.6008	4.6123	9.1846	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0532	0.0367	0.0779	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.2145	0.1250	0.3538	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21

Heptane (-n)						1.1051	0.6907	1.7199	100.2000	0.2266	0.1168	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						3.1870	2.1264	4.6428	86.1700	0.1232	0.1832	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						53.5949	41.0149	69.0692	58.1230	0.0026	0.0647	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						15.4985	11.0391	20.6670	72.1500	0.0081	0.0587	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.9848	0.6280	1.4957	98.1800	0.1638	0.0752	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.1073	0.0726	0.1603	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2475	0.1630	0.3800	114.2300	0.1301	0.0150	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						10.5992	7.4808	14.7114	72.1500	0.0301	0.1486	72.15	Option 3: A=27691, B=7.558
Toluene						0.6076	0.3746	0.9522	92.1300	0.0475	0.0135	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1798	0.1042	0.2983	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Aug	78.26	63.11	93.42	59.23	2.4282	1.7152	3.3725	78.3991			93.50	
2,2,4-Trimethylpentane (isooctane)						0.9867	0.6511	1.4547	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.8980	1.2722	2.7579	78.1100	0.0259	0.0242	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						36.2347	27.7196	46.6978	58.1230	0.0058	0.1039	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						1.9470	1.3171	2.8054	84.1600	0.2035	0.1946	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						6.2952	4.5074	8.6115	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0506	0.0359	0.0718	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.1995	0.1208	0.3183	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						1.0372	0.6708	1.5659	100.2000	0.2266	0.1154	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						3.0185	2.0734	4.2883	86.1700	0.1232	0.1827	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						51.7290	40.3222	65.4874	58.1230	0.0026	0.0657	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						14.8469	10.7899	19.4932	72.1500	0.0081	0.0592	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.9271	0.6106	1.3694	98.1800	0.1638	0.0746	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.1018	0.0708	0.1472	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2340	0.1587	0.3469	114.2300	0.1301	0.0149	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						10.1125	7.3210	13.7233	72.1500	0.0301	0.1493	72.15	Option 3: A=27691, B=7.558
Toluene						0.5695	0.3634	0.8661	92.1300	0.0475	0.0133	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1672	0.1007	0.2681	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Sep	73.33	59.67	86.99	59.23	2.1737	1.5789	2.9408	78.1362			93.50	
2,2,4-Trimethylpentane (isooctane)						0.8645	0.5900	1.2379	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.6713	1.1571	2.3611	78.1100	0.0259	0.0239	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						33.2943	25.9490	42.0250	58.1230	0.0058	0.1070	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						1.7194	1.2005	2.4101	84.1600	0.2035	0.1926	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						5.6652	4.1473	7.5981	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0453	0.0330	0.0620	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.1701	0.1073	0.2622	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.9025	0.6054	1.3186	100.2000	0.2266	0.1126	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.6786	1.8968	3.7057	86.1700	0.1232	0.1817	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						47.8068	37.9342	59.3684	58.1230	0.0026	0.0681	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						13.4635	9.9343	17.4570	72.1500	0.0081	0.0602	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.8118	0.5530	1.1644	98.1800	0.1638	0.0732	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0906	0.0648	0.1259	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2067	0.1443	0.2937	114.2300	0.1301	0.0148	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						9.1214	6.7851	12.0820	72.1500	0.0301	0.1510	72.15	Option 3: A=27691, B=7.558
Toluene						0.4937	0.3267	0.7275	92.1300	0.0475	0.0129	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1423	0.0893	0.2203	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Oct	66.30	54.13	78.48	59.23	1.8491	1.3825	2.4398	77.7578			93.50	
2,2,4-Trimethylpentane (isooctane)						0.7125	0.5018	0.9924	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.3874	0.9901	1.9086	78.1100	0.0259	0.0234	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.3845	23.4461	36.3641	58.1230	0.0058	0.1116	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4335	1.0310	1.9576	84.1600	0.2035	0.1897	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.8471	3.6544	6.3229	70.1300	0.0000	0.0001	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0386	0.0292	0.0509	142.2900	0.0041	0.0001	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1347	0.0882	0.2009	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7369	0.5119	1.0435	100.2000	0.2266	0.1086	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.2492	1.6389	3.0343	86.1700	0.1232	0.1802	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						42.5656	34.5232	51.9016	58.1230	0.0026	0.0716	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.5968	8.7626	14.9078	72.1500	0.0081	0.0613	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6684	0.4700	0.9325	98.1800	0.1638	0.0712	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0765	0.0571	0.1023	128.2600	0.0254	0.0013	128.26	Option 1: VP60 = .065278 VP70 = .08309

Octane (-n)						0.1724	0.1260	0.2352	114.2300	0.1301	0.0146	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						7.8492	5.9915	10.1580	72.1500	0.0301	0.1535	72.15	Option 3: A=27691, B=7.558
Toluene						0.4006	0.2743	0.5730	92.1300	0.0475	0.0124	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1124	0.0733	0.1683	106.1700	0.0020	0.0001	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Nov	58.56	48.62	68.50	59.23	1.5381	1.2054	1.9450	77.3348			93.50	
2,2,4-Trimethylpentane (isooctane)						0.5713	0.4252	0.7573	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.1219	0.8443	1.4714	78.1100	0.0259	0.0229	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						25.4478	21.0434	30.5269	58.1230	0.0058	0.1168	58.12	Option 1: VP50 = 21.58 VP60 = 26.1
Cyclohexane						1.1648	0.8825	1.5181	84.1600	0.2035	0.1863	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.0486	3.1801	5.0802	70.1300	0.0000	0.0001	70.13	Option 1: VP50 = 3.287 VP60 = 4.177
Decane (-n)						0.0322	0.0257	0.0405	142.2900	0.0041	0.0001	142.29	Option 1: VP50 = .026411 VP60 = .033211
Ethylbenzene						0.1032	0.0722	0.1450	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.5856	0.4316	0.7855	100.2000	0.2266	0.1043	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.8427	1.4116	2.3767	86.1700	0.1232	0.1785	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						37.2511	31.2360	44.1049	58.1230	0.0026	0.0758	58.12	Option 1: VP50 = 31.98 VP60 = 38.14
Isopentane						9.6997	7.6109	12.1505	72.1500	0.0081	0.0619	72.15	Option 1: VP50 = 7.889 VP60 = 10.005
Methylcyclohexane						0.5355	0.3981	0.7107	98.1800	0.1638	0.0690	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0633	0.0498	0.0804	128.2600	0.0254	0.0013	128.26	Option 1: VP50 = .051285 VP60 = .065278
Octane (-n)						0.1407	0.1089	0.1818	114.2300	0.1301	0.0144	114.23	Option 1: VP50 = .112388 VP60 = .145444
Pentane (-n)						6.6196	5.2795	8.2295	72.1500	0.0301	0.1564	72.15	Option 3: A=27691, B=7.558
Toluene						0.3156	0.2293	0.4279	92.1300	0.0475	0.0118	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0859	0.0599	0.1211	106.1700	0.0020	0.0001	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Dec	53.62	44.87	62.37	59.23	1.3654	1.0971	1.6853	77.0472			93.50	
2,2,4-Trimethylpentane (isooctane)						0.4943	0.3791	0.6376	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						0.9759	0.7559	1.2468	78.1100	0.0259	0.0225	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						23.2171	19.5901	27.3360	58.1230	0.0058	0.1205	58.12	Option 1: VP50 = 21.58 VP60 = 26.1
Cyclohexane						1.0166	0.7922	1.2914	84.1600	0.2035	0.1838	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						3.6094	2.8906	4.4292	70.1300	0.0000	0.0001	70.13	Option 1: VP50 = 3.287 VP60 = 4.177
Decane (-n)						0.0289	0.0236	0.0352	142.2900	0.0041	0.0001	142.29	Option 1: VP50 = .026411 VP60 = .033211
Ethylbenzene						0.0866	0.0628	0.1178	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.5040	0.3835	0.6563	100.2000	0.2266	0.1015	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.6168	1.2725	2.0346	86.1700	0.1232	0.1771	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						34.2111	29.2209	39.8054	58.1230	0.0026	0.0787	58.12	Option 1: VP50 = 31.98 VP60 = 38.14
Isopentane						8.6554	6.8577	10.6040	72.1500	0.0081	0.0625	72.15	Option 1: VP50 = 7.889 VP60 = 10.005
Methylcyclohexane						0.4630	0.3546	0.5979	98.1800	0.1638	0.0674	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0564	0.0456	0.0695	128.2600	0.0254	0.0013	128.26	Option 1: VP50 = .051285 VP60 = .065278
Octane (-n)						0.1244	0.0993	0.1556	114.2300	0.1301	0.0144	114.23	Option 1: VP50 = .112388 VP60 = .145444
Pentane (-n)						5.9229	4.8369	7.2035	72.1500	0.0301	0.1583	72.15	Option 3: A=27691, B=7.558
Toluene						0.2698	0.2025	0.3553	92.1300	0.0475	0.0114	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0720	0.0520	0.0982	106.1700	0.0020	0.0001	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)

El Cedro T91029 & T91021 (Cond)(May-Dec 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):					133.0523	151.1218	146.0387	127.1907	98.5302	76.5169	49.9267	40.1431
Vapor Space Volume (cu ft):					918.9159	918.9159	918.9159	918.9159	918.9159	918.9159	918.9159	918.9159
Vapor Density (lb/cu ft):					0.0305	0.0339	0.0346	0.0330	0.0297	0.0255	0.0214	0.0191
Vapor Space Expansion Factor:					0.3007	0.3358	0.3112	0.2770	0.2330	0.1894	0.1408	0.1172
Vented Vapor Saturation Factor:					0.5097	0.4816	0.4763	0.4888	0.5165	0.5567	0.6016	0.6297
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):					918.9159	918.9159	918.9159	918.9159	918.9159	918.9159	918.9159	918.9159
Tank Diameter (ft):					12.0000	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Vapor Space Outage (ft):					8.1250	8.1250	8.1250	8.1250	8.1250	8.1250	8.1250	8.1250
Tank Shell Height (ft):					15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000
Average Liquid Height (ft):					7.0000	7.0000	7.0000	7.0000	7.0000	7.0000	7.0000	7.0000
Roof Outage (ft):					0.1250	0.1250	0.1250	0.1250	0.1250	0.1250	0.1250	0.1250
Roof Outage (Cone Roof)												
Roof Outage (ft):					0.1250	0.1250	0.1250	0.1250	0.1250	0.1250	0.1250	0.1250
Roof Height (ft):					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Roof Slope (ft/ft):					0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
Shell Radius (ft):					6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
Vapor Density												
Vapor Density (lb/cu ft):					0.0305	0.0339	0.0346	0.0330	0.0297	0.0255	0.0214	0.0191
Vapor Molecular Weight (lb/lb-mole):					78.1986	78.4721	78.5208	78.3991	78.1362	77.7578	77.3348	77.0472
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):					2.2336	2.5001	2.5534	2.4282	2.1737	1.8491	1.5381	1.3654
Daily Avg. Liquid Surface Temp. (deg. R):					534.1959	539.2606	540.2118	537.9329	532.9993	525.9743	518.2270	513.2920
Daily Average Ambient Temp. (deg. F):					64.1500	74.1500	78.4500	75.8000	68.5500	57.0000	44.2500	35.3000
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):					10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):					518.9042	518.9042	518.9042	518.9042	518.9042	518.9042	518.9042	518.9042
Tank Paint Solar Absorptance (Shell):					0.6800	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Tank Paint Solar Absorptance (Roof):					0.6800	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):					2,443.9308	2,567.6661	2,392.5331	2,185.3558	1,860.7886	1,499.1008	1,101.2442	915.6412
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:					0.3007	0.3358	0.3112	0.2770	0.2330	0.1894	0.1408	0.1172
Daily Vapor Temperature Range (deg. R):					68.9244	71.7124	65.7858	60.6172	54.6534	48.7029	39.7597	35.0018
Daily Vapor Pressure Range (psia):					1.7629	2.0172	1.8781	1.6573	1.3619	1.0573	0.7395	0.5882
Breather Vent Press. Setting Range(psia):					0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):					2.2336	2.5001	2.5534	2.4282	2.1737	1.8491	1.5381	1.3654
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):					1.4926	1.6568	1.7558	1.7152	1.5789	1.3825	1.2054	1.0971
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):					3.2555	3.6740	3.6340	3.3725	2.9408	2.4398	1.9450	1.6853
Daily Avg. Liquid Surface Temp. (deg R):					534.1959	539.2606	540.2118	537.9329	532.9993	525.9743	518.2270	513.2920
Daily Min. Liquid Surface Temp. (deg R):					516.9648	521.3325	523.7654	522.7786	519.3359	513.7986	508.2871	504.5415
Daily Max. Liquid Surface Temp. (deg R):					551.4270	557.1887	556.6583	553.0872	546.6626	538.1500	528.1669	522.0424
Daily Ambient Temp. Range (deg. R):					31.1000	31.7000	28.1000	26.4000	26.7000	28.0000	26.1000	24.4000
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:					0.5097	0.4816	0.4763	0.4888	0.5165	0.5567	0.6016	0.6297
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):					2.2336	2.5001	2.5534	2.4282	2.1737	1.8491	1.5381	1.3654
Vapor Space Outage (ft):					8.1250	8.1250	8.1250	8.1250	8.1250	8.1250	8.1250	8.1250

Working Losses (lb):	229.8515	258.1689	263.8383	250.5110	223.5052	189.2071	156.5330	138.4371
Vapor Molecular Weight (lb/lb-mole):	78.1986	78.4721	78.5208	78.3991	78.1362	77.7578	77.3348	77.0472
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.2336	2.5001	2.5534	2.4282	2.1737	1.8491	1.5381	1.3654
Net Throughput (gal/mo.):	65,163.0000	65,163.0000	65,163.0000	65,163.0000	65,163.0000	65,163.0000	65,163.0000	65,163.0000
Annual Turnovers:	44.0200	44.0200	44.0200	44.0200	44.0200	44.0200	44.0200	44.0200
Turnover Factor:	0.8482	0.8482	0.8482	0.8482	0.8482	0.8482	0.8482	0.8482
Maximum Liquid Volume (gal):	11,844.4200	11,844.4200	11,844.4200	11,844.4200	11,844.4200	11,844.4200	11,844.4200	11,844.4200
Maximum Liquid Height (ft):	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000
Tank Diameter (ft):	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	362.9037	409.2907	409.8770	377.7017	322.0354	265.7240	206.4597	178.5802

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

Emissions Report for: May, June, July, August, September, October, November, December

El Cedro T91029 & T91021 (Cond)(May-Dec 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	1,710.05	822.52	2,532.57
2,2,4-Trimethylpentane (isooctane)	0.73	0.35	1.09
Benzene	40.70	19.67	60.36
Butane (-n)	184.06	87.63	271.69
Cyclohexane	328.63	158.65	487.28
Cyclopentane	0.09	0.04	0.14
Decane (-n)	0.17	0.08	0.26
Ethylbenzene	0.05	0.02	0.07
Heptane (-n)	191.86	93.06	284.91
Hexane (-n)	310.33	149.56	459.89
Isobutane	117.39	55.76	173.15
Isopentane	102.74	49.22	151.97
Methylcyclohexane	124.77	60.41	185.18
Nonane (-n)	2.17	1.04	3.21
Octane (-n)	25.29	12.20	37.49
Pentane (-n)	258.84	124.01	382.85
Toluene	21.97	10.67	32.64
Xylenes (mixed isomers)	0.27	0.13	0.40

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

Identification

User Identification:	El Cedro T91028 (Cond)(2018 PSD)
City:	Navajo Dam
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	21,000 Gallon Condensate Storage Tank

Tank Dimensions

Shell Height (ft):	20.00
Diameter (ft):	13.50
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	14,990.59
Turnovers:	12.45
Net Throughput(gal/yr):	186,564.00
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

El Cedro T91028 (Cond)(2018 PSD) - Vertical Fixed Roof Tank
Navajo Dam, 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	1.7068	1.2323	2.3258	79.3142			94.16	
2,2,4-Trimethylpentane (isooctane)						0.7338	0.4989	1.0546	114.2300	0.0009	0.0005	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4274	0.9846	2.0237	78.1100	0.0259	0.0257	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.9357	23.3576	37.8083	58.1230	0.0039	0.0807	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4738	1.0254	2.0729	84.1600	0.2002	0.2053	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.9596	3.6370	6.6394	70.1300	0.0000	0.0001	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.0068	0.0002	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0004	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.2306	0.1219	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.1142	0.1835	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						43.3083	34.4026	53.8185	58.1230	0.0023	0.0689	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0058	0.0476	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6886	0.4673	0.9913	98.1800	0.1647	0.0789	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.0275	0.0015	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.1366	0.0168	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0276	0.1540	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0494	0.0142	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0033	0.0003	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)

El Cedro T91028 (Cond)(2018 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	1,508.2292
Vapor Space Volume (cu ft):	1,880.9335
Vapor Density (lb/cu ft):	0.0239
Vapor Space Expansion Factor:	0.2009
Vented Vapor Saturation Factor:	0.4569
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,880.9335
Tank Diameter (ft):	13.5000
Vapor Space Outage (ft):	13.1406
Tank Shell Height (ft):	20.0000
Average Liquid Height (ft):	7.0000
Roof Outage (ft):	0.1406
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1406
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.7500
Vapor Density	
Vapor Density (lb/cu ft):	0.0239
Vapor Molecular Weight (lb/lb-mole):	79.3142
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.7068
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:	0.2009
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	1.0935
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.7068
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.2323
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	2.3258
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:	0.4569
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.7068
Vapor Space Outage (ft):	13.1406
Working Losses (lb):	601.3467
Vapor Molecular Weight (lb/lb-mole):	79.3142
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.7068
Annual Net Throughput (gal/yr.):	186,564.0000
Annual Turnovers:	12.4500
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	14,990.5900
Maximum Liquid Height (ft):	14.0000
Tank Diameter (ft):	13.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	2,109.5759

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

Emissions Report for: Annual

El Cedro T91028 (Cond)(2018 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	601.35	1,508.23	2,109.58
Isobutane	41.44	103.94	145.38
Butane (-n)	48.53	121.71	170.23
Isopentane	28.63	71.80	100.43
Pentane (-n)	92.61	232.28	324.90
Cyclopentane	0.04	0.09	0.13
Hexane (-n)	110.35	276.76	387.11
Cyclohexane	123.44	309.59	433.03
Heptane (-n)	73.30	183.84	257.14
Octane (-n)	10.11	25.35	35.46
Nonane (-n)	0.90	2.26	3.16
Decane (-n)	0.11	0.28	0.39
Methylcyclohexane	47.43	118.95	166.37
2,2,4-Trimethylpentane (isooctane)	0.28	0.70	0.98
Benzene	15.45	38.76	54.21
Ethylbenzene	0.02	0.06	0.08
Toluene	8.55	21.45	30.00
Xylenes (mixed isomers)	0.16	0.40	0.57

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

Identification		
User Identification:	El Cedro T91028 (Cond)(Jan-Apr 2019 PSD)	
City:	Navajo Dam	
State:	New Mexico	
Company:	Harvest Four Corners, LLC	
Type of Tank:	Vertical Fixed Roof Tank	
Description:	21,000 Gallon Condensate Storage Tank	
Tank Dimensions		
Shell Height (ft):		20.00
Diameter (ft):		13.50
Liquid Height (ft) :		14.00
Avg. Liquid Height (ft):		7.00
Volume (gallons):		14,990.59
Turnovers:		5.62
Net Throughput(gal/yr):		84,252.00
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

El Cedro T91028 (Cond)(Jan-Apr 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, 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	Jan	53.71	44.35	63.07	59.23	1.9583	1.5772	2.4104	71.2089			94.07	
2,2,4-Trimethylpentane (isooctane)						0.4955	0.3729	0.6503	114.2300	0.0011	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						0.9782	0.7441	1.2707	78.1100	0.0232	0.0153	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						23.2548	19.3861	27.6969	58.1230	0.0132	0.2076	58.12	Option 1: VP50 = 21.58 VP60 = 26.1
Cyclohexane						1.0189	0.7801	1.3155	84.1600	0.1623	0.1115	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						3.6168	2.8499	4.5028	70.1300	0.0000	0.0000	70.13	Option 1: VP50 = 3.287 VP60 = 4.177
Decane (-n)						0.0289	0.0234	0.0358	142.2900	0.0227	0.0004	142.29	Option 1: VP50 = .026411 VP60 = .033211
Ethylbenzene						0.0869	0.0616	0.1207	106.1700	0.0007	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.5053	0.3771	0.6699	100.2000	0.2362	0.0805	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.6204	1.2539	2.0711	86.1700	0.1207	0.1319	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						34.2625	28.9380	40.2917	58.1230	0.0077	0.1772	58.12	Option 1: VP50 = 31.98 VP60 = 38.14
Isopentane						8.6731	6.7519	10.7789	72.1500	0.0141	0.0825	72.15	Option 1: VP50 = 7.889 VP60 = 10.005
Methylcyclohexane						0.4641	0.3489	0.6098	98.1800	0.1333	0.0417	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0565	0.0451	0.0707	128.2600	0.0283	0.0011	128.26	Option 1: VP50 = .051285 VP60 = .065278
Octane (-n)						0.1246	0.0979	0.1586	114.2300	0.1509	0.0127	114.23	Option 1: VP50 = .112388 VP60 = .145444
Pentane (-n)						5.9341	4.7773	7.3140	72.1500	0.0320	0.1280	72.15	Option 3: A=27691, B=7.558
Toluene						0.2706	0.1990	0.3630	92.1300	0.0480	0.0088	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0722	0.0510	0.1006	106.1700	0.0056	0.0003	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Feb	57.85	46.68	69.01	59.23	2.1476	1.6659	2.7388	71.4673			94.07	
2,2,4-Trimethylpentane (isooctane)						0.5597	0.4008	0.7682	114.2300	0.0011	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.0998	0.7976	1.4917	78.1100	0.0232	0.0156	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						25.1265	20.2917	30.7956	58.1230	0.0132	0.2038	58.12	Option 1: VP50 = 21.58 VP60 = 26.1
Cyclohexane						1.1424	0.8348	1.5386	84.1600	0.1623	0.1136	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						3.9853	3.0303	5.1350	70.1300	0.0000	0.0000	70.13	Option 1: VP50 = 3.287 VP60 = 4.177
Decane (-n)						0.0317	0.0246	0.0409	142.2900	0.0227	0.0004	142.29	Option 1: VP50 = .026411 VP60 = .033211
Ethylbenzene						0.1007	0.0672	0.1475	106.1700	0.0007	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.5732	0.4061	0.7973	100.2000	0.2362	0.0830	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.8086	1.3382	2.4075	86.1700	0.1207	0.1338	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						36.8132	30.1937	44.4669	58.1230	0.0077	0.1730	58.12	Option 1: VP50 = 31.98 VP60 = 38.14
Isopentane						9.5492	7.2213	12.2807	72.1500	0.0141	0.0825	72.15	Option 1: VP50 = 7.889 VP60 = 10.005
Methylcyclohexane						0.5245	0.3751	0.7210	98.1800	0.1333	0.0429	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0623	0.0476	0.0813	128.2600	0.0283	0.0011	128.26	Option 1: VP50 = .051285 VP60 = .065278
Octane (-n)						0.1383	0.1039	0.1840	114.2300	0.1509	0.0128	114.23	Option 1: VP50 = .112388 VP60 = .145444
Pentane (-n)						6.5152	5.0465	8.3211	72.1500	0.0320	0.1277	72.15	Option 3: A=27691, B=7.558
Toluene						0.3086	0.2151	0.4346	92.1300	0.0480	0.0091	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0838	0.0557	0.1232	106.1700	0.0056	0.0003	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Mar	62.95	49.55	76.34	59.23	2.4042	1.7786	3.1986	71.7747			94.07	
2,2,4-Trimethylpentane (isooctane)						0.6481	0.4375	0.9375	114.2300	0.0011	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.2666	0.8678	1.8070	78.1100	0.0232	0.0160	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						27.6359	21.4068	35.0901	58.1230	0.0132	0.1994	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.3114	0.9064	1.8556	84.1600	0.1623	0.1160	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.4904	3.2525	6.0499	70.1300	0.0000	0.0000	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0357	0.0262	0.0486	142.2900	0.0227	0.0004	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1202	0.0747	0.1876	106.1700	0.0007	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21

Heptane (-n)						0.6676	0.4444	0.9828	100.2000	0.2362	0.0860	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.0649	1.4483	2.8823	86.1700	0.1207	0.1359	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						40.2095	31.7398	50.2023	58.1230	0.0077	0.1680	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						10.7494	7.7992	14.3084	72.1500	0.0141	0.0826	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6078	0.4096	0.8807	98.1800	0.1333	0.0442	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0705	0.0508	0.0975	128.2600	0.0283	0.0011	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1581	0.1112	0.2233	114.2300	0.1509	0.0130	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						7.2952	5.3952	9.7167	72.1500	0.0320	0.1272	72.15	Option 3: A=27691, B=7.558
Toluene						0.3617	0.2365	0.5389	92.1300	0.0480	0.0095	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1002	0.0620	0.1571	106.1700	0.0056	0.0003	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Apr	69.11	53.17	85.06	59.23	2.7446	1.9345	3.8218	72.1527			94.07	
2,2,4-Trimethylpentane (isooctane)						0.7704	0.4877	1.1781	114.2300	0.0011	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4958	0.9634	2.2511	78.1100	0.0232	0.0165	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						30.8482	23.0132	40.7084	58.1230	0.0132	0.1939	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.5427	1.0038	2.3003	84.1600	0.1623	0.1189	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						5.1458	3.5692	7.2987	70.1300	0.0000	0.0000	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0410	0.0286	0.0594	142.2900	0.0227	0.0004	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1480	0.0852	0.2470	106.1700	0.0007	0.0001	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7996	0.4971	1.2511	100.2000	0.2362	0.0897	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.4136	1.5974	3.5433	86.1700	0.1207	0.1384	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						44.5378	33.9333	57.6355	58.1230	0.0077	0.1622	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						12.3062	8.5600	16.8691	72.1500	0.0141	0.0824	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.7230	0.4568	1.1079	98.1800	0.1333	0.0458	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0815	0.0557	0.1204	128.2600	0.0283	0.0011	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1844	0.1229	0.2798	114.2300	0.1509	0.0132	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.3391	5.8623	11.6202	72.1500	0.0320	0.1267	72.15	Option 3: A=27691, B=7.558
Toluene						0.4359	0.2660	0.6896	92.1300	0.0480	0.0099	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1237	0.0708	0.2074	106.1700	0.0056	0.0003	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)

El Cedro T91028 (Cond)(Jan-Apr 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	92.9028	109.3908	162.3783	212.9668								
Vapor Space Volume (cu ft):	1,880.9335	1,880.9335	1,880.9335	1,880.9335								
Vapor Density (lb/cu ft):	0.0253	0.0276	0.0308	0.0349								
Vapor Space Expansion Factor:	0.1488	0.1876	0.2420	0.3149								
Vented Vapor Saturation Factor:	0.4230	0.4007	0.3739	0.3435								
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	1,880.9335	1,880.9335	1,880.9335	1,880.9335								
Tank Diameter (ft):	13.5000	13.5000	13.5000	13.5000								
Vapor Space Outage (ft):	13.1406	13.1406	13.1406	13.1406								
Tank Shell Height (ft):	20.0000	20.0000	20.0000	20.0000								
Average Liquid Height (ft):	7.0000	7.0000	7.0000	7.0000								
Roof Outage (ft):	0.1406	0.1406	0.1406	0.1406								
Roof Outage (Cone Roof)												
Roof Outage (ft):	0.1406	0.1406	0.1406	0.1406								
Roof Height (ft):	0.0000	0.0000	0.0000	0.0000								
Roof Slope (ft/ft):	0.0625	0.0625	0.0625	0.0625								
Shell Radius (ft):	6.7500	6.7500	6.7500	6.7500								
Vapor Density												
Vapor Density (lb/cu ft):	0.0253	0.0276	0.0308	0.0349								
Vapor Molecular Weight (lb/lb-mole):	71.2089	71.4673	71.7747	72.1527								
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.9583	2.1476	2.4042	2.7446								
Daily Avg. Liquid Surface Temp. (deg. R):	513.3754	517.5161	522.6180	528.7836								
Daily Average Ambient Temp. (deg. F):	34.2500	39.9500	46.8000	55.2000								
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731								
Liquid Bulk Temperature (deg. R):	518.9042	518.9042	518.9042	518.9042								
Tank Paint Solar Absorptance (Shell):	0.6800	0.6800	0.6800	0.6800								
Tank Paint Solar Absorptance (Roof):	0.6800	0.6800	0.6800	0.6800								
Daily Total Solar Insulation Factor (Btu/sqft day):	1,017.1676	1,321.1123	1,709.7680	2,169.4923								
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:	0.1488	0.1876	0.2420	0.3149								
Daily Vapor Temperature Range (deg. R):	37.4389	44.6660	53.5780	63.7711								
Daily Vapor Pressure Range (psia):	0.8333	1.0729	1.4200	1.8873								
Breather Vent Press. Setting Range(psia):	0.0600	0.0600	0.0600	0.0600								
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.9583	2.1476	2.4042	2.7446								
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.5772	1.6659	1.7786	1.9345								
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	2.4104	2.7388	3.1986	3.8218								
Daily Avg. Liquid Surface Temp. (deg R):	513.3754	517.5161	522.6180	528.7836								
Daily Min. Liquid Surface Temp. (deg R):	504.0156	506.3497	509.2235	512.8409								
Daily Max. Liquid Surface Temp. (deg R):	522.7351	528.6826	536.0125	544.7264								
Daily Ambient Temp. Range (deg. R):	25.1000	27.1000	29.2000	31.2000								
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:	0.4230	0.4007	0.3739	0.3435								
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.9583	2.1476	2.4042	2.7446								
Vapor Space Outage (ft):	13.1406	13.1406	13.1406	13.1406								

Working Losses (lb):	69.9333	76.9712	86.5385	99.3115
Vapor Molecular Weight (lb/lb-mole):	71.2089	71.4673	71.7747	72.1527
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.9583	2.1476	2.4042	2.7446
Net Throughput (gal/mo.):	21,063.0000	21,063.0000	21,063.0000	21,063.0000
Annual Turnovers:	5.6200	5.6200	5.6200	5.6200
Turnover Factor:	1.0000	1.0000	1.0000	1.0000
Maximum Liquid Volume (gal):	14,990.5900	14,990.5900	14,990.5900	14,990.5900
Maximum Liquid Height (ft):	14.0000	14.0000	14.0000	14.0000
Tank Diameter (ft):	13.5000	13.5000	13.5000	13.5000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	162.8361	186.3620	248.9167	312.2782

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

Emissions Report for: January, February, March, April

El Cedro T91028 (Cond)(Jan-Apr 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	332.75	577.64	910.39
2,2,4-Trimethylpentane (isooctane)	0.12	0.22	0.34
Benzene	5.29	9.23	14.52
Butane (-n)	66.73	115.27	181.99
Cyclohexane	38.39	66.95	105.34
Cyclopentane	0.01	0.02	0.03
Decane (-n)	0.15	0.26	0.40
Ethylbenzene	0.02	0.03	0.04
Heptane (-n)	28.37	49.63	77.99
Hexane (-n)	45.02	78.42	123.44
Isobutane	56.35	97.20	153.55
Isopentane	27.46	47.67	75.13
Methylcyclohexane	14.59	25.49	40.09
Nonane (-n)	0.36	0.63	0.99
Octane (-n)	4.31	7.50	11.81
Pentane (-n)	42.37	73.50	115.87
Toluene	3.12	5.46	8.58
Xylenes (mixed isomers)	0.10	0.18	0.28

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

Identification

User Identification:	El Cedro T91028 (Connd)(May-Dec 2019 PSD)
City:	Navajo Dam
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	21,000 Gallon Condensate Storage Tank

Tank Dimensions

Shell Height (ft):	20.00
Diameter (ft):	13.50
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	14,990.59
Turnovers:	44.67
Net Throughput(gal/yr):	669,606.00
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

El Cedro T91028 (Connd)(May-Dec 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, 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	May	74.53	57.29	91.76	59.23	2.2336	1.4926	3.2555	78.1986			93.50	
2,2,4-Trimethylpentane (isooctane)						0.8929	0.5507	1.3959	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.7241	1.0829	2.6505	78.1100	0.0259	0.0239	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						34.0075	24.8773	45.4212	58.1230	0.0058	0.1063	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						1.7725	1.1253	2.6985	84.1600	0.2035	0.1931	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						5.8180	3.9362	8.3450	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0466	0.0314	0.0690	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.1769	0.0987	0.3029	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.9337	0.5637	1.4984	100.2000	0.2266	0.1133	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.7580	1.7826	4.1311	86.1700	0.1232	0.1819	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						48.7581	36.4736	63.8223	58.1230	0.0026	0.0675	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						13.7991	9.4326	18.9475	72.1500	0.0081	0.0600	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.8386	0.5161	1.3138	98.1800	0.1638	0.0735	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0934	0.0615	0.1411	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2133	0.1365	0.3315	114.2300	0.1301	0.0149	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						9.3541	6.4353	13.2827	72.1500	0.0301	0.1505	72.15	Option 3: A=27691, B=7.558
Toluene						0.5112	0.3033	0.8283	92.1300	0.0475	0.0130	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1480	0.0821	0.2550	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Jun	79.59	61.66	97.52	59.23	2.5001	1.6568	3.6740	78.4721			93.50	
2,2,4-Trimethylpentane (isooctane)						1.0219	0.6248	1.6089	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.9632	1.2228	3.0385	78.1100	0.0259	0.0243	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						37.0260	26.9662	49.8519	58.1230	0.0058	0.1030	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						2.0123	1.2670	3.0843	84.1600	0.2035	0.1951	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						6.4647	4.3537	9.2698	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0521	0.0346	0.0788	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.2081	0.1150	0.3593	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						1.0763	0.6426	1.7438	100.2000	0.2266	0.1162	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						3.1158	1.9977	4.6975	86.1700	0.1232	0.1830	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						52.7846	39.3071	69.6013	58.1230	0.0026	0.0651	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						15.2192	10.4248	20.8414	72.1500	0.0081	0.0589	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.9604	0.5858	1.5153	98.1800	0.1638	0.0750	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.1048	0.0682	0.1622	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2413	0.1526	0.3849	114.2300	0.1301	0.0150	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						10.3938	7.0918	14.8630	72.1500	0.0301	0.1489	72.15	Option 3: A=27691, B=7.558
Toluene						0.5915	0.3476	0.9656	92.1300	0.0475	0.0134	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1745	0.0958	0.3030	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Jul	80.54	64.10	96.99	59.23	2.5534	1.7558	3.6340	78.5208			93.50	
2,2,4-Trimethylpentane (isooctane)						1.0478	0.6696	1.5882	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						2.0110	1.3069	3.0010	78.1100	0.0259	0.0243	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						37.6384	28.2337	49.4440	58.1230	0.0058	0.1025	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						2.0602	1.3521	3.0470	84.1600	0.2035	0.1955	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						6.6008	4.6123	9.1846	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0532	0.0367	0.0779	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.2145	0.1250	0.3538	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21

Heptane (-n)						1.1051	0.6907	1.7199	100.2000	0.2266	0.1168	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						3.1870	2.1264	4.6428	86.1700	0.1232	0.1832	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						53.5949	41.0149	69.0692	58.1230	0.0026	0.0647	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						15.4985	11.0391	20.6670	72.1500	0.0081	0.0587	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.9848	0.6280	1.4957	98.1800	0.1638	0.0752	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.1073	0.0726	0.1603	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2475	0.1630	0.3800	114.2300	0.1301	0.0150	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						10.5992	7.4808	14.7114	72.1500	0.0301	0.1486	72.15	Option 3: A=27691, B=7.558
Toluene						0.6076	0.3746	0.9522	92.1300	0.0475	0.0135	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1798	0.1042	0.2983	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Aug	78.26	63.11	93.42	59.23	2.4282	1.7152	3.3725	78.3991			93.50	
2,2,4-Trimethylpentane (isooctane)						0.9867	0.6511	1.4547	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.8980	1.2722	2.7579	78.1100	0.0259	0.0242	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						36.2347	27.7196	46.6978	58.1230	0.0058	0.1039	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						1.9470	1.3171	2.8054	84.1600	0.2035	0.1946	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						6.2952	4.5074	8.6115	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0506	0.0359	0.0718	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.1995	0.1208	0.3183	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						1.0372	0.6708	1.5659	100.2000	0.2266	0.1154	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						3.0185	2.0734	4.2883	86.1700	0.1232	0.1827	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						51.7290	40.3222	65.4874	58.1230	0.0026	0.0657	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						14.8469	10.7899	19.4932	72.1500	0.0081	0.0592	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.9271	0.6106	1.3694	98.1800	0.1638	0.0746	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.1018	0.0708	0.1472	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2340	0.1587	0.3469	114.2300	0.1301	0.0149	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						10.1125	7.3210	13.7233	72.1500	0.0301	0.1493	72.15	Option 3: A=27691, B=7.558
Toluene						0.5695	0.3634	0.8661	92.1300	0.0475	0.0133	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1672	0.1007	0.2681	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Sep	73.33	59.67	86.99	59.23	2.1737	1.5789	2.9408	78.1362			93.50	
2,2,4-Trimethylpentane (isooctane)						0.8645	0.5900	1.2379	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.6713	1.1571	2.3611	78.1100	0.0259	0.0239	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						33.2943	25.9490	42.0250	58.1230	0.0058	0.1070	58.12	Option 1: VP70 = 31.31 VP80 = 37.27
Cyclohexane						1.7194	1.2005	2.4101	84.1600	0.2035	0.1926	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						5.6652	4.1473	7.5981	70.1300	0.0000	0.0001	70.13	Option 1: VP70 = 5.24 VP80 = 6.517
Decane (-n)						0.0453	0.0330	0.0620	142.2900	0.0041	0.0001	142.29	Option 1: VP70 = .041762 VP80 = .052515
Ethylbenzene						0.1701	0.1073	0.2622	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.9025	0.6054	1.3186	100.2000	0.2266	0.1126	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.6786	1.8968	3.7057	86.1700	0.1232	0.1817	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						47.8068	37.9342	59.3684	58.1230	0.0026	0.0681	58.12	Option 1: VP70 = 45.16 VP80 = 53.11
Isopentane						13.4635	9.9343	17.4570	72.1500	0.0081	0.0602	72.15	Option 1: VP70 = 12.53 VP80 = 15.334
Methylcyclohexane						0.8118	0.5530	1.1644	98.1800	0.1638	0.0732	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0906	0.0648	0.1259	128.2600	0.0254	0.0013	128.26	Option 1: VP70 = .08309 VP80 = .105762
Octane (-n)						0.2067	0.1443	0.2937	114.2300	0.1301	0.0148	114.23	Option 1: VP70 = .188224 VP80 = .243586
Pentane (-n)						9.1214	6.7851	12.0820	72.1500	0.0301	0.1510	72.15	Option 3: A=27691, B=7.558
Toluene						0.4937	0.3267	0.7275	92.1300	0.0475	0.0129	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1423	0.0893	0.2203	106.1700	0.0020	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Oct	66.30	54.13	78.48	59.23	1.8491	1.3825	2.4398	77.7578			93.50	
2,2,4-Trimethylpentane (isooctane)						0.7125	0.5018	0.9924	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.3874	0.9901	1.9086	78.1100	0.0259	0.0234	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.3845	23.4461	36.3641	58.1230	0.0058	0.1116	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4335	1.0310	1.9576	84.1600	0.2035	0.1897	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.8471	3.6544	6.3229	70.1300	0.0000	0.0001	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0386	0.0292	0.0509	142.2900	0.0041	0.0001	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1347	0.0882	0.2009	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7369	0.5119	1.0435	100.2000	0.2266	0.1086	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.2492	1.6389	3.0343	86.1700	0.1232	0.1802	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						42.5656	34.5232	51.9016	58.1230	0.0026	0.0716	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.5968	8.7626	14.9078	72.1500	0.0081	0.0613	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6684	0.4700	0.9325	98.1800	0.1638	0.0712	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0765	0.0571	0.1023	128.2600	0.0254	0.0013	128.26	Option 1: VP60 = .065278 VP70 = .08309

Octane (-n)						0.1724	0.1260	0.2352	114.2300	0.1301	0.0146	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						7.8492	5.9915	10.1580	72.1500	0.0301	0.1535	72.15	Option 3: A=27691, B=7.558
Toluene						0.4006	0.2743	0.5730	92.1300	0.0475	0.0124	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1124	0.0733	0.1683	106.1700	0.0020	0.0001	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Nov	58.56	48.62	68.50	59.23	1.5381	1.2054	1.9450	77.3348			93.50	
2,2,4-Trimethylpentane (isooctane)						0.5713	0.4252	0.7573	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.1219	0.8443	1.4714	78.1100	0.0259	0.0229	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						25.4478	21.0434	30.5269	58.1230	0.0058	0.1168	58.12	Option 1: VP50 = 21.58 VP60 = 26.1
Cyclohexane						1.1648	0.8825	1.5181	84.1600	0.2035	0.1863	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.0486	3.1801	5.0802	70.1300	0.0000	0.0001	70.13	Option 1: VP50 = 3.287 VP60 = 4.177
Decane (-n)						0.0322	0.0257	0.0405	142.2900	0.0041	0.0001	142.29	Option 1: VP50 = .026411 VP60 = .033211
Ethylbenzene						0.1032	0.0722	0.1450	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.5856	0.4316	0.7855	100.2000	0.2266	0.1043	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.8427	1.4116	2.3767	86.1700	0.1232	0.1785	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						37.2511	31.2360	44.1049	58.1230	0.0026	0.0758	58.12	Option 1: VP50 = 31.98 VP60 = 38.14
Isopentane						9.6997	7.6109	12.1505	72.1500	0.0081	0.0619	72.15	Option 1: VP50 = 7.889 VP60 = 10.005
Methylcyclohexane						0.5355	0.3981	0.7107	98.1800	0.1638	0.0690	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0633	0.0498	0.0804	128.2600	0.0254	0.0013	128.26	Option 1: VP50 = .051285 VP60 = .065278
Octane (-n)						0.1407	0.1089	0.1818	114.2300	0.1301	0.0144	114.23	Option 1: VP50 = .112388 VP60 = .145444
Pentane (-n)						6.6196	5.2795	8.2295	72.1500	0.0301	0.1564	72.15	Option 3: A=27691, B=7.558
Toluene						0.3156	0.2293	0.4279	92.1300	0.0475	0.0118	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0859	0.0599	0.1211	106.1700	0.0020	0.0001	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Condensate	Dec	53.62	44.87	62.37	59.23	1.3654	1.0971	1.6853	77.0472			93.50	
2,2,4-Trimethylpentane (isooctane)						0.4943	0.3791	0.6376	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						0.9759	0.7559	1.2468	78.1100	0.0259	0.0225	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						23.2171	19.5901	27.3360	58.1230	0.0058	0.1205	58.12	Option 1: VP50 = 21.58 VP60 = 26.1
Cyclohexane						1.0166	0.7922	1.2914	84.1600	0.2035	0.1838	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						3.6094	2.8906	4.4292	70.1300	0.0000	0.0001	70.13	Option 1: VP50 = 3.287 VP60 = 4.177
Decane (-n)						0.0289	0.0236	0.0352	142.2900	0.0041	0.0001	142.29	Option 1: VP50 = .026411 VP60 = .033211
Ethylbenzene						0.0866	0.0628	0.1178	106.1700	0.0003	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.5040	0.3835	0.6563	100.2000	0.2266	0.1015	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.6168	1.2725	2.0346	86.1700	0.1232	0.1771	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						34.2111	29.2209	39.8054	58.1230	0.0026	0.0787	58.12	Option 1: VP50 = 31.98 VP60 = 38.14
Isopentane						8.6554	6.8577	10.6040	72.1500	0.0081	0.0625	72.15	Option 1: VP50 = 7.889 VP60 = 10.005
Methylcyclohexane						0.4630	0.3546	0.5979	98.1800	0.1638	0.0674	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0564	0.0456	0.0695	128.2600	0.0254	0.0013	128.26	Option 1: VP50 = .051285 VP60 = .065278
Octane (-n)						0.1244	0.0993	0.1556	114.2300	0.1301	0.0144	114.23	Option 1: VP50 = .112388 VP60 = .145444
Pentane (-n)						5.9229	4.8369	7.2035	72.1500	0.0301	0.1583	72.15	Option 3: A=27691, B=7.558
Toluene						0.2698	0.2025	0.3553	92.1300	0.0475	0.0114	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0720	0.0520	0.0982	106.1700	0.0020	0.0001	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)

El Cedro T91028 (Connd)(May-Dec 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):					209.0698	234.3357	225.8974	197.9017	155.3243	122.9721	82.0211	66.8819
Vapor Space Volume (cu ft):					1,880.9335	1,880.9335	1,880.9335	1,880.9335	1,880.9335	1,880.9335	1,880.9335	1,880.9335
Vapor Density (lb/cu ft):					0.0305	0.0339	0.0346	0.0330	0.0297	0.0255	0.0214	0.0191
Vapor Space Expansion Factor:					0.3007	0.3358	0.3112	0.2770	0.2330	0.1894	0.1408	0.1172
Vented Vapor Saturation Factor:					0.3913	0.3648	0.3599	0.3716	0.3978	0.4371	0.4828	0.5126
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):					1,880.9335	1,880.9335	1,880.9335	1,880.9335	1,880.9335	1,880.9335	1,880.9335	1,880.9335
Tank Diameter (ft):					13.5000	13.5000	13.5000	13.5000	13.5000	13.5000	13.5000	13.5000
Vapor Space Outage (ft):					13.1406	13.1406	13.1406	13.1406	13.1406	13.1406	13.1406	13.1406
Tank Shell Height (ft):					20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000
Average Liquid Height (ft):					7.0000	7.0000	7.0000	7.0000	7.0000	7.0000	7.0000	7.0000
Roof Outage (ft):					0.1406	0.1406	0.1406	0.1406	0.1406	0.1406	0.1406	0.1406
Roof Outage (Cone Roof)												
Roof Outage (ft):					0.1406	0.1406	0.1406	0.1406	0.1406	0.1406	0.1406	0.1406
Roof Height (ft):					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Roof Slope (ft/ft):					0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
Shell Radius (ft):					6.7500	6.7500	6.7500	6.7500	6.7500	6.7500	6.7500	6.7500
Vapor Density												
Vapor Density (lb/cu ft):					0.0305	0.0339	0.0346	0.0330	0.0297	0.0255	0.0214	0.0191
Vapor Molecular Weight (lb/lb-mole):					78.1986	78.4721	78.5208	78.3991	78.1362	77.7578	77.3348	77.0472
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):					2.2336	2.5001	2.5534	2.4282	2.1737	1.8491	1.5381	1.3654
Daily Avg. Liquid Surface Temp. (deg. R):					534.1959	539.2606	540.2118	537.9329	532.9993	525.9743	518.2270	513.2920
Daily Average Ambient Temp. (deg. F):					64.1500	74.1500	78.4500	75.8000	68.5500	57.0000	44.2500	35.3000
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):					10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):					518.9042	518.9042	518.9042	518.9042	518.9042	518.9042	518.9042	518.9042
Tank Paint Solar Absorptance (Shell):					0.6800	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Tank Paint Solar Absorptance (Roof):					0.6800	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):					2,443.9308	2,567.6661	2,392.5331	2,185.3558	1,860.7886	1,499.1008	1,101.2442	915.6412
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:					0.3007	0.3358	0.3112	0.2770	0.2330	0.1894	0.1408	0.1172
Daily Vapor Temperature Range (deg. R):					68.9244	71.7124	65.7858	60.6172	54.6534	48.7029	39.7597	35.0018
Daily Vapor Pressure Range (psia):					1.7629	2.0172	1.8781	1.6573	1.3619	1.0573	0.7395	0.5882
Breather Vent Press. Setting Range(psia):					0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):					2.2336	2.5001	2.5534	2.4282	2.1737	1.8491	1.5381	1.3654
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):					1.4926	1.6568	1.7558	1.7152	1.5789	1.3825	1.2054	1.0971
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):					3.2555	3.6740	3.6340	3.3725	2.9408	2.4398	1.9450	1.6853
Daily Avg. Liquid Surface Temp. (deg R):					534.1959	539.2606	540.2118	537.9329	532.9993	525.9743	518.2270	513.2920
Daily Min. Liquid Surface Temp. (deg R):					516.9648	521.3325	523.7654	522.7786	519.3359	513.7986	508.2871	504.5415
Daily Max. Liquid Surface Temp. (deg R):					551.4270	557.1887	556.6583	553.0872	546.6626	538.1500	528.1669	522.0424
Daily Ambient Temp. Range (deg. R):					31.1000	31.7000	28.1000	26.4000	26.7000	28.0000	26.1000	24.4000
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:					0.3913	0.3648	0.3599	0.3716	0.3978	0.4371	0.4828	0.5126
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):					2.2336	2.5001	2.5534	2.4282	2.1737	1.8491	1.5381	1.3654
Vapor Space Outage (ft):					13.1406	13.1406	13.1406	13.1406	13.1406	13.1406	13.1406	13.1406

Working Losses (lb):	291.7883	327.7363	334.9334	318.0149	283.7319	240.1918	198.7131	175.7411
Vapor Molecular Weight (lb/lb-mole):	78.1986	78.4721	78.5208	78.3991	78.1362	77.7578	77.3348	77.0472
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.2336	2.5001	2.5534	2.4282	2.1737	1.8491	1.5381	1.3654
Net Throughput (gal/mo.):	83,700.7500	83,700.7500	83,700.7500	83,700.7500	83,700.7500	83,700.7500	83,700.7500	83,700.7500
Annual Turnovers:	44.6700	44.6700	44.6700	44.6700	44.6700	44.6700	44.6700	44.6700
Turnover Factor:	0.8383	0.8383	0.8383	0.8383	0.8383	0.8383	0.8383	0.8383
Maximum Liquid Volume (gal):	14,990.5900	14,990.5900	14,990.5900	14,990.5900	14,990.5900	14,990.5900	14,990.5900	14,990.5900
Maximum Liquid Height (ft):	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000
Tank Diameter (ft):	13.5000	13.5000	13.5000	13.5000	13.5000	13.5000	13.5000	13.5000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	500.8581	562.0720	560.8308	515.9166	439.0562	363.1638	280.7342	242.6230

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

Emissions Report for: May, June, July, August, September, October, November, December

El Cedro T91028 (Connd)(May-Dec 2019 PSD) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	2,170.85	1,294.40	3,465.25
2,2,4-Trimethylpentane (isooctane)	0.93	0.56	1.49
Benzene	51.66	30.93	82.60
Butane (-n)	233.66	138.04	371.70
Cyclohexane	417.18	249.58	666.77
Cyclopentane	0.12	0.07	0.19
Decane (-n)	0.22	0.13	0.35
Ethylbenzene	0.06	0.04	0.10
Heptane (-n)	243.56	146.33	389.88
Hexane (-n)	393.95	235.32	629.27
Isobutane	149.02	87.86	236.88
Isopentane	130.43	77.49	207.92
Methylcyclohexane	158.39	95.00	253.40
Nonane (-n)	2.75	1.64	4.39
Octane (-n)	32.10	19.19	51.30
Pentane (-n)	328.59	195.23	523.82
Toluene	27.89	16.78	44.66
Xylenes (mixed isomers)	0.34	0.21	0.55

Simulation Report

Symmetry

File Name:	El Cedro - Unstabilized Flash - 1-1-2018 - 12-31-2018
Company:	Virtual Materials Group
Customer:	
Project:	
Job No:	
Prepared By:	
Report Date:	Thursday, March 12, 2020
Unit Set:	Field

File: C:\Users\khong\Desktop\El Cedro\El Cedro - Stabilizer\PSD Analysis\1-1-2018 - 12-31-2018\El Cedro

Symmetry

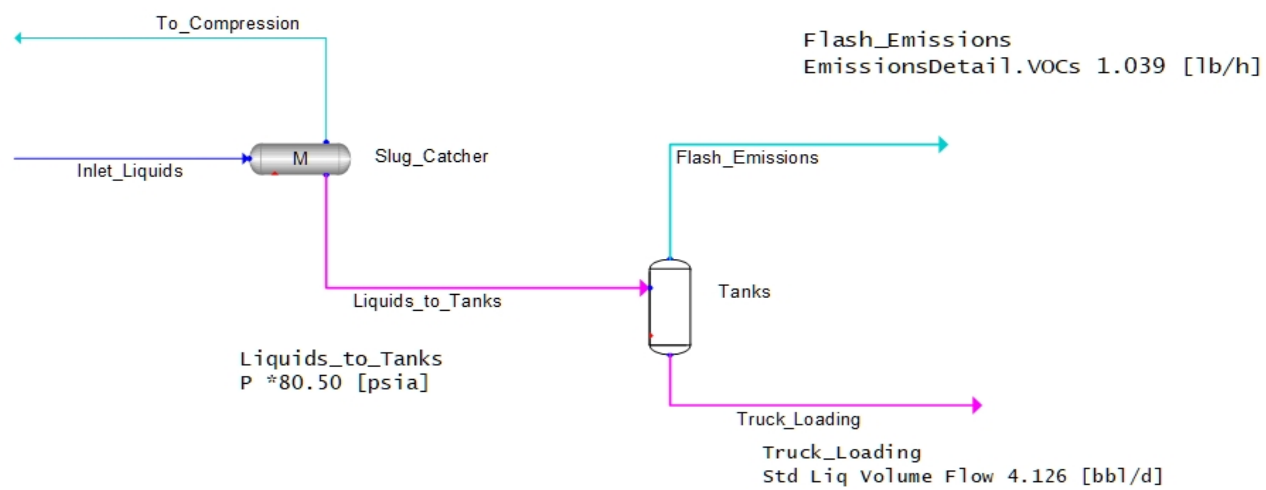
Main Flowsheet

Material Stream (5)
2ph Separator (2)

*Bold face throughout the report denotes specified values.

*Italic face throughout the report denotes recycle values.

El Cedro Unstabilized Flash Emissions
1/1/2018 – 12/31/2018



Simulation Report

Symmetry

File Name:	El Cedro - Unstabilized Flash - 1-1-2019 - 4-30-2019
Company:	Virtual Materials Group
Customer:	
Project:	
Job No:	
Prepared By:	
Report Date:	Thursday, March 12, 2020
Unit Set:	Field

File: C:\Users\khong\Desktop\El Cedro\El Cedro - Stabilizer\PSD Analysis\1-1-2019 - 4-30-2019\El Cedro -

Symmetry

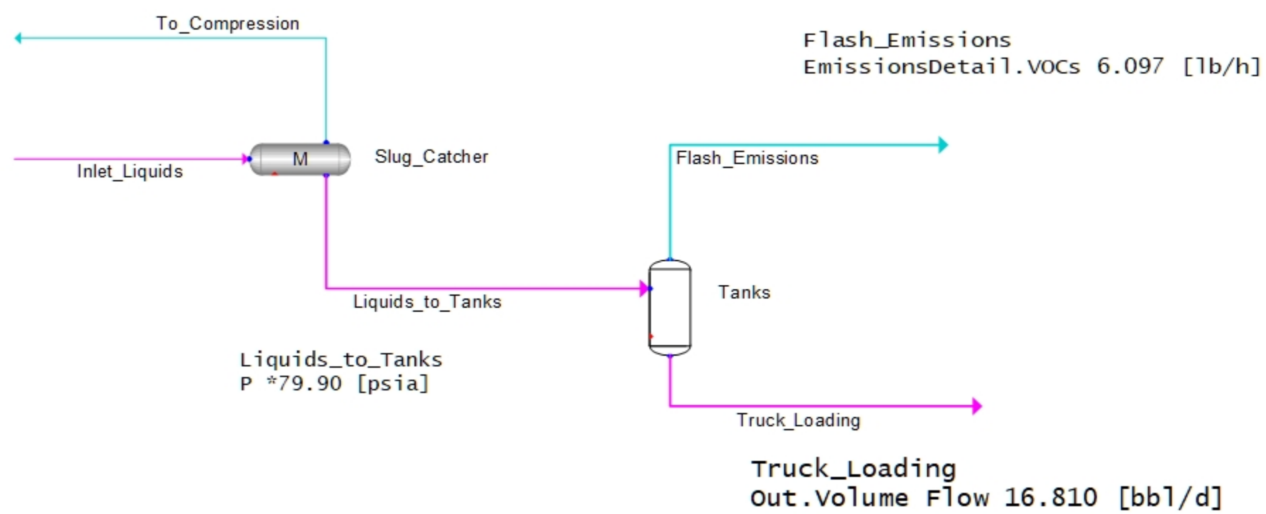
Main Flowsheet

Material Stream (5)
2ph Separator (2)

*Bold face throughout the report denotes specified values.

*Italic face throughout the report denotes recycle values.

El Cedro Unstabilized Flash Emissions
1/1/2019 – 4/30/2019



Simulation Report

Symmetry

File Name:	El Cedro - Unstabilized Flash - 5-1-2019 - 12-31-2019
Company:	Virtual Materials Group
Customer:	
Project:	
Job No:	
Prepared By:	
Report Date:	Thursday, March 12, 2020
Unit Set:	Field

File: C:\Users\khong\Desktop\El Cedro\El Cedro - Stabilizer\PSD Analysis\5-1-2019 - 12-31-2019\El Cedro

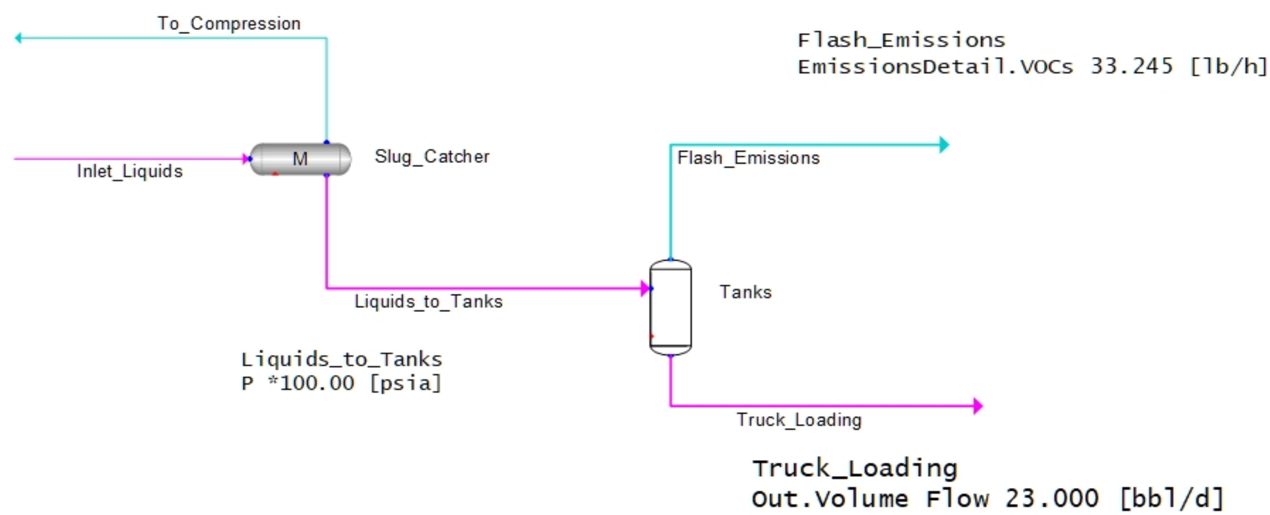
Symmetry

Main Flowsheet

*Bold face throughout the report denotes specified values.

*Italic face throughout the report denotes recycle values.

El Cedro Unstabilized Flash Emissions
5/1/2019 – 12/31/2019



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

Analysis No: WF170079
Cust No: 85000-13140

Well/Lease Information

Customer Name: WILLIAMS
Well Name: TRUNK L SUCTION INLET
County/State: RIO ARRIBA NM
Location:
Field:
Formation:
Cust. Stn. No.:

Source:
Well Flowing:
Pressure: 90 PSIG
Flow Temp: 68 DEG. F
Ambient Temp: 74 DEG. F
Flow Rate: MCF/D
Sample Method:
Date Sampled: 10/17/2017
Sample Time: 2.00 PM
Sampled By: DAN W.
Sampled by (CO): WFCA

Remarks:

Analysis

Component:	Mole%:	Unormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	1.4553	1.4585	0.1610	0.00	0.0141
CO2	0.8608	0.8627	0.1470	0.00	0.0131
Methane	80.7579	80.9361	13.7340	815.65	0.4473
Ethane	9.3076	9.3281	2.4970	164.72	0.0966
Propane	4.4356	4.4454	1.2260	111.60	0.0675
Iso-Butane	0.7668	0.7685	0.2520	24.94	0.0154
N-Butane	1.1616	1.1642	0.3670	37.90	0.0233
Neopentane 2,2 dmc3	0.0000	N/R	0.0000	0.00	0.0000
I-Pentane	0.4229	0.4238	0.1550	16.92	0.0105
N-Pentane	0.3130	0.3137	0.1140	12.55	0.0078
Neohexane	0.0132	N/R	0.0060	0.63	0.0004
2-3-Dimethylbutane	0.0124	N/R	0.0050	0.59	0.0004
Cyclopentane	0.0129	N/R	0.0040	0.49	0.0003
2-Methylpentane	0.0834	N/R	0.0350	3.96	0.0025
3-Methylpentane	0.0419	N/R	0.0170	1.99	0.0012
C6	0.0930	0.5197	0.0380	4.42	0.0028
Methylcyclopentane	0.0674	N/R	0.0240	3.03	0.0020
Benzene	0.0138	N/R	0.0040	0.52	0.0004
Cyclohexane	0.0308	N/R	0.0110	1.38	0.0009
2-Methylhexane	0.0117	N/R	0.0050	0.64	0.0004
3-Methylhexane	0.0107	N/R	0.0050	0.58	0.0004
2-2-4-Trimethylpentane	0.0029	N/R	0.0020	0.18	0.0001
i-heptanes	0.0074	N/R	0.0030	0.39	0.0003
Heptane	0.0269	N/R	0.0120	1.48	0.0009

Methylcyclohexane	0.0450	N/R	0.0180	2.35	0.0015
Toluene	0.0180	N/R	0.0060	0.81	0.0006
2-Methylheptane	0.0064	N/R	0.0030	0.40	0.0003
4-Methylheptane	0.0035	N/R	0.0020	0.22	0.0001
i-Octanes	0.0030	N/R	0.0010	0.18	0.0001
Octane	0.0065	N/R	0.0030	0.41	0.0003
Ethylbenzene	0.0004	N/R	0.0000	0.02	0.0000
m, p Xylene	0.0036	N/R	0.0010	0.19	0.0001
o Xylene (& 2,2,4 tmc7)	0.0005	N/R	0.0000	0.03	0.0000
i-C9	0.0010	N/R	0.0010	0.07	0.0000
C9	0.0008	N/R	0.0000	0.06	0.0000
i-C10	0.0007	N/R	0.0000	0.05	0.0000
C10	0.0007	N/R	0.0000	0.05	0.0000
i-C11	0.0000	N/R	0.0000	0.00	0.0000
C11	0.0000	N/R	0.0000	0.00	0.0000
C12P	0.0000	N/R	0.0000	0.00	0.0000
Total	100.00	null	18.859	1209.36	0.7117

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

COMPRESSIBLITY FACTOR	(1/Z):	1.0034
BTU/CU.FT IDEAL:		1212.2
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):		1216.2
BTU/CU.FT (WET) CORRECTED FOR (1/Z):		1195.0
DRY BTU @ 15.025:		1240.6
REAL SPECIFIC GRAVITY:		0.7138

CYLINDER #:	5
CYLINDER PRESSURE:	90 PSIG
DATE RUN:	10/18/17 2:00 PM
ANALYSIS RUN BY:	SEAN CASAUS

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: 10/18/2017**
GC Method: C12+BTEX Gas

WILLIAMS

WELL ANALYSIS COMPARISON

Lease: TRUNK L SUCTION INLET

Stn. No.:

Mtr. No.:

10/18/2017

85000-13140

Smpl Date:	10/17/2017
Test Date:	10/18/2017
Run No:	WF170079
Nitrogen:	1.4553
CO2:	0.8608
Methane:	80.7579
Ethane:	9.3076
Propane:	4.4356
I-Butane:	0.7668
N-Butane:	1.1616
2,2 dmc3:	0.0000
I-Pentane:	0.4229
N-Pentane:	0.3130
Neohexane:	0.0132
2-3-	0.0124
Cyclopentane:	0.0129
2-Methylpentane:	0.0834
3-Methylpentane:	0.0419
C6:	0.0930
Methylcyclopentane:	0.0674
Benzene:	0.0138
Cyclohexane:	0.0308
2-Methylhexane:	0.0117
3-Methylhexane:	0.0000
2-2-4-	0.0029
i-heptanes:	0.0074
Heptane:	0.0269
Methylcyclohexane:	0.0450
Toluene:	0.0180
2-Methylheptane:	0.0064
4-Methylheptane:	0.0035
i-Octanes:	0.0030
Octane:	0.0065
Ethylbenzene:	0.0004
m, p Xylene:	0.0036
o Xylene (& 2,2,4	0.0005
i-C9:	0.0010
C9:	0.0008
i-C10:	0.0007
C10:	0.0007
i-C11:	0.0000
C11:	0.0000
C12P:	0.0000
BTU:	1216.2
GPM:	18.8850
SPG:	0.7138

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

Analysis No: HM180018
Cust No: 33700-10085

Well/Lease Information

Customer Name:	HARVEST MIDSTREAM	Source:	CDP INLET PIPE
Well Name:	TRUNK L CDP	Well Flowing:	N
County/State:		Pressure:	78 PSIG
Location:		Flow Temp:	DEG. F
Field:		Ambient Temp:	DEG. F
Formation:		Flow Rate:	MCF/D
Cust. Stn. No.:		Sample Method:	Purge & Fill
		Sample Date:	12/26/2018
		Sample Time:	9.30 AM
		Sampled By:	STRATTON WALLER
Heat Trace:	N	Sampled by (CO):	HARVEST MID
Remarks:	CALCULATED MOLECULAR WEIGHT = 20.4285		

Analysis

Component:	Mole%:	Unormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.3129	0.3071	0.0350	0.00	0.0030
CO2	0.9707	0.9526	0.1660	0.00	0.0147
Methane	82.0921	80.5630	13.9610	829.13	0.4547
Ethane	9.3910	9.2161	2.5190	166.19	0.0975
Propane	4.0670	3.9912	1.1240	102.33	0.0619
Iso-Butane	0.7823	0.7677	0.2570	25.44	0.0157
N-Butane	1.1752	1.1533	0.3720	38.34	0.0236
Neopentane 2,2 dmc3	0.0087	0.0085	0.0030	0.35	0.0002
I-Pentane	0.4143	0.4066	0.1520	16.58	0.0103
N-Pentane	0.2944	0.2889	0.1070	11.80	0.0073
Neohexane	0.0145	N/R	0.0060	0.69	0.0004
2-3-Dimethylbutane	0.0117	N/R	0.0050	0.56	0.0003
Cyclopentane	0.0122	N/R	0.0040	0.46	0.0003
2-Methylpentane	0.0789	N/R	0.0330	3.75	0.0023
3-Methylpentane	0.0348	N/R	0.0140	1.65	0.0010
C6	0.0930	0.4823	0.0380	4.42	0.0028
Methylcyclopentane	0.0673	N/R	0.0240	3.03	0.0020
Benzene	0.0134	N/R	0.0040	0.50	0.0004
Cyclohexane	0.0305	N/R	0.0100	1.37	0.0009
2-Methylhexane	0.0116	N/R	0.0050	0.63	0.0004
3-Methylhexane	0.0110	N/R	0.0050	0.60	0.0004
2-2-4-Trimethylpentane	0.0027	N/R	0.0010	0.17	0.0001
i-heptanes	0.0075	N/R	0.0030	0.40	0.0003
Heptane	0.0255	N/R	0.0120	1.40	0.0009

Methylcyclohexane	0.0440	N/R	0.0180	2.29	0.0015
Toluene	0.0153	N/R	0.0050	0.68	0.0005
2-Methylheptane	0.0051	N/R	0.0030	0.32	0.0002
4-Methylheptane	0.0029	N/R	0.0010	0.18	0.0001
i-Octanes	0.0018	N/R	0.0010	0.11	0.0001
Octane	0.0043	N/R	0.0020	0.27	0.0002
Ethylbenzene	0.0002	N/R	0.0000	0.01	0.0000
m, p Xylene	0.0018	N/R	0.0010	0.09	0.0001
o Xylene (& 2,2,4 tmc7)	0.0002	N/R	0.0000	0.01	0.0000
i-C9	0.0004	N/R	0.0000	0.03	0.0000
C9	0.0003	N/R	0.0000	0.02	0.0000
i-C10	0.0001	N/R	0.0000	0.01	0.0000
C10	0.0002	N/R	0.0000	0.02	0.0000
i-C11	0.0000	N/R	0.0000	0.00	0.0000
C11	0.0001	N/R	0.0000	0.01	0.0000
C12P	0.0001	N/R	0.0000	0.01	0.0000
Total	100.00	98.137	18.891	1213.83	0.7042

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

COMPRESSIBLITY FACTOR	(1/Z):	1.0034
BTU/CU.FT IDEAL:		1216.6
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):		1220.7
BTU/CU.FT (WET) CORRECTED FOR (1/Z):		1199.5
DRY BTU @ 15.025:		1245.1
REAL SPECIFIC GRAVITY:		0.7062

CYLINDER #:	06
CYLINDER PRESSURE:	78 PSIG
ANALYSIS DATE:	12/27/2018
ANALYIS TIME:	04:49:41 AM
ANALYSIS RUN BY:	PATRICIA KING

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: 12/28/2018**
GC Method: C12+BTEX Gas

HARVEST MIDSTREAM

WELL ANALYSIS COMPARISON

Lease: TRUNK L CDP — CDP INLET PIPE — 12/28/2018

Stn. No.: 33700-10085

Mtr. No.:

Smpl Date:	12/26/2018
Test Date:	12/27/2018
Run No:	HM180018
Nitrogen:	0.3129
CO2:	0.9707
Methane:	82.0921
Ethane:	9.3910
Propane:	4.0670
I-Butane:	0.7823
N-Butane:	1.1752
2,2 dmc3:	0.0087
I-Pentane:	0.4143
N-Pentane:	0.2944
Neohexane:	0.0145
2-3-	0.0117
Cyclopentane:	0.0122
2-Methylpentane:	0.0789
3-Methylpentane:	0.0348
C6:	0.0930
Methylcyclopentane:	0.0673
Benzene:	0.0134
Cyclohexane:	0.0305
2-Methylhexane:	0.0116
3-Methylhexane:	0.0000
2-2-4-	0.0027
i-heptanes:	0.0075
Heptane:	0.0255
Methylcyclohexane:	0.0440
Toluene:	0.0153
2-Methylheptane:	0.0051
4-Methylheptane:	0.0029
i-Octanes:	0.0018
Octane:	0.0043
Ethylbenzene:	0.0002
m, p Xylene:	0.0018
o Xylene (& 2,2,4	0.0002
i-C9:	0.0004
C9:	0.0003
i-C10:	0.0001
C10:	0.0002
i-C11:	0.0000
C11:	0.0001
C12P:	0.0001
BTU:	1220.7
GPM:	18.9130
SPG:	0.7062

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

Analysis No: WF170069
Cust No: 85000-13095

Well/Lease Information

Customer Name: WILLIAMS
Well Name: EL CEDRO
County/State:
Location:
Field:
Formation:
Cust. Stn. No.:

Source:
Well Flowing:
Pressure: 80 PSIG
Flow Temp: 75 DEG. F
Ambient Temp: DEG. F
Flow Rate: MCF/D
Sample Method:
Date Sampled: 08/22/2017
Sample Time: 3.23 PM
Sampled By: JESUS BALLON
Sampled by (CO): WILLIAMS FCA

Remarks:

Analysis

Component:	Mole%:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.5767	0.0640	0.00	0.0056
CO2	1.2763	0.2180	0.00	0.0194
Methane	84.0326	14.2870	848.73	0.4655
Ethane	7.9049	2.1200	139.89	0.0821
Propane	3.4687	0.9580	87.28	0.0528
Iso-Butane	0.7051	0.2310	22.93	0.0142
N-Butane	0.9518	0.3010	31.05	0.0191
Neopentane 2,2 dmc3	0.0000	0.0000	0.00	0.0000
I-Pentane	0.3481	0.1280	13.93	0.0087
N-Pentane	0.2444	0.0890	9.80	0.0061
Neohexane	0.0076	0.0030	0.36	0.0002
2-3-Dimethylbutane	0.0113	0.0050	0.54	0.0003
Cyclopentane	0.0118	0.0040	0.44	0.0003
2-Methylpentane	0.0764	0.0320	3.63	0.0023
3-Methylpentane	0.0348	0.0140	1.65	0.0010
C6	0.0773	0.0320	3.68	0.0023
Methylcyclopentane	0.0498	0.0180	2.24	0.0014
Benzene	0.0095	0.0030	0.36	0.0003
Cyclohexane	0.0288	0.0100	1.29	0.0008
2-Methylhexane	0.0126	0.0060	0.69	0.0004
3-Methylhexane	0.0100	0.0050	0.55	0.0003
2-2-4-Trimethylpentane	0.0029	0.0020	0.18	0.0001
i-heptanes	0.0080	0.0030	0.43	0.0003
Heptane	0.0276	0.0130	1.52	0.0010

Methylcyclohexane	0.0539	0.0220	2.81	0.0018
Toluene	0.0193	0.0060	0.86	0.0006
2-Methylheptane	0.0105	0.0050	0.65	0.0004
4-Methylheptane	0.0049	0.0030	0.30	0.0002
i-Octanes	0.0054	0.0030	0.33	0.0002
Octane	0.0110	0.0060	0.69	0.0004
Ethylbenzene	0.0005	0.0000	0.03	0.0000
m, p Xylene	0.0092	0.0040	0.47	0.0003
o Xylene (& 2,2,4 tmc7)	0.0008	0.0000	0.04	0.0000
i-C9	0.0023	0.0010	0.15	0.0001
C9	0.0031	0.0020	0.22	0.0001
i-C10	0.0005	0.0000	0.03	0.0000
C10	0.0013	0.0010	0.10	0.0001
i-C11	0.0000	0.0000	0.00	0.0000
C11	0.0002	0.0000	0.02	0.0000
C12P	0.0000	0.0000	0.00	0.0000
Total	100.00	18.599	1177.85	0.6889

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

COMPRESSIBLITY FACTOR	(1/Z):	1.0031
BTU/CU.FT IDEAL:		1180.6
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):		1184.2
BTU/CU.FT (WET) CORRECTED FOR (1/Z):		1163.6
DRY BTU @ 15.025:		1207.9
REAL SPECIFIC GRAVITY:		0.6907

CYLINDER #:	3
CYLINDER PRESSURE:	4 PSIG
DATE RUN:	8/24/17 3:23 PM
ANALYSIS RUN BY:	SEAN CASAUS

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: 08/24/2017**
GC Method: C12+BTEX Gas

WILLIAMS

WELL ANALYSIS COMPARISON

Lease: EL CEDRO 08/28/2017

Stn. No.: 85000-13095

Mtr. No.:

Smpl Date:	08/22/2017
Test Date:	08/24/2017
Run No:	WF170069
Nitrogen:	0.5767
CO2:	1.2763
Methane:	84.0326
Ethane:	7.9049
Propane:	3.4687
I-Butane:	0.7051
N-Butane:	0.9518
2,2 dmc3:	0.0000
I-Pentane:	0.3481
N-Pentane:	0.2444
Neohexane:	0.0076
2-3-	0.0113
Cyclopentane:	0.0118
2-Methylpentane:	0.0764
3-Methylpentane:	0.0348
C6:	0.0773
Methylcyclopentane:	0.0498
Benzene:	0.0095
Cyclohexane:	0.0288
2-Methylhexane:	0.0126
3-Methylhexane:	0.0000
2-2-4-	0.0029
i-heptanes:	0.0080
Heptane:	0.0276
Methylcyclohexane:	0.0539
Toluene:	0.0193
2-Methylheptane:	0.0105
4-Methylheptane:	0.0049
i-Octanes:	0.0054
Octane:	0.0110
Ethylbenzene:	0.0005
m, p Xylene:	0.0092
o Xylene (& 2,2,4	0.0008
i-C9:	0.0023
C9:	0.0031
i-C10:	0.0005
C10:	0.0013
i-C11:	0.0000
C11:	0.0002
C12P:	0.0000
BTU:	1184.2
GPM:	18.6160
SPG:	0.6907

GAS ANALYSIS SERVICE

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

Analysis No: WF180112
Cust No: 85000-13450

Well/Lease Information

Customer Name:	WILLIAMS	Source:	INLET PIPING
Well Name:	TRUNK G INLET	Well Flowing:	Y
County/State:	RIO ARRIBA NM	Pressure:	80 PSIG
Location:	EL CEDRO	Flow Temp:	55 DEG. F
Field:		Ambient Temp:	38 DEG. F
Formation:		Flow Rate:	MCF/D
Cust. Stn. No.:		Sample Method:	Purge & Fill
		Sample Date:	09/28/2018
		Sample Time:	8.00 AM
		Sampled By:	RYAN ANTONSON
Heat Trace:		Sampled by (CO):	WILLIAMS
Remarks:	TOTAL MOLECULAR WEIGHT = 19.8398%		

Analysis

Component:	Mole%:	Unormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.1713	0.1719	0.0190	0.00	0.0017
CO2	1.4169	1.4221	0.2430	0.00	0.0215
Methane	84.9753	85.2843	14.4470	858.25	0.4707
Ethane	7.5136	7.5409	2.0150	132.97	0.0780
Propane	3.2637	3.2756	0.9020	82.12	0.0497
Iso-Butane	0.6692	0.6716	0.2200	21.76	0.0134
N-Butane	0.8726	0.8758	0.2760	28.47	0.0175
Neopentane 2,2 dmc3	0.0056	0.0056	0.0020	0.22	0.0001
I-Pentane	0.3331	0.3343	0.1220	13.33	0.0083
N-Pentane	0.2312	0.2320	0.0840	9.27	0.0058
Neohexane	0.0136	N/R	0.0060	0.64	0.0004
2-3-Dimethylbutane	0.0115	N/R	0.0050	0.55	0.0003
Cyclopentane	0.0120	N/R	0.0040	0.45	0.0003
2-Methylpentane	0.0775	N/R	0.0320	3.68	0.0023
3-Methylpentane	0.0334	N/R	0.0140	1.59	0.0010
C6	0.0881	0.5495	0.0360	4.19	0.0026
Methylcyclopentane	0.0634	N/R	0.0220	2.85	0.0018
Benzene	0.0114	N/R	0.0030	0.43	0.0003
Cyclohexane	0.0338	N/R	0.0120	1.51	0.0010
2-Methylhexane	0.0138	N/R	0.0060	0.75	0.0005
3-Methylhexane	0.0130	N/R	0.0060	0.71	0.0004
2-2-4-Trimethylpentane	0.0041	N/R	0.0020	0.25	0.0002
i-heptanes	0.0092	N/R	0.0040	0.49	0.0003
Heptane	0.0355	N/R	0.0160	1.95	0.0012

Methylcyclohexane	0.0663	N/R	0.0270	3.46	0.0022
Toluene	0.0226	N/R	0.0080	1.01	0.0007
2-Methylheptane	0.0106	N/R	0.0050	0.66	0.0004
4-Methylheptane	0.0052	N/R	0.0030	0.32	0.0002
i-Octanes	0.0045	N/R	0.0020	0.27	0.0002
Octane	0.0100	N/R	0.0050	0.62	0.0004
Ethylbenzene	0.0003	N/R	0.0000	0.02	0.0000
m, p Xylene	0.0048	N/R	0.0020	0.25	0.0002
o Xylene (& 2,2,4 tmc7)	0.0003	N/R	0.0000	0.02	0.0000
i-C9	0.0006	N/R	0.0000	0.04	0.0000
C9	0.0011	N/R	0.0010	0.08	0.0000
i-C10	0.0002	N/R	0.0000	0.01	0.0000
C10	0.0004	N/R	0.0000	0.03	0.0000
i-C11	0.0000	N/R	0.0000	0.00	0.0000
C11	0.0002	N/R	0.0000	0.02	0.0000
C12P	0.0000	N/R	0.0000	0.00	0.0000
Total	100.00	100.364	18.551	1173.23	0.6839

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

COMPRESSIBLITY FACTOR	(1/Z):	1.0031
BTU/CU.FT IDEAL:		1175.9
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):		1179.6
BTU/CU.FT (WET) CORRECTED FOR (1/Z):		1159.1
DRY BTU @ 15.025:		1203.2
REAL SPECIFIC GRAVITY:		0.6857

CYLINDER #:	206
CYLINDER PRESSURE:	82 PSIG
ANALYSIS DATE:	09/28/2018
ANALYIS TIME:	01:22:13 AM
ANALYSIS RUN BY:	CAMERON MANGAN

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: 10/01/2018**
GC Method: C12+BTEX Gas

WILLIAMS

WELL ANALYSIS COMPARISON

Lease: TRUNK G INLET   INLET PIPING   10/01/2018

Stn. No.:   85000-13450

Mtr. No.:

Smpl Date:	09/28/2018
Test Date:	09/28/2018
Run No:	WF180112
Nitrogen:	0.1713
CO2:	1.4169
Methane:	84.9753
Ethane:	7.5136
Propane:	3.2637
I-Butane:	0.6692
N-Butane:	0.8726
2,2 dmc3:	0.0056
I-Pentane:	0.3331
N-Pentane:	0.2312
Neohexane:	0.0136
2-3-	0.0115
Cyclopentane:	0.0120
2-Methylpentane:	0.0775
3-Methylpentane:	0.0334
C6:	0.0881
Methylcyclopentane:	0.0634
Benzene:	0.0114
Cyclohexane:	0.0338
2-Methylhexane:	0.0138
3-Methylhexane:	0.0000
2-2-4-	0.0041
i-heptanes:	0.0092
Heptane:	0.0355
Methylcyclohexane:	0.0663
Toluene:	0.0226
2-Methylheptane:	0.0106
4-Methylheptane:	0.0052
i-Octanes:	0.0045
Octane:	0.0100
Ethylbenzene:	0.0003
m, p Xylene:	0.0048
o Xylene (& 2,2,4	0.0003
i-C9:	0.0006
C9:	0.0011
i-C10:	0.0002
C10:	0.0004
i-C11:	0.0000
C11:	0.0002
C12P:	0.0000
BTU:	1179.6
GPM:	18.5730
SPG:	0.6857

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-18010186-001A

Environmental Department
Williams
1755 Arroyo Drive
Bloomfield, NM 87402

Jan. 05, 2018

Station Name:	El Cedro	Sampled By:	SC
Station Location:	ELC-FS	Sample Of:	Liquid Spot
Method:	GPA 2103M	Sample Date:	01/03/2018 13:45
Cylinder No:	cp14	Sample Conditions:	100 psig
Analyzed:	01/04/2018 13:02:52 by RR	PO/Ref. No:	651377

Analytical Data

Components	Mol. %	MW	Wt. %	Sp. Gravity	L.V. %
Nitrogen	0.018	28.013	0.006	0.807	0.005
Methane	5.434	16.043	1.012	0.300	2.354
Carbon Dioxide	0.190	44.010	0.097	0.817	0.083
Ethane	3.048	30.069	1.064	0.356	2.084
Propane	4.050	44.096	2.073	0.507	2.851
Iso-Butane	2.026	58.122	1.367	0.563	1.694
n-Butane	4.590	58.122	3.097	0.584	3.699
Iso-Pentane	4.884	72.149	4.091	0.625	4.566
n-Pentane	5.115	72.149	4.284	0.631	4.739
i-Hexanes	4.705	85.088	4.648	0.667	4.860
n-Hexane	5.141	86.175	5.143	0.664	5.404
2,2,4-Trimethylpentane	0.099	114.229	0.131	0.696	0.131
Benzene	1.134	78.112	1.028	0.884	0.811
Heptanes	22.954	94.468	25.173	0.720	24.388
Toluene	5.390	92.138	5.765	0.872	4.613
Octanes	21.044	106.489	26.014	0.747	24.299
Ethylbenzene	0.277	106.165	0.342	0.872	0.274
Xylenes	2.784	106.165	3.431	0.870	2.752
Nonanes	4.261	123.727	6.118	0.750	5.693
Decanes Plus	2.856	154.320	5.116	0.760	4.700
	100.000		100.000		100.000

Calculated Physical Properties	**Total**	**C10+**
Specific Gravity at 60°F	0.6977	0.7595
API Gravity at 60°F	71.311	54.807
Molecular Weight	86.142	154.320
Pounds per Gallon (in Vacuum)	5.817	6.332
Pounds per Gallon (in Air)	5.810	6.325
Cu. Ft. Vapor per Gallon @ 14.696 psia	25.625	15.571

Hydrocarbon Laboratory Manager

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

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-18010186-001A

Environmental Department
Williams
1755 Arroyo Drive
Bloomfield, NM 87402

Jan. 05, 2018

Station Name: El Cedro
Station Location: ELC-FS
PO/Ref. No: 651377
Cylinder No: cp14

Sampled By: SC
Sample Of: Liquid Spot
Sample Date: 01/03/2018 13:45
Sample Conditions: 100 psig

Analytical Data

Test	Method	Result	Units	Detection Limit	Lab Tech.	Analysis Date
Shrinkage Factor	Proprietary	0.9474			MR	01/04/2018
Flash Factor	Proprietary	65.3760	Cu.Ft./STBbl.		MR	01/04/2018
Color Visual	Proprietary	Light Straw			MR	01/04/2018
API Gravity @ 60° F	ASTM D-4052	64.85	°		JJH	01/05/2018

Hydrocarbon Laboratory Manager

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

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-19020161-001A

Environmental Departmant
Harvest Midstream
1755 Arroyo Dr.
Bloomfield, NM 87413

Feb. 21, 2019

Station Name:	El Cedro Station	Sampled By:	CL
Method:	GPA 2103M	Sample Of:	Liquid Spot
Cylinder No:	C315	Sample Date:	01/30/2019 18:20
Analyzed:	02/12/2019 16:32:52 by JB	Sample Conditions:	80 psig

Analytical Data

Components	Mol. %	MW	Wt. %	Sp. Gravity	L.V. %
Nitrogen	0.009	28.013	0.003	0.8069	0.003
Methane	2.043	16.043	0.378	0.3000	0.878
Carbon Dioxide	0.089	44.010	0.045	0.8172	0.038
Ethane	2.653	30.069	0.920	0.3563	1.801
Propane	5.086	44.096	2.587	0.5072	3.557
Iso-Butane	2.425	58.122	1.626	0.5628	2.015
n-Butane	5.640	58.122	3.781	0.5842	4.514
Iso-Pentane	5.799	72.149	4.826	0.6251	5.384
n-Pentane	5.966	72.149	4.965	0.6307	5.491
i-Hexanes	7.941	84.808	7.769	0.6678	8.114
n-Hexane	5.915	86.175	5.880	0.6641	6.176
2,2,4-Trimethylpentane	0.096	114.229	0.127	0.6964	0.127
Benzene	1.271	78.112	1.145	0.8844	0.903
Heptanes	23.163	94.019	25.121	0.7218	24.272
Toluene	4.430	92.138	4.708	0.8719	3.766
Octanes	17.843	106.008	21.817	0.7483	20.339
Ethylbenzene	0.208	106.165	0.255	0.8716	0.204
Xylenes	1.713	106.165	2.097	0.8697	1.682
Nonanes	2.788	123.459	3.971	0.7512	3.686
Decanes Plus	4.922	140.591	7.979	0.7894	7.050
	100.000		100.000		100.000

Calculated Physical Properties	**Total**	**C10+**
Specific Gravity at 60°F	0.6975	0.7894
API Gravity at 60°F	71.373	47.750
Molecular Weight	86.696	140.591
Pounds per Gallon (in Vacuum)	5.815	6.581
Pounds per Gallon (in Air)	5.809	6.574
Cu. Ft. Vapor per Gallon @ 14.696 psia	25.453	17.764

Hydrocarbon Laboratory Manager

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

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-19020161-001A

Environmental Departmant
Harvest Midstream
1755 Arroyo Dr.
Bloomfield, NM 87413

Feb. 21, 2019

Station Name: El Cedro Station
Sample Conditions: 80 psig
Cylinder No: C315

Sampled By: CL
Sample Of: Liquid Spot
Sample Date: 01/30/2019 18:20

Analytical Data

Test	Method	Result	Units	Detection Limit	Lab Tech.	Analysis Date
Shrinkage Factor	API 20.1 M	0.9170			SM	02/14/2019
Flash Factor	API 20.1 M	149.8980	Cu.Ft./STBbl.		SM	02/14/2019
Color Visual	API 20.1 M	Light Straw			SM	02/14/2019
API Gravity @ 60° F	ASTM D-4052	65.71	°		CI	02/15/2019

Hydrocarbon Laboratory Manager

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

Certificate of Analysis

Number: 1030-19120332-001A

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Environmental Department
Harvest Midstream
1755 Arroyo Dr.
Bloomfield, NM 87413

Dec. 10, 2019

Station Name:	El Cedro Comp Station	Sampled By:	SC
Method:	GPA 2186	Sample Of:	Liquid Spot
Cylinder No:	CP 14	Sample Date:	12/01/2019 13:35
Analyzed:	12/09/2019 14:30:48 by TB	Sample Conditions:	225 psig

Analytical Data

Components	Mol. %	Wt. %	L.V. %
Nitrogen	NIL	NIL	NIL
Methane	5.529	1.194	2.595
Carbon Dioxide	0.143	0.085	0.068
Ethane	5.003	2.026	3.706
Propane	9.779	5.806	7.461
Iso-Butane	3.775	2.954	3.421
n-Butane	9.604	7.516	8.386
Iso-Pentane	7.219	7.013	7.312
n-Pentane	7.327	7.118	7.356
Hexanes Plus	51.621	66.288	59.695
	100.000	100.000	100.000

Calculated Physical Properties	**Total**	**C6+**
Specific Gravity at 60°F	0.6518	0.7238
API Gravity at 60°F	85.5842	64.0062
Molecular Weight	74.270	95.374
Pounds per Gallon (in Vacuum)	5.434	6.034
Pounds per Gallon (in Air)	5.428	6.027
Cu. Ft. Vapor per Gallon @ 14.696 psia	27.767	24.009
Specific Gravity as a vapor	2.564	3.293
Calculated Vapor Pressure, psia @ 100°F	348.80	3.23
BTU / GAL. (as a vapor)	112527	122963
BTU / LB. (as a vapor)	20707	20378

Tom Berg

Hydrocarbon Laboratory Manager

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

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-19120332-001A

Environmental Department
Harvest Midstream
1755 Arroyo Dr.
Bloomfield, NM 87413

Dec. 10, 2019

Station Name:	El Cedro Comp Station	Sampled By:	SC
Method:	GPA 2186	Sample Of:	Liquid Spot
Cylinder No:	CP 14	Sample Date:	12/01/2019 13:35
Analyzed:	12/09/2019 14:30:48 by TB	Sample Conditions:	225 psig

Analytical Data

Components	Mol. %	Wt. %	L.V. %
Nitrogen	NIL	NIL	NIL
Methane	5.529	1.194	2.595
Carbon Dioxide	0.143	0.085	0.068
Ethane	5.003	2.026	3.706
Propane	9.779	5.806	7.461
Iso-Butane	3.775	2.954	3.421
n-Butane	9.604	7.516	8.386
Iso-Pentane	7.219	7.013	7.312
n-Pentane	7.327	7.118	7.356
Hexanes	15.344	17.600	17.204
Heptanes Plus	36.277	48.688	42.491
	100.000	100.000	100.000

Calculated Physical Properties	**Total**	**C7+**
Specific Gravity at 60°F	0.6518	0.7468
API Gravity at 60°F	85.5842	57.9737
Molecular Weight	74.270	99.682
Pounds per Gallon (in Vacuum)	5.434	6.226
Pounds per Gallon (in Air)	5.428	6.219
Cu. Ft. Vapor per Gallon @ 14.696 psia	27.767	23.703
BTU / GAL. (as a vapor)	112527	125716
BTU / LB. (as a vapor)	20707	20191

Tom Berg

Hydrocarbon Laboratory Manager

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

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-19120332-001A

Environmental Department
Harvest Midstream
1755 Arroyo Dr.
Bloomfield, NM 87413

Dec. 10, 2019

Station Name: El Cedro Comp Station
Method: GPA 2186
Cylinder No: CP 14
Analyzed: 12/09/2019 14:30:48 by TB

Sampled By: SC
Sample Of: Liquid Spot
Sample Date: 12/01/2019 13:35
Sample Conditions: 225 psig

Analytical Data

Components	Mol. %	Wt. %	L.V. %
Nitrogen	NIL	NIL	NIL
Methane	5.529	1.194	2.595
Carbon Dioxide	0.143	0.085	0.068
Ethane	5.003	2.026	3.706
Propane	9.779	5.806	7.461
Iso-Butane	3.775	2.954	3.421
n-Butane	9.604	7.516	8.386
Iso-Pentane	7.219	7.013	7.312
n-Pentane	7.327	7.118	7.356
i-Hexanes	9.284	10.568	10.298
n-Hexane	6.060	7.032	6.906
Benzene	0.988	1.039	0.767
Cyclohexane	3.544	4.016	3.339
i-Heptanes	10.730	13.654	12.467
n-Heptane	3.492	4.710	4.459
Toluene	2.471	3.066	2.291
i-Octanes	10.107	14.316	12.476
n-Octane	1.075	1.653	1.523
Ethylbenzene	0.138	0.198	0.147
Xylenes	1.121	1.601	1.200
i-Nonanes	1.660	2.731	2.363
n-Nonane	0.254	0.438	0.396
i-Decanes	0.556	0.978	0.807
Decanes Plus	0.141	0.288	0.256
	100.000	100.000	100.000

Calculated Physical Properties	**Total**	**C10+**
API Gravity at 60°F	85.5842	49.6858
Pounds per Gallon (in Air)	5.428	6.504
Pounds per Gallon (in Vacuum)	5.434	6.511
Cu. Ft. Vapor per Gallon @ 14.696 psia	27.767	18.335
Specific Gravity at 60°F	0.6518	0.7810
Molecular Weight	74.270	134.759
BTU / GAL. (as a vapor)	112527	130818
BTU / LB. (as a vapor)	20707	20086

Tom Berg

Hydrocarbon Laboratory Manager

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

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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.
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). Note that the condensate tank battery is limited to a useable capacity of just under 63,000 gallons (see the documentation at the end of this section).
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:
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	1-10, 15-20 & 28	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 the 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 NO_2, CO, VOC & HAP 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 does not apply 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)	Yes	Facility	This regulation is applicable because the facility is a PSD major source, the NOX, CO and VOC potential to emit are each greater than 250 tpy (see 20.2.74.200 NMAC). Note, however, that this is a Title V application and not a PSD application.
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	Yes	15 & 16	This regulation is applicable because it adopts by reference the federal NSPS codified in 40 CFR 60 (see 20.2.77.6 NMAC). The facility is subject to 40 CFR 60, Subparts A & GG.
20.2.78 NMAC	Emission Standards for HAPS	No		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		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	1-10, 15-20 & 28	This regulation is applicable because it establishes guidelines for the selection of an appropriate stack height for the purposes of atmospheric dispersion modeling (see 20.2.80.6 NMAC).
20.2.82 NMAC	MACT Standards for Source Categories of HAPS	Yes	1-10 & 17-19	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 affected units at the facility are 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 REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 50	NAAQS	Yes	Facility	This regulation applies because the facility is subject to 20.2.70, 20.2.72 and 20.2.74 NMAC.
40 CFR 52	Approval and Promulgation of Implementation Plans	Yes	Facility	40 CFR 52.21 *Prevention of Significant Deterioration of Air Quality* is applicable because the facility is 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	15 & 16	This regulation applies because 40 CFR 60, Subpart GG applies (see §60.1(a)).
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), and/or were installed prior to the applicability date, and/or contain condensate prior to custody transfer (§60.110b(a) & §60.110b(d)(4)). For tank capacities, installation dates and contents, see Tables 2-K and 2-L in section 2 of this application. The changes proposed in this registration are not modifications as defined in §60.14(e). (e) The following shall not, by themselves, be considered modifications under this part: (2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility.
NSPS 40 CFR 60 Subpart GG	Standards of Performance for Stationary Gas Turbines	Yes	15 & 16	This regulation is applicable because the turbines (Units 15 & 16) at the facility were constructed after the applicability date of October 3, 1977 and have a peak input load greater than the applicability threshold of 10.15 MMBtu/hr (see Table 2-A in Section 2 of this application) (see §60.330). The units must comply with the NO_X emission limitation of 150 ppmv at 15% O2 on a dry basis (see §60.332(a)(2)). The units must comply with the SO_2 emissions limitation of 0.015% by volume at 15% O2 on a dry basis or use a fuel that does not contain sulfur in excess of 0.8 percent by weight (8,000 ppmw) (see §60.333).

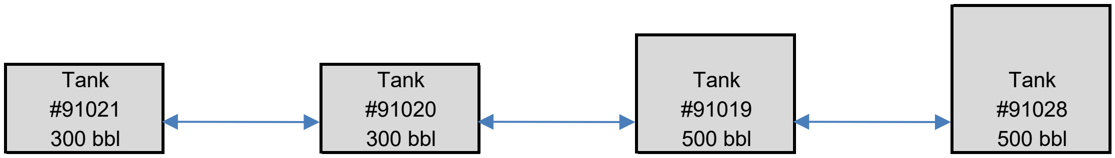
FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR 60, Subpart KKK	Standards of Performance for Equipment Leaks of VOC from Onshore Gas Plants	No	N/A	This regulation is not applicable because the facility is not an onshore natural gas processing 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 does not apply because the facility is not equipped with stationary CI ICE (see §60.4200(a)).
NSPS 40 CFR 60, Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	Potentially Subject	N/A	This regulation is not applicable because the facility is does not have affected equipment. The subpart is not applicable to the 4SLB stationary SI ICE at the facility (Units 1-9). They commenced construction prior to June 12, 2006. They have maximum engine powers between 500 and 1,350 hp and they were manufactured prior to January 1, 2008 (see Table 2-A in Section 2 of this application) (see §60.4230(a)(4)(ii)). The subpart is not applicable to the 4SRB stationary SI ICE at the facility (Units 17, 18 & 18a). They have maximum engine powers greater than or equal to 500 hp. They commenced construction prior to June 12, 2006 and/or were manufactured prior to July 1, 2007 (see Table 2-A in Section 2 of this application) (see §60.4230(a)(4)(i)). The subpart is not applicable to the emergency engine (Unit 19). It has a maximum engine power greater than 25 hp. It was constructed prior to June 12, 2006 and was manufactured prior to January 1, 2009 (see Table 2-A in Section 2 of this application) (see §60.4230(a)(4)(iv)).
NSPS 40 CFR 60, Subpart KKKK	Standards of Performance for Stationary Combustion Turbines	No	N/A	This regulation is not applicable because none of the turbines at the facility were constructed, modified, or reconstructed after February 18, 2005 (see Table 2-A in Section 2 of this application) (see §60.4305(a)).
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	Potentially Subject	N/A	This regulation is not applicable because the facility will not be equipped with “affected” sources that are constructed, modified, or reconstructed after Aug 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).

[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	Potentially Subject	N/A	This regulation is not applicable because the facility will not be equipped with "affected" sources that were constructed, modified, or reconstructed after September 18, 2015: gas wells, centrifugal or reciprocating compressors, pneumatic controllers, storage vessels, pneumatic pumps, and equipment leaks (see §60.5365a). Note that the facility is not a natural gas processing plant as defined by the subpart (see §60.5430a). The changes proposed in this registration are not modifications as defined in §60.14(e). (e) The following shall not, by themselves, be considered modifications under this part: (2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility.
NESHAP 40 CFR 61, Subpart A	General Provisions	No	N/A	This regulation is not applicable because none of the 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	1-10 & 17-19	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 dehydrators. The facility is an area HAP source. 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). Because the facility is an area HAP source, TEG dehydrators are the only potentially affected equipment (see §63.760(b)(2)).
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) is 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 YYYY	National Emission Standards for Hazardous Air Pollutants From Stationary Combustion Turbines	Yes	15 & 16	This regulation is applicable because the facility is both equipped with stationary combustion turbines (Units 15 & 16) and is a HAP major source (see §63.6090(a)). The facility is a major HAP source as defined by the subpart. Since it is a production field facility, only HAP emissions from dehydrators, storage vessels with the potential for flash emissions, combustion turbines and RICE are aggregated for a major source determination (see §63.6175). There are no applicable requirements for the turbines, because they were constructed or reconstructed prior to January 14, 2003 (see Table 2-A in Section 2 of this application) (see §63.6090(b)(4)).
MACT 40 CFR 63, Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE MACT)	Potentially Subject	1-10 & 17-19	This regulation is applicable because the facility is equipped with stationary RICE (see §63.6585). The facility is a major HAP source as defined by the subpart. Since it is a production field facility, only HAP emissions from dehydrators, storage vessels with the potential for flash emissions, combustion turbines and RICE are aggregated for a major source determination (see §63.6675). Except for initial notification requirements, there are no requirements for the 4-stroke lean burn compressor engines (Units 1-9). They have site ratings greater than 500 hp and commenced construction or reconstruction before December 19, 2002 (see Table 2-A in Section 2 of this application). The Subpart may be applicable to Unit 10, if it is installed and if it is constructed or reconstructed on or after December 19, 2002 (see §63.6590(a)(1)(i) and §63.6590(b)(3)(ii)). The 4-stroke rich burn generator engines (Units 17 & 18 or 18a) all have site ratings greater than 500 hp. Consequently, they must be equipped with catalysts to reduce formaldehyde emissions by 76 percent or to limit formaldehyde emissions to 350 ppbvd or less at 15% O2. The catalyst must be maintained so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test. The temperature of your stationary RICE exhaust must be maintained so that the catalyst inlet temperature is greater than or equal to 750 °F and less than or equal to 1250 °F (based on a 4-hour rolling average). CPMS must be installed to monitor the catalyst inlet temperatures. Also, the engine's time spent at idle must be minimized and the engine's startup time at startup must be minimized to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply (see §63.6600(a), Table 1a, and Table 1b). There are no requirements for the emergency generator engine (Unit 19). It has a site rating greater than 500 hp and commenced construction or reconstruction before December 19, 2002 (see Table 2-A in Section 2 of this application). Also, the generator does not operate and is not contractually obligated to be available for emergency demand response and deviations of voltage (see §63.6590(b)(3)(iii).
MACT 40 CFR 63, Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	No	N/A	This regulation is not applicable because the facility is an area HAP source as defined by the subpart (see §63.7480). Since the facility is a natural gas production facility, only HAP emissions from dehydrators and storage vessels with the potential for flash emissions are aggregated for a major source determination (see §63.7575).

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
MACT 40 CFR 63, Subpart CCCCCC	National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities	No	N/A	This regulation is not applicable to the gasoline storage tank because the facility is a major HAP source (see §63.11111(a)).
40 CFR 64	Compliance Assurance Monitoring	Yes	17 & 18	This regulation is applicable to two of the rich burn engines (Units 17 & 18) because they are equipped with control devices used to achieve compliance with emission limits or standards where pre control emissions equal or exceed the major source threshold (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).

Applicability Determination for 20.2.38 NMAC
(Capacity of El Cedro Condensate Tank Battery)



Since all four tanks are tied together, Units 91019 & 91028 are limited to holding 15 vertical feet of condensate or Units 91020 & 91021 will spill over.

Tank T91019

15.5	ft	Diameter	Nameplate
16.0	ft	Height	Nameplate
22,584	gal	Volume	3.1416 x (Diameter (ft)/2)^2) x Height (ft) x 7.4805 gal/ft^3
1.0	ft	Additional Height (Above T91020)	Height (ft)(T91019) - Height (ft)(T91020)
1,412	gal	Unusable Volume:	3.1416 x (Diameter (ft)/2)^2) x Additional Height (ft) x 7.4805 gal/ft^3
21,173	gal	Usable Volume	Volume (gal) - Unusable Volume (gal)

Note: The nameplate nominal volume of the tank is 500 bbl (21,000 gal)

Tanks T91020 & T91021

12.0	ft	Diameter	Nameplate
15.0	ft	Height	Nameplate
12,690	gal each	Volume	3.1416 x (Diameter (ft)/2)^2) x Height (ft) x 7.4805 gal/ft^3

Note: The nameplate nominal volumes of the tanks are 300 bbl (12,600 gal)

Tank T91028

13.6	ft	Diameter	Nameplate
20.0	ft	Height	Nameplate
21,733	gal	Volume	3.1416 x (Diameter (ft)/2)^2) x Height (ft) x 7.4805 gal/ft^3
5.0	ft	Additional Height (Above T91020)	Height (ft)(T91028) - Height (ft)(T91020)
5,433	gal	Unusable Volume:	3.1416 x (Diameter (ft)/2)^2) x Additional Height (ft) x 7.4805 gal/ft^3
16,300	gal	Usable Volume	Volume (gal) - Unusable Volume (gal)

Note: The nameplate nominal volume of the tank is 500 bbl (21,000 gal)

Battery Capacity

62,854	gal	Total Usable Volume	Sum of Usable Volumes

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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.

Not applicable, no alternative operating scenarios are being proposed.

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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.

A modeling report for NO_2, CO and particulate was submitted with the October 2015 permit application for 340-M12.

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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 permits conditions, you must submit a compliance test history. The table below provides an example.

Compliance Test History Table

Unit No.	Test Description	Test Date
1-9	Testing for NO_X and CO emissions	05/23/2019
10	Not applicable, as this unit is not installed.	N/A
15	Testing for NO_X and CO emissions	09/20/2016
16	Testing for NO_X and CO emissions	05/23/2019
17	Testing for NO_X and CO emissions	05/23/2019
17	Testing for formaldehyde emissions in accordance with Subpart ZZZZ	03/24/2014
18	Testing for NO_X and CO emissions	
18	Testing for formaldehyde emissions in accordance with Subpart ZZZZ	06/17/2015
18a	Testing for NO_X and CO emissions	
18a	Testing for formaldehyde emissions in accordance with Subpart ZZZZ	
19	Not applicable, as testing is not required for this unit	N/A

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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

<u>Who Must Use this Attachment</u>:

* 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, since no other relevant information is being submitted.

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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 this facility is not a landfill.

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Section 22

Certification

Company Name: Harvest Four Corners, LLC

I, Kijun Hong, 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 19th day of March, 2020, upon my oath or affirmation, before a notary of the State of New Mexico.

*Signature

3/19/2020
Date

Kijun Hong
Printed Name

Environmental Specialist
Title

Scribed and sworn before me on this 19th day of March, 2020.

My authorization as a notary of the State of New Mexico expires on the 4th day of April, 2022.

Rebecca Beard
Notary's Signature

3/19/20
Date

Rebecca Beard
Notary's Printed Name

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