



West Virginia Department of Environmental Protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25 4
Phone (304) 926-0475
Fax (304) 926-0479
www.dep.wv.gov

G70-C GENERAL PERMIT REGISTRATION APPLICATION
PREVENTION AND CONTROL OF AIR POLLUTION IN REGARD TO THE CONSTRUCTION, MODIFICATION, RELOCATION, ADMINISTRATIVE UPDATE AND OPERATION OF NATURAL GAS PRODUCTION FACILITIES LOCATED AT THE WELL SITE

- CONSTRUCTION
- MODIFICATION
- RELOCATION
- CLASS I ADMINISTRATIVE UPDATE
- CLASS II ADMINISTRATIVE UPDATE

SECTION 1. GENERAL INFORMATION

Name of Applicant (as registered with the WV Secretary of State's Office): **Northeast Natural Energy, LLC**

Federal Employer ID No. (FEIN): **27-0945493**

Applicant's Mailing Address: 48 Donley Street, Suite 601

City: **Morgantown** State: **WV** ZIP Code: **26501**

Facility Name: **Fisher Well Pad**

Operating Site Physical Address: **1003 Daybrook Road**
If none available, list road, city or town and zip of facility.

City: **Fairview** Zip Code: **26570** County: **Monongalia**

Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
Latitude: **39.69611**
Longitude: **-80.21369**

SIC Code: **1311** DAQ Facility ID No. (For existing facilities)
NAICS Code: **211111**

CERTIFICATION OF INFORMATION

This G70-C General Permit Registration Application shall be signed below by a Responsible Official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of the Board of Directors, or Owner, depending on business structure. A business may certify an Authorized Representative who shall have authority to bind the Corporation, Partnership, Limited Liability Company, Association, Joint Venture or Sole Proprietorship. Required records of daily throughput, hours of operation and maintenance, general correspondence, compliance certifications and all required notifications must be signed by a Responsible Official or an Authorized Representative. If a business wishes to certify an Authorized Representative, the official agreement below shall be checked off and the appropriate names and signatures entered. **Any administratively incomplete or improperly signed or unsigned G70-C Registration Application will be returned to the applicant. Furthermore, if the G70-C forms are not utilized, the application will be returned to the applicant. No substitution of forms is allowed.**

I hereby certify that _____ is an Authorized Representative and in that capacity shall represent the interest of the business (e.g., Corporation, Partnership, Limited Liability Company, Association Joint Venture or Sole Proprietorship) and may obligate and legally bind the business. If the business changes its Authorized Representative, a Responsible Official shall notify the Director of the Division of Air Quality immediately.

I hereby certify that all information contained in this G70-C General Permit Registration Application and any supporting documents appended hereto is, to the best of my knowledge, true, accurate and complete, and that all reasonable efforts have been made to provide the most comprehensive information possible.

Responsible Official Signature: 
Name and Title: **Brett Loflin - Vice President, regulatory Affairs** Phone: **304/241-5752** Fax: **304/414-7061**
Email: **bloflin@nne-llc.com** Date: **8/31/16**

If applicable:
Authorized Representative Signature: _____
Name and Title: _____ Phone: _____ Fax: _____
Email: _____ Date: _____

If applicable:
Environmental Contact
Name and Title: **Brett Loflin** Phone: _____ Fax: _____
Email: _____ Date: _____

OPERATING SITE INFORMATION	
Briefly describe the proposed new operation and/or any change(s) to the facility: New Natural Gas Well Pad Production Facility	
Directions to the facility: From I-79, take exit 155. Merge onto CHAPLIN HILL RD/CR-19/24 N toward US-19/WV-7/STAR CITY. If traveling from the south, this will be a right. If from the north, this will be a left off the exit. After 0.8 miles, turn left at light onto US-19/WV-7. Continue on US-19/WV-7 for 1.7 miles. Turn left on WV-7 and continue on route for 13.9 miles. Turn left onto WV-218/DAYBROOK RUN RD. Well site access road will be on the left-hand side of the road after 2.2 miles on top of hill. Follow signs on access road to pad.	
ATTACHMENTS AND SUPPORTING DOCUMENTS	
I have enclosed the following required documents:	
Check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR13 and 45CSR22).	
<input checked="" type="checkbox"/> Check attached to front of application. <input type="checkbox"/> I wish to pay by electronic transfer. Contact for payment (incl. name and email address): <input type="checkbox"/> I wish to pay by credit card. Contact for payment (incl. name and email address):	
<input checked="" type="checkbox"/> \$500 (Construction, Modification, and Relocation) <input type="checkbox"/> \$300 (Class II Administrative Update) <input checked="" type="checkbox"/> \$1,000 NSPS fee for 40 CFR60, Subpart IIII, JJJJ and/or OOOO ¹ <input type="checkbox"/> \$2,500 NESHAP fee for 40 CFR63, Subpart ZZZZ and/or HH ²	
¹ Only one NSPS fee will apply. ² Only one NESHAP fee will apply. The Subpart ZZZZ NESHAP fee will be waived for new engines that satisfy requirements by complying with NSPS, Subparts IIII and/or JJJJ. <i>NSPS and NESHAP fees apply to new construction or if the source is being modified.</i>	
<input checked="" type="checkbox"/> Responsible Official or Authorized Representative Signature (if applicable)	
<input checked="" type="checkbox"/> Single Source Determination Form (must be completed in its entirety) – Attachment A	
<input type="checkbox"/> Siting Criteria Waiver (if applicable) – Attachment B	<input checked="" type="checkbox"/> Current Business Certificate – Attachment C
<input checked="" type="checkbox"/> Process Flow Diagram – Attachment D	<input checked="" type="checkbox"/> Process Description – Attachment E
<input checked="" type="checkbox"/> Plot Plan – Attachment F	<input checked="" type="checkbox"/> Area Map – Attachment G
<input checked="" type="checkbox"/> G70-C Section Applicability Form – Attachment H	<input checked="" type="checkbox"/> Emission Units/ERD Table – Attachment I
<input checked="" type="checkbox"/> Fugitive Emissions Summary Sheet – Attachment J	
<input checked="" type="checkbox"/> Gas Well Affected Facility Data Sheet (if applicable) – Attachment K	
<input checked="" type="checkbox"/> Storage Vessel(s) Data Sheet (include gas sample data, USEPA Tanks, simulation software (e.g. ProMax, E&P Tanks, HYSYS, etc.), etc. where applicable) – Attachment L	
<input checked="" type="checkbox"/> Natural Gas Fired Fuel Burning Unit(s) Data Sheet (GPUs, Heater Treaters, In-Line Heaters if applicable) – Attachment M	
<input checked="" type="checkbox"/> Internal Combustion Engine Data Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment N	
<input checked="" type="checkbox"/> Tanker Truck Loading Data Sheet (if applicable) – Attachment O	
<input type="checkbox"/> Glycol Dehydration Unit Data Sheet(s) (include wet gas analysis, GRI- GLYCalc™ input and output reports and information on reboiler if applicable) – Attachment P	
<input type="checkbox"/> Pneumatic Controllers Data Sheet – Attachment Q	
<input type="checkbox"/> Air Pollution Control Device/Emission Reduction Device(s) Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment R	
<input checked="" type="checkbox"/> Emission Calculations (please be specific and include all calculation methodologies used) – Attachment S	
<input checked="" type="checkbox"/> Facility-wide Emission Summary Sheet(s) – Attachment T	
<input checked="" type="checkbox"/> Class I Legal Advertisement – Attachment U	
<input checked="" type="checkbox"/> One (1) paper copy and two (2) copies of CD or DVD with pdf copy of application and attachments	

All attachments must be identified by name, divided into sections, and submitted in order.

ATTACHMENT A - SINGLE SOURCE DETERMINATION FORM

Classifying multiple facilities as one “stationary source” under 45CSR13, 45CSR14, and 45CSR19 is based on the definition of Building, structure, facility, or installation as given in §45-14-2.13 and §45-19-2.12. The definition states:

“Building, Structure, Facility, or Installation” means all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Pollutant-emitting activities are a part of the same industrial grouping if they belong to the same “Major Group” (i.e., which have the same two (2)-digit code) as described in the Standard Industrial Classification Manual, 1987 (United States Government Printing Office stock number GPO 1987 0-185-718:QL 3).

Is there a facility owned by or associated with the natural gas industry located within one (1) mile of the proposed facility? Yes No

If Yes, please complete the questionnaire on the following page (Attachment A).

Please provide a source aggregation analysis for the proposed facility below:

This Northeast Natural Energy facility will receive and manage raw natural gas and associated produced water from the wells. After separation of the produced water, the gas will be injected into gathering lines for transportation via pipeline owned and operated by others to a compressor station, owned and operated by others, where it will be compressed, dehydrated and injected into a transmission line for transportation to customers.

The Fisher Well Pad is located 0.80 miles from the nearest facility (Coastal Well Pad) owned and operated by Northeast, including support facilities. These two well pads are owned and operated by the same organization, are under the same SIC code and share personnel. However the two facilities operate independent of each other. Operation of the Fisher Well Pad does not depend on operation of the Coastal Well Pad and operation of Coastal Well Pad does not depend on operation of the Fisher Well Pad. Most importantly, these two well pads are separated by 0.8 mile with multiple properties in between that are not under control of Northeast.

The Fisher Well Pad and the receiving compressor station (Cooper’s Run CS) are under the same general SIC Code. They are not under common ownership and will not have a sharing of staff. Additionally, as the gas can also flow to other compressor stations further away, there is no dependency of the Fisher Well Pad on this compressor station. Additionally, operation of this compressor station is not dependent upon the Fisher Well Pad as it also receives gas from other well pads. Lastly, the distance between the planned Fisher Well Pad and the receiving compressor station (0.7 miles) does not rise to the definition of contiguous or adjacent. Thus, not all of the criteria for aggregation are met. Hence, emissions from the Fisher Well Pad should not be aggregated with those of Cooper’s Run compressor station.

ATTACHMENT A - SINGLE SOURCE DETERMINATION FORM

Answer each question with a detailed explanation to determine contiguous or adjacent properties which are under a common control and any support facilities. This section must be completed in its entirety.

Provide a map of contiguous or adjacent facilities (production facilities, compressor stations, dehydration facilities, etc.) which are under common control and those facilities that are not under common control but are support facilities. Please indicate the SIC code, permit number (if applicable), and the distance between facilities in question on the map.

Are the facilities owned by the same parent company or a subsidiary of the parent company? Provide the owners identity and the percentage of ownership of each facility. Yes No
The two well pads are owned and operated by Northeast Natural Energy

Does an entity such as a corporation have decision making authority over the operation of a second entity through a contractual agreement or voting interest? Please explain. Yes No

Is there a contract for service relationship between the two (2) companies or, a support/dependency relationship that exists between the two (2) companies? Please explain. Yes No

Do the facilities share common workforces, plant managers, security forces, corporate executive officers or board executives? **NNE Well Tenders will work at both sites** Yes No

Will managers or other workers frequently shuttle back and forth to be involved actively at both facilities? **NNE Well Tenders will work at both sites** Yes No

Do the facilities share common payroll activities, employee benefits, health plans, retirement funds, insurance coverage, or other administrative functions? Please explain. **All workers at both sites will be NNE employees with common payroll and benefits** Yes No

Does one (1) facility operation support the operation of the other facility? Yes No

Is one (1) facility dependent on the other? If one (1) facility shuts down, what are the limitations on the other to pursue outside business? Please explain. Yes No

Are there any financial arrangements between the two (2) entities? Yes No

Are there any legal or lease agreements between the two (2) facilities? Yes No

Do the facilities share products, byproducts, equipment, or other manufacturing or air pollution control device equipment? Please explain. Yes No

Do all the pollutant-emitting activities at the facilities belong to the same SIC Code? Please provide the SIC Codes. **3111** Yes No

Was the location of the new facility chosen primarily because of its proximity to the existing facility to integrate the operation of the two (2) facilities? Please explain. Yes No

Will materials be routinely transferred between the two (2) facilities? Please explain the amount of transfer and how often the transfers take place and what percentages go to the various entities. Yes No

Does the facility influence production levels or compliance with environmental regulations at other facilities? Who accepts the responsibility for compliance with air quality requirements? Please explain. Yes No

ATTACHMENT C – CURRENT BUSINESS CERTIFICATE

If the applicant is a resident of West Virginia, the applicant should provide a copy of the current Business Registration Certificate issued to them from the West Virginia Secretary of State's Office. If the applicant is not a resident of the State of West Virginia, the registrant should provide a copy of the Certificate of Authority/Authority of LLC/Registration. This information is required for all sources to operate a business in West Virginia regardless of whether it is a construction, modification, or administrative update.

If you are a new business to West Virginia and have applied to the West Virginia Secretary of State's Office for a business license, please include a copy of your application.

Please note: Under the West Virginia Bureau of Employment Programs, 96CSR1, the DAQ may not grant, issue, or renew approval of any permit, general permit registration, or Certificate to Operate to any employing unit whose account is in default with the Bureau of Employment Programs Unemployment Compensation Division.

State of West Virginia



Certificate

*I, Natalie E. Tennant, Secretary of State of the
State of West Virginia, hereby certify that*

NORTHEAST NATURAL ENERGY LLC

Control Number: 99GX5

a limited liability company, organized under the laws of the State of Delaware
has filed its "Application for Certificate of Authority" in my office according to the provisions
of West Virginia Code §31B-10-1002. I hereby declare the organization to be registered as a
foreign limited liability company from its effective date of October 9, 2009, until a certificate of
cancellation is filed with our office.

Therefore, I hereby issue this

CERTIFICATE OF AUTHORITY OF A FOREIGN LIMITED LIABILITY COMPANY

to the limited liability company authorizing it to transact business in West Virginia



*Given under my hand and the
Great Seal of the State of
West Virginia on this day of
October 9, 2009*

Natalie E. Tennant

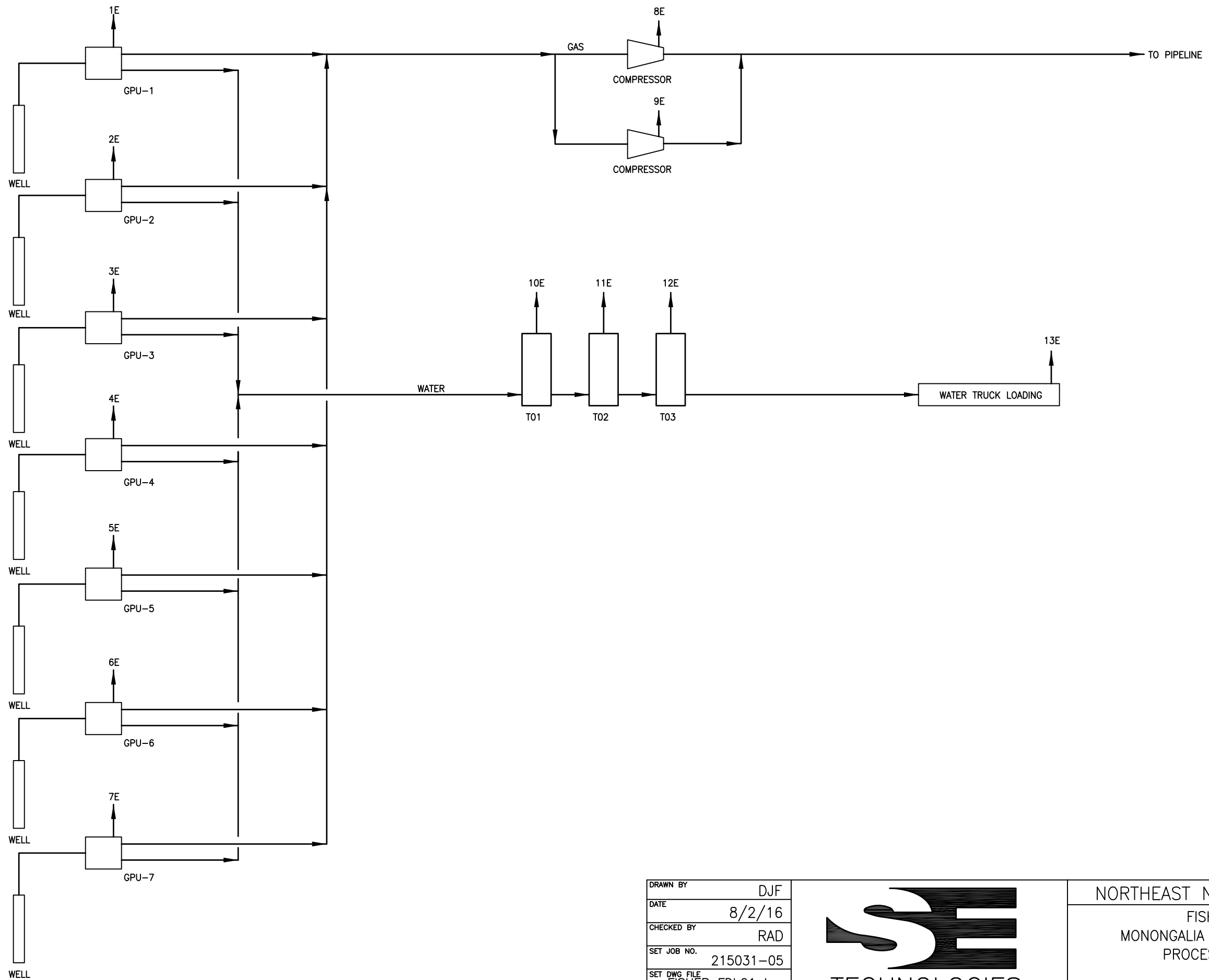
Secretary of State

ATTACHMENT D – PROCESS FLOW DIAGRAM

Provide a diagram or schematic that supplements the process description of the operation. The process flow diagram must show all sources, components or facets of the operation in an understandable line sequence of operation. The process flow diagram should include the emission unit ID numbers, the pollution control device ID numbers, and the emission point ID numbers consistent with references in other attachments of the application. For a proposed modification, clearly identify the process areas, emission units, emission points, and/or control devices that will be modified, and specify the nature and extent of the modification.

Use the following guidelines to ensure a complete process flow diagram:

- The process flow diagram shall logically follow the entire process from beginning to end.
- Identify each emission source and air pollution control device with proper and consistent emission unit identification numbers, emission point identification numbers, and control device identification numbers.
- The process flow lines may appear different for clarity. For example, dotted lines may be used for vapor flow and solid lines used for liquid flow and arrows for direction of flow.
- The process flow lines may be color coded. For example: new or modified equipment may be red; old or existing equipment may be blue; different stages of preparation such as raw material may be green; and, finished product or refuse, another color.



DRAWN BY	DJF
DATE	8/2/16
CHECKED BY	RAD
SET JOB NO.	215031-05
SET DWG FILE	FISHER FDb01.dwg
DRAWING SCALE	N.T.S.



NORTHEAST NATIONAL ENERGY, LLC
FISHER WELL PAD
MONONGALIA COUNTY, WEST VIRGINIA
PROCESS FLOW DIAGRAM

DRAWING NAME	FIGURE 2	REV.	0
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ATTACHMENT E – PROCESS DESCRIPTION

Provide a detailed written description of the operation for which the applicant is seeking a permit. The process description is used in conjunction with the process flow diagram to provide the reviewing engineer a complete understanding of the activity at the operation. Describe in detail and order the complete process operation.

Use the following guidelines to ensure a complete Process Description:

- The process flow diagram should be prepared first and used as a guide when preparing the process description. The written description shall follow the logical order of the process flow diagram.
- All emission sources, emission points, and air pollution control devices must be included in the process description.
- When modifications are proposed, describe the modifications and the effect the changes will have on the emission sources, emission points, control devices and the potential emissions.
- Proper emission source ID numbers must be used consistently in the process description, the process flow diagram, the emissions calculations, and the emissions summary information provided.
- Include any additional information that may facilitate the reviewers understanding of the process operation.

The process description is required for all sources regardless of whether it is a construction, modification, or administrative update.

Northeast Natural Energy, LLC
Fisher Well Pad
Attachment E
Process Description

Natural gas and Produced Fluids (water) will be received from seven wells on this location at approximately 600 psi and pass through Gas Processing Units [Emission Units GPU-1 to GPU-7] to avoid ice and methane hydrate formation during subsequent pressure drops. These materials will then pass through a separator where gas and water are separated. There will be two gas-fired engines [Emission Units CE-1 and CE-2] used to drive compressors which will boost the pressure of the production gas to a pressure suitable for injection into the gathering line owned by others. No dehydration units are proposed for this facility. The compressed gas will be metered and routed to a gathering pipeline owned and operated by others.

The Produced Water will be accumulated in two 400 BBL tanks and a single 210 BBL tank [Emission Units T01 - T03], pending truck loading [Emission Unit TL-1] and transportation to facilities owned and operated by others. Produced water will be re-used at subsequent wells or disposed of at a regional disposal facility. Flash, working and breathing losses from these tanks have been determined to be nominal, based on measurements at a nearby Northeast Energy Well Pad, and will be allowed to vent to atmosphere. *There is no condensate generated at this facility.*

A Process Flow Diagram depicting these features is provided in Attachment D.

All natural gas fired equipment (GPUs and the compressor engines) use natural gas produced at the site as fuel.

40 CFR 60, Subpart OOOOa requires that VOC emissions from each “storage vessel affected facility” installed after September 18, 2015 must be controlled by at least 95% within 60 days of installation when the VOC uncontrolled emissions exceed 6 tpy [40 CFR 60.5395a(a)(2)]. VOC emissions from the tanks described above will be well below the 6 tpy threshold to be defined as a “storage vessel affected facility”. Thus, the tanks at this facility will not be regulated under 40 CFR 60, Subpart OOOOa.

ATTACHMENT F – PLOT PLAN

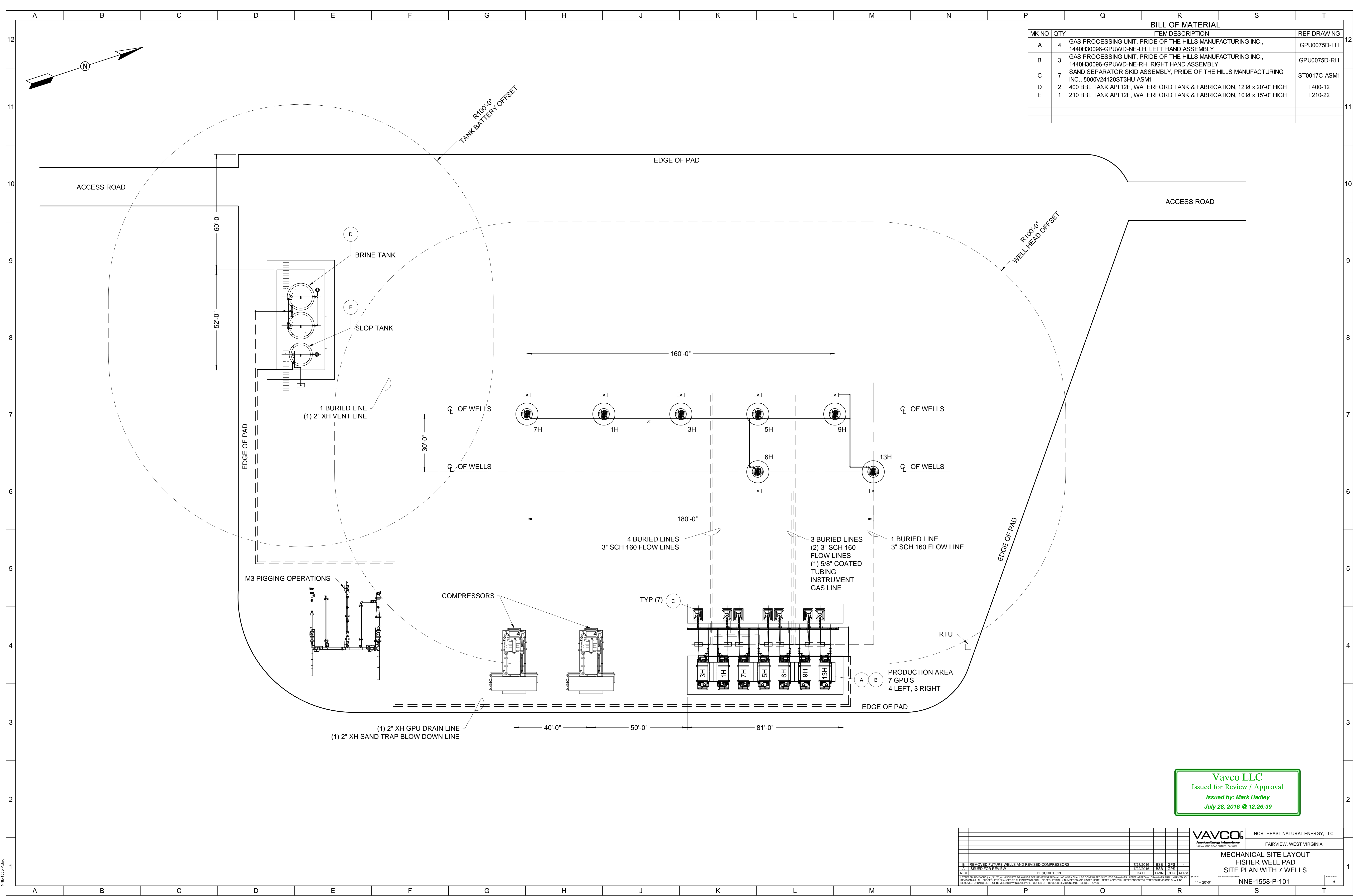
Provide an accurately scaled and detailed Plot Plan showing the locations of all emission units, emission points, and air pollution control devices. Show all emission units, affected facilities, enclosures, buildings and plant entrances and exits from the nearest public road(s) as appropriate. Note height, width and length of proposed or existing buildings and structures.

A scale between 1"=10' and 1"=200' should be used with the determining factor being the level of detail necessary to show operation or plant areas, affected facilities, emission unit sources, transfer points, etc. An overall small scale plot plan (e.g., 1"=300') should be submitted in addition to larger scale plot plans for process or activity areas (e.g., 1"=50') if the plant is too large to allow adequate detail on a single plot plan. Process or activity areas may be grouped for the enlargements as long as sufficient detail is shown.

Use the following guidelines to ensure a complete Plot Plan:

- Facility name
- Company name
- Company facility ID number (for existing facilities)
- Plot scale, north arrow, date drawn, and submittal date.
- Facility boundary lines
- Base elevation
- Lat/Long reference coordinates from the area map and corresponding reference point elevation
- Location of all point sources labeled with proper and consistent source identification numbers

This information is required for all sources regardless of whether it is a construction, modification, or administrative update.



Vavco LLC
 Issued for Review / Approval
 Issued by: Mark Hadley
 July 28, 2016 @ 12:26:39

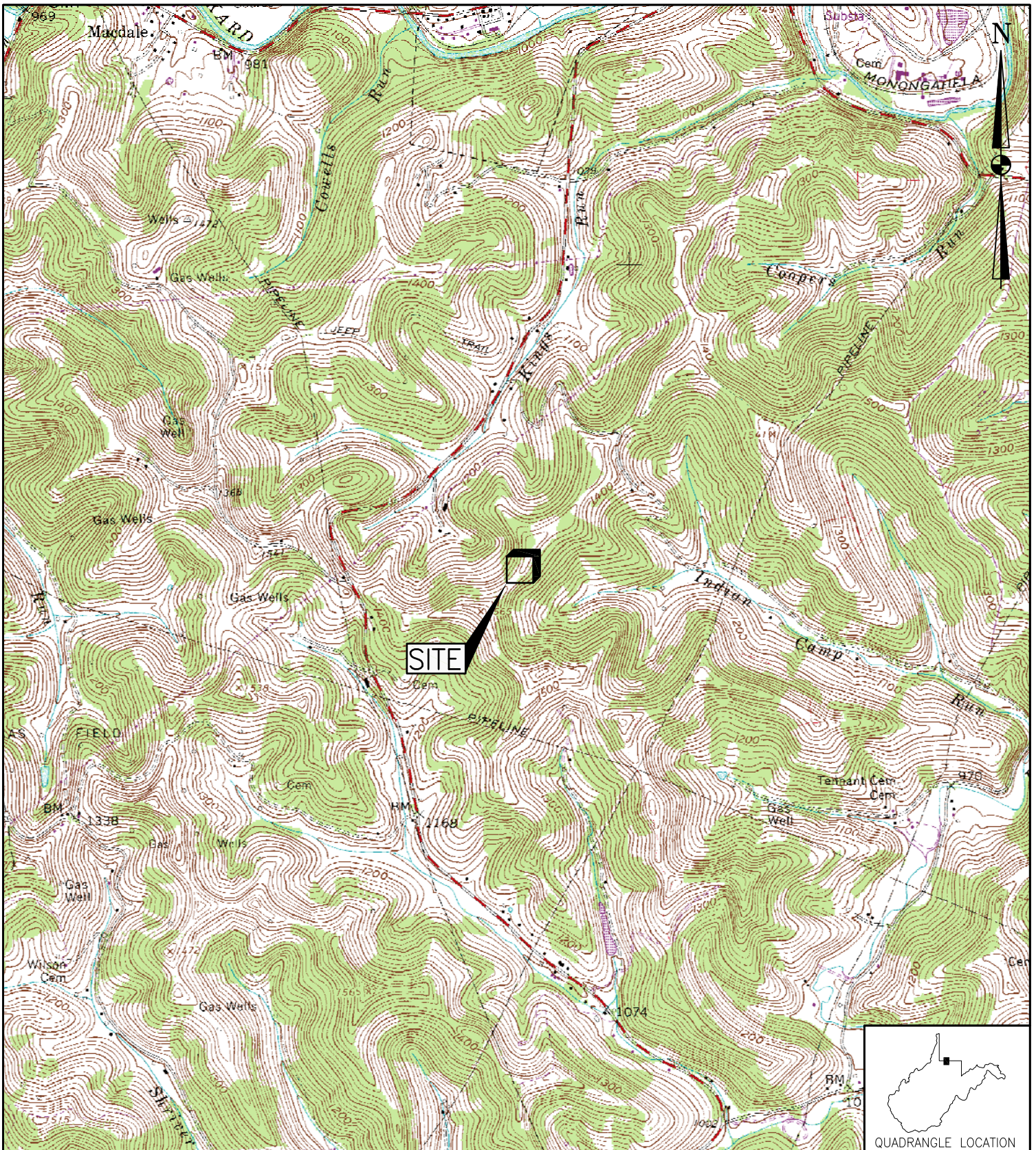
VAVCO American Energy Independence 101 BROADWAY, SUITE 200, FARMINGTON, CT 06030		NORTHEAST NATURAL ENERGY, LLC FAIRVIEW, WEST VIRGINIA	
MECHANICAL SITE LAYOUT FISHER WELL PAD SITE PLAN WITH 7 WELLS			
REVISIONS		DATE	BY
B	REMOVED FUTURE WELLS AND REVISED COMPRESSORS	7/28/2016	BSB JGPS
A	ISSUED FOR REVIEW	7/22/2016	BSB JGPS
REV	DESCRIPTION	DATE	BY
LETTERED REVISIONS (i.e., "A", "B", "M") INDICATE DRAWINGS FOR REVIEW/PRE-APPROVAL. NO WORK SHALL BE DONE BASED ON THESE DRAWINGS. AFTER APPROVAL, DRAWINGS SHALL BE REVISIONED AS REQUIRED. ALL SUBSEQUENT CHANGES TO THE DRAWING SHALL BE SEQUENTIALLY NUMBERED AND LETTERED HERE. AFTER APPROVAL, REFERENCES TO LETTERED REVISIONS SHALL BE REMOVED. UPON RECEIPT OF REVISED DRAWING, ALL PAPER COPIES OF PREVIOUS REVISIONS MUST BE DESTROYED.			
SCALE: 1" = 20'-0"		DRAWING NUMBER: NNE-1558-P-101	

ATTACHMENT G – AREA MAP

Provide an Area Map showing the current or proposed location of the operation. On this map, identify plant or operation property lines, access roads and any adjacent dwelling, business, public building, school, church, cemetery, community or institutional building or public park within a 300' boundary circle of the collective emission units.

Please provide a 300' boundary circle on the map surrounding the proposed emission units collectively.

This information is required for all sources regardless of whether it is a construction, modification, or administrative update.



REFERENCE: USGS 7.5' QUADRANGLE MAP OF: BLACKSVILLE, W.VA.-PA; DATED 1958, PHOTOREVISED 1976, PHOTOINSPECTED 1988.

DRAWN BY	DJF
DATE	8/2/16
CHECKED BY	RAD
SET JOB NO.	215031-05
SET DWG FILE	FISHERm01.dwg
DRAWING SCALE	1"=2000'



98 Vanadium Road Bridgeville, PA 15017 (412) 221-1100

NORTHEAST NATIONAL ENERGY, LLC	
FISHER WELL PAD MONONGALIA COUNTY, WEST VIRGINIA SITE LOCATION MAP	
DRAWING NO.	FIGURE 1
REV.	0



300' RADIUS

DRAWN BY	DJF
DATE	8/2/16
CHECKED BY	RAD
SET JOB NO.	215031-05
SET DWG FILE	FISHERm01.dwg
DRAWING SCALE	1"=500'



98 Vanadium Road Bridgeville, PA 15017 (412) 221-1100

NORTHEAST NATIONAL ENERGY, LLC

FISHER WELL PAD
 MONONGALIA COUNTY, WEST VIRGINIA
 SITE LOCATION MAP
 300' RADIUS MAP

DRAWING NO.	FIGURE 1A	REV.	0
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ATTACHMENT H – G70-C SECTION APPLICABILITY FORM

**General Permit G70-C Registration
Section Applicability Form**

General Permit G70-C was developed to allow qualified applicants to seek registration for a variety of sources. These sources include gas well affected facilities, storage vessels, gas production units, in-line heaters, heater treaters, glycol dehydration units and associated reboilers, pneumatic controllers, centrifugal compressors, reciprocating compressors, reciprocating internal combustion engines (RICEs), tank truck loading, fugitive emissions, completion combustion devices, flares, enclosed combustion devices, and vapor recovery systems. All registered facilities will be subject to Sections 1.0, 2.0, 3.0, and 4.0.

General Permit G70-C allows the registrant to choose which sections of the permit they are seeking registration under. Therefore, please mark which additional sections that you are applying for registration under. If the applicant is seeking registration under multiple sections, please select all that apply. Please keep in mind, that if this registration is approved, the issued registration will state which sections will apply to your affected facility.

GENERAL PERMIT G70-C APPLICABLE SECTIONS	
X Section 5.0	Gas Well Affected Facility (NSPS, Subpart OOOO)
X Section 6.0	Storage Vessels Containing Condensate and/or Produced Water ¹
<input type="checkbox"/> Section 7.0	Storage Vessel Affected Facility (NSPS, Subpart OOOO)
<input type="checkbox"/> Section 8.0	Control Devices and Emission Reduction Devices not subject to NSPS Subpart OOOO and/or NESHAP Subpart HH
X Section 9.0	Small Heaters and Reboilers not subject to 40CFR60 Subpart Dc
<input type="checkbox"/> Section 10.0	Pneumatic Controllers Affected Facility (NSPS, Subpart OOOO)
<input type="checkbox"/> Section 11.0	Centrifugal Compressor Affected Facility (NSPS, Subpart OOOO) ²
X Section 12.0	Reciprocating Compressor Affected Facility (NSPS, Subpart OOOO) ²
X Section 13.0	Reciprocating Internal Combustion Engines, Generator Engines, Microturbines
X Section 14.0	Tanker Truck Loading ³
<input type="checkbox"/> Section 15.0	Glycol Dehydration Units ⁴

- 1 Applicants that are subject to Section 6 may also be subject to Section 7 if the applicant is subject to the NSPS, Subpart OOOO control requirements or the applicable control device requirements of Section 8.*
- 2 Applicants that are subject to Section 11 and 12 may also be subject to the applicable RICE requirements of Section 13.*
- 3 Applicants that are subject to Section 14 may also be subject to control device and emission reduction device requirements of Section 8.*
- 4 Applicants that are subject to Section 15 may also be subject to the requirements of Section 9 (reboilers). Applicants that are subject to Section 15 may also be subject to control device and emission reduction device requirements of Section 8.*

ATTACHMENT I – EMISSION UNITS / EMISSION REDUCTION DEVICES (ERD) TABLE

Include ALL emission units and air pollution control devices/ERDs that will be part of this permit application review. Do not include fugitive emission sources in this table. Deminimis storage tanks shall be listed in the Attachment L table. This information is required for all sources regardless of whether it is a construction, modification, or administrative update.

Emission Unit ID ¹	Emission Point ID ²	Emission Unit Description	Year Installed	Manufac. Date ³	Design Capacity	Type ⁴ and Date of Change	Control Device(s) ⁵	ERD(s) ⁶
GPU-1	1E	Gas Processing Unit	Pending Permit		1.0 MMBTU/Hr	NEW		
GPU-2	2E	Gas Processing Unit	Pending Permit		1.0 MMBTU/Hr	NEW		
GPU-3	3E	Gas Processing Unit	Pending Permit		1.0 MMBTU/Hr	NEW		
GPU-4	4E	Gas Processing Unit	Pending Permit		1.0 MMBTU/Hr	NEW		
GPU-5	5E	Gas Processing Unit	Pending Permit		1.0 MMBTU/Hr	NEW		
GPU-6	6E	Gas Processing Unit	Pending Permit		1.0 MMBTU/Hr	NEW		
GPU-7	7E	Gas Processing Unit	Pending Permit		1.0 MMBTU/Hr	NEW		
CE-1	8E	CAT 3516B	Pending Permit	After Jan 1, 2012	1380 HP	NEW	1C	
CE-2	9E	CAT 3516B	Pending Permit	After Jan 1, 2012	1380 HP	NEW	2C	
T01	10E	Produced Water Tank	Pending Permit		400 BBL	NEW		
T02	11E	Produced Water Tank	Pending Permit		400 BBL	NEW		
T03	12E	Produced Water Tank	Pending Permit		210 BBL	NEW		
TL-1	13E	Produced Water Truck Loading	Pending Permit			NEW		

¹ For Emission Units (or Sources) use the following numbering system: 1S, 2S, 3S,... or other appropriate designation.

² For Emission Points use the following numbering system: 1E, 2E, 3E, ... or other appropriate designation.

³ When required by rule

⁴ New, modification, removal, existing

⁵ For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

⁶ For ERDs use the following numbering system: 1D, 2D, 3D,... or other appropriate designation.

ATTACHMENT J – FUGITIVE EMISSIONS SUMMARY SHEET

Sources of fugitive emissions may include loading operations, equipment leaks, blowdown emissions, etc.
Use extra pages for each associated source or equipment if necessary.

Source/Equipment: **Equipment Leaks and Blowdown Emissions**

Leak Detection Method Used		<input checked="" type="checkbox"/> Audible, visual, and olfactory (AVO) inspections	<input type="checkbox"/> Infrared (FLIR) cameras	<input type="checkbox"/> Other (please describe)	<input type="checkbox"/> None required		
Component Type	Closed Vent System	Count	Source of Leak Factors (EPA, other (specify))	Stream type (gas, liquid, etc.)	Estimated Emissions (tpy)		
					VOC	HAP	GHG (CO ₂ e)
Pumps	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	0	EPA	<input type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both			
Valves	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	42	EPA	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	<0.01	<0.01	5.35
Safety Relief Valves	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	21	EPA	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	<0.01	<0.01	3.96
Open Ended Lines	<input type="checkbox"/> Yes <input type="checkbox"/> No	7	EPA	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	<0.01	<0.01	0.01
Sampling Connections	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	14	TCEQ	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	0.01	<0.01	47.15
Connections (Not sampling)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	180	EPA	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	<0.01	<0.01	2.55
Compressors	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	2	API	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	<0.01	<0.01	0.18
Flanges	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	210	API	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	<0.01	<0.01	18.44
Other ¹ (Blowdowns)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	0.01	<0.01	40.4

¹ Other equipment types may include compressor seals, relief valves, diaphragms, drains, meters, etc.

Please provide an explanation of the sources of fugitive emissions (e.g. pigging operations, equipment blowdowns, pneumatic controllers, etc.):

Other Equipment is compressor engine blowdowns. No pigging owned/operated by Northeast.

Please indicate if there are any closed vent bypasses (include component):

None

Specify all equipment used in the closed vent system (e.g. VRU, ERD, thief hatches, tanker truck loading, etc.)**N/A**

Northeast Natural Energy, LLC
Fisher Well Pad
Attachment J – Fugitive Emissions Data

Storage Tank and Haul Road Fugitive Emissions

Haul Road Fugitive Emissions for unpaved roads are calculated and presented in Attachment S. Potential PM emissions are estimated to be 12.43 tons per year and PM-10 to be 1.68 tons per year.

Produced Fluids generated by the on-site wells will be accumulated in a three tanks prior to off-site shipment. Emissions from these tanks were determined by using direct measurements from produced water tanks at a nearby Northeast well pad. Uncontrolled emissions from these tanks were determined to be 1.01 tons per year of VOCs and 0.20 tons per year of HAPs. There is no control on these emissions. *There is no condensate generated at this facility.*

Emissions from these sources are summarized in the preceding fugitive emissions form and the calculations are included in the emissions summary in Attachment S.

Equipment Fugitive Emissions

As noted in the process discussion, Northeast plans to install various equipment at its Fisher Well Pad. This equipment will contain a variety of piping containing natural gas and separated liquids under pressure. During the normal course of operation minor leaks from valves, pressure release devices and various fittings associated with this piping may occur. A potential emission rate of 0.02 tpy of VOCs and 77.6 tpy CO_{2e} has been estimated (see Attachment S).

Estimates of these emissions are included in the calculations (Attachment S) and summarized on the form included in this section. These calculations are based on emission factors accepted by the American Petroleum Institute and EPA.

Pigging Emission Estimates

There will be no pigging operations under Northeast Natural Energy ownership/operation in association with this planned facility.

Facility Blowdown Emission Estimates

There will be two gas compressors at this facility that will require blowdowns to allow for routine maintenance. The volume of natural gas released per blowdown event from each unit and associated inlet separator and piping is approximately 1570 cubic feet of gas at STP (see attached calculations). There will be a maximum of 24 blow downs per compressor per year. Thus, there is a potential for 75,360 cubic feet of gas emitted from blowdowns per year.

The density of this gas at STP is 0.046 pounds per cubic foot (see the Inlet Gas spreadsheet in the calculations). Thus, the mass of gas released per year is 3,466 pounds (75,360 cf x 0.046). As the percentage of VOCs in the gas (by weight) is 0.56 percent (see Inlet Gas spreadsheet in the calculations), the VOC (non-methane/non-ethane) emissions from blowdown operations are estimated at approximately 19.4 lbs (3,466 x 0.0056) or 0.01 tons per year. As the methane concentration in this gas is 93.2 % (by weight), methane emissions will be 3,230 pounds (3,466 x 0.932) per year. Using a GHG factor of 25, methane emissions from blowdowns in CO_{2e} will be 40.4 tons CO_{2e} (3,230 x 25[GHG factor] /2000).

ATTACHMENT K – GAS WELL AFFECTED FACILITY DATA SHEET

Complete this data sheet if you are the owner or operator of a gas well affected facility for which construction, modification or reconstruction commenced after August 23, 2011. This form must be completed for natural gas well affected facilities regardless of when flowback operations occur (or have occurred).

API Number	Date of Flowback	Date of Well Completion	Green Completion and/or Combustion Device
47-061-01733	3/3/2017	1/9/2017	Gas flow to gathering line as soon as separator is functional
47-061-01734	3/3/2017	1/17/2017	Gas flow to gathering line as soon as separator is functional
47-061-01735	3/3/2017	1/25/2017	Gas flow to gathering line as soon as separator is functional
47-061-01753	3/3/2017	2/1/2017	Gas flow to gathering line as soon as separator is functional
47-061-01736	3/3/2017	2/9/2017	Gas flow to gathering line as soon as separator is functional
47-061-01737	3/3/2017	2/17/2017	Gas flow to gathering line as soon as separator is functional
47-061-01739	3/3/2017	2/25/2017	Gas flow to gathering line as soon as separator is functional

Note: If future wells are planned and no API number is available please list as PLANNED. If there are existing wells that commenced construction prior to August 23, 2011, please acknowledge as existing.

This is the same API (American Petroleum Institute) well number(s) provided in the well completion notification and as provided to the WVDEP, Office of Oil and Gas for the well permit. The API number may be provided on the application without the state code (047).

Every oil and gas well permitted in West Virginia since 1929 has been issued an API number. This API is used by agencies to identify and track oil and gas wells.

The API number has the following format: 047-001-00001

Where,
 047 = State code. The state code for WV is 047.
 001 = County Code. County codes are odd numbers, beginning with 001 (Barbour) and continuing to 109 (Wyoming).
 00001= Well number. Each well will have a unique well number.

ATTACHMENT L – STORAGE VESSEL DATA SHEET

Complete this data sheet if you are the owner or operator of a storage vessel that contains condensate and/or produced water. This form must be completed for *each* new or modified bulk liquid storage vessel(s) that contains condensate and/or produced water. (If you have more than one (1) identical tank (i.e. 4-400 bbl condensate tanks), then you can list all on one (1) data sheet). **Include gas sample analysis, flashing emissions, working and breathing losses, USEPA Tanks, simulation software (ProMax, E&P Tanks, HYSYS, etc.), and any other supporting documents where applicable.**

The following information is REQUIRED:

- Composition of the representative sample used for the simulation
- For each stream that contributes to flashing emissions:
 - Temperature and pressure (inlet and outlet from separator(s))
 - Simulation-predicted composition
 - Molecular weight
 - Flow rate
- Resulting flash emission factor or flashing emissions from simulation
- Working/breathing loss emissions from tanks and/or loading emissions if simulation is used to quantify those emissions

Additional information may be requested if necessary.

GENERAL INFORMATION (REQUIRED)

1. Bulk Storage Area Name Fisher Tank Farm	2. Tank Name T01 and T02
3. Emission Unit ID number T01 and T02	4. Emission Point ID number 10E and 11E
5. Date Installed , Modified or Relocated (<i>for existing tanks</i>) N/A Was the tank manufactured after August 23, 2011? <input type="checkbox"/> Yes <input type="checkbox"/> No	6. Type of change: <input checked="" type="checkbox"/> New construction <input type="checkbox"/> New stored material <input type="checkbox"/> Other <input type="checkbox"/> Relocation
7A. Description of Tank Modification (<i>if applicable</i>) N/A	
7B. Will more than one material be stored in this tank? <i>If so, a separate form must be completed for each material.</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7C. Was USEPA Tanks simulation software utilized? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<i>If Yes, please provide the appropriate documentation and items 8-42 below are not required.</i>	

TANK INFORMATION

8. Design Capacity (*specify barrels or gallons*). Use the internal cross-sectional area multiplied by internal height. **400 BBL**

9A. Tank Internal Diameter (ft.) 12.0	9B. Tank Internal Height (ft.) 20.0
10A. Maximum Liquid Height (ft.) 19.5	10B. Average Liquid Height (ft.) 8.0
11A. Maximum Vapor Space Height (ft.) 18.5	11B. Average Vapor Space Height (ft.) 12.0

12. Nominal Capacity (*specify barrels or gallons*). This is also known as “working volume”. **390 BBL**

13A. Maximum annual throughput (gal/yr) 5,104,900 each	13B. Maximum daily throughput (gal/day) 13,990 each
14. Number of tank turnovers per year 312 each	15. Maximum tank fill rate (gal/min) 50

16. Tank fill method Submerged Splash Bottom Loading

17. Is the tank system a variable vapor space system? Yes No
 If yes, (A) What is the volume expansion capacity of the system (gal)?
 (B) What are the number of transfers into the system per year?

18. Type of tank (check all that apply):
 Fixed Roof vertical horizontal flat roof cone roof dome roof other (describe)

 External Floating Roof pontoon roof double deck roof
 Domed External (or Covered) Floating Roof
 Internal Floating Roof vertical column support self-supporting
 Variable Vapor Space lifter roof diaphragm
 Pressurized spherical cylindrical
 Other (describe)

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:
 Does Not Apply Rupture Disc (psig)
 Inert Gas Blanket of _____ Carbon Adsorption¹
 Vent to Vapor Combustion Device¹ (vapor combustors, flares, thermal oxidizers, enclosed combustors)
 Conservation Vent (psig) Condenser¹
 Vacuum Setting Pressure Setting
 Emergency Relief Valve (psig)
 Vacuum Setting Pressure Setting
 Thief Hatch Weighted Yes No
¹ Complete appropriate Air Pollution Control Device Sheet

20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).

Material Name	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss		Estimation Method ¹
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
VOC	0.91	0.40	N/A	N/A	N/A	N/A	0.91	0.40	ST
GHG	122.7	537.6	N/A	N/A	N/A	N/A	122.7	537.6	ST
HAPs	0.018	0.08	N/A	N/A	N/A	N/A	0.018	0.08	ST

¹ EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)
 Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.

TANK CONSTRUCTION AND OPERATION INFORMATION			
21. Tank Shell Construction: <input type="checkbox"/> Riveted <input type="checkbox"/> Gunitite lined <input type="checkbox"/> Epoxy-coated rivets <input checked="" type="checkbox"/> Other (describe) Welded			
21A. Shell Color: Tan	21B. Roof Color: Tan	21C. Year Last Painted: 2016 (NEW)	
22. Shell Condition (if metal and unlined): <input checked="" type="checkbox"/> No Rust <input type="checkbox"/> Light Rust <input type="checkbox"/> Dense Rust <input type="checkbox"/> Not applicable			
22A. Is the tank heated? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?	
23. Operating Pressure Range (psig): Less than 0.3 psig Must be listed for tanks using VRUs with closed vent system.			
24. Is the tank a Vertical Fixed Roof Tank ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	24A. If yes, for dome roof provide radius (ft):	24B. If yes, for cone roof, provide slop (ft/ft): 0.06	
25. Complete item 25 for Floating Roof Tanks <input type="checkbox"/> Does not apply <input checked="" type="checkbox"/>			
25A. Year Internal Floaters Installed:			
25B. Primary Seal Type (check one): <input type="checkbox"/> Metallic (mechanical) shoe seal <input type="checkbox"/> Liquid mounted resilient seal <input type="checkbox"/> Vapor mounted resilient seal <input type="checkbox"/> Other (describe):			
25C. Is the Floating Roof equipped with a secondary seal? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25D. If yes, how is the secondary seal mounted? (check one) <input type="checkbox"/> Shoe <input type="checkbox"/> Rim <input type="checkbox"/> Other (describe):			
25E. Is the floating roof equipped with a weather shield? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25F. Describe deck fittings:			
26. Complete the following section for Internal Floating Roof Tanks <input checked="" type="checkbox"/> Does not apply			
26A. Deck Type: <input type="checkbox"/> Bolted <input type="checkbox"/> Welded		26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: <input type="checkbox"/> 5 ft. wide <input type="checkbox"/> 6 ft. wide <input type="checkbox"/> 7 ft. wide <input type="checkbox"/> 5 x 7.5 ft. wide <input type="checkbox"/> 5 x 12 ft. wide <input type="checkbox"/> other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft ²):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
28. Closed Vent System with Enclosed Combustor? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
SITE INFORMATION			
29. Provide the city and state on which the data in this section are based:			
30. Daily Avg. Ambient Temperature (°F):		31. Annual Avg. Maximum Temperature (°F):	
32. Annual Avg. Minimum Temperature (°F):		33. Avg. Wind Speed (mph):	
34. Annual Avg. Solar Insulation Factor (BTU/ft ² -day):		35. Atmospheric Pressure (psia):	
LIQUID INFORMATION			
36. Avg. daily temperature range of bulk liquid (°F): 60-75		36A. Minimum (°F): 50	36B. Maximum (°F): 85
37. Avg. operating pressure range of tank (psig): 0-0.3 psig		37A. Minimum (psig): 0 psig	37B. Maximum (psig): 0.3 psig
38A. Minimum liquid surface temperature (°F):		38B. Corresponding vapor pressure (psia):	
39A. Avg. liquid surface temperature (°F):		39B. Corresponding vapor pressure (psia):	
40A. Maximum liquid surface temperature (°F):		40B. Corresponding vapor pressure (psia):	
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
41A. Material name and composition:	Produced Water		
41B. CAS number:	N/A		
41C. Liquid density (lb/gal):	8.8		
41D. Liquid molecular weight (lb/lb-mole):	18.2		
41E. Vapor molecular weight (lb/lb-mole):	17.68		
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):			
41H. Months Storage per year. From: To:	Continuous		
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.	670		

ATTACHMENT L – STORAGE VESSEL DATA SHEET

Complete this data sheet if you are the owner or operator of a storage vessel that contains condensate and/or produced water. This form must be completed for *each* new or modified bulk liquid storage vessel(s) that contains condensate and/or produced water. (If you have more than one (1) identical tank (i.e. 4-400 bbl condensate tanks), then you can list all on one (1) data sheet). **Include gas sample analysis, flashing emissions, working and breathing losses, USEPA Tanks, simulation software (ProMax, E&P Tanks, HYSYS, etc.), and any other supporting documents where applicable.**

The following information is REQUIRED:

- Composition of the representative sample used for the simulation
- For each stream that contributes to flashing emissions:
 - Temperature and pressure (inlet and outlet from separator(s))
 - Simulation-predicted composition
 - Molecular weight
 - Flow rate
- Resulting flash emission factor or flashing emissions from simulation
- Working/breathing loss emissions from tanks and/or loading emissions if simulation is used to quantify those emissions

Additional information may be requested if necessary.

GENERAL INFORMATION (REQUIRED)

1. Bulk Storage Area Name Fisher Tank Farm	2. Tank Name T03
3. Emission Unit ID number T03	4. Emission Point ID number 10E and 11E
5. Date Installed , Modified or Relocated (<i>for existing tanks</i>) N/A Was the tank manufactured after August 23, 2011? <input type="checkbox"/> Yes <input type="checkbox"/> No	6. Type of change: <input checked="" type="checkbox"/> New construction <input type="checkbox"/> New stored material <input type="checkbox"/> Other <input type="checkbox"/> Relocation
7A. Description of Tank Modification (<i>if applicable</i>) N/A	
7B. Will more than one material be stored in this tank? <i>If so, a separate form must be completed for each material.</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7C. Was USEPA Tanks simulation software utilized? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<i>If Yes, please provide the appropriate documentation and items 8-42 below are not required.</i>	

TANK INFORMATION

8. Design Capacity (*specify barrels or gallons*). Use the internal cross-sectional area multiplied by internal height. **210 BBL**

9A. Tank Internal Diameter (ft.) 10.0	9B. Tank Internal Height (ft.) 15.0
10A. Maximum Liquid Height (ft.) 14.5	10B. Average Liquid Height (ft.) 7.0
11A. Maximum Vapor Space Height (ft.) 14	11B. Average Vapor Space Height (ft.) 8.0

12. Nominal Capacity (*specify barrels or gallons*). This is also known as “working volume”. **200 BBL**

13A. Maximum annual throughput (gal/yr) 2,667,400	13B. Maximum daily throughput (gal/day) 7310
14. Number of tank turnovers per year 318	15. Maximum tank fill rate (gal/min) 50

16. Tank fill method Submerged Splash Bottom Loading

17. Is the tank system a variable vapor space system? Yes No
 If yes, (A) What is the volume expansion capacity of the system (gal)?
 (B) What are the number of transfers into the system per year?

18. Type of tank (check all that apply):

Fixed Roof vertical horizontal flat roof cone roof dome roof other (describe)

External Floating Roof pontoon roof double deck roof

Domed External (or Covered) Floating Roof

Internal Floating Roof vertical column support self-supporting

Variable Vapor Space lifter roof diaphragm

Pressurized spherical cylindrical

Other (describe)

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:

Does Not Apply Rupture Disc (psig)

Inert Gas Blanket of _____ Carbon Adsorption¹

Vent to Vapor Combustion Device¹ (vapor combustors, flares, thermal oxidizers, enclosed combustors)

Conservation Vent (psig) Condenser¹

Vacuum Setting Pressure Setting

Emergency Relief Valve (psig)

Vacuum Setting Pressure Setting

Thief Hatch Weighted Yes No

¹ Complete appropriate Air Pollution Control Device Sheet

20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).

Material Name	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss		Estimation Method ¹
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
VOC	0.048	0.21	N/A	N/A	N/A	N/A	0.048	0.21	ST
GHG	64.5	282.3	N/A	N/A	N/A	N/A	64.5	282.3	ST
HAPs	0.009	0.04	N/A	N/A	N/A	N/A	0.009	0.04	ST

¹ EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)
 Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.

TANK CONSTRUCTION AND OPERATION INFORMATION			
21. Tank Shell Construction: <input type="checkbox"/> Riveted <input type="checkbox"/> Gunitite lined <input type="checkbox"/> Epoxy-coated rivets <input checked="" type="checkbox"/> Other (describe) Welded			
21A. Shell Color: Tan	21B. Roof Color: Tan	21C. Year Last Painted: 2016 (NEW)	
22. Shell Condition (if metal and unlined): <input checked="" type="checkbox"/> No Rust <input type="checkbox"/> Light Rust <input type="checkbox"/> Dense Rust <input type="checkbox"/> Not applicable			
22A. Is the tank heated? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?	
23. Operating Pressure Range (psig): Less than 0.3 psig Must be listed for tanks using VRUs with closed vent system.			
24. Is the tank a Vertical Fixed Roof Tank ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	24A. If yes, for dome roof provide radius (ft):	24B. If yes, for cone roof, provide slop (ft/ft): 0.06	
25. Complete item 25 for Floating Roof Tanks <input type="checkbox"/> Does not apply <input checked="" type="checkbox"/>			
25A. Year Internal Floaters Installed:			
25B. Primary Seal Type (check one): <input type="checkbox"/> Metallic (mechanical) shoe seal <input type="checkbox"/> Liquid mounted resilient seal <input type="checkbox"/> Vapor mounted resilient seal <input type="checkbox"/> Other (describe):			
25C. Is the Floating Roof equipped with a secondary seal? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25D. If yes, how is the secondary seal mounted? (check one) <input type="checkbox"/> Shoe <input type="checkbox"/> Rim <input type="checkbox"/> Other (describe):			
25E. Is the floating roof equipped with a weather shield? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25F. Describe deck fittings:			
26. Complete the following section for Internal Floating Roof Tanks <input checked="" type="checkbox"/> Does not apply			
26A. Deck Type: <input type="checkbox"/> Bolted <input type="checkbox"/> Welded	26B. For bolted decks, provide deck construction:		
26C. Deck seam. Continuous sheet construction: <input type="checkbox"/> 5 ft. wide <input type="checkbox"/> 6 ft. wide <input type="checkbox"/> 7 ft. wide <input type="checkbox"/> 5 x 7.5 ft. wide <input type="checkbox"/> 5 x 12 ft. wide <input type="checkbox"/> other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft ²):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
28. Closed Vent System with Enclosed Combustor? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
SITE INFORMATION			
29. Provide the city and state on which the data in this section are based:			
30. Daily Avg. Ambient Temperature (°F):		31. Annual Avg. Maximum Temperature (°F):	
32. Annual Avg. Minimum Temperature (°F):		33. Avg. Wind Speed (mph):	
34. Annual Avg. Solar Insulation Factor (BTU/ft ² -day):		35. Atmospheric Pressure (psia):	
LIQUID INFORMATION			
36. Avg. daily temperature range of bulk liquid (°F): 60-75	36A. Minimum (°F): 50	36B. Maximum (°F): 85	
37. Avg. operating pressure range of tank (psig): 0-0.3 psig	37A. Minimum (psig): 0 psig	37B. Maximum (psig): 0.3 psig	
38A. Minimum liquid surface temperature (°F):		38B. Corresponding vapor pressure (psia):	
39A. Avg. liquid surface temperature (°F):		39B. Corresponding vapor pressure (psia):	
40A. Maximum liquid surface temperature (°F):		40B. Corresponding vapor pressure (psia):	
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
41A. Material name and composition:	Produced Water		
41B. CAS number:	N/A		
41C. Liquid density (lb/gal):	8.8		
41D. Liquid molecular weight (lb/lb-mole):	18.2		
41E. Vapor molecular weight (lb/lb-mole):	17.68		
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):			
41H. Months Storage per year. From: To:	Continuous		
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.	670		

STORAGE TANK DATA TABLE

List all deminimis storage tanks (i.e. lube oil, glycol, diesel etc.)

Source ID # ¹	Status ²	Content ³	Volume ⁴
T04	NEW	Engine Lube Oil	500
T05	NEW	Compressor Oil	500
T06	NEW	Coolant Surge Tank	30
T07	NEW	Engine Lube Oil	500
T08	NEW	Compressor Oil	500
T09	NEW	Coolant Surge Tank	30

1. Enter the appropriate Source Identification Numbers (Source ID #) for each storage tank located at the compressor station. Tanks should be designated T01, T02, T03, etc.
2. Enter storage tank Status using the following:
 - EXIST Existing Equipment
 - NEW Installation of New Equipment
 - REM Equipment Removed
3. Enter storage tank content such as condensate, pipeline liquids, glycol (DEG or TEG), lube oil, diesel, mercaptan etc.
4. Enter the maximum design storage tank volume in gallons.

**ATTACHMENT M – SMALL HEATERS AND REBOILERS NOT SUBJECT TO
40CFR60 SUBPART DC
DATA SHEET**

Complete this data sheet for each small heater and reboiler not subject to 40CFR60 Subpart Dc at the facility. *The Maximum Design Heat Input (MDHI) must be less than 10 MMBTU/hr.*

Emission Unit ID#¹	Emission Point ID#²	Emission Unit Description (manufacturer, model #)	Year Installed/Modified	Type³ and Date of Change	Maximum Design Heat Input (MMBTU/hr)⁴	Fuel Heating Value (BTU/scf)⁵
GPU-1	1E	Pride of the Hills	2017	NEW	1.0	1031
GPU-2	2E	Pride of the Hills	2017	NEW	1.0	1031
GPU-3	3E	Pride of the Hills	2017	NEW	1.0	1031
GPU-4	4E	Pride of the Hills	2017	NEW	1.0	1031
GPU-5	5E	Pride of the Hills	2017	NEW	1.0	1031
GPU-6	6E	Pride of the Hills	2017	NEW	1.0	1031
GPU-7	7E	Pride of the Hills	2017	NEW	1.0	1031

¹ Enter the appropriate Emission Unit (or Source) identification number for each fuel burning unit located at the production pad. Gas Producing Unit Burners should be designated GPU-1, GPU-2, etc. Heater Treaters should be designated HT-1, HT-2, etc. Heaters or Line Heaters should be designated LH-1, LH-2, etc. For sources, use 1S, 2S, 3S...or other appropriate designation. Enter glycol dehydration unit Reboiler Vent data on the Glycol Dehydration Unit Data Sheet.

² Enter the appropriate Emission Point identification numbers for each fuel burning unit located at the production pad. Gas Producing Unit Burners should be designated GPU-1, GPU-2, etc. Heater Treaters should be designated HT-1, HT-2, etc. Heaters or Line Heaters should be designated LH-1, LH-2, etc. For emission points, use 1E, 2E, 3E...or other appropriate designation.

³ New, modification, removal

⁴ Enter design heat input capacity in MMBtu/hr.

⁵ Enter the fuel heating value in BTU/standard cubic foot.

ATTACHMENT N – INTERNAL COMBUSTION ENGINE DATA SHEET

Complete this data sheet for each internal combustion engine at the facility. Include manufacturer performance data sheet(s) or any other supporting document if applicable. Use extra pages if necessary. *Generator(s) and microturbine generator(s) shall also use this form.*

Emission Unit ID# ¹		CE-1		CE-2			
Engine Manufacturer/Model		CAT 3516B		CAT 3516B			
Manufacturers Rated bhp/rpm		1380/1400		1380/1400			
Source Status ²		NEW		NEW			
Date Installed/ Modified/Removed/Relocated ³		January 2017		January 2017			
Engine Manufactured /Reconstruction Date ⁴		After 1/1/2012		After 1/1/2012			
Check all applicable Federal Rules for the engine (include EPA Certificate of Conformity if applicable) ⁵		<input checked="" type="checkbox"/> 40CFR60 Subpart JJJJ <input type="checkbox"/> JJJJ Certified? <input type="checkbox"/> 40CFR60 Subpart IIII <input type="checkbox"/> IIII Certified? <input type="checkbox"/> 40CFR63 Subpart ZZZZ <input type="checkbox"/> NESHAP ZZZZ/ NSPS JJJJ Window <input type="checkbox"/> NESHAP ZZZZ Remote Sources		<input checked="" type="checkbox"/> 40CFR60 Subpart JJJJ <input type="checkbox"/> JJJJ Certified? <input type="checkbox"/> 40CFR60 Subpart IIII <input type="checkbox"/> IIII Certified? <input type="checkbox"/> 40CFR63 Subpart ZZZZ <input type="checkbox"/> NESHAP ZZZZ/ NSPS JJJJ Window <input type="checkbox"/> NESHAP ZZZZ Remote Sources		<input type="checkbox"/> 40CFR60 Subpart JJJJ <input type="checkbox"/> JJJJ Certified? <input type="checkbox"/> 40CFR60 Subpart IIII <input type="checkbox"/> IIII Certified? <input type="checkbox"/> 40CFR63 Subpart ZZZZ <input type="checkbox"/> NESHAP ZZZZ/ NSPS JJJJ Window <input type="checkbox"/> NESHAP ZZZZ Remote Sources	
Engine Type ⁶		4SLB		4SLB			
APCD Type ⁷		A/F + OxCat		A/F + OxCat			
Fuel Type ⁸		RG		RG			
H ₂ S (gr/100 scf)		<1		<1			
Operating bhp/rpm		1380/1400		1380/1400			
BSFC (BTU/bhp-hr)		8255		8255			
Hourly Fuel Throughput		11,028	ft ³ /hr gal/hr	11028	ft ³ /hr gal/hr	ft ³ /hr gal/hr	
Annual Fuel Throughput (Must use 8,760 hrs/yr unless emergency generator)		96.61	MMft ³ /yr gal/yr	96.61	MMft ³ /yr gal/yr	MMft ³ /yr gal/yr	
Fuel Usage or Hours of Operation Metered		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Calculation Methodology ⁹	Pollutant ¹⁰	Hourly PTE (lb/hr) ¹¹	Annual PTE (tons/year) ¹¹	Hourly PTE (lb/hr) ¹¹	Annual PTE (tons/year) ¹¹	Hourly PTE (lb/hr) ¹¹	Annual PTE (tons/year) ¹¹
MD	NO _x	1.52	6.66	1.52	6.66		
MD	CO	0.52	2.27	0.52	2.27		
MD	VOC	0.76	3.33	0.76	3.33		
AP-42	SO ₂	<0.01	0.03	<0.01	0.03		
AP-42	PM ₁₀	0.11	0.50	0.11	0.50		
MD	Formaldehyde	0.14	0.63	0.14	0.63		
AP-42	Total HAPs	0.30	1.33	0.30	1.33		
MD	GHG (CO ₂ e)	1748	7655	1748	7655		

1 Enter the appropriate Source Identification Number for each natural gas-fueled reciprocating internal combustion compressor/generator engine located at the compressor station. Multiple compressor engines should be designated CE-1, CE-2, CE-3 etc. Generator engines should be designated GE-1, GE-2, GE-3 etc. Microturbine generator engines should be designated MT-1, MT-2, MT-3 etc. If more than three (3) engines exist, please use additional sheets.

2 Enter the Source Status using the following codes:

NS	Construction of New Source (installation)	ES	Existing Source
MS	Modification of Existing Source	RS	Relocated Source
REM	Removal of Source		

- 3 Enter the date (or anticipated date) of the engine's installation (construction of source), modification, relocation or removal.
- 4 Enter the date that the engine was manufactured, modified or reconstructed.
- 5 Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart IIII/JJJJ? If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance as appropriate.

Provide a manufacturer's data sheet for all engines being registered.

- 6 Enter the Engine Type designation(s) using the following codes:

2SLB Two Stroke Lean Burn	4SRB Four Stroke Rich Burn
4SLB Four Stroke Lean Burn	
- 7 Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:

A/F Air/Fuel Ratio	IR Ignition Retard
HEIS High Energy Ignition System	SIPC Screw-in Pre-combustion Chambers
PSC Pre-stratified Charge	LEC Low Emission Combustion
NSCR Rich Burn & Non-Selective Catalytic Reduction	OxCat Oxidation Catalyst
SCR Lean Burn & Selective Catalytic Reduction	
- 8 Enter the Fuel Type using the following codes:

PQ Pipeline Quality Natural Gas	RG Raw Natural Gas /Production Gas	D Diesel
---------------------------------	------------------------------------	----------
- 9 Enter the Potential Emissions Data Reference designation using the following codes. Attach all reference data used.

MD Manufacturer's Data	AP AP-42	
GR GRI-HAPCalc TM	OT Other	(please list)
- 10 Enter each engine's Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer's rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet*.
- 11 PTE for engines shall be calculated from manufacturer's data unless unavailable.

**Engine Air Pollution Control Device
(Emission Unit ID# C1 and C2, use extra pages as necessary)**

Air Pollution Control Device Manufacturer's Data Sheet included?
Yes No

NSCR SCR Oxidation Catalyst

Provide details of process control used for proper mixing/control of reducing agent with gas stream: **N/A**

Manufacturer: DCL	Model #: DC65-14
--------------------------	-------------------------

Design Operating Temperature: 992 °F	Design gas volume: 9200 scfm
---	-------------------------------------

Service life of catalyst: 8000 hours	Provide manufacturer data? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Volume of gas handled: 9103 acfm at 994 °F	Operating temperature range for NSCR/Ox Cat: From 900 °F to 1200 °F
---	---

Reducing agent used, if any: N/A	Ammonia slip (ppm): N/A
---	--------------------------------

Pressure drop against catalyst bed (delta P): **3.4** inches of H₂O

Provide description of warning/alarm system that protects unit when operation is not meeting design conditions:

There is no warning/alarm system. However, the engine will shut down if the catalyst inlet temperature exceeds 1200 Deg. F.

Is temperature and pressure drop of catalyst required to be monitored per 40CFR63 Subpart ZZZZ?
 Yes No

How often is catalyst recommended or required to be replaced (hours of operation)?

How often is performance test required?
 Initial
 Annual
 Every 8,760 hours of operation
 Field Testing Required
 No performance test required. If so, why (please list any maintenance required and the applicable sections in NSPS/GACT,



USA Compression Unit TBD Caterpillar G3516BLE Engine Emissions

Date of Manufacture	TBD	Engine Serial Number	TBD	Date Modified/Reconstructed	Not Any
Driver Rated HP	1380	Rated Speed in RPM	1400	Combustion Type	Spark Ignited 4 Stroke
Number of Cylinders	16	Compression Ratio	8:1	Combustion Setting	Ultra Lean Burn
Total Displacement (in ³)	4211	Fuel Delivery Method	Carburetor	Combustion Air Treatment	T.C./Aftercooled

Raw Engine Emissions (Customer Supplied Fuel Gas with H2S < 10 PPM)

Fuel Consumption 7443 LHV BTU/bhp-hr or 8250 HHV BTU/bhp-hr
 Altitude 1200 ft
 Maximum Air Inlet Temp 90 F

	g/bhp-hr ¹	lb/MMBTU ²	lb/hr	TPY
Nitrogen Oxides (NOx)	0.5		1.52	6.66
Carbon Monoxide (CO)	2.43		7.39	32.38
Volatile Organic Compounds (VOC or NMNEHC excluding CH2O)	0.48		1.46	6.40
Formaldehyde (CH2O)	0.43		1.31	5.73
Particulate Matter (PM) ^{Filterable+Condensable}		9.99E-03	1.14E-01	4.98E-01
Sulfur Dioxide (SO2)		5.88E-04	6.69E-03	2.93E-02
	g/bhp-hr ¹		lb/hr	Metric Tonne/yr
Carbon Dioxide (CO2)	473		1439	5717
Methane (CH4)	4.05		12.32	48.95

¹ g/bhp-hr are based on Caterpillar Specifications (GERP) Customer Supplied fuel gas, 1200 ft elevation, and 90 F Max Air Inlet Temperature. Note that g/bhp-hr values are based on 100% Load Operation. It is recommended to add a safety margin to CO, VOC, and Formaldehyde to account for variations in fuel gas composition and load.

² Emission Factor obtained from EPA's AP-42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources (Section 3.2 Natural Gas-Fired Reciprocating Engines, Table 3.2-2).

Catalytic Converter Emissions

Catalytic Converter Make and Model: DCL DC64L2-16
 Element Type: Oxidation
 Number of Elements in Housing: 2
 Air/Fuel Ratio Control Caterpillar ADEM3, NOx Feedback

	% Reduction	lb/hr	TPY
Nitrogen Oxides (NOx)	0	1.52	6.66
Carbon Monoxide (CO)	93	0.52	2.27
Volatile Organic Compounds (VOC or NMNEHC excluding CH2O)	48	0.76	3.33
Formaldehyde (CH2O)	89	0.14	0.63
Particulate Matter (PM)	0	1.14E-01	4.98E-01
Sulfur Dioxide (SO2)	0	6.69E-03	2.93E-02
	% Reduction	lb/hr	Metric Tonne/yr
Carbon Dioxide (CO2)	0	1439	5717
Methane (CH4)	0	12.32	48.95



1610 Woodstead Ct, Suite 245, The Woodlands, Texas 77380 USA
 Tel: 877-965-8989 Fax: 281-605-5858 info@dcl-inc.com www.dcl-inc.com

GLOBAL LEADER IN EMISSION CONTROL SOLUTIONS

To:	Chris Magee
Company:	USA Compression
Date:	

Phone:	
Email:	
No. Pages:	1

Dear Chris,

We hereby guarantee that our Model DC64A specified below with two (2) elements installed as described below, and sized for the following engine:

Engine Data	
Engine Model	Caterpillar G3516B
Power	1380HP
Fuel	PQNG
Exhaust Flow Rate	9103 acfm
Exhaust Temperature	992 °F

Catalyst Data	
Catalyst Model	DC64A
Type	Oxidation- A
# of Elements	2
Cell Density	300 cpsi
Approx Dimensions	See attached drawing
Approx Pressure Drop	3.4" w.c

will perform as follows:

Exhaust Component	Engine Output (g/bhp-hr)	Converter Output (% Reduction or g/bhp-hr)
CO	2.43	93%
VOC	0.48	0.25
Formaldehyde (HCHO)	0.43	0.05

for a period of 1 year or 8000 hours, whichever comes first, subject to all terms and conditions contained in the attached warranty document being respected and met.

Best Regards,

On behalf of DCL America Inc.

Lisa Barber
 416-788-8021
 lbarber@dcl-inc.com

GAS COMPRESSION APPLICATION

ENGINE SPEED (rpm): 1400
 COMPRESSION RATIO: 8
 AFTERCOOLER TYPE: SCAC
 AFTERCOOLER - STAGE 2 INLET (°F): 130
 AFTERCOOLER - STAGE 1 INLET (°F): 201
 JACKET WATER OUTLET (°F): 210
 ASPIRATION: TA
 COOLING SYSTEM: JW+OC+1AC, 2AC
 CONTROL SYSTEM: ADEM3
 EXHAUST MANIFOLD: DRY
 COMBUSTION: LOW EMISSION
 NOX EMISSION LEVEL (g/bhp-hr NOx): 0.5
 SET POINT TIMING: 30

RATING STRATEGY: STANDARD
 RATING LEVEL: CONTINUOUS
 FUEL SYSTEM: CAT WIDE RANGE
 WITH AIR FUEL RATIO CONTROL

SITE CONDITIONS:
 FUEL: Rice Roger Perry 3-18-16
 FUEL PRESSURE RANGE(psig): 7.0-40.0
 FUEL METHANE NUMBER: 80.7
 FUEL LHV (Btu/scf): 965
 ALTITUDE(ft): 1200
 MAXIMUM INLET AIR TEMPERATURE(°F): 90
 STANDARD RATED POWER: 1380 bhp@1400rpm

RATING	NOTES	LOAD	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE			
			100%	100%	75%	50%
ENGINE POWER (WITHOUT FAN)	(1)	bhp	1380	1380	1035	690
INLET AIR TEMPERATURE		°F	90	90	90	90

ENGINE DATA						
FUEL CONSUMPTION (LHV)	(2)	Btu/bhp-hr	7443	7443	7971	8562
FUEL CONSUMPTION (HHV)	(2)	Btu/bhp-hr	8250	8250	8836	9490
AIR FLOW (@inlet air temp, 14.7 psia)	(3)(4) (WET)	ft ³ /min	3202	3202	2512	1756
AIR FLOW	(3)(4) (WET)	lb/hr	13861	13861	10873	7601
FUEL FLOW (60°F, 14.7 psia)		scfm	177	177	142	102
INLET MANIFOLD PRESSURE	(5)	in Hg(abs)	94.6	94.6	76.8	54.0
EXHAUST TEMPERATURE - ENGINE OUTLET	(6)	°F	992	992	986	1006
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(7)(4) (WET)	ft ³ /min	9100	9100	7117	5050
EXHAUST GAS MASS FLOW	(7)(4) (WET)	lb/hr	14343	14343	11260	7879

EMISSIONS DATA - ENGINE OUT						
NOx (as NO ₂)	(8)(9)	g/bhp-hr	0.50	0.50	0.50	0.50
CO	(8)(9)	g/bhp-hr	2.43	2.43	2.60	2.55
THC (mol. wt. of 15.84)	(8)(9)	g/bhp-hr	4.76	4.76	5.10	5.17
NMHC (mol. wt. of 15.84)	(8)(9)	g/bhp-hr	0.71	0.71	0.76	0.78
NMNEHC (VOCs) (mol. wt. of 15.84)	(8)(9)(10)	g/bhp-hr	0.48	0.48	0.51	0.52
HCHO (Formaldehyde)	(8)(9)	g/bhp-hr	0.43	0.43	0.42	0.42
CO ₂	(8)(9)	g/bhp-hr	473	473	504	548
EXHAUST OXYGEN	(8)(11)	% DRY	9.0	9.0	8.7	8.3

HEAT REJECTION						
HEAT REJ. TO JACKET WATER (JW)	(12)	Btu/min	23599	23599	21679	20030
HEAT REJ. TO ATMOSPHERE	(12)	Btu/min	6110	6110	5092	4074
HEAT REJ. TO LUBE OIL (OC)	(12)	Btu/min	4475	4475	3978	3363
HEAT REJ. TO A/C - STAGE 1 (1AC)	(12)(13)	Btu/min	11582	11582	9646	3430
HEAT REJ. TO A/C - STAGE 2 (2AC)	(12)(13)	Btu/min	5519	5519	5204	3397

COOLING SYSTEM SIZING CRITERIA			
TOTAL JACKET WATER CIRCUIT (JW+OC+1AC)	(13)(14)	Btu/min	43489
TOTAL AFTERCOOLER CIRCUIT (2AC)	(13)(14)	Btu/min	5795

A cooling system safety factor of 0% has been added to the cooling system sizing criteria.

CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature. 100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature. Maximum rating is the maximum capability at the specified aftercooler inlet temperature for the specified fuel at site altitude and reduced inlet air temperature. Lowest load point is the lowest continuous duty operating load allowed. No overload permitted at rating shown.

For notes information consult page three.

ATTACHMENT O – TANKER TRUCK LOADING DATA SHEET

Complete this data sheet for each new or modified bulk liquid transfer area or loading rack at the facility. This is to be used for bulk liquid transfer operations to tanker trucks. Use extra pages if necessary.

Truck Loadout Collection Efficiencies

The following applicable capture efficiencies of a truck loadout are allowed:

- For tanker trucks passing the MACT level annual leak test – 99.2%
- For tanker trucks passing the NSPS level annual leak test – 98.7%
- For tanker trucks not passing one of the annual leak tests listed above – 70%

Compliance with this requirement shall be demonstrated by keeping records of the applicable MACT or NSPS Annual Leak Test certification for *every* truck and railcar loaded/unloaded. This requirement can be satisfied if the trucking company provided certification that its entire fleet was compliant. This certification must be submitted in writing to the Director of the DAQ. These additional requirements must be noted in the Registration Application.

Emission Unit ID#: TL-1	Emission Point ID#: 12E	Year Installed/Modified: NEW		
Emission Unit Description: Produced Water Truck Loading				
Loading Area Data				
Number of Pumps: 1 on truck	Number of Liquids Loaded: 1	Max number of trucks loading at one (1) time: 1		
Are tanker trucks pressure tested for leaks at this or any other location? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required If Yes, Please describe:				
Provide description of closed vent system and any bypasses. N/A				
Are any of the following truck loadout systems utilized? No				
<input type="checkbox"/> Closed System to tanker truck passing a MACT level annual leak test?				
<input type="checkbox"/> Closed System to tanker truck passing a NSPS level annual leak test?				
<input type="checkbox"/> Closed System to tanker truck not passing an annual leak test and has vapor return?				
Projected Maximum Operating Schedule (for rack or transfer point as a whole)				
Time	Jan – Mar	Apr - Jun	Jul – Sept	Oct - Dec
Hours/day	24	24	24	24
Days/week	7	7	7	7
Bulk Liquid Data (use extra pages as necessary)				
Liquid Name	Produced Water			
Max. Daily Throughput (1000 gal/day)	35.3			
Max. Annual Throughput (1000 gal/yr)	12,877.2			
Loading Method ¹	Sub			
Max. Fill Rate (gal/min)	50 gpm			
Average Fill Time (min/loading)	120			
Max. Bulk Liquid Temperature (°F)	80			
True Vapor Pressure ²	0.3 psia			
Cargo Vessel Condition ³	U			
Control Equipment or Method ⁴	None			
Max. Collection Efficiency (%)	N/A			

Max. Control Efficiency (%)		N/A		
Max.VOC Emission Rate	Loading (lb/hr)	<0.01		
	Annual (ton/yr)	0.01		
Max.HAP Emission Rate	Loading (lb/hr)	<0.01		
	Annual (ton/yr)	<0.01		
Estimation Method ⁵		EPA		

- 1 BF Bottom Fill SP Splash Fill SUB Submerged Fill
- 2 At maximum bulk liquid temperature
- 3 B Ballasted Vessel C Cleaned U Uncleaned (dedicated service)
O Other (describe)
- 4 List as many as apply (complete and submit appropriate Air Pollution Control Device Sheets)
CA Carbon Adsorption VB Dedicated Vapor Balance (closed system)
ECD Enclosed Combustion Device F Flare
TO Thermal Oxidization or Incineration
- 5 EPA EPA Emission Factor in AP-42 MB Material Balance
TM Test Measurement based upon test data submittal O Other (describe)

**ATTACHMENT Q – PNEUMATIC CONTROLLERS
DATA SHEET**

Are there any continuous bleed natural gas driven pneumatic controllers at this facility that commenced construction, modification or reconstruction after August 23, 2011?

Yes No

Please list approximate number.

Are there any continuous bleed natural gas driven pneumatic controllers at this facility with a bleed rate greater than 6 standard cubic feet per hour that are required based on functional needs, including but not limited to response time, safety and positive actuation that commenced construction, modification or reconstruction after August 23, 2011?

Yes No

Please list approximate number.

ATTACHMENT S – EMISSIONS CALCULATIONS

Provide detailed potential to emit (PTE) emission calculations for criteria and hazardous air pollutants (HAPs) for each emission point identified in the application. For hazardous air pollutants and volatile organic compounds (VOCs), the speciated emission calculations must be included.

Use the following guidelines to ensure complete emission calculations:

- All emission sources and fugitive emissions are included in the emission calculations, as well as all methods used to calculate the emissions.
- Proper emission point identification numbers and APCD and ERD identification numbers are used consistently in the emission calculations that are used throughout the application.
- A printout of the emission summary sheets is attached to the registration application.
- Printouts of any modeling must be included with the emission calculations. The modeling printout must show all inputs/outputs or assumptions that the modeled emissions are based upon.
- If emissions are provided from the manufacturer, the manufacturer's documentation and/or certified emissions must also be included.
- The emission calculations results must match the emissions provided on the emissions summary sheet.
- If calculations are based on a compositional analysis of the gas, attach the laboratory analysis. Include the following information: the location that the sample was taken (and whether the sample was taken from the actual site or a representative site); the date the sample was taken; and, if the sample is considered representative, the reasons that it is considered representative (same gas field, same formation and depth, distance from actual site, etc.).
- Provide any additional clarification as necessary. Additional clarification or information is especially helpful when reviewing modeling calculations to assist the engineer in understanding the basis of assumptions and/or inputs.

Please follow specific guidance provided on the emissions summary sheet when providing the calculations.

EMISSIONS SUMMARY

Fisher Well Pad
 Northeast Natural Energy
 Monongalia County

Source	Description	NOx lb/hr	CO lb/hr	CO2e lb/hr	VOC lb/hr	SO2 lb/hr	PM lb/hr	acrolein lb/hr	acetaldehyde lb/hr	n-Hexane	benzene lb/hr	toluene lb/hr	xylenes lb/hr	formaldehyde lb/hr	Total HAPs lb/hr
										lb/Hr					
CE-1	Compressor Engine #1	1.52	0.52	1748	0.760	0.01	0.11	0.059	0.095	0.0012	0.0005	0.0004	0.0002	0.144	0.303
CE-2	Compressor Engine #2	1.52	0.52	1748	0.760	0.01	0.11	0.059	0.095	0.0012	0.0005	0.0004	0.0002	0.144	0.303
GPU-1- GPU-7	Seven GPUs	0.70	0.59	846	0.04	0.00	0.05			0.013	0.002	0.000		0.001	0.013
---	Haul Road Fugitive Dust						8.11								
T01-T04	Produced Water Tanks ²			310	0.23					0.024	0.002	0.007	0.011		0.045
TL-1	Produced Water Truck Loading			6	0.00										
---	Equipment Fugitive Emissions			18	0.00										
---	Blowdowns ¹			N/A	N/A										
Total		3.74	1.62	4,674	1.80	0.02	8.39	0.117	0.190	0.039	0.005	0.008	0.011	0.288	0.664

Source	Description	NOx tpy	CO tpy	CO2e tpy	VOC tpy	SO2 tpy	PM tpy	acrolein tpy	acetaldehyde tpy	n-Hexane	benzene tpy	toluene tpy	xylenes tpy	formaldehyde tpy	Total HAPs tpy
										TPY					
CE-1	Compressor Engine #1	6.66	2.27	7,655	3.33	0.03	0.50	0.256	0.417	0.005	0.002	0.002	0.001	0.630	1.327
CE-2	Compressor Engine #2	6.66	2.27	7,655	3.33	0.03	0.50	0.256	0.417	0.005	0.002	0.002	0.001	0.630	1.327
GPU-1- GPU-7	Seven GPUs	3.07	2.58	3,703	0.17	0.02	0.23			0.055	0.000	0.000		0.002	0.058
---	Haul Road Fugitive Dust						12.43								
T01-T04	Produced Water Tanks ²			1358	1.01					0.107	0.008	0.030	0.050		0.200
TL-1	Produced Water Truck Loading			10	0.01										
---	Equipment Fugitive Emissions			78	0.02										
---	Blowdowns ¹			40	0.01										
Total		16.39	7.11	20,500	7.87	0.08	13.66	0.513	0.834	0.173	0.012	0.034	0.052	1.263	2.911

¹ See Attachment J for Blowdown Calculations

² Water tank emissions are uncontrolled.

ENGINE EMISSIONS

**Fisher Well Pad
Northeast Natural Energy
Monongalia County**

Proposed Emission Rates

Source CE-1

Engine Data:

Engine Manufacturer	CAT	
Engine Model	3516 B	
Type (Rich-burn or Low Emission)	Low Emissions	
Aspiration (Natural or Turbocharged)	Natural	
Turbocharge Cooler Temperature	130	deg. F
Manufacturer Rating	1,380	hp
Speed at Above Rating	1,400	rpm
Configration (In-line or Vee)	V-16	
Number of Cylinders	16	
Engine Bore	6.700	inches
Engine Stroke	7.500	inches
Fuel Heat Content	929	BTU/scf
Engine Displacement	4,231	cu. in.
Fuel Consumption (HHV)	8,255	Btu/bhp-hr

Emission Rates:

	g/bhp-hr	lb/hr	tons/year	g/hr	lb/day	AP-42 4strokeclean lb/mmbtu	
Oxides of Nitrogen, NOx	0.50	1.52	6.66	690	36.51		Comment
Carbon Monoxide CO	0.17	0.52	2.27	235	12.41		453.59 grams = 1 pound
VOC (NMNEHC)	0.24	0.76	3.33	331	18.24		2,000 pounds = 1 ton
CO2e		1748	7655.19				
CO2	473	1439	6303.02	652,740	34537.12		

Total Annual Hours of Operation

Total Annual Hours of Operation	8,760						
SO2		0.0067	0.0293			0.000588	
PM (Condensable+ Filterable)		0.1138	0.4985			0.00999	
CH ₄ as CO _{2e}	4.05	308.04	1349.2				Mfg. Spec Used
N ₂ O as CO _{2e}		0.679	2.9738			0.0002	Factor From 40 CFR 98, Table C-2
acrolein		0.0586	0.2565			0.00514	
acetaldehyde		0.0952	0.4171			0.00836	
formaldehyde	0.047	0.1439	0.6303				Mfg. Spec Used
biphenyl		0.0002	0.0010			0.000212	
benzene		0.0005	0.0021			0.00044	
toluene		0.0004	0.0019			0.000408	
ethylbenzene		4E-05	0.0002			3.97E-05	
xylene		0.0002	0.0009			0.000184	
methanol		0.0027	0.0118			0.0025	
n-hexane		0.0012	0.0052			0.00111	
total HAPs		0.3029	1.3269			0.018394	

Exhaust Parameters:

Exhaust Gas Temperature	992	deg. F
Exhaust Gas Flow Rate	9216	acfm
Total Exhaust Gas Volume Flow, wet	9,216	acfm
Total Exhaust Gas Volume Flow, wet	153.6	acf per sec
Exhaust Stack Height	260	inches
	21.67	feet
Exhaust Stack Inside Diameter	20	inches
	1.667	feet
Exhaust Stack Velocity	70.4	ft/sec
	4,224.3	ft/min

$$3.1416 \times \frac{4 \times \text{acfm}}{(\text{stack diameter})^2}$$

ENGINE EMISSIONS

**Fisher Well Pad
Northeast Natural Energy
Monongalia County**

Proposed Emission Rates

Source CE-2

Engine Data:

Engine Manufacturer	CAT	
Engine Model	3516 B	
Type (Rich-burn or Low Emission)	Low Emissions	
Aspiration (Natural or Turbocharged)	Natural	
Turbocharge Cooler Temperature	130	deg. F
Manufacturer Rating	1,380	hp
Speed at Above Rating	1,400	rpm
Configuration (In-line or Vee)	V-16	
Number of Cylinders	16	
Engine Bore	6.700	inches
Engine Stroke	7.500	inches
Fuel Heat Content	929	BTU/scf
Engine Displacement	4,231	cu. in.
Fuel Consumption (HHV)	8,255	Btu/bhp-hr

Emission Rates:

	g/bhp-hr	lb/hr	tons/year	g/hr	lb/day	AP-42 4strokeclean lb/mmbtu	
Oxides of Nitrogen, NOx	0.50	1.52	6.66	690	36.51		Comment
Carbon Monoxide CO	0.17	0.52	2.27	235	12.41		453.59 grams = 1 pound 2,000 pounds = 1 ton
VOC (NMNEHC)	0.24	0.76	3.33	331	18.24		
CO _{2e}		1748	7655.19				
CO ₂	473	1439	6303.02	652,740	34537.12		

Total Annual Hours of Operation

Total Annual Hours of Operation	8,760						
SO ₂		0.0067	0.0293			0.000588	
PM (Condensable+ Filterable)		0.1138	0.4985			0.00999	
CH ₄ as CO _{2e}	4.05	308.04	1349.2				Mfg. Spec Used
N ₂ O as CO _{2e}		0.679	2.9738			0.0002	Factor From 40 CFR 98, Table C-2
acrolein		0.0586	0.2565			0.00514	
acetaldehyde		0.0952	0.4171			0.00836	
formaldehyde	0.047	0.1439	0.6303				Mfg. Spec Used
biphenyl		0.0002	0.0010			0.000212	
benzene		0.0005	0.0021			0.00044	
toluene		0.0004	0.0019			0.000408	
ethylbenzene		4E-05	0.0002			3.97E-05	
xylene		0.0002	0.0009			0.000184	
methanol		0.0027	0.0118			0.0025	
n-hexane		0.0012	0.0052			0.00111	
total HAPs		0.3029	1.3269			0.018394	

Exhaust Parameters:

Exhaust Gas Temperature	992	deg. F
Exhaust Gas Flow Rate	9216	acfm
Total Exhaust Gas Volume Flow, wet	9,216	acfm
Total Exhaust Gas Volume Flow, wet	153.6	acf per sec
Exhaust Stack Height	260	inches
	21.67	feet
Exhaust Stack Inside Diameter	20	inches
	1.667	feet
Exhaust Stack Velocity	70.4	ft/sec
	4,224.3	ft/min

$$3.1416 \times \frac{4 \times \text{acfm}}{(\text{stack diameter})^2}$$

**Fisher Well Pad
Northeast Natural Energy
Monongalia County**

Potential Emission Rates

Sources GPU-1 to GPU-7

Burner Duty Rating	7000.0 Mbtu/hr	Seven Units at 1.0 Mbtu/Hr Each
Burner Efficiency	98.0 %	
Gas Heat Content (HHV)	1031.1 Btu/scf	
Total Gas Consumption	166257.4 scfd	
H2S Concentration	0.000 Mole %	
Hours of Operation	8760	

NOx	0.7003	lbs/hr	3.067	TPY
CO	0.5882	lbs/hr	2.576	TPY
CO2	840.3	lbs/hr	3680.7	TPY
CO2e	846	lbs/hr	3,703	tpy
VOC	0.0385	lbs/hr	0.169	TPY
SO2	0.0042	lbs/hr	0.018	TPY
H2S	0.0000	lbs/hr	0.000	TPY
PM10	0.0532	lbs/hr	0.233	TPY
CHOH	0.0005	lbs/hr	0.002	TPY
Benzene	0.0000	lbs/hr	0.000	TPY
N-Hezane	0.0126	lbs/hr	0.055	TPY
Toluene	0.0000	lbs/hr	0.000	TPY
Total HAPs	0.0132	lbs/hr	0.058	TPY

AP-42 Factors Used

NOx	100 Lbs/MMCF	
CO	84 Lbs/MMCF	
CO₂	120,000 Lbs/MMCF	Global Warming Potential = 1
VOC	5.5 Lbs/MMCF	
PM	7.6 Lbs/MMCF	
SO₂	0.6 Lbs/MMCF	
CH₄	2.3 Lbs/MMCF	Global Warming Potential = 25
N₂O	2.2 Lbs/MMCF	Global Warming Potential =310
HCOH	0.075 Lbs/MMCF	
Benzene	0.0021 Lbs/MMCF	
n-Hexane	1.8 Lbs/MMCF	
Toluene	0.0034 Lbs/MMCF	

FUGITIVE EMISSIONS

Fisher Well Pad
 Northeast Natural Energy
 Monongalia County

Fugitive VOC Emissions

Volatile Organic Compounds, NMNEHC from gas analysis: 0.56 weight percent
 Methane from gas analysis: 93.21 weight percent
 Carbon Dioxide from gas analysis: 0.55 weight percent
 Gas Density 0.0462 lb/scf

Emission Source:	Number	Oil & Gas Production*	VOC %	VOC, lb/hr	VOC TPY	CO2 lb/Hr	CO2 TPY	CH4 lb/hr	CH4 TPY	CO2e
Valves:										
Gas/Vapor:	42	0.02700 scf/hr	0.6	0.000	0.001	0.000	0.001	0.049	0.2138	5.347
Light Liquid:	-	0.05000 scf/hr	100.0	0.000	0.000					0.000
Heavy Liquid (Oil):	-	0.00050 scf/hr	100.0	0.000	0.000					0.000
Low Bleed Pneumatic	-	1.39000 scf/hr	0.6	0.000	0.000	0.000	0.000	0.000	0.0000	0.000
Relief Valves:	21	0.04000 scf/hr	0.6	0.000	0.001	0.000	0.001	0.036	0.1584	3.961
Open-ended Lines, gas:	7	0.06100 scf/hr	0.6	0.000	0.000	0.000	0.000	0.000	0.0005	0.012
Open-ended Lines, liquid:	-	0.05000 lb/hr	100.0	0.000	0.000					0.000
Pump Seals:										
Gas:	-	0.00529 lb/hr	0.6	0.000	0.000	0.000	0.000	0.000	0.0000	0.000
Light Liquid:	-	0.02866 lb/hr	100.0	0.000	0.000					0.000
Heavy Liquid (Oil):	-	0.00133 lb/hr	100.0	0.000	0.000					0.000
Compressor Seals, Gas:	2	0.01940 lb/hr	0.6	0.000	0.001	0.000	0.001	0.002	0.0073	0.184
Connectors:										
Gas:	180	0.00300 scf/hr	0.6	0.000	0.001	0.000	0.001	0.023	0.1018	2.546
Light Liquid:	0	0.00700 scf/hr	100.0	0.000	0.000					0.000
Heavy Liquid (Oil):	-	0.00030 scf/hr	100.0	0.000	0.000					0.000
Sampling Connectors:										
Gas:	14	0.03300 lb/hr	0.6	0.003	0.011	0.000	0.000	0.431	1.8862	47.154
Light Liquid:	-	0.03300 lb/hr	100.0	0.000	0.000					0.000
Flanges:										
Gas:	210	0.00086 lb/hr	0.6	0.001	0.004	0.001	0.004	0.168	0.7373	18.437
Light Liquid:	0	0.00300 scf/hr	100.0	0.000	0.000					0.000
Heavy Liquid:		0.0009 scf/hr	100.0	0.000	0.000					0.000

<i>Fugitive Calculations:</i>		
	lb/hr	t/y
VOC	0.005	0.020
CH4	0.709	3.105
CO2	0.002	0.009
CO2e	17.724	77.63

Notes: *Factors are from 40 CFR 98, Table W-1A (scf/hr), where available.
 . Sampling Connectors are from TCEQ. Remaining are API (lb/hr)

GAS ANALYSIS INFORMATION

Fisher Well Pad
Northeast Natural Energy
Monongalia County

Fuel Gas Composition Information:

	Fuel Gas mole %	Fuel M.W. lb/lb-mole	Fuel S.G.	Fuel Wt. %	LHV, dry Btu/scf	HHV, dry Btu/scf	AFR vol/vol	VOC NM / NE	Z Factor	GPM
Nitrogen, N2	0.3557	0.100	0.003	0.600			-		0.0036	
Carbon Dioxide, CO2	0.2081	0.092	0.003	0.552			-		0.0021	
Hydrogen Sulfide, H2S		-	-	-			-		-	
Helium, He		-	-	-			-		-	
Oxygen, O2		-	-	-			-		-	
Methane, CH4	96.4299	15.470	0.534	93.210	876.9	973.9	9.190		0.9624	
Ethane, C2H6	2.8012	0.842	0.029	5.075	45.3	49.6	0.467		0.0278	0.745
Propane	0.1837	0.081	0.003	0.488	4.3	4.6	0.044	0.488	0.0018	0.050
Iso-Butane	0.0052	0.003	0.000	0.018	0.2	0.2	0.002	0.018	0.0001	0.002
Normal Butane	0.0162	0.009	0.000	0.057	0.5	0.5	0.005	0.057	0.0002	0.005
Iso Pentane		-	-	-			-	-	-	-
Normal Pentane		-	-	-			-	-	-	-
Hexane		-	-	-			-	-	-	-
Heptane		-	-	-			-	-	-	-
	100.000	16.597	0.573		927.2	1,028.8	9.707	0.563	0.9978	0.802

Gas Density (STP) = 0.046

Ideal Gross (HHV)	1,028.8
Ideal Gross (sat'd)	1,011.7
GPM	-
Real Gross (HHV)	1,031.1
Real Net (LHV)	929.2

GAS ANALYSIS INFORMATION

Fisher Well Pad
Northeast Natural Energy
Monongalia County

Flash Gas Composition Information:

	Fuel Gas mole %	Fuel M.W. lb/lb-mole	Fuel S.G.	Fuel Wt. %	LHV, dry Btu/scf	HHV, dry Btu/scf	AFR vol/vol	VOC NM / NE	Z Factor	GPM
Nitrogen, N2	0.6160	0.173	0.006	0.977			-		0.0062	
Carbon Dioxide, CO2	3.6910	1.624	0.056	9.199			-		0.0368	
Hydrogen Sulfide, H2S		-	-	-			-		-	
Helium, He		-	-	-			-		-	
Oxygen, O2		-	-	-			-		-	
Methane, CH4	93.2080	14.953	0.516	84.682	847.6	941.4	8.883		0.9302	
Ethane, C2H6	2.1550	0.648	0.022	3.670	34.9	38.1	0.359		0.0214	0.573
Propane	0.0840	0.037	0.001	0.210	1.9	2.1	0.020	0.210	0.0008	0.023
Iso-Butane	0.0080	0.005	0.000	0.026	0.2	0.3	0.002	0.026	0.0001	0.003
Normal Butane	0.0140	0.008	0.000	0.046	0.4	0.5	0.004	0.046	0.0001	0.004
Iso Pentane	0.0010	0.001	0.000	0.004	0.0	0.0	0.000	0.004	0.0000	0.000
Normal Pentane	0.0080	0.006	0.000	0.033	0.3	0.3	0.003	0.033	0.0001	0.003
Hexane	0.0840	0.072	0.002	0.410	3.7	4.0	0.038	0.410	0.0008	0.034
Heptane	0.1310	0.131	0.005	0.743	6.7	7.2	0.069	0.743	0.0013	0.060
	100.000	17.658	0.610		895.8	993.9	9.379	1.472	0.9978	0.701

Gas Density (STP) = 0.049

Ideal Gross (HHV)	993.9
Ideal Gross (sat'd)	977.4
GPM	-
Real Gross (HHV)	996.1
Real Net (LHV)	897.8

GAS DATA INFORMATION

Specific Gravity of Air, @ 29.92 in. Hg and 60 -F, 28.9625
 One mole of gas occupies, @ 14.696 psia & 32 -F 359.2 cu ft. per lb-mole
 One mole of gas occupies, @ 14.696 psia & 60 -F 379.64 cu ft. per lb-mole

Hydrogen Sulfide (H2S) conversion chart:

0 grains H2S/100 scf	=	0.00000 mole % H2S
		0.0 ppmv H2S
0 mole % H2S	=	0 grains H2S/100 scf
		0.0 ppmv H2S
0 ppmv H2S	=	0.000 grains H2S/100 scf
		0.00000 mole % H2S

Ideal Gas at 14.696 psia and 60°F

		MW lb/mol	Specific Gravity	Lb per Cu Ft	Cu Ft per Lb	LHV, dry Btu/scf	HHV, dry Btu/scf	LHV Btu/lb	HHV Btu/lb	cu ft of air / 1 cu ft of gas	Z factor
Nitrogen	N2	28.013	0.9672	0.0738	13.552	0	0	0	0	0	0.9997
Carbon Dioxide	CO2	44.010	1.5196	0.1159	8.626	0	0	0	0	0	0.9964
Hydrogen Sulfide	H2S	34.076	1.1766	0.0898	11.141	587	637	6,545	7,100	7.15	0.9846
Water	H2O	18.000	0.6215	0.0474	21.091	0	0	0	0	0	1.0006
Oxygen	O2	31.999	1.1048	0.0843	11.864	0	0	0	0	0	0.9992
Methane	CH4	16.043	0.5539	0.0423	23.664	909.4	1,010.0	21,520	23,879	9.53	0.9980
Ethane	C2H6	30.070	1.0382	0.0792	12.625	1,618.7	1,769.6	20,432	22,320	16.68	0.9919
Propane	C3H8	44.097	1.5226	0.1162	8.609	2,314.9	2,516.1	19,944	21,661	23.82	0.9825
Iso-Butane	C4H10	58.124	2.0069	0.1531	6.532	3,000.4	3,251.9	19,629	21,257	30.97	0.9711
Normal Butane	C4H10	58.124	2.0069	0.1531	6.532	3,010.8	3,262.3	19,680	21,308	30.97	0.9667
Iso Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,699.0	4,000.9	19,478	21,052	38.11	1.0000
Normal Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,706.9	4,008.9	19,517	21,091	38.11	1.0000
Hexane	C6H14	86.178	2.9755	0.2270	4.405	4,403.8	4,755.9	19,403	20,940	45.26	0.9879
Heptane	C7H16	100.205	3.4598	0.2639	3.789	5,100.0	5,502.5	22,000	23,000	52.41	0.9947

Real Gas at 14.696 psia and 60°F

		MW lb/mol	Specific Gravity	Lb per Cu Ft	Cu Ft per Lb	LHV, dry Btu/scf	HHV, dry Btu/scf	LHV Btu/lb	HHV Btu/lb	cu ft of air / 1 cu ft of gas	Gal/Mole
Nitrogen	N2	28.013	0.9672	0.0738	13.552	0	0	0	0	0	4.1513
Carbon Dioxide	CO2	44.010	1.5196	0.1159	8.626	0	0	0	0	0	6.4532
Hydrogen Sulfide	H2S	34.076	1.1766	0.0898	11.141	621	672	6,545	7,100	7.15	5.1005
Water	H2O	18.000	0.6215	0.0474	21.091						3.8376
Oxygen	O2	31.999	1.1048	0.0843	11.864	0	0	0	0	0	3.3605
Methane	CH4	16.043	0.5539	0.0423	23.664	911	1,012	21,520	23,879	9.53	6.4172
Ethane	C2H6	30.070	1.0382	0.0792	12.625	1,631	1,783	20,432	22,320	16.68	10.126
Propane	C3H8	44.097	1.5226	0.1162	8.609	2,353	3,354	19,944	21,661	23.82	10.433
Iso-Butane	C4H10	58.124	2.0069	0.1531	6.532	3,101	3,369	19,629	21,257	30.97	12.386
Normal Butane	C4H10	58.124	2.0069	0.1531	6.532	3,094	3,370	19,680	21,308	30.97	11.937
Iso Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,709	4,001	19,478	21,052	38.11	13.86
Normal Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,698	4,009	19,517	21,091	38.11	13.713
Hexane	C6H14	86.178	2.9755	0.2270	4.405	4,404	4,756	19,403	20,940	45.26	15.566
Heptane	C7H16	100.205	3.4598	0.2639	3.789	5,101	5,503	22,000	23,000	52.41	17.468

16.3227
17.468

Gas Analytical

Report Date: Sep 11, 2015 1:27p

Client:	Northeast Natural Energy	Date Sampled:	Sep 1, 2015
Site:	Coastal 8H	Analysis Date:	Sep 8, 2015 11:02a
Field No:		Collected By:	G. Cutright GAS
Meter:		Date Effective:	Sep 1, 2015 12:00a
Source Laboratory	Clarksburg (Bridgeport), WV	Sample Pressure (PSI):	975.0
Lab File No:	X_CH1-5929.CHR	Sample Temp (°F):	
Sample Type:	Spot	Field H2O:	No Test
Reviewed By:		Field H2S:	No Test

Component	Mol %	Gal/MSCF
Methane	96.4299	
Ethane	2.8012	0.74
Propane	0.1837	0.05
I-Butane	0.0052	0.00
N-Butane	0.0162	0.01
I-Pentane	<MDL	0.00
N-Pentane	<MDL	0.00
Nitrogen	0.3557	
Oxygen	<MDL	
Carbon Dioxide	0.2081	
Hexanes+	<MDL	0.00
TOTAL	100.0000	0.80

Analytical Results at Base Conditions (Real)	
BTU/SCF (Dry):	1,033.0422 BTU/ft ³
BTU/SCF (Saturated):	1,015.9404 BTU/ft ³
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99790
Z Factor (Saturated):	0.99755

Analytical Results at Contract Conditions (Real)	
BTU/SCF (Dry):	1,033.0422 BTU/ft ³
BTU/SCF (Saturated):	1,015.9404 BTU/ft ³
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99790
Z Factor (Saturated):	0.99755

Calculated Specific Gravities		
Ideal Gravity:	0.5730	Real Gravity: 0.5740
Molecular Wt:	16.5967 lb/lbmol	

Gross Heating Values are Based on:
 GPA 2145-09, 2186
 Compressibility is Calculated using AGA-8.

Source	Date	Notes
Gas Analytical	Sep 8, 2015	RWarner@nne-llc.com

Attachment I FUGITIVE EMISSIONS FROM UNPAVED HAULROADS

UNPAVED HAULROADS (including all equipment traffic involved in process, haul trucks, endloaders, etc.)

		PM	PM-10
k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	10	3
p =	Number of days per year with precipitation >0.01 in.	157	157

Item Number	Description	Number of Wheels	Mean Vehicle Weight (tons)	Mean Vehicle Speed (mph)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1	Produced Water Tanker Truck	18	27	10	1.10	1	3066	None	0
2									
3									
4									
5									
6									
7									
8									

Source: AP-42 Fifth Edition – 13.2.2 Unpaved Roads

$$E = k \times 5.9 \times (s \div 12) \times (S \div 30) \times (W \div 3)^{0.7} \times (w \div 4)^{0.5} \times ((365 - p) \div 365) = \text{lb/Vehicle Mile Traveled (VMT)}$$

Where:

		PM	PM-10
k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	10	3
S =	Mean vehicle speed (mph)	10	10
W =	Mean vehicle weight (tons)	27	27
w =	Mean number of wheels per vehicle	18	18
p =	Number of days per year with precipitation >0.01 in.	157	157

For lb/hr: $[\text{lb} \div \text{VMT}] \times [\text{VMT} \div \text{trip}] \times [\text{Trips} \div \text{Hour}] = \text{lb/hr}$

For TPY: $[\text{lb} \div \text{VMT}] \times [\text{VMT} \div \text{trip}] \times [\text{Trips} \div \text{Hour}] \times [\text{Ton} \div 2000 \text{ lb}] = \text{Tons/year}$

SUMMARY OF UNPAVED HAULROAD EMISSIONS

Item No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	8.11	12.43	8.11	12.43	1.10	1.68	1.10	1.68
2								
3								
4								
5								
6								
7								
8								
TOTALS	8.11	12.43	8.11	12.43	1.10	1.68	1.10	1.68

FUGITIVE EMISSIONS FROM PAVED HAULROADS

INDUSTRIAL PAVED HAULROADS (including all equipment traffic involved in process, haul trucks, endloaders, etc.)

I =	Industrial augmentation factor (dimensionless)	
n =	Number of traffic lanes	
s =	Surface material silt content (%)	
L =	Surface dust loading (lb/mile)	

Item Number	Description	Mean Vehicle Weight (tons)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1	None						
2							
3							
4							
5							
6							
7							
8							

Source: AP-42 Fifth Edition – 11.2.6 Industrial Paved Roads

$$E = 0.077 \times I \times (4 \div n) \times (s \div 10) \times (L \div 1000) \times (W \div 3)^{0.7} = \text{lb/Vehicle Mile Traveled (VMT)}$$

Where:

I =	Industrial augmentation factor (dimensionless)	
n =	Number of traffic lanes	
s =	Surface material silt content (%)	
L =	Surface dust loading (lb/mile)	
W =	Average vehicle weight (tons)	

For lb/hr: $[\text{lb} \div \text{VMT}] \times [\text{VMT} \div \text{trip}] \times [\text{Trips} \div \text{Hour}] = \text{lb/hr}$

For TPY: $[\text{lb} \div \text{VMT}] \times [\text{VMT} \div \text{trip}] \times [\text{Trips} \div \text{Hour}] \times [\text{Ton} \div 2000 \text{ lb}] = \text{Tons/year}$

SUMMARY OF PAVED HAULROAD EMISSIONS

Item No.	Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY
1				
2				
3				
4				
5				
6				
7				
8				
TOTALS				

G3516TALE JGT-4, 2 Stage

(Note: assumed ideal gas behavior and used OD for volume calc)

Cylinders	Bore, in	Stroke, in	Rod Diameter, in	Pocket Clearance, in ³	Total Cylinder Volume, in ³
1st Stage Cylinder	6.38	4.50	2.00	0.00	129
1st Stage Cylinder	6.38	4.50	2.00	0.00	129
2nd Stage Cylinder	6.38	4.50	2.00	0.00	129
2nd Stage Cylinder	6.38	4.50	2.00	0.00	129

Scrubbers/Suction & Discharge Drums	OD, in	Height/Length, in	Total Volume, in ³
1st Stage Scrubber	24.00	68.00	30762
1st Stage Suction Drum	16.00	114.50	23022
1st Stage Discharge Drum	16.00	114.50	23022
2nd Stage Scrubber	24.00	68.00	30762
2nd Stage Suction Drum	16.00	114.50	23022
2nd Stage Discharge Drum	16.00	114.50	23022

Cooler Section	No. of Tubes	OD, in	Length, in	Total Cooler Tube Volume, in ³
1st Stage Cooler Section	86	0.75	216	8207
2nd Stage Cooler Section	146	0.75	216	13932

Piping	OD, in	Length, in	Total Piping Volume, in ³
1st Stg Piping	6.00	150.00	4241
2nd Stg Piping	6.00	150.00	4241

Equipment	Volume, in ³	Temperature, R	Pressure, psig	Calculated Moles
1st Stage Total	89512	718	160	1.17
2nd Stage Total	95238	715	390	2.91

Total Moles 4.08

Estimated

Total Volume of Blowdown Gas @ STP =

1570 ft³

Does not include fuel scrubber

**Northeast Natural Energy, LLC
Fisher Well Pad
Produced Water Tank Emissions**

Utilizing direct measurements of tank vent emissions from Produced Water Tanks at an area well pad owned and operated by Northeast (attached), gas emissions were determined to be 3.80 scf per barrel of water. Thus, with an anticipated maximum water production rate at the Fisher Well Pad being 840 BBL/day, an emission rate of 3192 SCFD is anticipated. The natural gas constituents were forced into solution in the Produced Water by the high pressures in the gas production zone. As they are not soluble in water, they are quickly volatilized as the pressure on the water is released as it progresses from the well to the atmospheric pressure tank (flash gas). Working and breathing emissions from Produced Water are nominal, again as the gas constituents are not water soluble and flash out upon release of pressure.

The composition of the flash gas is assumed to be very similar to that of the nearby pad where flash gas testing was performed. As noted on the attached analysis, the specific gravity of the flash gas was measured to be 0.612. Thus, as shown in the following calculation spreadsheet, annual flash emissions at the maximum production rate of 306,600 BBL/yr is 64.23 tpy of total vapors and 1.01 tpy of VOCs (0.23 lb/hr). Potential HAP emissions are 0.20 tpy (0.045 lb/hr).

Methane comprises approximately 84.6% of the gas by weight. Thus, methane emissions are projected to be 54.3 tpy. Using a GHG factor of 25, potential CO_{2e} emissions will be 1357.5 tpy or 309.9 lb/Hr CO_{2e}

There are three tanks that will receive and accumulate produced water prior to shipment off-site. Assuming this water and associated emissions are distributed proportionately between these tanks, potential emissions are as follows:

Tank	Capacity	BBL/Day	BBL/Yr	VOC		HAP		Co2e	
				Lb/Hr	TPY	Lb/Hr	TPY	Lb/Hr	TPY
T01	400 BBL	333	121,545	0.091	0.40	0.018	0.08	122.7	537.6
T02	400 BBL	333	121,545	0.091	0.40	0.018	0.08	122.7	537.6
T03	210 BBL	174	63,510	0.048	0.21	0.009	0.04	64.5	282.3
Total	1010 BBL	840	306,600	0.23	1.01	0.045	0.20	309.9	1357.5

Flash Emission Calculations - Produced Water

Using Gas-Water Ratio Method

Un-Controlled

Site specific data

Gas-Water-ratio	=	3.8 scf/bbl Using GOW from comparable well pad
Throughput	=	306,600 bbl/yr (840 BBL/Day)
Stock tank gas molecular weight	=	39.56 g/mole

Conversions

1 lb	=	453.6 g
1 mole	=	22.4 L
1 scf	=	28.32 L
1 ton	=	2000 lb

Equations

$$E_{TOT} = Q \frac{(bbl)}{(yr)} \times R \frac{(scf)}{(bbl)} \times \frac{28.32(L)}{1(scf)} \times \frac{1(mole)}{22.4(L)} \times MW \frac{(g)}{(mole)} \times \frac{1(lb)}{453.6(g)} \times \frac{1(ton)}{2000(lb)}$$

- E_{TOT} = Total stock tank flash emissions (TPY)
- R = Measured gas-oil ratio (scf/bbl)
- Q = Throughput (bbl/yr)
- MW = Stock tank gas molecular weight (g/mole)

$$E_{spec} = E_{TOT} \times X_{spec}$$

- E_{spec} = Flash emission from constituent
- X_{spec} = Weight fraction of constituent in stock tank gas

Flash Emissions

Constituent	TPY
Total	64.2324
VOC	1.0059
Nitrogen	6.30E-01
Carbon Dioxide	5.90E+00
Methane	5.43E+01
Ethane	2.35E+00
Propane	1.35E-01
Isobutane	1.67E-02
n-Butane	2.95E-02
2,2 Dimethylpropane	0.00E+00
Isopentane	2.57E-03
n-Pentane	2.12E-02
2,2 Dimethylbutane	0.00E+00
Cyclopentane	0.00E+00
2,3 Dimethylbutane	6.42E-03
2 Methylpentane	2.51E-02
3 Methylpentane	3.47E-02
n-Hexane	1.07E-01
Methylcyclopentane	3.08E-02
Benzene	8.35E-03
Cyclohexane	4.88E-02
2-Methylhexane	1.09E-02
3-Methylhexane	1.09E-02
2,2,4 Trimethylpentane	0.00E+00
Other C7's	2.18E-02
n-Heptane	2.18E-02
Methylcyclohexane	2.51E-02
Toluene	3.02E-02
Other C8's	6.81E-02
n-Octane	4.56E-02
Ethylbenzene	3.85E-03
M & P Xylenes	4.24E-02
O-Xylene	7.71E-03
Other C9's	9.63E-02
n-Nonane	4.18E-02
Other C10's	7.71E-02
n-Decane	1.54E-02
Undecanes (11)	2.12E-02

E_{TOT}

Sum of C3+



FESCO, Ltd.
1100 Fesco Avenue - Alice, Texas 78332

For: Northeast Natural Energy LLC
 707 Virginia St. East, Suite 1200
 Charleston, West Virginia 25301

Date Sampled: 04/16/14

Date Analyzed: 04/30/14

Job Number: J42910

Sample: Statler No. 6H

FLASH LIBERATION OF SEPARATOR WATER		
	Separator	Stock Tank
Pressure, psig	670	0
Temperature, °F	73	70
Gas Water Ratio (1)	-----	3.80
Gas Specific Gravity (2)	-----	0.612
Separator Volume Factor (3)	1.000	1.000

(1) - Scf of water saturated vapor per barrel of stock tank water

(2) - Air = 1.000

(3) - Separator volume / Stock tank volume

Analyst: _____ T.G. _____

Piston No.: WF-305*

Base Conditions: 14.85 PSI & 60 °F

Certified: FESCO, Ltd. - Alice, Texas

 David Dannhaus 361-661-7015

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: Northeast Natural Energy LLC
 707 Virginia St. East, Suite 1200
 Charleston, West Virginia 25301

Sample: Statler No. 6H
 Gas Liberated from Separator Water
 From 670 psig & 73 °F to 0 psig & 70 °F

Date Sampled: 04/16/14

Job Number: 42910.001

CHROMATOGRAPH EXTENDED ANALYSIS - SUMMATION REPORT - GPA 2286

COMPONENT	MOL%	GPM
Hydrogen Sulfide*	< 0.001	
Nitrogen	0.619	
Carbon Dioxide	3.691	
Methane	93.208	
Ethane	2.155	0.581
Propane	0.084	0.023
Isobutane	0.008	0.003
n-Butane	0.014	0.004
2-2 Dimethylpropane	0.000	0.000
Isopentane	0.001	0.000
n-Pentane	0.008	0.003
Hexanes	0.055	0.023
Heptanes Plus	<u>0.157</u>	<u>0.072</u>
Totals	100.000	0.709

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity ----- 3.811 (Air=1)
 Molecular Weight ----- 110.14
 Gross Heating Value ----- 5776 BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity ----- 0.612 (Air=1)
 Compressibility (Z) ----- 0.9977
 Molecular Weight ----- 17.68
 Gross Heating Value
 Dry Basis ----- 1007 BTU/CF
 Saturated Basis ----- 990 BTU/CF

*Hydrogen Sulfide tested in laboratory by: Stained Tube Method (GPA 2377)
 Results: <0.013 Gr/100 CF, <0.2 PPMV or <0.001 Mol %

Base Conditions: 14.850 PSI & 60 Deg F

Certified: FESCO, Ltd. - Alice, Texas

Analyst: MR
 Processor: AL
 Cylinder ID: WF# 13 S

 David Dannhaus 361-661-7015

**CHROMATOGRAPH EXTENDED ANALYSIS
TOTAL REPORT - GPA 2286**

COMPONENT	MOL %	GPM	WT %
Hydrogen Sulfide*	< 0.001		< 0.001
Nitrogen	0.619		0.981
Carbon Dioxide	3.691		9.190
Methane	93.208		84.597
Ethane	2.155	0.581	3.666
Propane	0.084	0.023	0.210
Isobutane	0.008	0.003	0.026
n-Butane	0.014	0.004	0.046
2,2 Dimethylpropane	0.000	0.000	0.000
Isopentane	0.001	0.000	0.004
n-Pentane	0.008	0.003	0.033
2,2 Dimethylbutane	0.000	0.000	0.000
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.002	0.001	0.010
2 Methylpentane	0.008	0.003	0.039
3 Methylpentane	0.011	0.005	0.054
n-Hexane	0.034	0.014	0.166
Methylcyclopentane	0.010	0.003	0.048
Benzene	0.003	0.001	0.013
Cyclohexane	0.016	0.005	0.076
2-Methylhexane	0.003	0.001	0.017
3-Methylhexane	0.003	0.001	0.017
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.006	0.003	0.034
n-Heptane	0.006	0.003	0.034
Methylcyclohexane	0.007	0.003	0.039
Toluene	0.009	0.003	0.047
Other C8's	0.017	0.008	0.106
n-Octane	0.011	0.006	0.071
Ethylbenzene	0.001	0.000	0.006
M & P Xylenes	0.011	0.004	0.066
O-Xylene	0.002	0.001	0.012
Other C9's	0.021	0.011	0.150
n-Nonane	0.009	0.005	0.065
Other C10's	0.015	0.009	0.120
n-Decane	0.003	0.002	0.024
Undecanes (11)	<u>0.004</u>	<u>0.002</u>	<u>0.033</u>
Totals	100.000	0.709	100.000

Computed Real Characteristics Of Total Sample:

Specific Gravity -----	0.612	(Air=1)
Compressibility (Z) -----	0.9977	
Molecular Weight -----	17.68	
Gross Heating Value		
Dry Basis -----	1007	BTU/CF
Saturated Basis -----	990	BTU/CF

Produced Water Truck Loading Lost Emissions Per AP-42

Per AP-42, Chapter 5.2.2.1.1, the uncontrolled loading loss emission factor L_L can be estimated as follows:

$$L_L = 12.46[SPM/T]$$

Where:

L_L = uncontrolled loading loss in pounds per 1000 gallons of liquid loaded

S= saturation factor (0.6)

P=true vapor pressure of liquid loaded: 0.3 psia (water at 60 Deg. F)

M= Molecular weight of vapor in lb/lb-mole 17.68 (flash gas of comparable water sample)

T= temperature of bulk liquid loaded in deg R or 460+deg F (60 Deg F)

Thus, $L_L = 12.46[0.6 \times 0.3 \times 17.68]/[460+60]$

$L_L = 0.076$ lb/1000 gallons loaded

Based on sample data of breathing vapor (attached), these emissions are 1.55% VOCs. It is assumed that vapor composition from truck loading is the same as that from the tank breathing vapors.

Given a maximum loading of 840 BBL (35,280 gallons) a day, uncontrolled VOC emissions are estimated at 0.04 lb of VOC per day $[35.28 \times 0.076 \times .0155]$. With all daily loading taking place within 10 hours, the average hourly un-controlled emission rate is therefore estimated at <0.01 lb/hr VOCs. Emissions from truck loading are un-controlled.

Methane is approximately 84.6 % of emissions. Thus, potential daily methane emissions are estimated at 2.27 lb of Methane per day $[35.28 \times 0.076 \times 0.846]$. Thus, with all daily loading taking place within 10 hours each day, potential hourly emissions are estimated at 0.23 lb/hour $[5.75$ lb/hr CO₂e]

Maximum annual throughput is 12,877,200 gallons (306,600 barrels) per year. Thus, un-captured/un-controlled VOC emissions are conservatively estimated at 15.2 pounds per year $[12,877 \times 0.076 \times 0.0155]$ or 0.01 tons per year. Annual potential emissions of methane is 827.9 pounds per year $[12,877 \times 0.076 \times 0.846]$ or 10.35 tpy of CO₂e.

ATTACHMENT T – FACILITY-WIDE CONTROLLED EMISSIONS SUMMARY SHEET

List all sources of emissions in this table. Use extra pages if necessary.

Emission Point ID#	NO _x		CO		VOC		SO ₂		PM ₁₀		PM _{2.5}		GHG (CO ₂ e)	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1E	0.10	0.438	0.084	0.368	<0.01	0.024	<0.01	<0.01	<0.01	0.033	<0.01	<0.033	121	529
2E	0.10	0.438	0.084	0.368	<0.01	0.024	<0.01	<0.01	<0.01	0.033	<0.01	<0.033	121	529
3E	0.10	0.438	0.084	0.368	<0.01	0.024	<0.01	<0.01	<0.01	0.033	<0.01	<0.033	121	529
4E	0.10	0.438	0.084	0.368	<0.01	0.024	<0.01	<0.01	<0.01	0.033	<0.01	<0.033	121	529
5E	0.10	0.438	0.084	0.368	<0.01	0.024	<0.01	<0.01	<0.01	0.033	<0.01	<0.033	121	529
6E	0.10	0.438	0.084	0.368	<0.01	0.024	<0.01	<0.01	<0.01	0.033	<0.01	<0.033	121	529
7E	0.10	0.438	0.084	0.368	<0.01	0.024	<0.01	<0.01	<0.01	0.033	<0.01	<0.033	121	529
8E	1.52	6.66	0.52	2.27	0.76	3.33	0.01	0.03	0.11	0.50	0.11	0.50	1748	7655
9E	1.52	6.66	0.52	2.27	0.76	3.33	0.01	0.03	0.11	0.50	0.11	0.50	1748	7655
10E					0.091	0.40								
11E					0.091	0.40								
12E					0.048	0.21								
13E					<0.01	0.01							5.75	10.35
TOTAL	3.74	16.39	1.62	7.11	1.80	7.84	0.02	0.08	0.28	1.23	0.28	1.23	4,656	20,381

Annual emissions shall be based on 8,760 hours per year of operation for all emission units except emergency generators.

According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, fugitive emissions shall not be included in the PTE above.

ATTACHMENT T – FACILITY-WIDE HAP CONTROLLED EMISSIONS SUMMARY SHEET

List all sources of emissions in this table. Use extra pages if necessary.

Emission Point ID#	Formaldehyde		Benzene		Toluene		Ethylbenzene		Xylenes		Hexane		Total HAPs	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1E	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2E	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
3E	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4E	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
5E	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
6E	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
7E	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
8E	0.14	0.63	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.30	1.33
9E	0.14	0.63	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.30	1.33
10E	<0.01	<0.01	<0.01	<0.01	<0.01	0.010	<0.01	0.015	<0.01	0.016	0.01	0.05	0.017	0.078
11E	<0.01	<0.01	<0.01	<0.01	<0.01	0.010	<0.01	0.015	<0.01	0.016	0.01	0.05	0.017	0.078
12E	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.02	0.01	0.042
13E	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TOTAL	0.288	1.263	<0.01	<0.01	0.01	0.03	0.01	0.04	0.01	0.05	0.04	0.17	0.66	2.91

Annual emissions shall be based on 8,760 hours per year of operation for all emission units except emergency generators. According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, fugitive emissions shall not be included in the PTE above.

ATTACHMENT U – CLASS I LEGAL ADVERTISEMENT

Publication of a proper Class I legal advertisement is a requirement of the G70-C registration process. In the event the applicant's legal advertisement fails to follow the requirements of 45CSR13, Section 8 or the requirements of Chapter 59, Article 3, of the West Virginia Code, the application will be considered incomplete and no further review of the application will occur until this is corrected.

The applicant, utilizing the format for the Class I legal advertisement example provided on the following page, shall have the legal advertisement appear a minimum of one (1) day in the newspaper most commonly read in the area where the facility exists or will be constructed. The notice must be published no earlier than five (5) working days of receipt by this office of your application. The original affidavit of publication must be received by this office no later than the last day of the public comment period.

The advertisement shall contain, at a minimum, the name of the applicant, the type and location of the source, the type and amount of air pollutants that will be discharged (excluding fugitive emissions), the nature of the permit being sought, the proposed start-up date for the source, and a contact telephone number for more information.

The location of the source should be as specific as possible starting with: 1.) the street address of the source; 2.) the nearest street or road; 3.) the nearest town or unincorporated area, 4.) the county, and 5.) latitude and longitude coordinates in decimal format.

Types and amounts of pollutants discharged must include all regulated pollutants (Nitrogen Oxides, Carbon Monoxide, Particulate Matter-2.5, Particulate Matter-10, Volatile Organic Compounds, Sulfur Dioxide, Formaldehyde, Benzene, Toluene, Ethylbenzene, Xylenes, Hexane, Total Hazardous Air Pollutants and their potential to emit or the permit level being sought in units of tons per year.

In the event the 30th day is a Saturday, Sunday, or legal holiday, the comment period will be extended until 5:00 p.m. on the following regularly scheduled business day.

A list of qualified newspapers that are eligible to publish legal ads may be found:

<http://www.sos.wv.gov/elections/resource/Documents/Qualified%20Newspapers.pdf>

AIR QUALITY PERMIT NOTICE
Notice of Application

Notice is given that Northeast Natural Energy, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a G70-C General Permit Registration for its Fisher Well Pad located at 1003 Daybrook Road, near Fairview in Monongalia County, West Virginia. The latitude and longitude coordinates are: 39.69611 latitude and -80.21369 longitude.

The applicant estimates the potential to discharge the following Regulated Air Pollutants will be:

16.39 tons per year of Nitrogen Oxides
7.11 tons per year of Carbon Monoxide
7.87 tons per year of Volatile Organic Carbons
0.08 tons per year of Sulfur Oxides
0.51 tons per year of Acrolein
0.83 tons per year of Acetaldehyde
0.01 tons per year of Benzene
1.26 tons per year of Formaldehyde
0.17 tons per year of n-Hexane
1.23 tons per year of Particulate Matter
20,479 tons per year of Greenhouse Gases

Startup of operation is planned to begin on or about the first day of March, 2017. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the **(Day)** day of **(Month)**, **(Year)**.

By: Northeast Natural Energy, LLC
Brett Loflin
Vice President Regulatory Affairs
48 Donley Street Suite 601
Morgantown, WV 26501