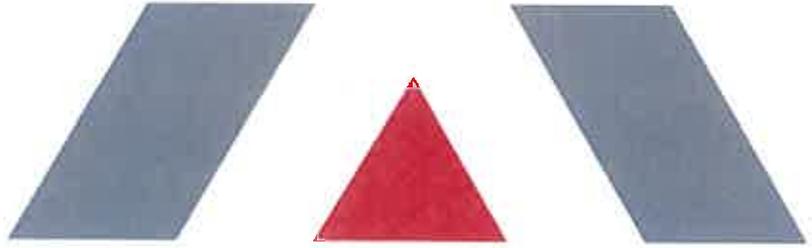


Roy
G70-A137
017-000666



PROJECT REPORT

EQT Production
WEU-8 Pad

G70-A Permit Application



Where energy meets innovation.

TRINITY CONSULTANTS
4500 Brooktree Drive
Suite 103
Wexford, PA 15090
(724) 935-2611

January 2015

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1. INTRODUCTION

EQT Production Company (EQT) is submitting this General Permit application to the West Virginia Department of Environmental Protection (WVDEP) for the WEU-8 facility, a natural gas production well pad, located in Doddridge County, West Virginia.

1.1. FACILITY AND PROJECT DESCRIPTION

The WEU-8 Pad is an existing natural gas production facility consisting of six natural gas wells. WEU-8 is currently permitted and operating under West Virginia permit R13-3124. Natural gas and liquids (including water and condensate) are extracted from deposits underneath the surface. Natural gas is transported from the well to a gas line for additional processing and compression, as necessary. The liquids produced are stored in storage vessels.

This application seeks to authorize installation and operation of the following additional equipment at the WEU-8 Pad:

- > One (1) 140 bbl sand separator tank for produced water and sand, controlled by one (1) existing combustor (rated at 11.66 MMBtu/hr). Control is optional and no credit is included in emission calculations.

Additionally, this application also seeks to increase the current permit liquid throughput limits of the Produced Fluid Tanks and Liquid Loading at the facility.

The following equipment is already permitted and installed at the WEU-8 Pad:

- > Six (6) natural gas wells;
- > Six (6) 400 barrel (bbl) storage tanks for condensate/water controlled by one (1) existing combustor (rated at 11.66 MMBtu/hr);
- > Six (6) line heaters, rated at 1.54 MMBtu/hr (heat input, each); and
- > Two (2) thermoelectric generators (TEG), rated at 0.013 MMBtu/hr (heat input, each).

A process flow diagram is included as Attachment D.

1.2. SOURCE STATUS

WVDEP must make stationary source determinations on a case-by-case basis using the guidance under the Clean Air Act (CAA) and EPA's and WVDEP's implementing regulations. The definition of stationary source in 40 CFR 51.166(b) includes the following:

"(6) Building, structure, facility, or installation means all of the pollutant emitting activities which belong to the same industrial grouping, are located on or more contiguous or adjacent properties, and are under control of the same person (or persons under common control)."

Other additional pollutant emitting facilities should be aggregated with the proposed WEU-8 Pad for air permitting purposes if, and only if, all three elements of the "stationary source" definition above are fulfilled.

There are no Marcellus facilities within a quarter-mile radius of the WEU-8 Pad. The closest pad is WEU-1, which is located 1.7 miles East of WEU-8. Therefore, the WEU-8 Pad should be considered a separate stationary source with respect to permitting programs, including Title V and Prevention of Significant Deterioration (PSD). As discussed in this application, the facility is a minor source of air emissions with respect to New Source Review (NSR) and Title V permitting.

1.3. G70-A APPLICATION ORGANIZATION

This West Virginia Code of State Regulations, Title 45 (CSR) Series 13 (45 CSR 13) G70-A permit application is organized as follows:

- Section 2: Sample Emission Source Calculations;
- Section 3: Regulatory Discussion;
- Section 4: G70-A Application Forms;
- Attachment A: Current Business Certificate;
- Attachment B: Process Description;
- Attachment C: Description of Fugitive Emissions;
- Attachment D: Process Flow Diagram;
- Attachment E: Plot Plan;
- Attachment F: Area Map;
- Attachment G: Emission Unit Data Sheets and G70-A Section Applicability Form;
- Attachment H: Air Pollution Control Device Sheets;
- Attachment I: Emission Calculations;
- Attachment J: Class I Legal Advertisement;
- Attachment K: Electronic Submittal (*not applicable*);
- Attachment L: General Permit Registration Application Fee;
- Attachment M: Siting Criteria Waiver (*not applicable*);
- Attachment N: Material Safety Data Sheet (*not applicable*); and
- Attachment O: Emissions Summary Sheet;

2. SAMPLE EMISSION SOURCE CALCULATIONS

The characteristics of air emissions from the proposed natural gas production operations, along with the methodology for calculating emissions, are briefly described in this section of the application. Detailed emission calculations are presented in Attachment I of this application. The methods by which emissions from each of this source type, as well as the existing source types, are calculated are summarized below.

- > **Line Heaters and Thermoelectric Generators:** Potential emissions of all criteria pollutants and HAPs are calculated using U.S. EPA's AP-42 factors for natural gas combustion equipment.¹ These calculations assume a site-specific heat content of natural gas. Greenhouse gas (GHG) emissions are calculated according to 40 CFR 98 Subpart C.² Please note that potential emissions of NO_x, CO, PM, SO₂ and GHGs from the combustor are also calculated according to the aforementioned methodologies.
- > **Fugitive Equipment Leaks:** Emissions of VOC and HAPs from leaking equipment components have been estimated using facility estimated component counts and types along with *Table 2-4: Oil & Gas Production Operations Average Emission Factors, Protocol for Equipment Leak Emission Estimates, EPA 453/R-95-017, November 1995*. Emission factors used are based on average measured TOC from component types indicated in gas service at O&G Production Operations. Greenhouse gas emissions from component leaks are calculated according to the procedures in 40 CFR 98 Subpart W.³
- > **Storage Tanks:** Working, breathing and flashing emissions of VOC and HAPs from the condensate/water stored in the tanks at the facility are calculated using API E&P TANK v2.0. Note that the sand storage tank emissions do not include control.
- > **Tank Truck Loading:** Emissions of VOC and HAPs from the loading of organic liquids from storage tanks to tank truck are calculated using U.S. EPA's AP-42 Chapter 5 Section 2 factors.⁴
- > **Haul Roads:** Fugitive dust emitted from facility roadways has been estimated using projected vehicle miles traveled along with U.S. EPA's AP-42 factors for unpaved haul roads.⁵

¹ U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 1.4, Natural Gas Combustion, Supplement D, July 1998.

² 40 CFR 98 Subpart C, *General Stationary Fuel combustion Sources*, Tables C-1 and C-2.

³ 40 CFR 98 Subpart W, *Petroleum and Natural Gas Systems*, Section 98.233(r), *Population Count and Emission Factors*.

⁴ U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 5.2, *Transportation And Marketing Of Petroleum Liquids*, June 2008.

⁵ U.S. EPA, AP 42, Fifth Edition, Volume I, Section 13.2.2, *Unpaved Roads*, November 2006.

3. REGULATORY DISCUSSION

This section documents the applicability determinations made for Federal and State air quality regulations. In this section, applicability or non-applicability of the following regulatory programs is addressed:

- > Prevention of Significant Deterioration (PSD) permitting;
- > Title V of the 1990 Clean Air Act Amendments;
- > New Source Performance Standards (NSPS);
- > National Emission Standards for Hazardous Air Pollutants (NESHAP); and
- > West Virginia State Implementation Plan (SIP) regulations.

This review is presented to supplement and/or add clarification to the information provided in the WVDEP G70-A permit application forms.

In addition to providing a summary of applicable requirements, this section of the application also provides non-applicability determinations for certain regulations, allowing the WVDEP to confirm that identified regulations are not applicable to the wellpad. Note that explanations of non-applicability are limited to those regulations for which there may be some question of applicability specific to the operations at the wellpad. Regulations that are categorically non-applicable are not discussed (e.g., NSPS Subpart J, Standards of Performance for Petroleum Refineries).

3.1. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) SOURCE CLASSIFICATION

Federal construction permitting programs regulate new and modified sources of attainment pollutants under Prevention of Significant Deterioration (PSD). PSD regulations apply when a major source makes a change, such as installing new equipment or modifying existing equipment, and a significant increase in emissions results from the change. The wellpad is not a major source with respect to the PSD program since its potential emissions are below all the PSD thresholds. As such, PSD permitting is not triggered by this construction activity. EQT will monitor future construction activities at the site closely and will compare any future increase in emissions with the PSD thresholds to ensure these activities will not trigger this program.

3.2. TITLE V OPERATING PERMIT PROGRAM

Title 40 of the Code of Federal Regulations Part 70 (40 CFR 70) establishes the federal Title V operating permit program. West Virginia has incorporated the provisions of this federal program in its Title V operating permit program in West Virginia Code of State Regulations (CSR) 45-30. The major source thresholds with respect to the West Virginia Title V operating permit program regulations are 10 tons per year (tpy) of a single HAP, 25 tpy of any combination of HAP, 100,000 tpy of greenhouse gas pollutants (on a carbon dioxide equivalent [CO₂e] basis), and 100 tpy of all other regulated pollutants.⁶ The potential emissions of all regulated pollutants are below the corresponding threshold(s) at this facility after the proposed project. Therefore, the wellpad is not a major source for Title V purposes.

⁶ On June 23, 2014, the U.S Supreme Court decision in the case of *Utility Air Regulatory Group v. EPA* effectively changed the permitting procedures for GHGs under the PSD and Title V programs.

3.3. NEW SOURCE PERFORMANCE STANDARDS

New Source Performance Standards (NSPS), located in 40 CFR 60, require new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology as specified in the applicable provisions. Moreover, any source subject to an NSPS is also subject to the general provisions of NSPS Subpart A, except where expressly noted. The following is a summary of applicability and non-applicability determinations for NSPS regulations of relevance to the wellpad.

3.3.1. NSPS Subparts D, Da, Db, and Dc

These subparts apply to steam generating units of various sizes, all greater than 10 MMBtu/hr. The proposed project does not include any steam generating units, therefore the requirements of these subparts do not apply.

3.3.2. NSPS Subparts K, Ka, and Kb

These subparts apply to storage tanks of certain sizes constructed, reconstructed, or modified during various time periods. Subpart K applies to storage tanks constructed, reconstructed, or modified prior to 1978, and Subpart Ka applies to those constructed, reconstructed, or modified prior to 1984. Both Subparts K and Ka apply to storage tanks with a capacity greater than 40,000 gallons. Subpart Kb applies to volatile organic liquid (VOL) storage tanks constructed, reconstructed, or modified after July 23, 1984 with a capacity equal to or greater than 75 m³ (~19,813 gallons). All of the tanks at the wellpad have a capacity of 19,813 gallons or less. As such, Subparts K, Ka, and Kb do not apply to the storage tanks at the wellpad.

3.3.3. NSPS Subpart OOOO—Crude Oil and Natural Gas Production, Transmission, and Distribution

Subpart OOOO – *Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution*, applies to affected facilities that commenced construction, reconstruction, or modification after August 23, 2011. This NSPS was published in the Federal Register on August 16, 2012, and amended in the Federal Register on September 23, 2013⁷. The list of potentially affected facilities includes:

- > Gas wellheads
- > Centrifugal compressors located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment
- > Reciprocating compressors located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment
- > Continuous bleed natural gas-driven pneumatic controllers with a bleed rate of > 6 scfh located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment (excluding natural gas processing plants)
- > Continuous bleed natural gas-driven pneumatic controllers located at natural gas processing plants
- > Storage vessels in the production, processing, or transmission and storage segments
- > Sweetening units located onshore that process natural gas produced from either onshore or offshore wells

There are six (6) existing produced fluid storage vessels at the wellpad. As part of this project, EQT is proposing to install one (1) new sand separator storage vessel. The storage vessels are controlled by one (1) enclosed combustor with a destruction efficiency greater than 98 percent. The storage vessels at the facility will each have potential VOC

⁷ 78 FR 54816 (<http://www.gpo.gov/fdsys/pkg/FR-2013-09-23/pdf/2013-22010.pdf>)

emissions less than 6 tpy based on the permit application materials and enforceable limits to be included in the G70-A permit. Note that the uncontrolled VOC emissions from the sand separator tank are less than 6 tpy. As such, per 60.5365(e), the tanks are not storage vessel affected facilities under the rule.

The pneumatic controllers were ordered and installed after August 23, 2011 and are therefore potentially subject to NSPS 0000. Per 60.5365(d)(2), a pneumatic controller affected facility is a single continuous bleed natural gas driven pneumatic controller operating at a natural gas bleed rate greater than 6 scfh. No pneumatic controllers installed will meet the definition of a pneumatic controller affected facility. Therefore, these units are not subject to the requirements of Subpart 0000.

3.3.4. Non-Applicability of All Other NSPS

NSPS are developed for particular industrial source categories. Other than NSPS developed for natural gas processing plants (Subparts 0000) and associated equipment (Subparts D-Dc and K-Kb), the applicability of a particular NSPS to the wellpad can be readily ascertained based on the industrial source category covered. All other NSPS are categorically not applicable to the proposed project.

3.4. NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

Part 63 NESHAP allowable emission limits are established on the basis of a maximum achievable control technology (MACT) determination for a particular major source. A HAP major source is defined as having potential emissions in excess of 25 tpy for total HAP and/or potential emissions in excess of 10 tpy for any individual HAP. The wellpad is an Area (minor) source of HAP since its potential emissions of HAP are less than the 10/25 major source thresholds. NESHAP apply to sources in specifically regulated industrial source categories (Clean Air Act Section 112(d)) or on a case-by-case basis (Section 112(g)) for facilities not regulated as a specific industrial source type. Besides 40 CFR 63 Subpart A (NESHAP Subpart A), which is similar to 40 CFR 60 Subpart A (NSPS Subpart A), the following NESHAP could potentially apply to the wellpad:

- > 40 CFR Part 63 Subpart HH – Oil and Natural Gas Production Facilities
- > 40 CFR Part 63 Subpart JJJJJ – Industrial, Commercial, and Institutional Boilers

The applicability of these NESHAP Subparts is discussed in the following sections.

3.4.1. 40 CFR 63 Subpart HH - Oil and Natural Gas Production Facilities

This standard contains requirements for both major and area sources of HAP. At area sources, the only affected source is the triethylene glycol (TEG) dehydration unit (§63.760(b)(2)). The wellpad does not include a triethylene glycol dehydration unit; therefore the requirements of this subpart do not apply.

3.4.2. 40 CFR 63 Subpart JJJJJ - Industrial, Commercial, and Institutional Boilers

This MACT standard applies to industrial, commercial, and institutional boilers of various sizes and fuel types at area sources. The heaters at the wellpad are natural gas-fired and are specifically exempt from this subpart. Therefore, no sources at the wellpad are subject to any requirements under 40 CFR 63 Subpart JJJJJ.

3.5. WEST VIRGINIA SIP REGULATIONS

The wellpad is potentially subject to regulations contained in the West Virginia Code of State Regulations, Chapter 45 (Code of State Regulations). The Code of State Regulations fall under two main categories, those regulations that are generally applicable (e.g., permitting requirements), and those that have specific applicability (e.g., PM standards for manufacturing equipment).

3.5.1. 45 CSR 2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

45 CSR 2 applies to fuel burning units, defined as equipment burning fuel “for the primary purpose of producing heat or power by indirect heat transfer”. The TEGs and line heaters are fuel burning units and therefore must comply with this regulation. Per 45 CSR 2-3, opacity of emissions from units shall not exceed 10 percent. Per 45 CSR 2-4, PM emissions from units will not exceed a level of 0.09 multiplied by the heat design input in MMBtu/hr of the unit.

3.5.2. 45 CSR 4: To Prevent and Control the Discharge of Air Pollutants into the Air Which Causes or Contributes to an Objectionable Odor

According to 45 CSR 4-3:

No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.

The wellpad is generally subject to this requirement. However, due to the nature of the process at the wellpad, production of objectionable odor from the wellpad during normal operation is unlikely.

3.5.3. 45 CSR 6: Control of Air Pollution from the Combustion of Refuse

45 CSR 6 applies to activities involving incineration of refuse, defined as “the destruction of combustible refuse by burning in a furnace designed for that purpose. For the purposes of this rule, the destruction of any combustible liquid or gaseous material by burning in a flare or flare stack, thermal oxidizer or thermal catalytic oxidizer stack shall be considered incineration.” The enclosed combustor is an incinerator and therefore must comply with this regulation. Per 45 CSR 6-4.3, opacity of emissions from units shall not exceed 20 percent, except as provided by 4.4. PM emissions from units will not exceed the levels calculated in accordance with 6-4.1.

3.5.4. 45 CSR 16: Standards of Performance for New Stationary Sources

45 CSR 16-1 incorporates the federal Clean Air Act (CAA) standards of performance for new stationary sources set forth in 40 CFR Part 60 by reference. As such, by complying with all applicable requirements of 40 CFR Part 60 at the wellpad, EQT will be complying with 45 CSR 16.

3.5.5. 45 CSR 17: To Prevent and Control Particulate Matter Air Pollution from Materials Handling, Preparation, Storage and Other Sources of Fugitive Particulate Matter

According to 45 CSR 17-3.1:

No person shall cause, suffer, allow or permit fugitive particulate matter to be discharged beyond the boundary lines of the property lines of the property on which the discharge originates or at any public or residential location, which causes or contributes to statutory air pollution.

Due to the nature of the activities at the wellpad, it is unlikely that fugitive particulate matter emissions will be emitted under normal operating conditions. However, EQT will take measures to ensure any fugitive particulate matter emissions will not cross the property boundary should any such emissions occur.

3.5.6. 45 CSR 34: Emissions Standards for Hazardous Air Pollutants

45 CSR 34-1 incorporates the federal Clean Air Act (CAA) national emissions standards for hazardous air pollutants (NESHAPs) as set forth in 40 CFR Parts 61 and 63 by reference. As such, by complying with all applicable requirements of 40 CFR Parts 61 and 63 at the wellpad, EQT will be complying with 45 CSR 34. Note that there are no applicable requirements under 40 CFR Parts 61 and 63 for the wellpad.

3.5.7. Non-Applicability of Other SIP Rules

A thorough examination of the West Virginia SIP rules with respect to applicability at the wellpad reveals many SIP regulations that do not apply or impose additional requirements on operations. Such SIP rules include those specific to a particular type of industrial operation that is categorically not applicable to the wellpad.

4. G70-A APPLICATION FORMS

The WVDEP permit application forms contained in this application include all applicable G70-A application forms including the required attachments.



WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF AIR QUALITY
 601 57th Street, SE
 Charleston, WV 25304
 Phone: (304) 926-0475 • www.dep.wv.gov/daq

APPLICATION FOR GENERAL PERMIT REGISTRATION
 CONSTRUCT, MODIFY, RELOCATE OR ADMINISTRATIVELY UPDATE
 A STATIONARY SOURCE OF AIR POLLUTANTS

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

CHECK WHICH TYPE OF GENERAL PERMIT REGISTRATION YOU ARE APPLYING FOR:

- | | |
|---|---|
| <input type="checkbox"/> G10-D – Coal Preparation and Handling | <input type="checkbox"/> G40-C – Nonmetallic Minerals Processing |
| <input type="checkbox"/> G20-B – Hot Mix Asphalt | <input type="checkbox"/> G50-B – Concrete Batch |
| <input type="checkbox"/> G30-D – Natural Gas Compressor Stations | <input type="checkbox"/> G60-C – Class II Emergency Generator |
| <input type="checkbox"/> G33-A – Spark Ignition Internal Combustion Engines | <input type="checkbox"/> G65-C – Class I Emergency Generator |
| <input type="checkbox"/> G35-A – Natural Gas Compressor Stations (Flare/Glycol Dehydration Unit) | <input checked="" type="checkbox"/> G70-A – Class II Oil and Natural Gas Production Facility |

SECTION I. GENERAL INFORMATION

1. Name of applicant (as registered with the WV Secretary of State's Office): EQT Production Company		2. Federal Employer ID No. (FEIN): 25-0724685	
3. Applicant's mailing address: 625 Liberty Avenue, Suite 1700 Pittsburgh, PA 15222		4. Applicant's physical address: _____ _____	
5. If applicant is a subsidiary corporation, please provide the name of parent corporation:			
6. WV BUSINESS REGISTRATION. Is the applicant a resident of the State of West Virginia? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO – IF YES, provide a copy of the Certificate of Incorporation/ Organization / Limited Partnership (one page) including any name change amendments or other Business Registration Certificate as Attachment A. – IF NO, provide a copy of the Certificate of Authority / Authority of LLC / Registration (one page) including any name change amendments or other Business Certificate as Attachment A.			

SECTION II. FACILITY INFORMATION

7. Type of plant or facility (stationary source) to be constructed, modified, relocated or administratively updated (e.g., coal preparation plant, primary crusher, etc.): Natural gas wellpad	8a. Standard Industrial Classification Classification (SIC) code: 1311	AND	8b. North American Industry System (NAICS) code: 211111
9. DAQ Plant ID No. (for existing facilities only): 017 - 00066	10. List all current 45CSR13 and other General Permit numbers associated with this process (for existing facilities only): R13-3124 _____ _____		

A: PRIMARY OPERATING SITE INFORMATION

11A. Facility name of primary operating site: WEU-8 Wellpad _____ _____	12A. Address of primary operating site: Mailing: _____ Physical: _____ _____	
13A. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO - IF YES, please explain: Property is leased and held under production rights. _____ - IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.		
14A. - For Modifications or Administrative Updates at an existing facility, please provide directions to the present location of the facility from the nearest state road; - For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a MAP as Attachment F . From West Union, WV go South on WV-18 S for 0.6 miles. Turn right onto US-50 W and go 2.6 miles. Turn left onto Arnolds Creek Rd/Central Station Rd/Right Fork Run Rd proceed 0.5 miles. Turn right onto Co Rte 11/3 and go 0.3 miles. Then the wellpad should be on the left.		
15A. Nearest city or town: West Union	16A. County: Doddridge	17A. UTM Coordinates: Northing (KM): 4346.741 _____ Easting (KM): 516.386 _____ Zone: 17 _____
18A. Briefly describe the proposed new operation or change (s) to the facility: Increased produced water/condensate throughput at the existing WEU-8 pad.		19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: 39.270046 Longitude: -80.809934

B: 1ST ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits) - NA

11B. Name of 1 st alternate operating site: NA _____	12B. Address of 1 st alternate operating site: Mailing: _____ Physical: _____ _____	
13B. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <input type="checkbox"/> YES <input type="checkbox"/> NO - IF YES, please explain: _____ _____ - IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.		
14B. - For Modifications or Administrative Updates at an existing facility, please provide directions to the present location of the facility from the nearest state road; - For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a MAP as Attachment F . _____ _____		

15B. Nearest city or town:	16B. County:	17B. UTM Coordinates: Northing (KM): _____ Easting (KM): _____ Zone: _____
18B. Briefly describe the proposed new operation or change (s) to the facility:		19B. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: _____ Longitude: _____

C: 2ND ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits): - NA

11C. Name of 2 nd alternate operating site: NA	12C. Address of 2 nd alternate operating site: Mailing: _____ Physical: _____
--	---

13C. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? YES NO

– IF YES, please explain: _____

– IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

14C. – For **Modifications or Administrative Updates** at an existing facility, please provide directions to the present location of the facility from the nearest state road;

– For **Construction or Relocation** permits, please provide directions to the proposed new site location from the nearest state road. Include a **MAP as Attachment F**.

15C. Nearest city or town:	16C. County:	17C. UTM Coordinates: Northing (KM): _____ Easting (KM): _____ Zone: _____
18C. Briefly describe the proposed new operation or change (s) to the facility:		19C. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: _____ Longitude: _____

20. Provide the date of anticipated installation or change: ____/____/____ <input type="checkbox"/> If this is an After-The-Fact permit application, provide the date upon which the proposed change did happen: : ____/____/____	21. Date of anticipated Start-up if registration is granted: ____/____/____
---	--

22. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application if other than 8760 hours/year. (Note: anything other than 24/7/52 may result in a restriction to the facility's operation).

Hours per day _____ Days per week _____ Weeks per year _____ Percentage of operation _____

SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS

23. Include a check payable to WVDEP – Division of Air Quality with the appropriate **application fee** (per 45CSR22 and 45CSR13).

24. Include a **Table of Contents** as the first page of your application package.

All of the required forms and additional information can be found under the Permitting Section (General Permits) of DAQ's website, or requested by phone.

25. Please check all attachments included with this permit application. Please refer to the appropriate reference document for an explanation of the attachments listed below.

- ATTACHMENT A : CURRENT BUSINESS CERTIFICATE
- ATTACHMENT B: PROCESS DESCRIPTION
- ATTACHMENT C: DESCRIPTION OF FUGITIVE EMISSIONS
- ATTACHMENT D: PROCESS FLOW DIAGRAM
- ATTACHMENT E: PLOT PLAN
- ATTACHMENT F: AREA MAP
- ATTACHMENT G: EQUIPMENT DATA SHEETS AND REGISTRATION SECTION APPLICABILITY FORM
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- ATTACHMENT M: SITING CRITERIA WAIVER (*not applicable*)
- ATTACHMENT N: MATERIAL SAFETY DATA SHEETS (MSDS) (*not applicable*)
- ATTACHMENT O: EMISSIONS SUMMARY SHEETS
- OTHER SUPPORTING DOCUMENTATION NOT DESCRIBED ABOVE (Equipment Drawings, Aggregation Discussion, etc.)

Please mail an original and two copies of the complete General Permit Registration Application with the signature(s) to the DAQ Permitting Section, at the address shown on the front page of this application. Please DO NOT fax permit applications. For questions regarding applications or West Virginia Air Pollution Rules and Regulations, please refer to the website shown on the front page of the application or call the phone number also provided on the front page of the application.

SECTION IV. CERTIFICATION OF INFORMATION

This 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 a 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, Emission Inventory, Certified Emission Statement, 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 Registration Application will be returned to the applicant.

FOR A CORPORATION (domestic or foreign)

I certify that I am a President, Vice President, Secretary, Treasurer or in charge of a principal business function of the corporation

FOR A PARTNERSHIP

I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

I certify that I am the President or a member of the Board of Directors

FOR A JOINT VENTURE

I certify that I am the President, General Partner or General Manager

FOR A SOLE PROPRIETORSHIP

I certify that I am the Owner and Proprietor

G I hereby certify that (please print or type) Kenneth Kirk
 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 Office of Air Quality immediately, and/or,

I hereby certify that all information contained in this 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

Signature _____
(please use blue ink) Responsible Official: Date

Name & Title _____
(please print or type) Kenneth Kirk, Executive Vice President

Signature _____
(please use blue ink) Authorized Representative (if applicable) Date 12-30-2014

Applicant's Name _____
Alex Bosiljevac, Environmental Coordinator

Phone & Fax _____
Phone 412-395-3699 Fax 412-395-7027

Email _____
abosiljevac@eqt.com

ATTACHMENT A

Current Business Certificate

**WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION
CERTIFICATE**

ISSUED TO:
**EQT PRODUCTION COMPANY
625 LIBERTY AVE 1700
PITTSBURGH, PA 15222-3114**

BUSINESS REGISTRATION ACCOUNT NUMBER: 1022-8081

This certificate is issued on: 08/4/2010

*This certificate is issued by
the West Virginia State Tax Commissioner
in accordance with Chapter 11, Article 12, of the West Virginia Code*

*The person or organization identified on this certificate is registered
to conduct business in the State of West Virginia at the location above.*

This certificate is not transferrable and must be displayed at the location for which issued.
This certificate shall be permanent until cessation of the business for which the certificate of registration
was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

Change in name or change of location shall be considered a cessation of the business and a new
certificate shall be required.

TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of
this certificate displayed at every job site within West Virginia.

ATTACHMENT B

Process Description

ATTACHMENT B: PROCESS DESCRIPTION

This project involves the construction and operation of one (1) sand separator tank and increase in produced fluid throughput at an existing natural gas production wellpad operation.

The WEU-8 wellpad consists of six wells, each with the same basic operation. The incoming gas stream from the underground wells will pass through a sand separator, where sand, water and residual solids are displaced and transferred to the sand separator tank. The gas then flows into a three phase separator which separates water and condensate from the gas stream. The produced fluids in the separator will be transferred to a storage vessel. Emissions from the storage vessels (produced fluid tanks and sand separator tank) are controlled by a single enclosed combustor. Once the tanks are filled, the contents are loaded into trucks for transport. Heat and electricity is provided by a line heater and a thermoelectric generator, respectively.

A process flow diagram is included as Attachment D.

ATTACHMENT C

Description of Fugitive Emissions

G70-A FUGITIVE EMISSIONS SUMMARY SHEET

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants-Chemical Name/CAS ¹	Maximum Potential Uncontrolled Emissions ²		Maximum Potential Controlled Emissions ³		Est. Method Used ⁴
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads	NA					
Unpaved Haul Roads	PM PM ₁₀ PM _{2.5}	1.83	8.01	1.83	8.01	O ^A
		0.47	2.04	0.47	2.04	
		0.05	0.20	0.05	0.20	
		0.63	2.78	0.20	0.87	
Loading/Unloading Operations	VOC HAP	0.01	0.06	<0.01	0.020	O ^B
Equipment Leaks	VOC CO ₂ e HAP	Does not apply	9.58	Does not apply	9.58	O ^C
			683		683	
			0.37		0.37	
Blowdown Emissions	NA					
Other	NA					

^A AP-42 Section 13.2.2

^B AP-42 Section 5.2

^C Protocol for Equipment Leak Estimates (EPA-453/R-95-017), Table 2-1, Nov. 1995.

¹ List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. DO NOT LIST H₂, H₂O, N₂, O₂, and Noble Gases.

² Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

³ Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁴ Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; M = modelling; O = other (specify).

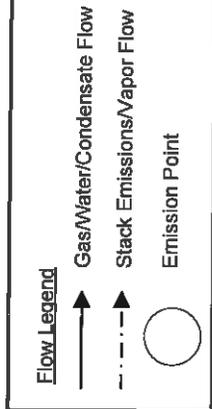
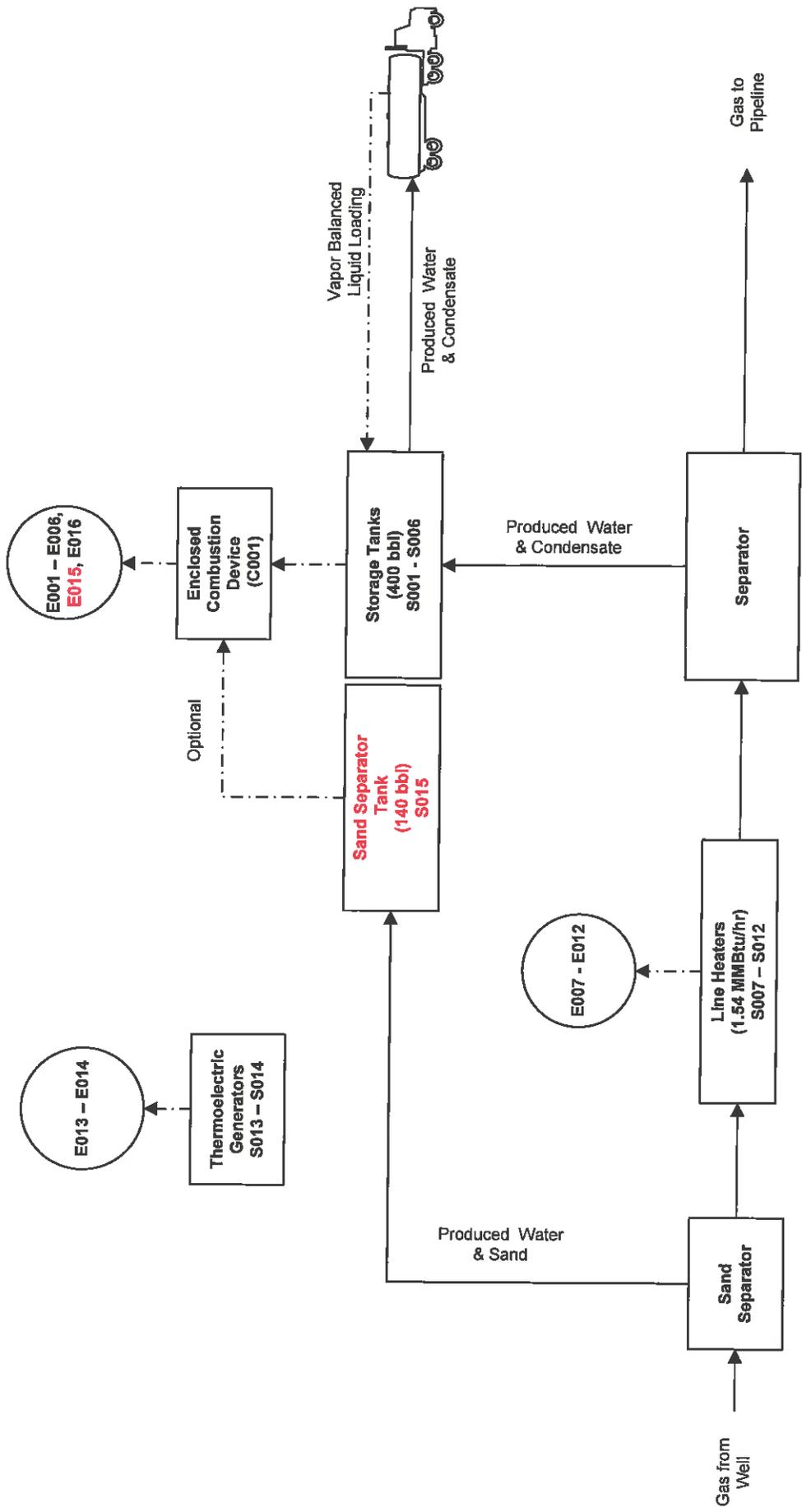
LEAK SOURCE DATA SHEET

Source Category	Pollutant	Number of Source Components ¹	Number of Components Monitored by Frequency ²	Average Time to Repair (days) ³	Estimated Annual Emission Rate (lb/yr) ⁴
Pumps ⁵	light liquid VOC ^{6,7}	1	TBD	TBD	384
	heavy liquid VOC ⁸	---	TBD	TBD	---
	Non-VOC ⁹	---	TBD	TBD	---
Valves ¹⁰	Gas VOC	211	TBD	TBD	4,865
	Light Liquid VOC	---	TBD	TBD	---
	Heavy Liquid VOC	---	TBD	TBD	---
	Non-VOC	---	TBD	TBD	---
	Gas VOC	18	TBD	TBD	7,231
Safety Relief Valves ¹¹	Non VOC	---	TBD	TBD	---
	VOC	15	TBD	TBD	98
Open-ended Lines ¹²	Non-VOC	---	TBD	TBD	---
	VOC	---	TBD	TBD	---
	Non-VOC	---	TBD	TBD	---
Sampling Connections ¹³	VOC	---	TBD	TBD	---
	Non-VOC	---	TBD	TBD	---
Compressors	VOC	---	TBD	TBD	---
	Non-VOC	---	TBD	TBD	---
	VOC	---	TBD	TBD	---
Flanges	VOC	930	TBD	TBD	6,574
	Non-VOC	---	TBD	TBD	---
Other	VOC	---	TBD	TBD	---
	Non-VOC	---	TBD	TBD	---
	VOC	---	TBD	TBD	---

¹⁻¹³ See notes on the following page.

ATTACHMENT D

Process Flow Diagram



EQT Where energy meets innovation.
EQT Production

Process Flow Diagram
WEU-8 Wellpad

Trinity Consultants
January 2015

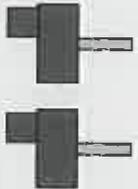
ATTACHMENT E

Plot Plan

**NOTE: This diagram is not to scale.
Locations and distances between surface
equipment are not known at this time.**

Entrance to WEU-8 pad

Thermoelectric
Generators
(2)



Sand Separator
Tank
140 bbl
(1)



Line Heaters
(6)



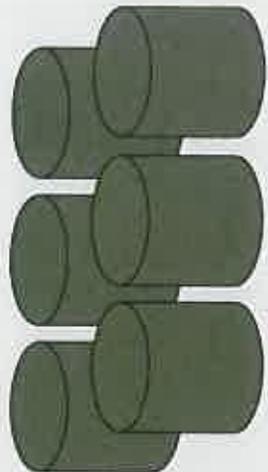
Wellheads (6)



Combustor
11.66 MMBTU/hr



Tanks
400 bbl
(6)



ATTACHMENT F

Area Map

ATTACHMENT F: AREA MAP



Figure 1 - Map of WEU-8 Location

UTM Northing (KM):	4346.741
UTM Easting (KM):	516.386
Elevation (ft):	1085

ATTACHMENT G

Emission Unit Data Sheets and G70-A Section Applicability Form

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

General Permit G70-A was developed to allow qualified applicants to seek registration for a variety of sources. These sources include natural gas well affected facilities, storage tanks, natural gas-fired compressor engines (RICE), natural gas producing units, natural gas-fired in-line heaters, pneumatic controllers, heater treaters, tank truck loading, glycol dehydration units, 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-A 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.

Section 5	Natural Gas Well Affected Facility	<input checked="" type="checkbox"/>
Section 6	Storage Vessels*	<input checked="" type="checkbox"/>
Section 7	Gas Producing Units, In-Line Heaters, Heater Treaters, and Glycol Dehydration Reboilers	<input checked="" type="checkbox"/>
Section 8	Pneumatic Controllers Affected Facility (NSPS, Subpart OOOO)	<input type="checkbox"/>
Section 9	<i>Reserved</i>	<input type="checkbox"/>
Section 10	Natural gas-fired Compressor Engine(s) (RICE) **	<input type="checkbox"/>
Section 11	Tank Truck Loading Facility ***	<input checked="" type="checkbox"/>
Section 12	Standards of Performance for Storage Vessel Affected Facilities (NSPS, Subpart OOOO)	<input type="checkbox"/>
Section 13	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (NSPS, Subpart JJJJ)	<input type="checkbox"/>
Section 14	Control Devices not subject to NSPS, Subpart OOOO	<input checked="" type="checkbox"/>
Section 15	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (40CFR63, Subpart ZZZZ)	<input type="checkbox"/>
Section 16	Glycol Dehydration Units	<input type="checkbox"/>
Section 17	Dehydration Units With Exemption from NESHAP Standard, Subpart HH § 63.764(d) (40CFR63, Subpart HH)	<input type="checkbox"/>
Section 18	Dehydration Units Subject to NESHAP Standard, Subpart HH and Not Located Within an UA/UC (40CFR63, Subpart HH)	<input type="checkbox"/>
Section 19	Dehydration Units Subject to NESHAP Standard, Subpart HH and Located Within an UA/UC (40CFR63, Subpart HH)	<input type="checkbox"/>

* Applicants that are subject to Section 6 may also be subject to Section 12 if the applicant is subject to the NSPS, Subpart OOOO control requirements or the applicable control device requirements of Section 14.

** Applicants that are subject to Section 10 may also be subject to the applicable RICE requirements of Section 13 and/or Section 15.

*** Applicants that are subject to Section 11 may also be subject to control device requirements of Section 14.

NATURAL 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).

Please provide the API number(s) for each NG well at this facility:	
4701706195	
4701706196	
4701706197	
4701706198	
4701706199	
4701706200	

Note: This is the same API 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 (American Petroleum Institute) 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.

STORAGE VESSEL EMISSION UNIT DATA SHEET

Provide the following information for each new or modified bulk liquid storage tank.

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name WEU-8 Wellpad	2. Tank Name Produced Fluid Storage Tanks
3. Emission Unit ID number S001 through S006 (Existing)	4. Emission Point ID number E001 through E006 (Existing)
5. Date Installed or Modified <i>(for existing tanks)</i> 2013/2015 throughput increase	6. Type of change: <input type="checkbox"/> New construction <input type="checkbox"/> New stored material <input checked="" type="checkbox"/> Other (Throughput Increase)
7A. Description of Tank Modification <i>(if applicable)</i> No physical changes to existing tanks.	
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. Provide any limitations on source operation affecting emissions. (production variation, etc.) None	

II. TANK INFORMATION (required)

8. Design Capacity <i>(specify barrels or gallons)</i> . Use the internal cross-sectional area multiplied by internal height. 400 bbl	
9A. Tank Internal Diameter (ft.) ~12	9B. Tank Internal Height (ft.) ~20
10A. Maximum Liquid Height (ft.) ~20	10B. Average Liquid Height (ft.) ~10
11A. Maximum Vapor Space Height (ft.) ~20	11B. Average Vapor Space Height (ft.) ~10
12. Nominal Capacity <i>(specify barrels or gallons)</i> . This is also known as "working volume. 400 bbl	
13A. Maximum annual throughput (gal/yr) ~2,423,148 (each tank)	13B. Maximum daily throughput (gal/day) ~6,639 (each tank)
14. Number of tank turnovers per year ~145 (each tank)	15. Maximum tank fill rate (gal/min)
16. Tank fill method <input type="checkbox"/> Submerged <input checked="" type="checkbox"/> Splash <input type="checkbox"/> Bottom Loading	
17. Is the tank system a variable vapor space system? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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): <input checked="" type="checkbox"/> Fixed Roof <input checked="" type="checkbox"/> vertical <input type="checkbox"/> horizontal <input checked="" type="checkbox"/> flat roof <input type="checkbox"/> cone roof <input type="checkbox"/> dome roof <input type="checkbox"/> other (describe) <input type="checkbox"/> External Floating Roof <input type="checkbox"/> pontoon roof <input type="checkbox"/> double deck roof <input type="checkbox"/> Domed External (or Covered) Floating Roof <input type="checkbox"/> Internal Floating Roof <input type="checkbox"/> vertical column support <input type="checkbox"/> self-supporting <input type="checkbox"/> Variable Vapor Space <input type="checkbox"/> lifter roof <input type="checkbox"/> diaphragm <input type="checkbox"/> Pressurized <input type="checkbox"/> spherical <input type="checkbox"/> cylindrical <input type="checkbox"/> Underground <input type="checkbox"/> Other (describe)	

III. TANK CONSTRUCTION AND OPERATION INFORMATION *(check which one applies)*

<input type="checkbox"/> Refer to enclosed TANKS Summary Sheets
<input checked="" type="checkbox"/> Refer to the responses to items 19 – 26 in section VII

IV. SITE INFORMATION *(check which one applies)*

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 (<i>check one</i>): <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? (<i>check one</i>) <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:
SITE INFORMATION:			
27. Provide the city and state on which the data in this section are based: Charleston, West Virginia			
28. Daily Avg. Ambient Temperature (°F): 54.98		29. Annual Avg. Maximum Temperature (°F): 65.75	
30. Annual Avg. Minimum Temperature (°F): 44.22		31. Avg. Wind Speed (mph): 6.05	
32. Annual Avg. Solar Insulation Factor (BTU/ft ² -day): 1,250.57		33. Atmospheric Pressure (psia): 14.25	
LIQUID INFORMATION:			
34. Avg. daily temperature range of bulk liquid (°F): 57.22	34A. Minimum (°F):	34B. Maximum (°F):	
35. Avg. operating pressure range of tank (psig): 0.3970	35A. Minimum (psig): 0.3161	35B. Maximum (psig): 0.4967	
36A. Minimum liquid surface temperature (°F): 52.97		36B. Corresponding vapor pressure (psia): 0.3161	
37A. Avg. liquid surface temperature (°F): 61.57		37B. Corresponding vapor pressure (psia): 0.3970	
38A. Maximum liquid surface temperature (°F): 70.18		38B. Corresponding vapor pressure (psia): 0.4967	
39. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
39A. Material name and composition:	Produced Water/Condensate		
39B. CAS number:	NA		
39C. Liquid density (lb/gal):	NA		
39D. Liquid molecular weight (lb/lb-mole):	22.49		
39E. Vapor molecular weight (lb/lb-mole):	31.61		
39F. Maximum true vapor pressure (psia):	NA		
39G. Maxim Reid vapor pressure (psia):	NA		
39H. Months Storage per year. From:	12 (All year)		
To:			

STORAGE VESSEL EMISSION UNIT DATA SHEET

Provide the following information for each new or modified bulk liquid storage tank.

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name WEU-8 Wellpad	2. Tank Name Sand Separator Tank
3. Emission Unit ID number S015	4. Emission Point ID number E015
5. Date Installed or Modified (for existing tanks) TBD	6. Type of change: <input checked="" type="checkbox"/> New construction <input type="checkbox"/> New stored material <input type="checkbox"/> Other
7A. Description of Tank Modification (if applicable) Installation of one new tank	
7B. Will more than one material be stored in this tank? If so, a separate form must be completed for each material. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7C. Provide any limitations on source operation affecting emissions. (production variation, etc.) None	

II. TANK INFORMATION (required)

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height. 140 bbl	
9A. Tank Internal Diameter (ft.) ~10	9B. Tank Internal Height (ft.) ~10
10A. Maximum Liquid Height (ft.) ~10	10B. Average Liquid Height (ft.) ~5
11A. Maximum Vapor Space Height (ft.) ~10	11B. Average Vapor Space Height (ft.) ~5
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume. 140 bbl	
13A. Maximum annual throughput (gal/yr) ~141,120	13B. Maximum daily throughput (gal/day) ~387
14. Number of tank turnovers per year ~24	15. Maximum tank fill rate (gal/min)
16. Tank fill method <input type="checkbox"/> Submerged <input checked="" type="checkbox"/> Splash <input type="checkbox"/> Bottom Loading	
17. Is the tank system a variable vapor space system? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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): <input type="checkbox"/> Fixed Roof ___ vertical ___X_ horizontal ___ flat roof ___ cone roof ___ dome roof ___ other (describe) <input type="checkbox"/> External Floating Roof ___ pontoon roof ___ double deck roof <input type="checkbox"/> Domed External (or Covered) Floating Roof <input type="checkbox"/> Internal Floating Roof ___ vertical column support ___ self-supporting <input type="checkbox"/> Variable Vapor Space ___ lifter roof ___ diaphragm <input type="checkbox"/> Pressurized ___ spherical ___ cylindrical <input type="checkbox"/> Underground <input type="checkbox"/> Other (describe)	

III. TANK CONSTRUCTION AND OPERATION INFORMATION (check which one applies)

<input type="checkbox"/> Refer to enclosed TANKS Summary Sheets
<input checked="" type="checkbox"/> Refer to the responses to items 19 – 26 in section VII

IV. SITE INFORMATION (check which one applies)

<input type="checkbox"/> Refer to enclosed TANKS Summary Sheets
<input checked="" type="checkbox"/> Refer to the responses to items 27 – 33 in section VII

V. LIQUID INFORMATION (check which one applies)

<input type="checkbox"/> Refer to enclosed TANKS Summary Sheets
<input checked="" type="checkbox"/> Refer to the responses to items 34 – 39 in section VII

VI. EMISSIONS AND CONTROL DEVICE DATA (required)

40. Emission Control Devices (check as many as apply):

<input type="checkbox"/> Does Not Apply	<input type="checkbox"/> Rupture Disc (psig)
<input type="checkbox"/> Carbon Adsorption ¹	<input type="checkbox"/> Inert Gas Blanket of _____
<input checked="" type="checkbox"/> Vent to Vapor Combustion Device ¹ (vapor combustors, flares, thermal oxidizers) Optional	
<input type="checkbox"/> Condenser ¹	<input type="checkbox"/> Conservation Vent (psig)
<input type="checkbox"/> Other ¹ (describe)	Vacuum Setting Pressure Setting
	<input type="checkbox"/> Emergency Relief Valve (psig)

¹ Complete appropriate Air Pollution Control Device Sheet

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

Material Name and CAS No.	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss (All tanks)		Estimation Method ¹
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
See Attached Emission Calculations									

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.

SECTION VII (required if did not provide TANKS Summary Sheets) See enclosed TANKS summary sheet.

TANK CONSTRUCTION AND OPERATION INFORMATION

19. Tank Shell Construction:
 Riveted Gunite lined Epoxy-coated rivets Other (describe) Welded

20A. Shell Color: Gray 20B. Roof Color: Gray 20C. Year Last Painted:

21. Shell Condition (if metal and unlined):
 No Rust Light Rust Dense Rust Not applicable

22A. Is the tank heated? Yes No 22B. If yes, operating temperature: 22C. If yes, how is heat provided to tank?

23. Operating Pressure Range (psig): -0.03 to 0.70 psig

24. Is the tank a Vertical Fixed Roof Tank? 24A. If yes, for dome roof provide radius (ft): 24B. If yes, for cone roof, provide slop (ft/ft):
 Yes No

25. Complete item 25 for Floating Roof Tanks Does not apply

25A. Year Internal Floaters Installed:

25B. Primary Seal Type (check one): Metallic (mechanical) shoe seal 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:
SITE INFORMATION:			
27. Provide the city and state on which the data in this section are based: Charleston, West Virginia			
28. Daily Avg. Ambient Temperature (°F): 54.98		29. Annual Avg. Maximum Temperature (°F): 65.75	
30. Annual Avg. Minimum Temperature (°F): 44.22		31. Avg. Wind Speed (mph): 6.05	
32. Annual Avg. Solar Insulation Factor (BTU/ft ² -day): 1,250.57		33. Atmospheric Pressure (psia): 14.25	
LIQUID INFORMATION:			
34. Avg. daily temperature range of bulk liquid (°F): 57.22		34A. Minimum (°F):	34B. Maximum (°F):
35. Avg. operating pressure range of tank (psig): 0.3970		35A. Minimum (psig): 0.3161	35B. Maximum (psig): 0.4967
36A. Minimum liquid surface temperature (°F): 52.97		36B. Corresponding vapor pressure (psia): 0.3161	
37A. Avg. liquid surface temperature (°F): 61.57		37B. Corresponding vapor pressure (psia): 0.3970	
38A. Maximum liquid surface temperature (°F): 70.18		38B. Corresponding vapor pressure (psia): 0.4967	
39. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
39A. Material name and composition:	Sand/Produced Water		
39B. CAS number:	NA		
39C. Liquid density (lb/gal):	NA		
39D. Liquid molecular weight (lb/lb-mole):	22.49		
39E. Vapor molecular weight (lb/lb-mole):	31.61		
39F. Maximum true vapor pressure (psia):	NA		
39G. Maxim Reid vapor pressure (psia):	NA		
39H. Months Storage per year. From:	12 (All year)		
To:			

NATURAL GAS FIRED FUEL BURNING UNITS EMISSION DATA SHEET

Complete the information on this data for each Gas Producing Unit(s), Heater Treater(s), and in-line heater(s) at the production pad. Reboiler information should be entered on the Glycol Dehydration Emission Unit Data Sheet.

Emission Unit ID # ¹	Emission Point ID# ²	Emission Unit Description (Manufacturer / Model #)	Year Installed/ Modified	Type ³ and Date of Change	Control Device ⁴	Design Heat Input (mmBtu/hr) ⁵	Fuel Heating Value (Btu/scf) ⁶
S007	E007	Line Heater	2013	Existing; No change	None	1.54	1,050
S008	E008	Line Heater	2013	Existing; No change	None	1.54	1,050
S009	E009	Line Heater	2013	Existing; No change	None	1.54	1,050
S010	E010	Line Heater	2013	Existing; No change	None	1.54	1,050
S011	E011	Line Heater	2013	Existing; No change	None	1.54	1,050
S012	E012	Line Heater	2013	Existing; No change	None	1.54	1,050
S013	E013	Thermoelectric Generator	2013	Existing; No change	None	0.013	1,050
S014	E014	Thermoelectric Generator	2013	Existing; No change	None	0.013	1,050

¹ Enter the appropriate Emission Unit (or Sources) 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 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 Complete appropriate air pollution control device sheet for any control device.

⁵ Enter design heat input capacity in mmBtu/hr.

⁶ Enter the fuel heating value in Btu/standard cubic foot.

TANK TRUCK LOADING EMISSION UNIT DATA SHEET

Furnish the following information for each new or modified bulk liquid transfer area or loading rack at the natural gas production pad. This form is to be used for bulk liquid transfer operations to tank trucks.

1. Emission Unit ID: Liquid Loading	2. Emission Point ID: NA	3. Year Installed/ Modified: NA		
4. Emission Unit Description: Loss of vapors from loading of trucks				
5. Loading Area Data:				
5A. Number of pumps: 1	5B. Number of liquids loaded: 1	5C. Maximum number of tank trucks loading at one time: 1		
6. Describe cleaning location, compounds and procedure for tank trucks: NA				
7. Are tank trucks pressure tested for leaks at this or any other location? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If YES, describe:				
8. Projected Maximum Operating Schedule (for rack or transfer point as a whole):				
Maximum	Jan. - Mar.	Apr. - June	July - Sept.	Oct. - Dec.
hours/day	As needed	As needed	As needed	As needed
days/week	As needed	As needed	As needed	As needed

9. Bulk Liquid Data <i>(add pages as necessary)</i> :			
Liquid Name	Condensate and Produced Water		
Max. daily throughput (1000 gal/day)	Variable		
Max. annual throughput (1000 gal/yr)	~14,680		
Loading Method ¹	Vapor Balanced		
Max. Fill Rate (gal/min)	TBD		
Average Fill Time (min/loading)	TBD		
Max. Bulk Liquid Temperature (°F)	Ambient		
True Vapor Pressure ²	0.50 psia (estimate)		
Cargo Vessel Condition ³	Unknown		
Control Equipment or Method ⁴	VB, ECD		
Minimum collection efficiency (%)	70		
Minimum control efficiency (%)	98		
<i>* Continued on next page</i>			

Maximum Emission Rate	Loading (lb/hr)	VOC	0.20		
		HAP	<0.01		
	Annual (ton/yr)	VOC	0.87		
		HAP	0.02		
Estimation Method ⁵					
Notes:					
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 <i>Air Pollution Control Device Sheets as Attachment "H"</i>): CA = Carbon Adsorption VB = Dedicated Vapor Balance (closed system) ECD = Enclosed Combustion Device F = Flare TO = Thermal Oxidation or Incineration					
⁵ EPA = EPA Emission Factor as stated in AP-42 MB = Material Balance TM = Test Measurement based upon test data submittal O = other (describe)					

10. Proposed Monitoring, Recordkeeping, Reporting, and Testing	
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.	
<p>MONITORING <i>Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment operation/air pollution control device.</i></p> <p>None</p>	<p>RECORDKEEPING <i>Please describe the proposed recordkeeping that will accompany the monitoring.</i></p> <p>None</p>
<p>REPORTING <i>Please describe the proposed frequency of reporting of the recordkeeping.</i></p> <p>None</p>	<p>TESTING <i>Please describe any proposed emissions testing for this process equipment/air pollution control device.</i></p> <p>None</p>
11. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty:	
None	

ATTACHMENT H

Air Pollution Control Device Data Sheets

AIR POLLUTION CONTROL DEVICE

Vapor Combustion Control Device Sheet

Complete this vapor combustion control device sheet for each enclosed combustion device, flare, thermal oxidizer, or completion combustion device that is located at the natural gas production pad for the purpose of thermally destructing waste gas to control emissions of regulated pollutants to the atmosphere.

IMPORTANT: READ THE INSTRUCTIONS ACCOMPANYING THIS FORM BEFORE COMPLETING.			
General Information			
1. Control Device ID#: C001		2. Installation Date: 2013 <input type="checkbox"/> New	
3. Maximum Rated Total Flow Capacity: ~130 scf/min ~188,380 scfd	4. Maximum Design Heat Input: 11.66 MMBtu/hr	5. Design Heat Content: 1,050 BTU/scf	
Control Device Information			
6. Select the type of vapor combustion control device being used: <input checked="" type="checkbox"/> Enclosed Combustion Device <input type="checkbox"/> Elevated Flare <input type="checkbox"/> Ground Flare <input type="checkbox"/> Thermal Oxidizer <input type="checkbox"/> Completion Combustion Device			
7. Manufacturer: LEED Fabrication Model No.: Enclosed Combustor 48"		8. Hours of operation per year: 8760	
9. List the emission units whose emissions are controlled by this vapor combustion control device: (Emission Point ID#: <u>S001-S006</u> , <u>S015</u> , <u>S016</u>)			
10. Emission Unit ID#	Emission Source Description:	Emission Unit ID#	Emission Source Description:
E001 – E006	Existing Produced Fluid Storage Tanks		
E015 (optional)	New Sand Separator Storage Tank		
E016	Liquid Loading		
<i>If this vapor combustor controls emissions from more than six emission units, please attach additional pages.</i>			
11. Assist Type		12. Flare Height	13. Tip Diameter
<input type="checkbox"/> Steam - <input type="checkbox"/> Air - <input type="checkbox"/> Pressure - <input checked="" type="checkbox"/> Non -		~25 ft	~4 ft
		14. Was the design per §60.18? <input type="checkbox"/> Yes <input type="checkbox"/> No NA	
Waste Gas Information			
15. Maximum waste gas flow rate (scfm):	16. Heat value of waste gas stream (BTU/ft3)	17. Temperature of the emissions stream (°F)	18. Exit Velocity of the emissions stream (scf/min)
~130	Variable	~70	
19. Provide an attachment with the characteristics of the waste gas stream to be burned. <i>See attached emission calculations.</i>			

Pilot Information				
20. Type/Grade of pilot fuel:	21. Number of pilot lights:	22. Fuel flow rate to pilot flame per pilot (scf/hr):	23. Heat input per pilot (BTU/hr):	24. Will automatic re-ignition be used?
Pipeline quality natural gas	1	25	26,335	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
25. If automatic re-ignition will be used, describe the method: NA				
26. Describe the method of controlling flame: Three flame cells to stop the main flame front; One 2" flame arrestor on piping from drip pot to burner assembly.				
27. Is pilot flame equipped with a monitor to detect the presence of the flame? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		28. If yes, what type? <input checked="" type="checkbox"/> Thermocouple <input type="checkbox"/> Infra-Red <input type="checkbox"/> Ultra Violet <input type="checkbox"/> Camera with monitoring control room <input type="checkbox"/> Other, describe:		

29. Pollutant(s) Controlled	30. % Capture Efficiency	31. Manufacturer's Guaranteed Control Efficiency (%)
HC	100	≥ 98
VOC	100	≥ 98
HAP	100	≥ 98
32. Has the control device been tested by the manufacturer and certified?		
33. Describe all operating ranges and maintenance procedures required by the manufacturer to maintain warranty: See attached specification sheet.		
34. Additional Information Attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
<i>Please attach a copy of manufacturer's data sheet.</i> <i>Please attach a copy of manufacturer's drawing.</i> <i>Please attach a copy of the manufacturer's performance testing.</i>		

If any of the requested information is not available, please contact the manufacturer.



**Environmental Control Equipment
Data Sheet**

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Project:		Date:	27 February 2014		
P.O. No.:	-	By:	JS		
RFQ No.:	-	Checked:	SG		
Ref. P&ID:	-	Approved:	MS		
Client:		Supplier:	LEED FABRICATION		
Site:		Model No.:	L30-0011-00		
Unit/Lease:		Remarks:	-		

GENERAL

1 Design Code:		NDE:	LEED Fabrication Standards		
2 Service:		Customer Specs:	<input type="checkbox"/> Yes		
3 Description:	Standard Dual Stage 48 High Efficiency Combustor		<input checked="" type="checkbox"/> No		

PROCESS DATA

Gas Composition.	mol %	Process Conditions:		
		Variable	Value	Units
Methane		Flow Rate	Up to 140	Mscfd
Ethane		Pressure	Up to 12	oz/in2
Propane		Temperature		°F
I-Butane		Molecular Weight		
n-Butane		Process/Waste Stream	<input checked="" type="checkbox"/> Gas	<input type="checkbox"/> Liquid
I-Pentane		Detailed Process Description / Process Notes:		
n-Pentane		1. Turndown 10:1. Based on an expected normal operating rate indicated above.		
n-Hexane		2. DRE: 98 % operating at design conditions		
CO2		3. Burner Pressure Drop: Min. 0.10 oz/in2		
N2				
Helium				
H2O				
C7				
C8				
C9				
C10				
C11+				
TOTAL				
Other Components:	PPMV	Available Utilities:		
H2S		Fuel / Pilot Gas	Min. 30psig Natural Gas /Propane 40-50 SCFH	
Benzene		Instrument Air	NA	
Toluene		Power	120 V / 50 Hz or Solar Power	
E-Benzene		Steam	NA	
Xylene		Purge Gas		

DESIGN DATA

27 Ambient Temperatures:		Noise Performance Requirements:	Under 85 dBA	
28 Low, °F	-20	Structural Design Code:		
29 High, °F	120	Wind Design Code:	ASCE	
30 Design Conditions:	Pressure/Temperature			
31 Max. Relative Humidity, %	90	Pressure/Speed	100 mph	
32 Elevation (ASL), ft		Category		
33 Area Classification:	Class I Div 2	Seismic Design Code:		
34 Electrical Design Code:	NEC	Location		

EQUIPMENT SPECIFICATION

35 Type:	<input type="checkbox"/> Elevated <input checked="" type="checkbox"/> Enclosed	Equipment Design:		
36	<input type="checkbox"/> Above Ground	Component	Material / Size / Rating / Other	
37	<input checked="" type="checkbox"/> Stack <input type="checkbox"/> Multiple Stack	Burner		
38	<input type="checkbox"/> Portable / Trailer	Burner Tip / Asslst Gas Burner	304 SS	
39		Burner Body	Carbon Steel	
40 Smokeless By:	<input type="checkbox"/> Steam <input type="checkbox"/> Assist Air	Pilot		
41	<input type="checkbox"/> Gas Asslst <input checked="" type="checkbox"/> Staging	Pilot Tip	304 SS	
42		Pilot Line(s)	Carbon Steel	
43 Stack:	<input checked="" type="checkbox"/> Self Supporting	Firebox / Stack		
44 Flare Burner:	<input type="checkbox"/> Non-Smokeless <input checked="" type="checkbox"/> Smokeless <input type="checkbox"/> Gas Asslst	Shell	Carbon Steel	
45 Pilot:	<input checked="" type="checkbox"/> Intermittent <input type="checkbox"/> Continuous	Piping	Carbon Steel	
46 Pilot Air Inspirator:	<input checked="" type="checkbox"/> Local <input type="checkbox"/> Remote	Nozzles	Carbon Steel	
47 Pilot Flame Control:	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (Thermocouple)	Flanges	Carbon Steel	
48		Insulation	Blanket	
49 Pilot Ignition:	<input type="checkbox"/> Flamefront Generator <input checked="" type="checkbox"/> Inspiring Ignitor	Insulation Pins	304 SS	
50	<input type="checkbox"/> Electronic <input checked="" type="checkbox"/> Automatic <input type="checkbox"/> Manual	Refractory	NA	
51	<input type="checkbox"/> With Pilot Flame Control	Refractory Anchors	NA	
52	<input type="checkbox"/> With Auto Pilot Re-Ignition	Ladders and Platforms	NA	
53		Stack Sample Connections	Per EPA requirements	
54 Pilot Ignition Backup:	<input type="checkbox"/> Manual Specify: i.e Piezo-Electric	Sight Glass	2	
55	<input type="checkbox"/> Battery Pack	Other		



**Environmental Control Equipment
Data Sheet**

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P.O. No.:	-	By:	JS		
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Ref. P&ID:	-	Approved:	MS		
Supplier:	LEED FABRICATION				
Model No.:	L30-0011-00				

Client:	
Site:	
Unit/Lease:	

EQUIPMENT SPECIFICATION

56	Flame Detection:	<input type="checkbox"/> Thermocouple	<input checked="" type="checkbox"/> Ionization Rod	Auxiliary Equipment	
57		<input type="checkbox"/> UV Scanner		Valves	NA
58	General Configuration:			Blowers	NA
59				Dampers	NA
60				Inlet KO / Liquid Seal	NA
61				Flame / Detonation Arrestor	Yes
62				Instrumentation & Controls	
63				Solenoids / Shut-Off Valves	Check with Sales for available config.
64				Flow Meters	NA
65				Calorimeter	NA
66				Pressure Switches/Transmitters	NA
67				Thermocouples	Check with Sales for available config.
68		Temperature Switches/Transmitters	NA		
69		BMS	Check with Sales for available config.		
70		CEMS	NA		
71		Other	NA		
72					
73					
74					
75					

FABRICATION AND INSPECTION

76	Special requirements	<input type="checkbox"/> Skid Mounted	<input checked="" type="checkbox"/> Concrete Pad	Equipment Info	
77		<input type="checkbox"/> Other		Component	Weight / Dimensions
78				Burner	
79	Inspection	<input checked="" type="checkbox"/> Vendor Standard		Burner Assembly	
80		<input type="checkbox"/> Other. Specify:		Stack	
81	Material Certification	<input checked="" type="checkbox"/> Vendor Standard		Stack Assembly	48" OD x 25' H
82		<input type="checkbox"/> MTR		Pilot Tip	
83		<input type="checkbox"/> Certificate of Compliance		Pilot Line(s)	
84		<input type="checkbox"/> Other (Specify):		Stack Assembly	
85	NDE	<input checked="" type="checkbox"/> Vendor Standard		Auxiliary Equipment	
86		<input type="checkbox"/> Radiography. Specify:		Blowers	
87		<input type="checkbox"/> Ultrasonic. Specify:		Inlet KO / Liquid Seal	
88		<input type="checkbox"/> Liquid Penetrant.		Flame / Detonation Arrestor	
89		<input type="checkbox"/> Magnetic Particles.		Skid	
90		<input type="checkbox"/> PMI. Specify:		Instrumentation & Controls	
91		<input type="checkbox"/> Other. Specify:		BMS	
92	Surface Preparation	<input checked="" type="checkbox"/> Vendor Standard		Control Panel	
93		<input type="checkbox"/> Other. Specify:			
94	Paint System	<input checked="" type="checkbox"/> Vendor Standard			
95		<input type="checkbox"/> Other. Specify:			
96	Finished Color	<input checked="" type="checkbox"/> Vendor Standard			
97		<input type="checkbox"/> Other. Specify:			
98					
99					

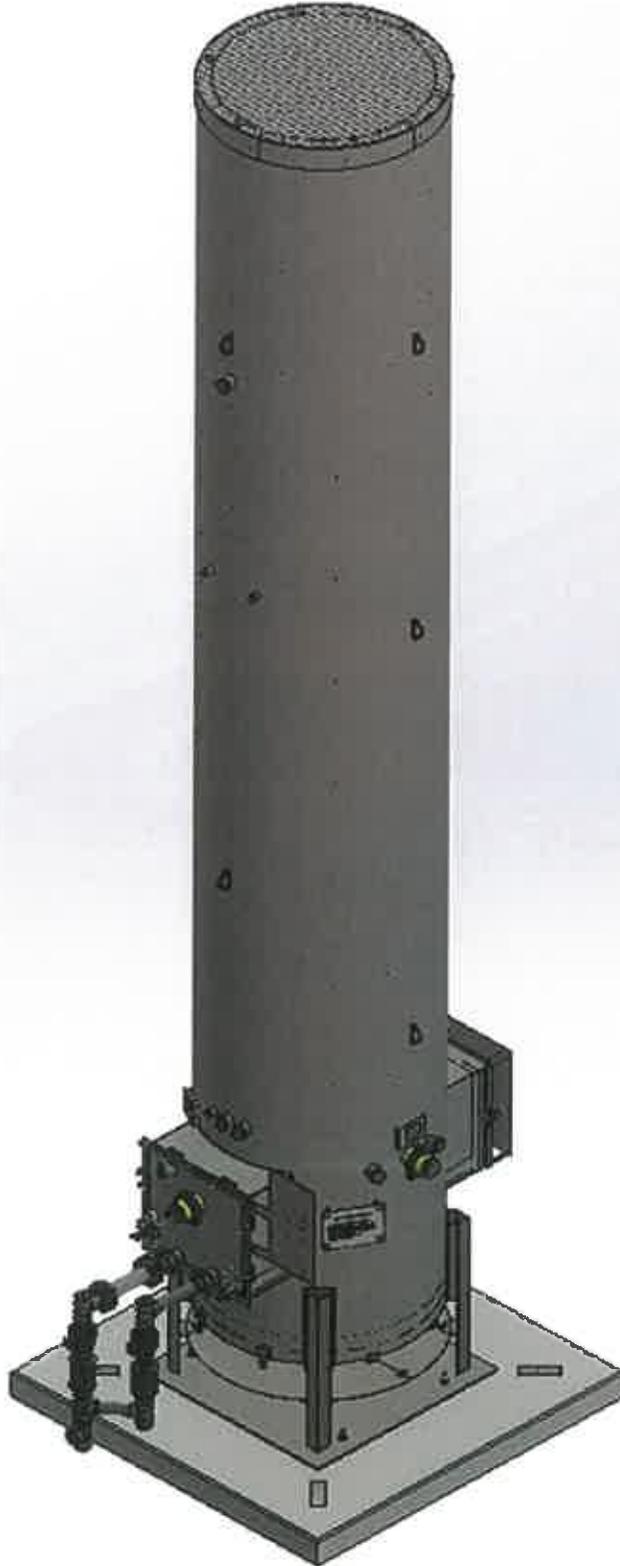
Additional Notes:



**Environmental Control Equipment
Data Sheet**

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Project:		Date:	27 February 2014		
P.O. No.:	-	By:	JS		
RFQ No.:	-	Checked:	SG		
		Approved:	MS		
Client:		Ref. P&ID:	-		
Site:		Remarks:	-		
Unit/Lease:		Supplier:	LEED FABRICATION		
		Model No.:	L30-0011-00		

GENERAL ARRANGEMENT



ATTACHMENT I

Emission Calculations

Company Name: EOT Production, LLC
 Facility Name: WEU-8 Pad
 Project Description: G-70A Permit Application

Site Wide Summary

Emission Source	Value	Units	Emission Unit ID(s)	Emission Point ID(s)	Control Device
Well(s)	6	per pad	---	---	---
Produced Fluid Storage Tank(s)	6	per pad	S001 - S006	E001 - E006	C001
Sand Separator Tank	1	per pad	S015	E015	C001
Line Heater(s)	0	per pad	S007 - S012	E007 - E012	None
Thermoelectric Generator(s) (TEGs)	0	per pad	S013 - S014	E013 - E014	None
Dehydrator(s)	0	per pad	---	---	---
Reboiler(s)	0	per pad	---	---	---
Tank Combustor(s)	1	per pad	C001	C001	N/A
Dehy Combustor(s)	0	per pad	---	---	---
Length of lease road	2,080	feet	---	---	---

Company Name: EOT Production, LLC
 Facility Name: WEU-8 Pad
 Project Description: G-70A Permit Application

Site Wide Summary

Constituent	Prod. Fluid Storage Tanks w/ Combustor (tpy)	Sand Separator Tank (tpy)	Line Heaters (tpy)	IFGs (tpy)	Fugitive Components (tpy)	Liquid Loading (tpy)	Haul Roads (tpy)	Total Emissions (tpy)
Criteria Pollutants								
NO _x	4.87	---	3.85	1.1E-02	---	---	---	8.74
CO	4.09	---	3.23	9.1E-03	---	---	---	7.34
PM Total	0.37	---	2.9E-01	8.2E-04	---	---	8.01	8.68
PM ₁₀ Total	0.37	---	2.9E-01	8.2E-04	---	---	2.04	2.71
PM _{2.5} Total	0.37	---	2.9E-01	8.2E-04	---	---	0.20	0.87
SO ₂	0.03	---	2.3E-02	6.5E-05	---	---	---	0.05
VOC	34.67	0.75	2.1E-01	5.9E-04	9.58	0.87	---	46.08
Greenhouse Gases								
CO ₂	5,988.64	---	4,730.29	13.28	0.20	---	---	10,732
CH ₄	8.78	0.19	8.9E-02	2.5E-04	27.31	---	---	36.37
N ₂ O	0.01	---	8.9E-03	2.5E-05	---	---	---	0.02
CO ₂ e	6,211.58	4.68	4,735.18	13.29	8,139.42	---	---	19,104
Hazardous Air Pollutants								
Methylnaphthalene (2-)	---	---	9.2E-07	2.6E-09	---	---	---	9.3E-07
Methylchloranthrene (3-)	---	---	6.9E-08	1.9E-10	---	---	---	7.0E-08
Dimethylbenz(a)anthracene (7,12-)	---	---	6.2E-07	1.7E-09	---	---	---	6.2E-07
Acenaphthene	---	---	6.9E-08	1.9E-10	---	---	---	7.0E-08
Acenaphthylene	---	---	6.9E-08	1.9E-10	---	---	---	7.0E-08
Anthracene	---	---	9.2E-08	2.6E-10	---	---	---	9.3E-08
Benzo(a)anthracene	---	---	6.9E-08	1.9E-10	---	---	---	7.0E-08
Benzene	6E-03	<0.001	8.1E-05	2.3E-07	2.4E-02	4.4E-04	---	3.1E-02
Benzo(a)pyrene	---	---	4.6E-08	1.3E-10	---	---	---	4.6E-08
Benzo(b)fluoranthene	---	---	6.9E-08	1.9E-10	---	---	---	7.0E-08
Benzo(g,h,i)perylene	---	---	4.6E-08	1.3E-10	---	---	---	4.6E-08
Benzo(k)fluoranthene	---	---	6.9E-08	1.9E-10	---	---	---	7.0E-08
Chrysene	---	---	6.9E-08	1.9E-10	---	---	---	7.0E-08
Dibenzo(a,h)anthracene	---	---	4.6E-08	1.3E-10	---	---	---	4.6E-08
Dichlorobenzene	---	---	4.6E-05	1.3E-07	---	---	---	4.6E-05
Fluoranthene	---	---	1.2E-07	3.2E-10	---	---	---	1.2E-07
Fluorene	---	---	1.1E-07	3.0E-10	---	---	---	1.1E-07
Formaldehyde	---	---	2.9E-03	8.1E-06	---	---	---	2.9E-03
Hexane, n-	3E-01	6E-03	6.9E-02	1.9E-04	1.7E-01	1.8E-02	---	5.3E-01
Indeno(1,2,3-cd)pyrene	---	---	6.9E-08	1.9E-10	---	---	---	7.0E-08
Naphthalene	---	---	2.3E-05	6.6E-08	---	---	---	2.4E-05
Phenanthrene	---	---	6.5E-07	1.8E-09	---	---	---	6.6E-07
Pyrene	---	---	1.9E-07	5.4E-10	---	---	---	1.9E-07
Toluene	1E-02	<0.001	1.3E-04	3.7E-07	1.2E-02	8.2E-04	---	2.5E-02
Arsenic	---	---	7.7E-06	2.2E-08	---	---	---	7.7E-06
Beryllium	---	---	4.6E-07	1.3E-09	---	---	---	4.6E-07
Cadmium	---	---	4.2E-05	1.2E-07	---	---	---	4.2E-05
Chromium	---	---	5.4E-05	1.5E-07	---	---	---	5.4E-05
Cobalt	---	---	3.2E-06	9.1E-09	---	---	---	3.2E-06
Manganese	---	---	1.5E-05	4.1E-08	---	---	---	1.5E-05
Mercury	---	---	1.0E-05	2.8E-08	---	---	---	1.0E-05
Nickel	---	---	8.1E-05	2.3E-07	---	---	---	8.1E-05
Selenium	---	---	9.2E-07	2.6E-09	---	---	---	9.3E-07
Ethylbenzene	<0.001	<0.001	---	---	1.2E-03	4.6E-05	---	1.3E-03
Trimethylpentane (2,2,4-)	2E-01	5E-03	---	---	1.4E-01	3.9E-05	---	3.5E-01
Xylene	6E-03	<0.001	---	---	1.4E-02	6.2E-04	---	2.1E-02
Total HAP	0.49	0.01	0.07	2.04E-04	0.37	0.02	---	0.96

Company Name: EQT Production, LLC
Facility Name: WEU-8 Pad
Project Description: G-70A Permit Application

Produced Fluid Storage Tanks

Throughput Parameter	Value	Units
Operational Hours	8,760	hrs/yr
Total Condensate Throughput ¹	6,810	bbbl/month
Total Produced Water Throughput	22,037	bbbl/month

¹ Condensate throughput only. For calculation purposes, produced water is assumed to contain 1% condensate.

Description	Potential Throughput ¹ (gal/yr)
Produced Water and Condensate	14,538,888

¹ Based on maximum produced water and condensate throughput for the WEU-8 Wellpad, and scaled based on total number of wells at WEU-8.

Storage Tanks (400 bbl, each) - Uncontrolled (Per tank)

Constituent	Total Emissions ¹	
	lb/hr	tpy
Methane	16.496	72.253
Ethane	25.922	113.539
Propane	34.649	151.763
Isobutane	8.532	37.369
n-Butane	14.218	62.276
Isopentane	3.340	14.630
n-Pentane	2.627	11.507
n-Hexane	0.506	2.217
Other Hexanes	0.971	4.253
Heptanes	0.477	2.089
Benzene	0.017	0.074
Toluene	0.018	0.081
Ethylbenzene	0.001	0.003
Xylenes	0.007	0.031
2,2,4-Trimethylpentane	0.390	1.708
C8+ Heavies	0.209	0.914
Total Emissions:	108.564	475.509
Total VOC Emissions:	65.962	288.914
Total HAP Emissions:	0.938	4.110

¹ E&P TANK 2.0 calculates working, breathing and flashing losses and reports the sum as one total.

² E&P TANK 2.0 emission calculations are based on 7/22/2014 condensate sample from WEU-8 Wellpad.

Control Efficiency of Combustor	98%	LEED Guarantee
Pilot Rating	0.03 MMBtu/hr	Max. pilot fuel usage for Leed Enclosed Combustor
Combustor Rating	11.66 MMBtu/hr	Max. input from Leed Enclosed Combustor Operations Manual

Company Name: EOT Production, LLC
Facility Name: WEU-8 Pad
Project Description: G-70A Permit Application

Produced Fluid Storage Tanks

Storage Tanks (400 bbl, each) - Controlled (Per tank)

Constituent	Total Emissions	
	lb/hr	tpy
Methane	0.330	1.445
Ethane	0.518	2.271
Propane	0.693	3.035
Isobutane	0.171	0.747
n-Butane	0.284	1.246
Isopentane	0.067	0.293
n-Pentane	0.053	0.230
n-Hexane	0.010	0.044
Other Hexanes	0.019	0.085
Heptanes	0.010	0.042
Benzene	<0.001	0.001
Toluene	<0.001	0.002
Ethylbenzene	<0.001	<0.001
Xylenes	<0.001	0.001
2,2,4-Trimethylpentane	0.008	0.034
C8+ Heavies	0.004	0.018
Total Emissions:	2.171	9.510
Total VOC Emissions:	1.319	5.778
Total HAP Emissions:	0.019	0.082

Enclosed Combustor Emissions ¹

Pollutant ²	Emission Factor (lb/MMBtu)	Combustor Potential Emissions		Pilot Potential Emissions	
		(lb/hr)	(tpy)	(lb/hr)	(tpy)
NO _x	0.095	1.110	4.864	0.003	0.011
CO	0.080	0.933	4.086	0.002	0.009
PM/PM ₁₀	0.007	0.084	0.370	1.9E-04	0.001
SO ₂	0.001	0.007	0.029	1.5E-05	6.6E-05
CO ₂ (Natural Gas Firing)	116.997	1364.189	5975.146	3.081	13.495
CH ₄ (Natural Gas Firing)	0.002	0.026	0.113	5.8E-05	2.5E-04
N ₂ O (Natural Gas Firing)	2.2E-04	0.003	0.011	5.8E-06	2.5E-05

¹ Emission factors from AP-42 Ch. 1.4 for natural gas combustion were used as they were determined to be most representative of the process. Ch. 5.3 (Natural Gas Processing) was consulted, however, factors contained there are appropriate for amine gas sweetening processes, which is not the case at this facility. Also, Ch. 13.5 (Industrial Flares) was consulted, but since the control device in this case is an enclosed combustor vs. an elevated flare, these factors were also determined to be inappropriate.

² GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

Company Name:
 Facility Name:
 Project Description:

EQT Production, LLC
WEU-8 Pad
G-70A Permit Application

Sand Separator Tank

Throughput Parameter	Value	Units
Tank Capacity	5,880	gallons
Operational Hours	8,760	hrs/yr
Total Produced Water and Sand Throughput	280	bbl/month
Percent Produced Water	50%	%
Total Produced Water Throughput	140	bbl/month

1. Conservatively assumed 2 turnovers/month of sand and produced water. Assumes produced fluids is 1% condensate.

Description	Potential Throughput (gal/yr)
Produced Water and Sand	141,120

Sand Separator Tank (140 bbl) - Uncontrolled (Per tank)

Constituent	Total Emissions ¹	
	lb/hr	tpy
Methane	0.043	0.187
Ethane	0.067	0.294
Propane	0.089	0.392
Isobutane	0.022	0.097
n-Butane	0.037	0.162
Isopentane	0.009	0.039
n-Pentane	0.007	0.031
n-Hexane	0.001	0.006
Other Hexanes	0.003	0.011
Heptanes	0.001	0.006
Benzene	<0.001	<0.001
Toluene	<0.001	<0.001
Ethylbenzene	<0.001	<0.001
Xylenes	<0.001	<0.001
2,2,4-Trimethylpentane	0.001	0.005
C8+ Heavies	<0.001	0.002
Total Emissions:	0.282	1.234
Total VOC Emissions:	0.171	0.751
Total HAP Emissions:	0.002	0.010

¹ E&P TANK 2.0 calculates working, breathing and flashing losses and reports the sum as one total.

² E&P TANK 2.0 emission calculations are based on 7/22/2014 condensate sample from WEU-8 Wellpad.

Company Name:
 Facility Name:
 Project Description:

EOT Production, LLC
WEU-8 Pad
G-70A Permit Application

Sand Separator Tank

Sand Separator Tank (140 bbl) - Controlled (Per tank)

Constituent	Total Emissions	
	lb/hr	tpy
Methane	0.043	0.187
Ethane	0.067	0.294
Propane	0.089	0.392
Isobutane	0.022	0.097
n-Butane	0.037	0.162
Isopentane	0.009	0.039
n-Pentane	0.007	0.031
n-Hexane	0.001	0.006
Other Hexanes	0.003	0.011
Heptanes	0.001	0.006
Benzene	<0.001	<0.001
Toluene	<0.001	<0.001
Ethylbenzene	<0.001	<0.001
Xylenes	<0.001	<0.001
2,2,4-Trimethylpentane	0.001	0.005
C8+ Heavies	<0.001	0.002
Total Emissions:	0.282	1.234
Total VOC Emissions:	0.171	0.751
Total HAP Emissions:	0.002	0.010

¹ All vapors may be routed to the existing enclosed combustor (C001). EQT has assumed no control

Company Name: EQT Production, LLC
Facility Name: WEU-8 Pad
Project Description: G-70A Permit Application

Line Heaters

Parameter	Value	Units
Fuel Used	Natural Gas	
Higher Heating Value (HHV)	1,050	BTU/scf
Heat Input	1.54	MMBtu/hr (each)
Fuel Consumption	1.47E-03	MMscf/hr (each)
Potential Annual Hours of Operation	8,760	hr/yr

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Emission Factor (lb/MMscf) ¹	Potential Emissions	
		(lb/hr) ²	(tons/yr) ³
NO _x	100	0.15	0.64
CO	84	0.12	0.54
SO ₂	0.6	8.8E-04	3.9E-03
PM Total	7.6	1.1E-02	4.9E-02
PM Condensable	5.7	8.4E-03	3.7E-02
PM ₁₀ (Filterable)	1.9	2.8E-03	1.2E-02
PM _{2.5} (Filterable)	1.9	2.8E-03	1.2E-02
VOC	5.5	8.1E-03	3.5E-02
Lead	5.00E-04	7.3E-07	3.2E-06
CO ₂ (Natural Gas Firing) ⁴	122,847	180	788
CH ₄ (Natural Gas Firing) ⁴	2.3	3.4E-03	1.5E-02
N ₂ O (Natural Gas Firing) ⁴	0.23	3.4E-04	1.5E-03

Company Name: EQT Production, LLC
Facility Name: WEU-8 Pad
Project Description: G-70A Permit Application

Line Heaters

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMscf) ¹	Potential Emissions	
		(lb/hr) ²	(tons/yr) ³
HAPs:			
Methylnaphthalene (2-)	2.4E-05	3.5E-08	1.5E-07
3-Methylchloranthrene	1.8E-06	2.6E-09	1.2E-08
7,12-Dimethylbenz(a)anthracene	1.6E-05	2.3E-08	1.0E-07
Acenaphthene	1.8E-06	2.6E-09	1.2E-08
Acenaphthylene	1.8E-06	2.6E-09	1.2E-08
Anthracene	2.4E-06	3.5E-09	1.5E-08
Benz(a)anthracene	1.8E-06	2.6E-09	1.2E-08
Benzene	2.1E-03	3.1E-06	1.3E-05
Benzo(a)pyrene	1.2E-06	1.8E-09	7.7E-09
Benzo(b)fluoranthene	1.8E-06	2.6E-09	1.2E-08
Benzo(g,h,i)perylene	1.2E-06	1.8E-09	7.7E-09
Benzo(k)fluoranthene	1.8E-06	2.6E-09	1.2E-08
Chrysene	1.8E-06	2.6E-09	1.2E-08
Dibenzo(a,h) anthracene	1.2E-06	1.8E-09	7.7E-09
Dichlorobenzene	1.2E-03	1.8E-06	7.7E-06
Fluoranthene	3.0E-06	4.4E-09	1.9E-08
Fluorene	2.8E-06	4.1E-09	1.8E-08
Formaldehyde	7.5E-02	1.1E-04	4.8E-04
Hexane	1.8E+00	2.6E-03	1.2E-02
Indo(1,2,3-cd)pyrene	1.8E-06	2.6E-09	1.2E-08
Naphthalene	6.1E-04	8.9E-07	3.9E-06
Phenanthrene	1.7E-05	2.5E-08	1.1E-07
Pyrene	5.0E-06	7.3E-09	3.2E-08
Toluene	3.4E-03	5.0E-06	2.2E-05
Arsenic	2.0E-04	2.9E-07	1.3E-06
Beryllium	1.2E-05	1.8E-08	7.7E-08
Cadmium	1.1E-03	1.6E-06	7.1E-06
Chromium	1.4E-03	2.1E-06	9.0E-06
Cobalt	8.4E-05	1.2E-07	5.4E-07
Manganese	3.8E-04	5.6E-07	2.4E-06
Mercury	2.6E-04	3.8E-07	1.7E-06
Nickel	2.1E-03	3.1E-06	1.3E-05
Selenium	2.4E-05	3.5E-08	1.5E-07
Total HAP		2.8E-03	1.2E-02

¹ Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

² Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf)

³ Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

⁴ GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

Company Name: EOT Production, LLC
Facility Name: WEU-8 Pad
Project Description: G-70A Permit Application

Thermoelectric Generators (TEGs)

Parameter	Value	Units
Manufacturer	Global Thermoelectric	
Fuel Used	Natural Gas	
Higher Heating Value (HHV)	1,050	BTU/scf
Heat Input	0.013	MMBtu/hr (each)
Fuel Consumption ¹	1.23E-05	MMscf/hr (each)
Potential Annual Hours of Operation	8,760	hr/yr

¹ Global Thermoelectric specification sheet states 311 f³/day at 1000 BTU/ft³.

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Emission Factor (lb/MMscf) ¹	Potential Emissions	
		(lb/hr) ²	(tons/yr) ³
NO _x	100	1.2E-03	5.4E-03
CO	84	1.0E-03	4.5E-03
SO ₂	0.6	7.4E-06	3.2E-05
PM Total	7.6	9.4E-05	4.1E-04
PM Condensable	5.7	7.0E-05	3.1E-04
PM ₁₀ (Filterable)	1.9	2.3E-05	1.0E-04
PM _{2.5} (Filterable)	1.9	2.3E-05	1.0E-04
VOC	5.5	6.8E-05	3.0E-04
Lead	5.00E-04	6.2E-09	2.7E-08
CO ₂ (Natural Gas Firing) ^d	122,847	2	7
CH ₄ (Natural Gas Firing) ^d	2.3	2.9E-05	1.3E-04
N ₂ O (Natural Gas Firing) ^d	0.23	2.9E-06	1.3E-05

Company Name: EQT Production, LLC
Facility Name: WEU-8 Pad
Project Description: G-70A Permit Application

Thermoelectric Generators (TEGs)

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMscf) ¹	Potential Emissions	
		(lb/hr) ²	(tons/yr) ³
HAPs:			
Methylnaphthalene (2-)	2.4E-05	3.0E-10	1.3E-09
3-Methylchloranthrene	1.8E-06	2.2E-11	9.7E-11
7,12-Dimethylbenz(a)anthracene	1.6E-05	2.0E-10	8.6E-10
Acenaphthene	1.8E-06	2.2E-11	9.7E-11
Acenaphthylene	1.8E-06	2.2E-11	9.7E-11
Anthracene	2.4E-06	3.0E-11	1.3E-10
Benz(a)anthracene	1.8E-06	2.2E-11	9.7E-11
Benzene	2.1E-03	2.6E-08	1.1E-07
Benzo(a)pyrene	1.2E-06	1.5E-11	6.5E-11
Benzo(b)fluoranthene	1.8E-06	2.2E-11	9.7E-11
Benzo(g,h,i)perylene	1.2E-06	1.5E-11	6.5E-11
Benzo(k)fluoranthene	1.8E-06	2.2E-11	9.7E-11
Chrysene	1.8E-06	2.2E-11	9.7E-11
Dibenzo(a,h) anthracene	1.2E-06	1.5E-11	6.5E-11
Dichlorobenzene	1.2E-03	1.5E-08	6.5E-08
Fluoranthene	3.0E-06	3.7E-11	1.6E-10
Fluorene	2.8E-06	3.5E-11	1.5E-10
Formaldehyde	7.5E-02	9.3E-07	4.1E-06
Hexane	1.8E+00	2.2E-05	9.7E-05
Indo(1,2,3-cd)pyrene	1.8E-06	2.2E-11	9.7E-11
Naphthalene	6.1E-04	7.5E-09	3.3E-08
Phenanthrene	1.7E-05	2.1E-10	9.2E-10
Pyrene	5.0E-06	6.2E-11	2.7E-10
Toluene	3.4E-03	4.2E-08	1.8E-07
Arsenic	2.0E-04	2.5E-09	1.1E-08
Beryllium	1.2E-05	1.5E-10	6.5E-10
Cadmium	1.1E-03	1.4E-08	5.9E-08
Chromium	1.4E-03	1.7E-08	7.6E-08
Cobalt	8.4E-05	1.0E-09	4.5E-09
Manganese	3.8E-04	4.7E-09	2.1E-08
Mercury	2.6E-04	3.2E-09	1.4E-08
Nickel	2.1E-03	2.6E-08	1.1E-07
Selenium	2.4E-05	3.0E-10	1.3E-09
Total HAP		2.3E-05	1.0E-04

¹ Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

² Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf)

³ Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

⁴ GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

Company Name: EOI Production, LLC
 Facility Name: WEU-8 Pad
 Project Description: G-70A Permit Application

Fugitive Components

Component Counts

Facility Equipment Type ¹	Valves	Connectors	Open-Ended Lines	Pressure Relief Devices
Wellhead	8	38	0.5	0
Separators	1	6	0	0
Meters/Piping	12	45	0	0
Compressors	12	57	0	0
In-line heaters	14	65	2	1
Dehydrators	24	90	2	2

¹ Table W-1B to Subpart W of Part 98 — Default Average Component Counts for Major Onshore Natural Gas Production

Fugitive Emissions from Component Leaks

Equipment Type	Service	Emission Factors ¹ (kg/hr/source)	Facility Equipment Count ² (units)	TOC Total Fugitive Emissions (lb/hr)	TOC Annual Fugitive Emissions (tpy)
Valves	Gas	0.005970	211	2.78	12.16
Pump Seals	Light Liquid	0.019900	1	0.04	0.19
Pressure Relief Valves	Gas	0.104000	18	4.13	18.08
Connectors	All	0.001830	930	3.75	16.43
Open-Ended Lines	All	0.001700	1.5	0.06	0.25
Emission Totals:				10.76	47.11

¹ U.S. EPA. Office of Air Quality Planning and Standards. *Protocol for Equipment Leak Emission Estimates*. Table 2-1. (Research Triangle Park, NC: U.S. EPA EPA-453/R-95-017, 1995). SOCFMI factors were used as it was representative of natural gas liquids extraction.

² Assumes one pump for liquid loading, no compressors or dehydrators, and one meter per wellhead. Pressure relief valves count includes an Enardo valve and Emergency Pressure Relief valve for each storage tank.

VOC and HAP Weight Fractions¹

Service	Weight Fraction VOC	Weight Fraction Hexane	Weight Fraction Benzene	Weight Fraction Toluene	Weight Fraction Ethylbenzene	Weight Fraction 2,2,4-trimethylpentane	Weight Fraction Xylene
Gas	0.20	3.6E-03	5.2E-04	2.6E-04	2.6E-05	3.1E-03	3.0E-04
Light Liquid	1.00	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
All	0.20	3.6E-03	5.2E-04	2.6E-04	2.6E-05	3.1E-03	3.0E-04

¹ All weight fractions from the same representative gas analyses used for other emission calculation.

Company Name: EOT Production, LLC
 Facility Name: WEU-8 Pad
 Project Description: G-70A Permit Application

Fugitive Components

VOC and HAP Fugitive Emissions

Pollutant	Hourly Fugitive Emissions (lb/hr)	Annual Fugitive Emissions (tpy)
VOC	2.19	9.58
Hexane	0.04	0.17
Benzene	0.01	0.02
Toluene	2.8E-03	0.01
Ethylbenzene	2.8E-04	1.2E-03
2,2,4-trimethylpentane	0.03	0.14
Xylene	3.2E-03	0.01
Total HAP	0.08	0.37

GHG Fugitive Emissions from Component Leaks

Component	Component Count	GHG Emission Factor ² (scf/hr/component)	CH ₄ Emissions ^{3,4} (tpy)	CO ₂ Emissions ^{3,4} (tpy)	CO ₂ e Emissions ⁵ (tpy)
Connectors	930	3.0E-03	4.0E-01	3.0E-03	1.0E+01
Open-Ended Lines	15	6.1E-02	1.3E-01	9.8E-04	3.3E+00
Pressure Relief Devices	18	4.0E-02	1.0E-01	7.7E-04	2.6E+00
Pneumatic Devices	30	6.0E+00	2.6E+01	1.9E-01	6.5E+02
Valves	211	2.7E-02	8.2E-01	6.1E-03	2.0E+01
Total			27.3	0.203	683

¹ The component count for pneumatics assumes 5 pneumatics per well

² Population emission factors for gas service in the Eastern U.S. from Table W-1A of Subpart W - Default Whole Gas Emission Factors for Onshore Production, 40 CFR 98, Subpart W, except for pneumatics, which are set at NSPS OOOO limits.

³ Calculated in accordance with Equations W-31, W-35 and W-36 in Subpart W of 40 CFR 98.

⁴ Mole fractions of CH₄ and CO₂ based on gas analysis:

CH ₄	77.49%	CO ₂	0.21%
Carbon Dioxide (CO ₂)	1	Methane (CH ₄)	25

⁵ Carbon equivalent emissions (CO₂e) are based on the following Global Warming Potentials (GWP) from 40 CFR Part 98, Table A-1:

Company Name: EQT Production, LLC
 Facility Name: WEU-8 Pad
 Project Description: G-70A Permit Application

Liquid Loading

Liquid Loading Losses:

Uncontrolled Loading Losses: L_L (lb/10³ gal) = 12.46 (SPM)/T

Controlled Loading Losses: L_L (lb/10³ gal) = 12.46 (SPM)/T * (1 - collection efficiency * control efficiency)

Parameter	Value	Description
S	1.00	saturation factor for vapor balancing (AP-42 Table 5.2-1)
Collection Efficiency	70%	collection efficiency for non-NSPS/MACT annual leak tested trucks
Control Efficiency	98%	control efficiency of combustor
P	0.50	max true vapor pressure of liquid loaded (psia) - TANKS Data
M	31.61	molecular weight of vapors (lb/lb-mol) - TANKS Data
T	516.9	temperature of liquids loaded (deg R) - TANKS Data

Description	Loading Losses (lb/10 ³ gal)	Maximum Throughput ¹ (gal)	VOC Emissions	
			Uncontrolled (tpy)	Controlled (tpy)
Liquids Hauling	0.4	14,680,008	2.78	0.87

¹ Sum of the annual throughput from each well at the pad including the sand separator tank.

Speciated HAP Emission Potential:

Constituent	mol% ¹	True Vapor Pressure of Organic Compounds in liquid (psia) ²	Partial Vapor Pressure (psia)	Mole Fraction	Molecular Weight	VOC Vapor Weight	Speciated Weight Fraction	Speciated Liquid Loading Emissions (tpy)
Methane	0.095	---	---	---	---	---	---	---
Ethane	0.602	---	---	---	---	---	---	---
Propane	1.646	127.310	2.10	0.32	44.10	14.13	0.20	0.17
Isobutane	0.867	46.110	0.40	6.1E-02	58.12	3.55	4.9E-02	4.3E-02
n-Butane	2.986	32.045	0.96	0.15	58.12	8.51	0.12	0.10
Isopentane	3.103	12.530	0.39	5.9E-02	72.15	4.29	5.9E-02	5.2E-02
n-Pentane	3.943	8.433	0.33	5.1E-02	72.15	3.67	5.1E-02	4.4E-02
n-Hexane	4.692	2.436	0.11	1.7E-02	85.67	1.50	2.1E-02	1.8E-02
Other Hexanes	4.939	2.436	0.12	1.8E-02	86.18	1.59	2.2E-02	1.9E-02
Heptanes	14.686	0.735	0.11	1.7E-02	97.88	1.62	2.2E-02	2.0E-02
Benzene	0.200	1.508	3.0E-03	4.6E-04	78.11	3.6E-02	5.0E-04	4.4E-04
Toluene	1.138	0.425	4.8E-03	7.4E-04	92.14	6.8E-02	9.4E-04	8.2E-04
Ethylbenzene	0.155	0.151	2.3E-04	3.6E-05	106.17	3.8E-03	5.3E-05	4.6E-05
Xylenes	1.763	0.180	3.2E-03	4.8E-04	106.17	5.1E-02	7.1E-04	6.2E-04
2,2,4-Trimethylpentane	0.031	0.596	1.8E-04	2.8E-05	114.23	3.2E-03	4.5E-05	3.9E-05
C8+ Heavies	59.154	3.4	2.01	0.31	107.73	33.14	0.46	0.40
	100.0		6.54			72.15	1.00	
Total Emissions:								0.87
Total HAP Emissions:								0.02

¹ An atmospheric analysis of a representative condensate sample (from wellpad OXF-131, Well #512441) is utilized to estimate the composition.

² Emission factors from AP-42 Section 7.1 "Liquid Storage Tanks" Tables 7.1-2, 7.1-3 and 7.1-5 (at 70 deg F or -21 deg C) and Handbook of Chemistry and Physics: 84th Edition (at 295 K)

³ Speciated emissions (tpy) = Speciated Weight Fraction x Calculated Controlled Liquid Loading Emissions (tpy). As methane and ethane will flash off prior to loading, the emissions from these constituents are not included in the speciation.

Company Name: EOT Production, LLC
Facility Name: WEU-8 Pad
Project Description: G-70A Permit Application

Haul Roads

Estimated Potential Road Fugitive Emissions

Unpaved Road Emissions

Unpaved Roads: $E \text{ (lb/VMT)} = k(s/12)^a(W/3)^b * [(365-p)/365]$

	PM	PM₁₀	PM_{2.5}	
k Factor (lb/VMT)	4.9	1.5	0.15	AP-42 Table 13.2.2-2 (Final, 11/06)
Silt content, s	4.8	%		AP-42 Table 13.2.2-1 (11/06), for Sand and Gravel Processing
Number of Rain Days, p	150			AP-42 Figure 13.2.1-2
a	0.7	0.9	0.9	AP-42 Table 13.2.2-2 (Final, 11/06)
b	0.45	0.45	0.45	AP-42 Table 13.2.2-2 (Final, 11/06)

Description	Weight of Empty Truck (tons)	Weight of Truck w/ Max Load (tons)	Mean Vehicle Weight (tons)	Length of Unpaved Road Traveled (mile/trip)	Trips Per Year	Mileage Per Year	Control (%)	Emissions (tpy)		
								PM	PM ₁₀	PM _{2.5}
Liquids Hauling	20	40	30	1.00	3,670	3,670	0	7.86	2.00	0.200
Employee Vehicles	3	3	3	1.00	200	200	0	0.15	0.04	0.004
Total Potential Emissions								8.01	2.04	0.20

Company Name: EQT Production, LLC
 Facility Name: WEU-8 Pad
 Project Description: G-70A Permit Application

Combustor Flow Rate Calculations

TANK GAS STREAM (FROM E&P TANKS 2.0)					
Component	lb/hr	lb-mol/hr	mol%	MW lb/lb-mol	MW in Mixture
Carbon Dioxide	1.098	0.025	0.001	44.010	0.057
Nitrogen	<0.001	<0.001	<0.001	28.000	<0.001
Methane	99.019	6.173	0.323	16.040	5.184
Ethane	155.599	5.175	0.271	30.070	8.146
Propane	207.983	4.716	0.247	44.100	10.888
Isobutane	51.214	0.881	0.046	58.120	2.681
n-Butane	85.345	1.468	0.077	58.120	4.468
Isopentane	20.049	0.278	0.015	72.150	1.050
n-Pentane	15.769	0.219	0.011	72.150	0.825
n-Hexane	3.037	0.035	0.002	85.667	0.159
Other Hexanes	5.829	0.068	0.004	86.177	0.305
Heptanes	2.863	0.029	0.002	97.880	0.150
2,2,4-Trimethylpentane	2.341	0.020	0.001	114.230	0.123
Benzene	0.102	0.001	6.8E-05	78.110	0.005
Toluene	0.108	0.001	6.1E-05	92.140	0.006
Ethylbenzene	0.006	5.7E-05	3.0E-06	106.170	3.1E-04
Xylenes	0.042	4.0E-04	2.1E-05	106.170	0.002
C8 + Heavies	1.254	0.012	6.1E-04	107.726	0.066

Total	651.66	19.10		34.11	lb/lbmole
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1. Representative gas stream from the produced water storage tanks and sand separator storage tank are flowing to the combustor.

Combustor Rating	11.66 MMBtu/hr	Max. input from Leed Enclosed Combustor Operations Manual
Pilot Rating	0.03 MMBtu/hr	Max. pilot fuel usage for Leed Enclosed Combustor
Pilot Rating	26,335 btu/hr	
Pilot Fuel Usage	25 scf/hr	
Combustor Flow Capacity	188.38 MSCFD	Max. flowrate from LEED Combustor Operations Manual
	7,849 scf/hr	
	131 scf/min	

Enclosed Combustor Mass Flow Rate (C001)

$$\frac{7,849 \text{ scf}}{\text{hr}} \times \frac{1 \text{ lbmole}}{379 \text{ scf}} \times \frac{34.11 \text{ lb}}{\text{lbmole}} = 707 \frac{\text{lb}}{\text{hr}}$$

Mass flow rate (lb/hr) = $\frac{\text{Maximum Rated total flow capacity (scf/hr)} \times \text{Vapor Molecular Weight (lb/lbmole)}}{\text{Molar Gas Volume (scf/lbmole)}}$

Company Name: EQT Production, LLC
Facility Name: WEU-8 Pad
Project Description: G-70A Permit Application

Gas Analysis

Sample Location: Average of OXF127, OXF134, OXF136, OXF138, OXF150, OXF153, WEU1, & WEU2
HHV (Btu/scf): 1,050

Constituent	Molecular Weight	Average Weight Fraction	Natural Gas Stream Speciation (Wt. %)
Carbon Dioxide	44.01	0.004	0.443
Nitrogen	28.01	0.006	0.615
Methane	16.04	0.595	59.519
Ethane	30.07	0.208	20.801
Propane	44.10	0.097	9.672
Isobutane	58.12	0.016	1.611
n-Butane	58.12	0.032	3.200
Isopentane	72.15	0.009	0.945
n-Pentane	72.15	0.010	0.957
n-Hexane	86.18	0.004	0.363
Cyclohexane	84.16	6.1E-04	0.061
Other Hexanes	86.18	0.005	0.532
Heptanes	100.21	0.004	0.429
2,2,4-Trimethylpentane	114.23	0.003	0.305
Benzene*	78.11	5.2E-04	0.052
Toluene*	92.14	2.6E-04	0.026
Ethylbenzene*	106.17	2.6E-05	0.003
Xylenes*	106.16	3.0E-04	0.030
C8 + Heavies	114.23	0.004	0.370
Totals		1.00	100

¹ Per email from Regina Henry, EQT, to Tom Muscenti, Trinity, on 10/10/2012

TOC (Total)	98.87
VOC (Total)	18.55
HAP (Total)	0.78

20141229_EQT_WEU8_Produced Fluid Tanks.txt

* Project Setup Information

*

Project File : \\tsclient\Z\Client\EQT Corporation\west Virginia\WV
Production Wells\143901.0023\WEU 8\02 Draft\20141229 WEU-8 G70 Application\Attach I
- Emission Calcs\E&P TANK\20141229_EQT_WEU8_Produced Fluid Tanks.ept
Flowsheet Selection : Oil Tank with Separator
Calculation Method : RVP Distillation
Control Efficiency : 98.0%
Known Separator Stream : Low Pressure Oil
Entering Air Composition : No

Filed Name : EQT - WEU-8 Produced Fluid Storage Tanks
Well Name : PTE for G70 Application
Date : 2014.12.29

* Data Input

*

Separator Pressure : 380.00[psig]
Separator Temperature : 60.00[F]
Ambient Pressure : 14.70[psia]
Ambient Temperature : 55.00[F]
C10+ SG : 0.7434
C10+ MW : 117.749

-- Low Pressure Oil

No.	Component	mol %
1	H2S	0.0000
2	O2	0.0000
3	CO2	0.0560
4	N2	0.0000
5	C1	13.8400
6	C2	11.6040
7	C3	10.8340
8	i-C4	3.2330
9	n-C4	8.0930
10	i-C5	4.7120
11	n-C5	5.4070
12	C6	5.5800
13	C7	8.6890
14	C8	1.9800
15	C9	4.5790
16	C10+	8.1610
17	Benzene	0.1480
18	Toluene	0.6090
19	E-Benzene	0.0810
20	Xylenes	0.8820
21	n-C6	3.8640
22	2,2,4-Trimethylp	7.6480

-- Sales Oil

20141229_EQT_WEU8_Produced Fluid Tanks.txt

Production Rate : 38.7[bb1/day]
 Days of Annual Operation : 365 [days/year]
 API Gravity : 59.11
 Reid Vapor Pressure : 10.60[psia]

* Calculation Results

-- Emission Summary

Item	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
Total HAPs	4.110	0.938	0.082	0.019
Page 1	E&P TANK			
Total HC	474.706	108.380	9.494	2.168
VOCs, C2+	402.453	91.884	8.049	1.838
VOCs, C3+	288.914	65.962	5.778	1.319

Uncontrolled Recovery Info.

Vapor	28.9500	[MSCFD]
HC Vapor	28.9100	[MSCFD]
GOR	748.06	[SCF/bbl]

-- Emission Composition

No	Component	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
1	H2S	0.000	0.000	0.000	0.000
2	O2	0.000	0.000	0.000	0.000
3	CO2	0.802	0.183	0.802	0.183
4	N2	0.000	0.000	0.000	0.000
5	C1	72.253	16.496	1.445	0.330
6	C2	113.539	25.922	2.271	0.518
7	C3	151.763	34.649	3.035	0.693
8	i-C4	37.369	8.532	0.747	0.171
9	n-C4	62.276	14.218	1.246	0.284
10	i-C5	14.630	3.340	0.293	0.067
11	n-C5	11.507	2.627	0.230	0.053
12	C6	4.253	0.971	0.085	0.019
13	C7	2.089	0.477	0.042	0.010
14	C8	0.141	0.032	0.003	0.001
15	C9	0.109	0.025	0.002	0.000
16	C10+	0.664	0.152	0.013	0.003
17	Benzene	0.074	0.017	0.001	0.000
18	Toluene	0.081	0.018	0.002	0.000
19	E-Benzene	0.003	0.001	0.000	0.000
20	Xylenes	0.031	0.007	0.001	0.000
21	n-C6	2.217	0.506	0.044	0.010
22	2,2,4-Trimethylp	1.708	0.390	0.034	0.008
	Total	475.509	108.564	9.510	2.171

-- Stream Data

No. Component	MW	LP oil	Flash oil	Sale oil	Flash Gas	W&S Gas
Total Emissions		mol %	mol %	mol %	mol %	mol %

20141229_EQT_WEU8_Produced Fluid Tanks.txt

mol %						
1 H2S	34.80	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000						
2 O2	32.00	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000						
3 CO2	44.01	0.0560	0.0054	0.0000	0.1593	0.0366
0.1307						
4 N2	28.01	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000						
5 C1	16.04	13.8400	0.3455	0.0000	41.4216	2.3236
32.3107						
6 C2	30.07	11.6040	2.3741	0.0012	30.4691	15.9625
27.0887						
7 C3	44.10	10.8340	7.2173	0.4513	18.2263	45.9676
24.6907						
8 i-C4	58.12	3.2330	3.4886	2.1994	2.7106	10.8724
4.6125						
9 n-C4	58.12	8.0930	9.7333	8.3976	4.7404	17.3843
7.6867						
10 i-C5	72.15	4.7120	6.5374	7.1527	0.9810	3.0142
1.4547						
11 n-C5	72.15	5.4070	7.6802	8.6012	0.7608	2.4059
1.1441						
12 C6	86.16	5.5800	8.1976	9.4889	0.2298	0.8022
0.3632						
13 C7	100.20	8.6890	12.8966	15.0839	0.0891	0.3697
0.1545						
14 C8	114.23	1.9800	2.9464	3.4568	0.0047	0.0237
0.0091						
15 C9	128.28	4.5790	6.8180	8.0052	0.0028	0.0182
0.0064						
16 C10+	117.75	8.1610	12.1438	14.2455	0.0204	0.1074
0.0407						
17 Benzene	78.11	0.1480	0.2184	0.2538	0.0042	0.0152
0.0068						
18 Toluene	92.13	0.6090	0.9053	1.0606	0.0035	0.0155
0.0063						
19 E-Benzene	106.17	0.0810	0.1206	0.1415	0.0001	0.0006
0.0002						
20 Xylenes	106.17	0.8820	1.3130	1.5413	0.0010	0.0057
0.0021						
21 n-C6	86.18	3.8640	5.6989	6.6210	0.1136	0.4183
0.1846						
22 224Trimethylp	114.24	7.6480	11.3596	13.2982	0.0619	0.2566
0.1073						
MW		68.66	87.57	94.54	29.99	47.69
34.11						
Stream Mole Ratio		1.0000	0.6715	0.5717	0.3285	0.0998
0.4283						
Heating Value [BTU/SCF]					1756.81	2705.49
1977.88						
Gas Gravity [Gas/Air]					1.04	1.65
1.18						
Bubble Pt. @ 100F [psia]		519.45	47.11	11.12		
RVP @ 100F [psia]		163.78	31.17	10.59		

Page 2-----E&P TANK
 Spec. Gravity @ 100F 0.613 0.663 0.676

20141229_EQT_WEU8_Produced Fluid Tanks.txt

* Project Setup Information *

Project File : \\Pit-dc1\p\Client\EQT Corporation\West Virginia\WV Production Wells\143901.0023\WEU 8\02 Draft\20141027 G70\Attach I - Emission Calcs\E&P TANK\20141028_EQT_WEU8_Condensate Tanks.ept
Flowsheet Selection : Oil Tank with Separator
Calculation Method : RVP Distillation
Control Efficiency : 98.0%
Known Separator Stream : Low Pressure Oil
Entering Air Composition : No

Filed Name : EQT - WEU-8 Sand Separator Tanks
Well Name : PTE for G70 Application
Date : 2014.10.28

* Data Input *

Separator Pressure : 1000.00[psig]
Separator Temperature : 60.00[F]
Ambient Pressure : 14.70[psia]
Ambient Temperature : 55.00[F]
C10+ SG : 0.7434
C10+ MW : 117.749

-- Low Pressure Oil -----

Table with 3 columns: No., Component, mol %. Rows include H2S, O2, CO2, N2, C1, C2, C3, i-C4, n-C4, i-C5, n-C5, C6, C7, C8, C9, C10+, Benzene, Toluene, E-Benzene, Xylenes, n-C6, and 224Trimethylp.

== Sales Oil -----

Production Rate : 0.1[bb]/day
 Days of Annual Operation : 365 [days/year]
 API Gravity : 59.11
 Reid Vapor Pressure : 10.60[psia]

 * Calculation Results *

-- Emission Summary -----

Item	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
Total HAPs	0.010	0.002	0.000	0.000
Page 1----- E&P TANK				
Total HC	1.232	0.281	0.025	0.006
VOCs, C2+	1.045	0.239	0.021	0.005
VOCs, C3+	0.751	0.171	0.015	0.003

Uncontrolled Recovery Info.

Vapor 74.9700 x1E-3 [MSCFD]
 HC Vapor 74.8800 x1E-3 [MSCFD]
 GOR 749.70 [SCF/bbl]

-- Emission Composition -----

No	Component	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
1	H2S	0.000	0.000	0.000	0.000
2	O2	0.000	0.000	0.000	0.000
3	CO2	0.002	0.000	0.002	0.000
4	N2	0.000	0.000	0.000	0.000
5	C1	0.187	0.043	0.004	0.001
6	C2	0.294	0.067	0.006	0.001
7	C3	0.392	0.089	0.008	0.002
8	i-C4	0.097	0.022	0.002	0.000
9	n-C4	0.162	0.037	0.003	0.001
10	i-C5	0.039	0.009	0.001	0.000
11	n-C5	0.031	0.007	0.001	0.000
12	C6	0.011	0.003	0.000	0.000
13	C7	0.006	0.001	0.000	0.000
14	C8	0.000	0.000	0.000	0.000
15	C9	0.000	0.000	0.000	0.000
16	C10+	0.002	0.000	0.000	0.000
17	Benzene	0.000	0.000	0.000	0.000
18	Toluene	0.000	0.000	0.000	0.000
19	E-Benzene	0.000	0.000	0.000	0.000
20	Xylenes	0.000	0.000	0.000	0.000
21	n-C6	0.006	0.001	0.000	0.000
22	224Trimethylp	0.005	0.001	0.000	0.000
Total		1.234	0.282	0.025	0.006

-- Stream Data -----

No. Component MW LP Oil Flash Oil Sale Oil Flash Gas W&S Gas Total Emissions

	mol %	mol %	mol %	mol %	mol %	mol %	mol %
1 H2S	34.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2 O2	32.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3 CO2	44.01	0.0560	0.0053	0.0000	0.1578	0.0365	0.1305
4 N2	28.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5 C1	16.04	13.8400	0.3375	0.0000	40.9492	2.3343	32.2636
6 C2	30.07	11.6040	2.2981	0.0012	30.2877	15.8894	27.0491
7 C3	44.10	10.8340	7.0403	0.4655	18.4508	45.9509	24.6364
8 i-C4	58.12	3.2330	3.4483	2.2045	2.8007	10.8096	4.6022
9 n-C4	58.12	8.0930	9.6651	8.3639	4.9366	17.3673	7.7327
10 i-C5	72.15	4.7120	6.5426	7.1302	1.0368	3.0650	1.4930
11 n-C5	72.15	5.4070	7.6976	8.5834	0.8080	2.4556	1.1786
12 C6	86.16	5.5800	8.2365	9.4891	0.2465	0.8237	0.3763
13 C7	100.20	8.6890	12.9687	15.0957	0.0965	0.3811	0.1605
14 C8	114.23	1.9800	2.9636	3.4603	0.0051	0.0245	0.0095
15 C9	128.28	4.5790	6.8582	8.0138	0.0031	0.0188	0.0066
16 C10+	117.75	8.1610	12.2147	14.2600	0.0223	0.1107	0.0422
17 Benzene	78.11	0.1480	0.2195	0.2539	0.0045	0.0156	0.0070
18 Toluene	92.13	0.6090	0.9104	1.0616	0.0038	0.0160	0.0065
19 E-Benzene	106.17	0.0810	0.1213	0.1417	0.0001	0.0006	0.0002
20 Xylenes	106.17	0.8820	1.3207	1.5429	0.0011	0.0059	0.0022
21 n-C6	86.18	3.8640	5.7277	6.6229	0.1222	0.4300	0.1915
22 224Trimethylp	114.24	7.6480	11.4239	13.3095	0.0671	0.2646	0.1115

MW	68.66	87.79	94.56	30.24	47.74	34.17	
Stream Mole Ratio	1.0000	0.6675	0.5710	0.3325	0.0965	0.4290	
Heating Value [BTU/SCF]				1770.01	2708.27	1981.06	
Gas Gravity [Gas/Air]				1.04	1.65	1.18	
Bubble Pt. @ 100F [psia]	519.45	46.08	11.13				
RVP @ 100F [psia]	163.78	30.54	10.59				
Page 2-----							E&P TANK
Spec. Gravity @ 100F	0.613	0.663	0.676				

ATTACHMENT ↓

Class I Legal Advertisement

**AIR QUALITY PERMIT NOTICE
Notice of Application**

Notice is given that EQT Production has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Class II General Permit (G70-A) for the existing natural gas production wellpad WEU-8. The facility is located in Doddridge County, West Virginia, about 3.4 miles southwest of West Union, WV at 39.270046, -80.809934.

The applicant estimates the potential to discharge the following Regulated Air Pollutants associated with this facility:

Pollutant	Emissions (tons per year)
NO _x	8.74
CO	7.34
VOC	46.08
SO ₂	0.05
PM	8.68
Total HAPs	0.96
Carbon Dioxide Equivalents (CO ₂ e)	19,104

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 1227, during normal business hours.

Dated this the 30th day of December, 2014.

By: EQT Production
Kenneth Kirk, Executive Vice President
625 Liberty Ave Suite 1700
Pittsburgh, PA 15222

ATTACHMENT K

Electronic Submittal (*not applicable*)

ATTACHMENT L

General Permit Registration Application Fee

ATTACHMENT M

Siting Criteria Waiver (*not applicable*)

ATTACHMENT N

Material Safety Data Sheet (*not applicable*)

ATTACHMENT O

Emission Summary Sheet

G70-A EMISSIONS SUMMARY SHEET

Emission Point ID No.	Emission Point Type ¹	Emission Unit Vented Through This Point		Air Pollution Control Device		All Regulated Pollutants - Chemical Name/CAS ² <i>(Speciate VOCs & HAPS)</i>	Maximum Potential Uncontrolled Emissions ³		Maximum Potential Controlled Emissions ⁴		Emission Form or Phase <i>(At exit conditions, Solid, Liquid or Gas/Vapor)</i>	Est. Method Used ⁵
		ID No.	Source	ID No.	Device Type		lb/hr	ton/yr	lb/hr	ton/yr		
E001 – E006, (Total-All Tanks)	Upward vertical stack	S001 – S006	Produced Fluid Tanks	C001	Combustor	VOC	395.77	1733.48	7.91	34.67	Gas/Vapor	E&P Tank
							5.63	24.66	0.11	0.49		
E007 – E012, (Total-All Heaters)	Upward vertical stack	S007 – S012	Line Heaters	None	---	NOx	0.88	3.85	0.88	3.85	Gas/Vapor	AP-42
							0.74	3.23	0.74	3.23		
							0.07	0.29	0.07	0.29		
							0.01	0.02	0.01	0.02		
							0.05	0.21	0.05	0.21		
1,081	4,735	1,081	4,735									
E013 – E014 (Total-All TEG's)	Upward vertical stack	S013 – S014	TEGs	None	---	NOx	<0.01	0.01	<0.01	0.01	Gas/Vapor	AP-42
							<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	<0.01	<0.01		
3.04	13.29	3.04	13.29									
E015	Upward vertical stack	S015	Sand Separator Tank	C001 (optional)	Combustor	VOC	0.17	0.75	0.17	0.75	Gas/Vapor	E&P Tank
							<0.01	0.01	<0.01	0.01		

E016	Upward vertical stack	S016	Liquid Loading	C001	Combustor	VOC		2.78	0.20	0.87	AP-42	
						HAPs						
C001	Upward vertical stack	C001	Combustor	None	---	NOx	1.11	4.87	1.11	4.87	4.87	AP-42
						CO	0.93	4.09	0.93	4.09	4.09	
						PM/PM10/PM2.5	0.08	0.37	0.08	0.37	0.37	
						SO2	0.01	0.03	0.01	0.03	0.03	
						VOC	---	---	---	---	---	
						CO2e	1,369	5,995	1,369	5,995	5,995	

The EMISSION SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSIONS SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

- 1 Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.
- 2 List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead Organics, O₃, NO, NO₂, SO₂, SO_x, all applicable Greenhouse Gases (including CO₂ and methane), etc. DO NOT LIST H₂, H₂O, N₂, O₂, and Noble Gases
- 3 Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
- 4 Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
- 5 Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; M = modeling; O = other (specify).