



9/14/2015

WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
DIVISION OF AIR QUALITY  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304

**Subject: EnerVest Operating Compression Downsizing Project Kopperston Compressor G35 Permit application (109-00220).**

Dear Sir or Madame,

We are removing the Ajax DPC-280 rated at 269HP currently at this facility and placing a Caterpillar G3306 rated at 203HP at this facility. This facility had permit in the past but due to an increase in emissions this facility will require a modification to that permit. If you have any additional questions please feel free to call me at 304-414-8171 or email me at [mdearing@enervest.net](mailto:mdearing@enervest.net).

Sincerely,

A handwritten signature in blue ink that reads "Michael Dearing".

Michael Dearing  
Air Emissions Supervisor



ENERVEST

**Kopperston Compressor Station Permit Application**



WEST VIRGINIA  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 DIVISION OF AIR QUALITY  
 601 57<sup>th</sup> 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

9 CONSTRUCTION      9 **MODIFICATION**      9 RELOCATION      9 CLASS I ADMINISTRATIVE UPDATE  
 9 CLASS II ADMINISTRATIVE UPDATE

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

- |  |  |
|--|--|
| 9 G10-D – Coal Preparation and Handling  | 9 G40-C – Nonmetallic Minerals Processing                  |
| 9 G20-B – Hot Mix Asphalt  | 9 G50-B – Concrete Batch                                   |
| 9 G30-D – Natural Gas Compressor Stations  | 9 G60-C - Class II Emergency Generator                     |
| 9 G33-A – Spark Ignition Internal Combustion Engines                             | 9 G65-C – Class I Emergency Generator                      |
| 9 <b>G35-A – Natural Gas Compressor Stations (Flare/Glycol Dehydration Unit)</b> | 9 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): EnerVest Operating, LLC		2. Federal Employer ID No. (FEIN): . 76-0460809	
3. Applicant's mailing address: 300 Capitol Street, Suite 200, Charleston, WV, 25301		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?      9 YES      9 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 compressor and dehydrator	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):  109 - 00041	10. List all current 45CSR13 and other General Permit numbers associated with this process (for existing facilities only): _____ _____		

**A: PRIMARY OPERATING SITE INFORMATION**

<p>11A. Facility name of primary operating site:                  _____                  Kopperston Compressor Station                  _____</p>	<p>12A. Address of primary operating site:                  Mailing: 300 Capitol Street, Suite 200, Charleston, WV, 25301                  Physical: _____                  _____</p>	
<p>13A. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <span style="float:right"><b>9 YES</b>    9 NO</span></p> <p>– IF YES, please explain: <u>  Enervest has lease agreement with the land owner  </u></p> <p>– IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.</p>		
<p>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.</p> <p><b>Turn onto WV-85N/Kopperston Rd. For 4.8 Miles. Turn Left onto Bridge After Manufactured Housing Community But before Mountain Heart Community Services. Stay on Dirt road and go past Dominion Building</b></p> <p>_____</p>		
<p>15A. Nearest city or town:  Kopperston</p>	<p>16A. County: Wyoming</p>	<p>17A. UTM Coordinates:                  Northing (KM): <u>  449.523  </u>                  Easting (KM): <u>  4176.945  </u>                  Zone: <u>  17S  </u></p>
<p>18A. Briefly describe the proposed new operation or change (s) to the facility: Swapping compressors</p>		<p>19A. Latitude &amp; Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):                  Latitude: _____                  Longitude: _____</p>

**B: 1<sup>ST</sup> ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits)**

<p>11B. Name of 1<sup>st</sup> alternate operating site:                  _____                  _____</p>	<p>12B. Address of 1<sup>st</sup> alternate operating site:                  Mailing: _____ Physical: _____                  _____</p>
<p>13B. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <span style="float:right"><b>9 YES</b>    9 NO</span></p> <p>– IF YES, please explain: _____</p> <p>– IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.</p>	

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: _____
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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: 2<sup>ND</sup> ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits):**

11C. Name of 2 <sup>nd</sup> alternate operating site:	12C. Address of 2 <sup>nd</sup> alternate operating site: Mailing: _____ Physical: _____
--	---

13C. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? 9 YES    9 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: _____
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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:

9 / 30 / 15

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:

9 / 30 / 15

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 24 Days per week 7 Weeks per year 52 Percentage of operation 100

### 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.

9 ATTACHMENT A : CURRENT BUSINESS CERTIFICATE

9 ATTACHMENT B: PROCESS DESCRIPTION

9 ATTACHMENT C: DESCRIPTION OF FUGITIVE EMISSIONS

9 ATTACHMENT D: PROCESS FLOW DIAGRAM

9 ATTACHMENT E: PLOT PLAN

9 ATTACHMENT F: AREA MAP

9 ATTACHMENT G: EQUIPMENT DATA SHEETS AND REGISTRATION SECTION APPLICABILITY FORM

9 ATTACHMENT H: AIR POLLUTION CONTROL DEVICE SHEETS

9 ATTACHMENT I: EMISSIONS CALCULATIONS

9 ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT

9 ATTACHMENT K: ELECTRONIC SUBMITTAL

9 ATTACHMENT L: GENERAL PERMIT REGISTRATION APPLICATION FEE

9 ATTACHMENT M: SITING CRITERIA WAIVER

9 ATTACHMENT N: MATERIAL SAFETY DATA SHEETS (MSDS)

9 ATTACHMENT O: EMISSIONS SUMMARY SHEETS

9 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)

G 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

G I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

G I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

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

FOR A JOINT VENTURE

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

FOR A SOLE PROPRIETORSHIP

G I certify that I am the Owner and Proprietor

G I hereby certify that (please print or type) James McKinney  
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

9/16/15  
Date

Name & Title Sr. Vice President and General Manager EVOC

(please print or type)

Signature \_\_\_\_\_

(please use blue ink)

Authorized Representative (if applicable)

Date

Applicant's Name EnerVest Operating LLC

Phone & Fax \_\_\_\_\_

Phone

Fax

Email \_\_\_\_\_

**Attachment A - Current Business Certificate**

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

ISSUED TO:  
**ENERVEST OPERATING LLC EASTERN DIVISION  
300 CAPITOL ST 200  
CHARLESTON, WV 25301-1794**

**BUSINESS REGISTRATION ACCOUNT NUMBER: 1051-6031**

This certificate is issued on: **05/27/2011**

*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**

**Natural Gas is produced from Coalbed Methane wells as well as conventional wells where is then transported via pipeline to the Kopperston compressor station then compressed gas treated in a TEG dehydration unit to remove excess water. Natural gas is combusted in the engine and natural gas is compressed so that EnerVest may produce wells more efficiently.**

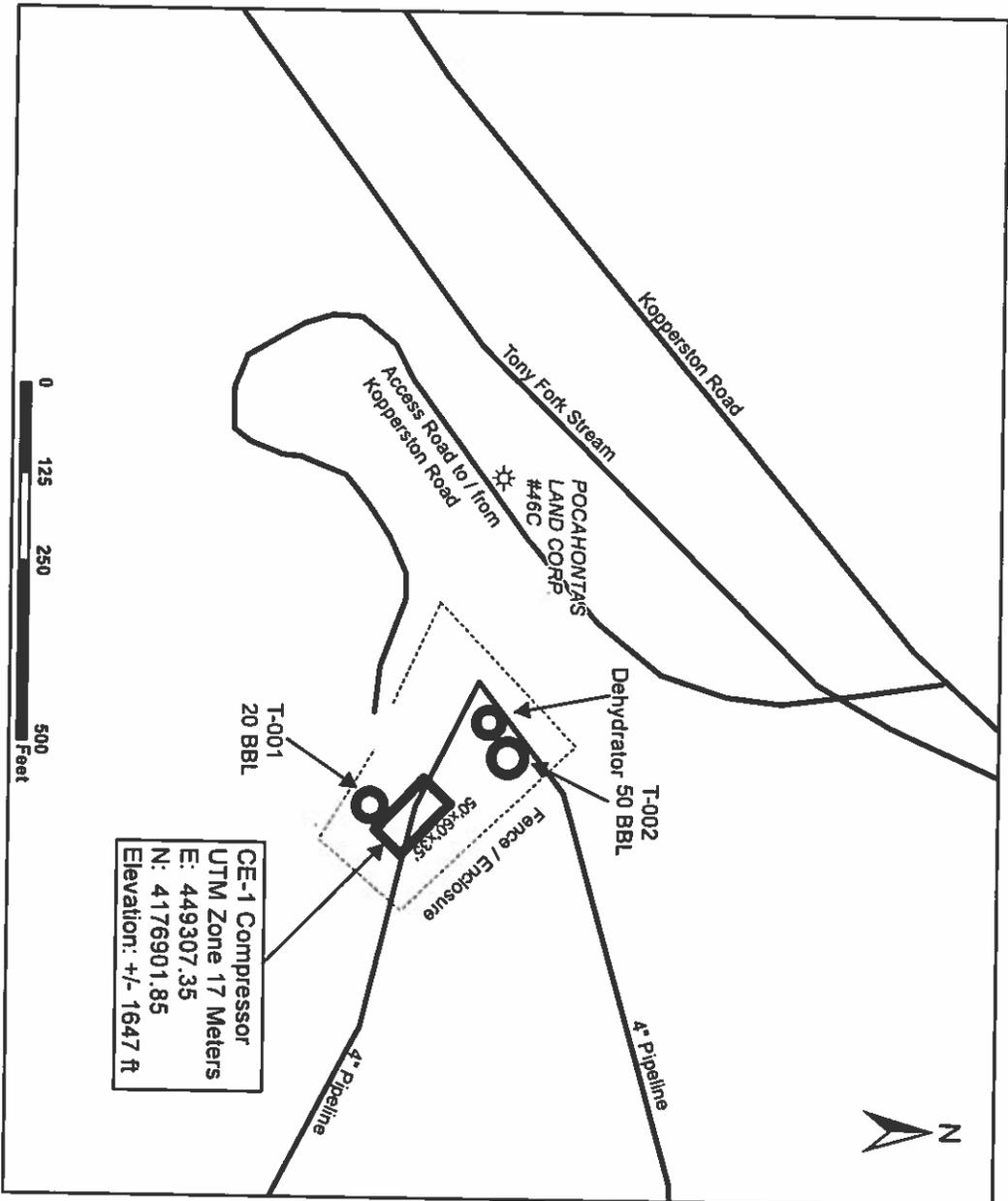
## **Attachment C – Description of Fugitive Emissions**

**Fugitive emissions occur at the threaded and flanged connections of the piping on the site as well on the seals and connections on the compressor.**

## Attachment D – Process Flow Diagram



## **Attachment E – Plot Plan**



CE-1 Compressor  
 UTM Zone 17 Meters  
 E: 449307.35  
 N: 4176901.85  
 Elevation: +/- 1647 ft

**EnerVest Operating, LLC**  
 CE-1 Compressor  
 Wyoming Co. WV  
 Attachment "E"  
 Base Elevation: +/- 1647 ft  
 Scale: 1in = 250 ft



## **Attachment F – Area Map**

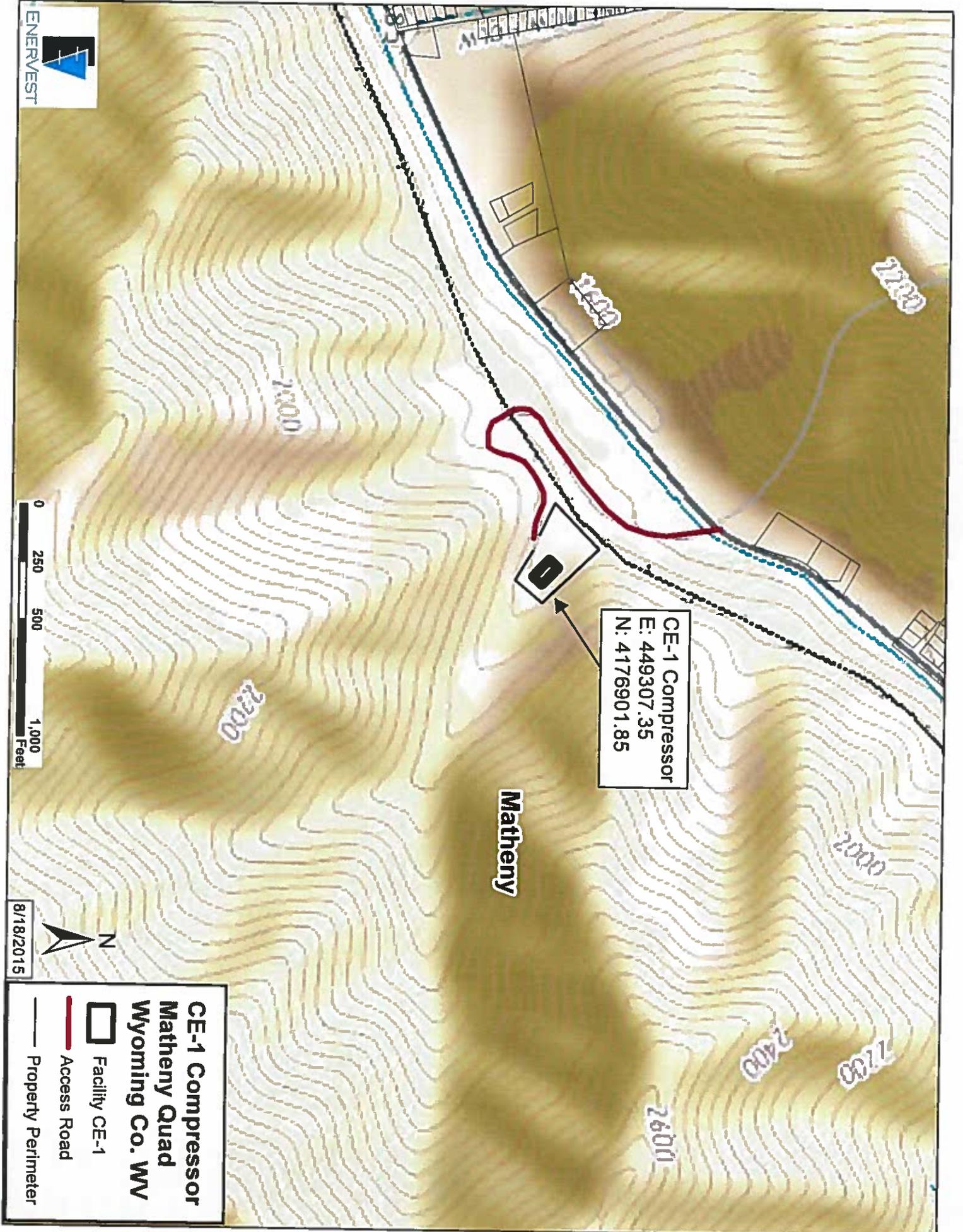


**CE-1 Compressor**  
**Matheny Quad**  
**Wyoming Co. WV**

- Facility CE-1
- Access Road
- Property Perimeter

CE-1 Compressor  
E: 449307.35  
N: 4176901.85

Matheny



## Attachment G – Affected Source Sheets

# **G35-A REGISTRATION APPLICATION FORMS**

### General Permit G35-A Registration Section Applicability Form

General Permit G35-A was developed to allow qualified registrants to seek registration for a variety of sources. These sources include internal combustion engines, boilers, reboilers, line heaters, tanks, emergency generators, dehydration units not subject to MACT standards, dehydration units not subject to MACT standards and being controlled by a flare control device, dehydration units not subject to MACT standards and being controlled by recycling the dehydration unit back to flame zone of reboiler, dehydration units not subject to MACT standards being controlled by a thermal oxidizer, and permit exemptions including the less than 1 ton/year benzene exemption, the 40CFR63 Subpart HH - Annual Average Flow of Gas Exemption (3 mmscf/day), and the 40CFR63 Subpart HHH - Annual Average Flow of Gas Exemption (10 mmscf/day). All registered facilities will be subject to Sections 1.0, 1.1, 2.0, 3.0, and 4.0.

General Permit G35-A allows the registrant to choose which sections of the permit that they wish to seek registration under. Therefore, please mark which sections that you are applying for registration under. 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  | Reciprocating Internal Combustion Engines (R.I.C.E.)*   | <input checked="" type="checkbox"/> |
| Section 6  | Boilers, Reboilers, and Line Heaters  | <input checked="" type="checkbox"/> |
| Section 7  | Tanks   | <input checked="" type="checkbox"/> |
| Section 8  | Emergency Generators  | <input type="checkbox"/>            |
| Section 9  | Dehydration Units Not Subject to MACT Standards   | <input checked="" type="checkbox"/> |
| Section 10 | Dehydration Units Not Subject to MACT Standards and being controlled by a flare control device  | <input checked="" type="checkbox"/> |
| Section 11 | Dehydration Units Not Subject to MACT Standards being controlled by recycling the dehydration unit back to the flame zone of the reboiler | <input checked="" type="checkbox"/> |
| Section 12 | Dehydration Units Not Subject to MACT Standards and being controlled by a thermal oxidizer  | <input checked="" type="checkbox"/> |
| Section 13 | Permit Exemption (Less than 1 ton/year of benzene exemption)  | <input checked="" type="checkbox"/> |
| Section 14 | Permit Exemption (40CFR63 Subpart HH – Annual average flow of gas exemption (3 mmscf/day))  | <input checked="" type="checkbox"/> |
| Section 15 | Permit Exemption (40CFR63 Subpart HHH – Annual average flow of gas exemption (10 mmscf/day))  | <input checked="" type="checkbox"/> |
| Section 16 | Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (40CFR60 Subpart JJJJ)                                 | <input checked="" type="checkbox"/> |

\* Affected facilities that are subject to Section 5 may also be subject to Section 16. Therefore, if the applicant is seeking registration under both sections, please select both.

### NATURAL GAS COMPRESSOR/GENERATOR ENGINE DATA SHEET

Source Identification Number <sup>1</sup>		CE-1					
Engine Manufacturer and Model		Caterpillar					
Manufacturer's Rated bhp/rpm		203/1800					
Source Status <sup>2</sup>		ES					
Date Installed/Modified/Removed <sup>3</sup>		9/30/15					
Engine Manufactured/Reconstruction Date <sup>4</sup>		8/30/1991					
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) <sup>5</sup>							
Engine, Fuel and Combustion Data	Engine Type <sup>6</sup>	RB4S					
	APCD Type <sup>7</sup>	None					
	Fuel Type <sup>8</sup>	RG					
	H <sub>2</sub> S (gr/100 scf)	0					
	Operating bhp/rpm	203/1800					
	BSFC (Btu/bhp-hr)	7877					
	Fuel throughput (ft <sup>3</sup> /hr)	1599					
	Fuel throughput (MMft <sup>3</sup> /yr)	14.008					
Operation (hrs/yr)	8760						
Reference <sup>9</sup>	Potential Emissions <sup>10</sup>	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
	NO <sub>x</sub>	12.4	54.31				
	CO	0.67	2.94				
	VOC	0.05	0.22				
	SO <sub>2</sub>	0.00	0.00				
	PM <sub>10</sub>	0.015	0.07				
	Formaldehyde	0.067	0.294				

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

NS	Construction of New Source (installation)	ES	Existing Source
MS	Modification of Existing Source	RS	Removal of Source
- Enter the date (or anticipated date) of the engine's installation (construction of source), modification or removal.





General Glycol Dehydration Unit Data		Manufacturer and Model		Pride of the Hills	
		Max Dry Gas Flow Rate (mmscf/day)		5.2	
		Design Heat Input (mmBtu/hr)		250,000	
		Design Type (DEG or TEG)		TEG	
		Source Status <sup>2</sup>		ES	
		Date Installed/Modified/Removed <sup>3</sup>			
		Regenerator Still Vent APCD <sup>4</sup>		None	
		Fuel HV (Btu/scf)		1000	
		H <sub>2</sub> S Content (gr/100 scf)		0	
		Operation (hrs/yr)		8760	
Source ID # <sup>1</sup>	Vent	Reference <sup>5</sup>	Potential Emissions <sup>6</sup>	lbs/hr	tons/yr
RBV-1	Reboiler Vent	AP-42	NO <sub>x</sub>	0.005	0.002
		AP-42	CO	0.00	0.00
		AP-42	VOC	0.001	0.006
		AP-42	SO <sub>2</sub>	0.00	0.00
		AP-42	PM <sub>10</sub>	0.001	0.005
GSV-1	Glycol Regenerator Still Vent	GRI-GLYCalc™	VOC	0.817	0.149
		GRI-GLYCalc™	Benzene		
		GRI-GLYCalc™	Ethylbenzene		
		GRI-GLYCalc™	Toluene		
		GRI-GLYCalc™	Xylenes		
		GRI-GLYCalc™	n-Hexane		

1. Enter the appropriate Source Identification Numbers for the glycol dehydration unit Reboiler Vent and glycol Regenerator Still Vent. The glycol dehydration unit Reboiler Vent and glycol Regenerator Still Vent should be designated RBV-1 and RSV-1, respectively. If the compressor station incorporates multiple glycol dehydration units, a *Glycol Dehydration Unit Data Sheet* shall be completed for each, using Source Identification #s RBV-2 and RSV-2, RBV-3 and RSV-3, etc.

2. Enter the Source Status using the following codes:

NS Construction of New Source	ES Existing Source
MS Modification of Existing Source	RS Removal of Source

3. Enter the date (or anticipated date) of the glycol dehydration unit's installation (construction of source), modification or removal.

4. Enter the Air Pollution Control Device (APCD) type designation using the following codes:

NA None	CD Condenser
FL Flare	CC Condenser/Combustion Combination
TO Thermal Oxidizer	

5. Enter the Potential Emissions Data Reference designation using the following codes:

MD Manufacturer's Data  
GR GRI-GLYCalc™

AP AP-42  
OT Other \_\_\_\_\_ (please list)

6. Enter the Reboiler Vent and glycol Regenerator Still Vent Potential to Emit (PTE) for the listed regulated pollutants in lbs per hour and tons per year. The glycol Regenerator Still Vent potential emissions may be determined using the most recent version of the thermodynamic software model GRI-GLYCalc™ (Radian International LLC & Gas Research Institute). Attach all referenced Potential Emissions Data (or calculations) and the GRI-GLYCalc *Aggregate Calculations Report* to this *Glycol Dehydration Unit Data Sheet(s)*. This PTE data shall be incorporated in the *Emissions Summary Sheet*.

**Include a copy of the GRI-GLYCalc™ analysis. This includes a printout of the aggregate calculations report, which shall include emissions reports, equipment reports, and stream reports.**

\*An explanation of input parameters and examples, when using GRI-GLYCalc™ is available on our website.

West Virginia Department of Environmental Protection

DIVISION OF AIR QUALITY : (304) 926-0475  
 WEB PAGE: http://www.wvdep.org

Division of Air Quality

40 CFR Part 63; Subpart HH & HHH Registration Form

Complete this form for any oil and natural gas production or natural gas transmission and storage facility that uses an affected unit under HH/HHH, whether subject or not.

Section A: Facility Description			
Affected facility actual annual average natural gas throughput (scf/day):	650,000		
Affected facility actual annual average hydrocarbon liquid throughput (bbl/day):	0.0		
The affected facility processes, upgrades, or stores hydrocarbon liquids prior to custody transfer.	Yes	No	
The affected facility processes, upgrades, or stores natural gas prior to the point at which natural gas (NG) enters the NG transmission and storage source category or is delivered to the end user.	Yes	No	
The affected facility is:	<input type="checkbox"/> prior to a NG processing plant <input type="checkbox"/> a NG processing plant <input checked="" type="checkbox"/> prior to the point of custody transfer and there is no NG processing plant		
The affected facility transports or stores natural gas prior to entering the pipeline to a local distribution company or to a final end user (if there is no local distribution company).	Yes	No	
The affected facility exclusively processes, stores, or transfers black oil.	Yes	No	
Initial producing gas-to-oil ratio (GOR):	scf/bbl	API gravity:	degrees
Section B: Dehydration Unit (if applicable) <sup>1</sup>			
Description:			
Date of Installation:	Annual Operating Hours:	Burner rating (MMBtu/hr):	
Exhaust Stack Height (ft):	Stack Diameter (ft):	Stack Temp. (°F):	
Glycol Type:	<input checked="" type="checkbox"/> TEG <input type="checkbox"/> EG <input type="checkbox"/> Other:		
Glycol Pump Type:	<input checked="" type="checkbox"/> Electric <input type="checkbox"/> Gas    If gas, what is the volume ratio? _____ ACFM/gpm		
Condenser installed?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Exit Temp. _____ °F	Condenser Pressure _____ psig
Incinerator/flare installed?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Destruction Eff. _____ %	
Other controls installed?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Describe:	
Wet Gas <sup>2</sup> : (Upstream of Contact Tower)	Gas Temp.: <u>102</u> °F	Gas Pressure <u>26</u> psig	Saturated Gas? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    If no, water content _____ lb/MMSCF
Dry Gas: (Downstream of Contact Tower)	Gas Flowrate(MMSCFD)	Actual <u>65</u>	Design <u>5.2</u>
Lean Glycol:	Water Content _____ lb/MMSCF	Circulation rate (gpm)	Actual <sup>3</sup> <u>1.7</u> Maximum <sup>4</sup> <u>4</u>
		Pump make/model: <u>Rotor-Tech GA-4</u>	
Glycol Flash Tank (if applicable):	Temp.: _____ °F	Pressure _____ psig	Vented?    Yes <input type="checkbox"/> No <input type="checkbox"/>
	If no, describe vapor control:		
Stripping Gas (if applicable):	Source of gas:	Rate _____ scfm	

**Please attach the following required dehydration unit information:**

1. System map indicating the chain of custody information. See Page 43 of this document for an example of a gas flow schematic. It is not intended that the applicant provide this level of detail for all sources. The level of detail that is necessary is to establish where the custody transfer points are located. This can be accomplished by submitting a process flow diagram indicating custody transfer points and the natural gas flow. However, the DAQ reserves the right to request more detailed information in order to make the necessary decisions.
2. Extended gas analysis from the Wet Gas Stream including mole percents of C<sub>1</sub>-C<sub>6</sub>, benzene, ethylbenzene, toluene, xylene and n-Hexane, using Gas Processors Association (GPA) 2286 (or similar). A sample should be taken from the inlet gas line, downstream from any inlet separator, and using a manifold to remove entrained liquids from the sample and a probe to collect the sample from the center of the gas line. GPA standard 2166 reference method or a modified version of EPA Method TO-14, (or similar) should be used.
3. GRI-GLYCalc Ver. 3.0 aggregate report based on maximum Lean Glycol circulation rate and maximum throughput.
4. Detailed calculations of gas or hydrocarbon flow rate.

**Section C: Facility NESHAPS Subpart HH/HHH status**

	—	Subject to Subpart HH	
Affected facility status:	<input type="checkbox"/>	Subject to Subpart HHH	
(choose only one)	<input checked="" type="checkbox"/>	Not Subject	<input checked="" type="checkbox"/> < 10/25 TPY
	because:	<input type="checkbox"/>	Affected facility exclusively handles black oil
		<input type="checkbox"/>	The facility wide actual annual average NG throughput is < 650 thousand scf/day and facility wide actual annual average hydrocarbon liquid is < 250 bpd
		<input type="checkbox"/>	No affected source is present





## **Attachment I - Emissions Calculations**

### Rich Burn Engines 4 Stroke AP 42 Table 3.2-1

Emissions Unit ID:	Kopperston CS	BHP	203	BTU Content of Gas:	1000
Fuel Usage in MMBTU/hr:	1.599	Fuel Consumption BTU/BHP-hr	7877	Date of manufacture:	8/30/1991
Make:	CAT	Model:	G3306	Serial number:	07Y03778
<b>Pollutants</b>		Emission Factor	lbs./hr	Tons Year	G/bhp-hr
SOX ton/yr		0.000588	0.001	0.004	0.002
PM10 (filterable)		0.009500	0.015	0.067	0.034
PM Condensable		0.009910	0.016	0.069	0.035
<b>Calculations</b>		EF	MMBTU x EF = lbs/hr	(lbs/hr)/2000	(lbs-hr*453.592)/BPH

### Emissions Calculator Based on Spec sheet Data @ 100% Load

Pollutant	Unit BHP	Emissions g/BHP-Hr	Grams Per hour	lbs-hr	Tons/yr
NOX	203	27.71	5625.1	12.401	54.318
VOC	203	0.11	22.3	0.049	0.216
CO	203	1.5	304.5	0.671	2.940
Formaldehyde ( H2CO )	203	0.15	30.5	0.067	0.294
<b>Calculations</b>			(BHP*G/HP-hr)*8760	g-hr * 0.00220462	lbs-hr*8760/2000

### Fuel Usage Calculator

Rated BHP	BTU/BHP-Hr	MMBTU/ Hr	BTU Content:	Total BTU/Hr	Total BTU Year
203	7877	1.599	1000	1599031	14007511560
		(Bhp x Btu/Bhp-hr)/1,000,000		Bhp x Btu/Bhp-hr	TBtu/Bhp-hr x 8760
MMBTU/hr	MCF/HOUR	SCF / HOUR	SCF/YR	MCF/YEAR	MMSCF/YR
1.599031	1.599031	1599.031	14007511.56	14007.51156	14.00751156
	SCF-HR/1000	TBtu HR/ Btu Content	SCF-HR*8760	SCF-YR/1000	SCF-YR/1,000,000

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

	lb/10 <sup>6</sup> scf	lb/MMBTU	Burner heat rating MMBTU	lbs/hr	Tons/yr
CO2	120000	117.6470588	0.250	29.411765	128.823529
N2O	2.2	0.002156863	0.250	0.000539	0.002362
PM TOTAL	7.6	0.00745098	0.250	0.001863	0.008159
PM CONDENSABLE	5.7	0.005588235	0.250	0.001397	0.006119
PM FILTERABLE	1.9	0.001862745	0.250	0.000466	0.002040
SO2	0.6	0.000588235	0.250	0.000147	0.000644
VOC	5.5	0.005392157	0.250	0.001348	0.005904
emission factor				BTU/hr <sup>3</sup> lb/mmbtu	(lb/hr <sup>3</sup> 8760)/2000

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Kopperston Compressor Station Dehy

File Name:

Date: August 20, 2015

DESCRIPTION:

Description:

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

-----  
UNCONTROLLED REGENERATOR EMISSIONS  
-----

Component	lbs/hr	lbs/day	tons/yr
Methane	0.1222	2.932	0.5351
Ethane	0.0228	0.547	0.0999
Propane	0.0098	0.236	0.0431
Isobutane	0.0029	0.070	0.0128
n-Butane	0.0045	0.107	0.0196
Isopentane	0.0026	0.063	0.0115
n-Pentane	0.0017	0.042	0.0076
Other Hexanes	0.0125	0.299	0.0546
Total Emissions	0.1790	4.296	0.7841

Total Hydrocarbon Emissions 0.1790 4.296 0.7841

Total VOC Emissions 0.0341 0.817 0.1491

EQUIPMENT REPORTS:

-----  
ABSORBER  
-----

Calculated Absorber Stages: 2.97

Specified Dry Gas Dew Point: 7.00 lbs. H2O/MMSCF

Temperature: 102.0 deg. F

Pressure: 26.0 psig

Dry Gas Flow Rate: 0.6500 MMSCF/day

Glycol Losses with Dry Gas: 0.0138 lb/hr

Wet Gas Water Content: Saturated

Calculated Wet Gas Water Content: 1181.67 lbs. H2O/MMSCF

Specified Lean Glycol Recirc. Ratio: 3.00 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
-----------	-------------------------	-----------------------

Water	0.58%	99.42%
Carbon Dioxide	99.83%	0.17%
Nitrogen	99.99%	0.01%
Methane	99.99%	0.01%
Ethane	99.95%	0.05%

Propane	99.90%	0.10%
Isobutane	99.83%	0.17%
n-Butane	99.77%	0.23%
Isopentane	99.71%	0.29%
n-Pentane	99.63%	0.37%

Other Hexanes 99.46% 0.54%

## REGENERATOR

---

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	6.43%	93.57%
Carbon Dioxide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	0.50%	99.50%
n-Pentane	0.50%	99.50%
Other Hexanes	1.00%	99.00%

## STREAM REPORTS:

---

### WET GAS STREAM

---

Temperature: 102.00 deg. F  
 Pressure: 40.70 psia  
 Flow Rate: 2.78e+004 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	2.49e+000	3.28e+001
Carbon Dioxide	1.66e+000	5.36e+001
Nitrogen	3.83e-001	7.84e+000
Methane	9.29e+001	1.09e+003
Ethane	2.20e+000	4.83e+001
Propane	2.92e-001	9.42e+000
Isobutane	3.97e-002	1.69e+000
n-Butane	4.51e-002	1.92e+000
Isopentane	1.74e-002	9.17e-001
n-Pentane	8.98e-003	4.74e-001
Other Hexanes	3.66e-002	2.31e+000

-----  
Total Components 100.06 1.25e+003

DRY GAS STREAM

-----  
Temperature: 102.00 deg. F

Pressure: 40.70 psia

Flow Rate: 2.71e+004 scfh

Component	Conc. (vol%)	Loading (lb/hr)
-----------	--------------	-----------------

-----  
Water 1.47e-002 1.90e-001

Carbon Dioxide 1.70e+000 5.35e+001

Nitrogen 3.92e-001 7.84e+000

Methane 9.52e+001 1.09e+003

Ethane 2.25e+000 4.83e+001

Propane 2.99e-001 9.41e+000

Isobutane 4.06e-002 1.69e+000

n-Butane 4.61e-002 1.91e+000

Isopentane 1.78e-002 9.14e-001

n-Pentane 9.17e-003 4.72e-001

Other Hexanes 3.73e-002 2.30e+000

-----  
Total Components 100.00 1.22e+003

LEAN GLYCOL STREAM

-----  
Temperature: 102.00 deg. F

Flow Rate: 1.59e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
-----------	-------------	-----------------

-----  
TEG 9.97e+001 8.95e+002

Water 2.50e-001 2.24e+000

Carbon Dioxide 1.02e-012 9.17e-012

Nitrogen 9.59e-015 8.60e-014

Methane 4.58e-019 4.10e-018

Ethane 1.20e-009 1.08e-008

Propane 4.46e-011 4.00e-010

Isobutane 9.74e-012 8.74e-011

n-Butane 1.24e-011 1.11e-010

Isopentane 1.47e-006 1.32e-005

n-Pentane 9.78e-007 8.77e-006

Other Hexanes 1.40e-005 1.26e-004

-----  
Total Components 100.00 8.97e+002

## RICH GLYCOL STREAM

---

Temperature: 102.00 deg. F

Pressure: 40.70 psia

Flow Rate: 1.64e+000 gpm

NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
-----------	-------------	-----------------

---

TEG 9.62e+001 8.88e+002

Water 3.78e+000 3.49e+001

Carbon Dioxide 9.92e-003 9.16e-002

Nitrogen 9.29e-005 8.58e-004

Methane 1.32e-002 1.22e-001

Ethane 2.47e-003 2.28e-002

Propane 1.06e-003 9.83e-003

Isobutane 3.15e-004 2.91e-003

n-Butane 4.84e-004 4.47e-003

Isopentane 2.85e-004 2.63e-003

n-Pentane 1.90e-004 1.75e-003

Other Hexanes 1.36e-003 1.26e-002

---

Total Components 100.00 9.23e+002

## REGENERATOR OVERHEADS STREAM

---

Temperature: 212.00 deg. F

Pressure: 14.70 psia

Flow Rate: 6.91e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
-----------	--------------	-----------------

---

Water 9.94e+001 3.26e+001

Carbon Dioxide 1.14e-001 9.16e-002

Nitrogen 1.68e-003 8.58e-004

Methane 4.18e-001 1.22e-001

Ethane 4.16e-002 2.28e-002

Propane 1.22e-002 9.83e-003

Isobutane 2.75e-003 2.91e-003

n-Butane 4.22e-003 4.47e-003

Isopentane 1.99e-003 2.62e-003

n-Pentane 1.33e-003 1.75e-003

Other Hexanes 7.94e-003 1.25e-002

---

Total Components 100.00 3.29e+001

Report Date: Aug 14, 2015 7:36a

Client:	Everest Operating	Date Sampled:	Aug 5, 2015 12:00p
Site:	Kopperston Compressor	Analysis Date:	Aug 13, 2015 2:03p
Field No:	9998	Collected By:	Rick Hash
Meter:	105002	Date Effective:	Aug 5, 2015 12:00a
Source Laboratory	Clarksburg (Bridgeport), WV	Sample Pressure (PSI):	26.0
Lab File No:	X_CH1-5402.CHR	Sample Temp (°F):	102
Sample Type:	Spot	Field H2O:	No Test
Reviewed By:		Field H2S:	No Test

Component	Mol %	Gal/MSCF
Methane	95.1758	
Ethane	2.2500	0.60
Propane	0.2991	0.08
I-Butane	0.0407	0.01
N-Butane	0.0462	0.01
I-Pentane	0.0178	0.01
N-Pentane	0.0092	0.00
Nitrogen	0.3922	
Oxygen	0.0273	
Carbon Dioxide	1.7042	
Hexanes+	0.0375	0.02
TOTAL	100.0000	0.73

Analytical Results at Base Conditions (Real)	
BTU/SCF (Dry):	1,018.6387 BTU/ft <sup>3</sup>
BTU/SCF (Saturated):	1,001.7875 BTU/ft <sup>3</sup>
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99786
Z Factor (Saturated):	0.99750

Analytical Results at Contract Conditions (Real)	
BTU/SCF (Dry):	1,018.6387 BTU/ft <sup>3</sup>
BTU/SCF (Saturated):	1,001.7875 BTU/ft <sup>3</sup>
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99786
Z Factor (Saturated):	0.99750

Calculated Specific Gravities		
Ideal Gravity:	0.5887	Real Gravity: 0.5897
Molecular Wt:	17.0506 lb/lbmol	

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

Source	Date	Notes

**Attachment L - General Permit Registration Application Fee**

**AFFIDAVIT OF PUBLICATION**  
**BECKLEY NEWSPAPERS**  
**BECKLEY, WEST VIRGINIA 25801**

09/07/2015

STATE OF WEST VIRGINIA  
COUNTY OF RALEIGH, to wit:

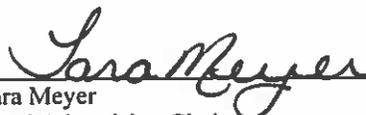
I, Tara Meyer, being duly sworn upon my oath, do depose and say that I am Legal Advertising Clerk for Beckley Newspapers, a corporation, publisher of the newspaper entitled The Register-Herald, an Independent newspaper; that I have been duly authorized by the board of directors of such corporation to execute this affidavit of publication; that such newspaper has been published for more than one year prior to publication of the annexed notice described below; that such newspaper is regularly published daily for at least fifty weeks during the calendar year, in the municipality of Beckley, Raleigh County, West Virginia: that such newspaper is a newspaper of "general circulation" as that term is defined in article three, chapter fifty-nine of the Code of West Virginia, 1931, as amended, within the publication area of areas of the aforesaid municipality and county; that such newspaper averages in length four or more pages, exclusive of any cover, per issue; that such newspaper is circulated to the general public at a definite price of consideration; that such newspaper is a newspaper to which the general public resorts for passing events of a political, religious, commercial and social nature, and for current happenings, announcements, miscellaneous reading matter, advertisements and other notices; that the annexed notice

of AIR QUALITY PERMIT NOTICE / NOTICE OF APPLICATION

(Description of notice)

was duly published in said newspaper once a week for 1 successive weeks (Class 1), commencing with the issue of 09/07/2015 and ending with the issue of 09/07/2015, that said annexed notice was published on the following dates: 09/07/2015, and that the cost of publishing said annexed notice as aforesaid was \$ 41.93

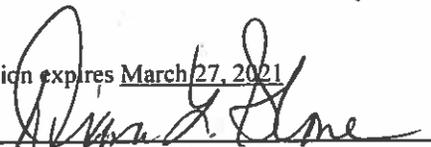
Signed



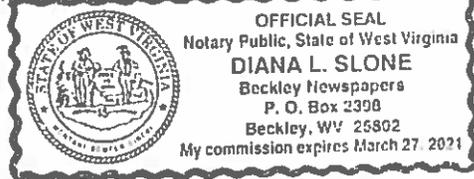
Tara Meyer  
Legal Advertising Clerk  
Beckley Newspapers

Taken, subscribed and sworn to before me in my said county this day:  
09/07/2015

My commission expires March 27, 2021



Notary Public of Raleigh County,  
West Virginia



**COPY OF PUBLICATION**

**AIR QUALITY  
PERMIT NOTICE  
Notice of Application**

Notice is given that EnerVest Operating, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a General Permit Registration for a Natural Gas Compressor and Dehydration unit located on Kopperston Road, near Kopperston, in Wyoming County, West Virginia. The latitude and longitude coordinates are: Latitude: 37.738481 Longitude: -81.572895.

The applicant estimates the potential to discharge the following Regulated Air Pollutants will be: PM (0.069 TON/YR), PM10 (0.067 TON/YR), VOC (0.368 TON/YR), CO (2.94 TON/YR), NOx (54.318 TON/YR), SO2 (0.004 TON/YR), HAPS (0.294 TON/YR).

Startup of operation is planned to begin on or about the 15th day of October, 2015. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours. Dated this the 2nd day of September, 2015.

By: EnerVest Operating, LLC  
James McKinney  
Senior Vice President and General Manager  
EVOC  
300 Capitol Street,  
Suite 200  
Charleston, WV 25301  
9-7-MON-1-RH: L 3393