CONESTOGA-ROVERS
& ASSOCIATES

6320 Rothway, Suite 100, Houston, Texas 77040
Telephone: (713) 734-3090 Fax: (713) 734-3391
www.CRAworld.com

June 8, 2015 Reference No. 082715

Mr. Jay Fedczak
Assistant Director for Permitting
Division of Air Quality
WV Department of Environmental Protection
601 57th Street, SE
Charleston, West Virginia 25304

Dear Mr. Jay Fedczak:

Re: New Source Review Permit Application 45CSR13
Hinter Heirs Fresh Water Impoundment
Antero Resources Corporation

Conestoga-Rovers & Associates (CRA) would like to submit this 45CSR13 Permit application that we prepared on behalf of Antero Resources Corporation for a fresh water impoundment facility identified as Hinter Heirs FWI.

The only sources of emissions from this facility are the two engines driving the water pumps and the unpaved road. Although the engines only operate depending on water demand, the potential to emit was calculated based on 8760 hours of operations per year.

Enclosed are the following documents:

- Original copy of the 45CSR13 Permit Application
- Two CD copies of the 45CSR13 Permit Application
- The application fee with check no. 404627 in the amount of $2,000.00.

Please let us know if you have any questions or require additional information.

Sincerely,

CONESTOGA-ROVERS & ASSOCIATES

Manuel Bautista

MB/ma/198
Encl.

cc: Barry Schatz, Antero Resources Corporation

CONESTOGA-ROVERS & ASSOCIATES

www.CRAworld.com



New Source Review Air Permit Application

45CSR13

(New Source)

Hinter Heirs FWI

Prepared for: Antero Resources Corporation

Conestoga-Rovers & Associates
6320 Rothway, Suite 100
Houston, Texas 77040

June 2015 • 082715 • Report No. 198

Partners in Sustainability

Table of Contents

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

601 57th Street, SE
Charleston, WV 25304
(304) 926-0475
www.dep.wv.gov/daq

APPLICATION FOR NSR PERMIT AND TITLE V PERMIT REVISION (OPTIONAL)

PLEASE CHECK ALL THAT APPLY TO **NSR (45CSR13)** (IF KNOWN):

☒ **CONSTRUCTION** ☐ **MODIFICATION** ☐ **RELOCATION**
☐ **CLASS I ADMINISTRATIVE UPDATE** ☐ **TEMPORARY**
☐ **CLASS II ADMINISTRATIVE UPDATE** ☐ **AFTER-THE-FACT**

PLEASE CHECK TYPE OF **45CSR30 (TITLE V)** REVISION (IF ANY):

☐ **ADMINISTRATIVE AMENDMENT** ☐ **MINOR MODIFICATION**
☐ **SIGNIFICANT MODIFICATION**

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS **ATTACHMENT S** TO THIS APPLICATION

FOR TITLE V FACILITIES ONLY: Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

Section I. General

1. Name of applicant *(as registered with the WV Secretary of State's Office):*
Antero Resources Corporation

2. Federal Employer ID No. ***(FEIN):***
80-0162034

3. Name of facility *(if different from above):*
Hinter Heirs FWI

4. The applicant is the:
☐ **OWNER** ☐ **OPERATOR** ☒ **BOTH**

5A. Applicant's mailing address:
1615 Wynkoop St.
Denver, CO, 80202

5B. Facility's present physical address:
0.5 mile Northwest of the intersection of Carder Camp Road and WV-18

6. **West Virginia Business Registration.** Is the applicant a resident of the State of West Virginia? ☒ **YES** ☐ **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 L.L.C./Registration** (one page) including any name change amendments or other Business Certificate as **Attachment A.**

7. If applicant is a subsidiary corporation, please provide the name of parent corporation: N/A

8. Does the applicant own, lease, have an option to buy or otherwise have control of the *proposed site?* ☒ **YES** ☐ **NO**
- If **YES,** please explain: Antero is leasing the mineral rights for this site
- If **NO,** you are not eligible for a permit for this source.

9. Type of plant or facility (stationary source) to be **constructed, modified, relocated, administratively updated** or **temporarily permitted** (e.g., coal preparation plant, primary crusher, etc.):
Fresh Water Impoundment Facility

10. North American Industry Classification System **(NAICS)** code for the facility:
213112

11A. DAQ Plant ID No. (for existing facilities only):

11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):
N/A

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

12A.

- For **Modifications, Administrative Updates** or **Temporary permits** 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 B**.

From the intersection of WV-18 S and Carder Camp Rd, Turn NW onto Carder Camp Rd and go for 0.4 mi, head N on the unpaved road for 0.33 mi, the destination will be on the right.

12.B. New site address (if applicable):	12C. Nearest city or town:	12D. County:
0.5 mile Northwest of the intersection of Carder Camp Road and Rte 18	New Milton	Doddridge
12.E. UTM Northing (KM): 4337.459	12F. UTM Easting (KM): 525.373	12G. UTM Zone: 17 N

13. Briefly describe the proposed change(s) at the facility:

Installation of permanent diesel engines

14A. Provide the date of anticipated installation or change: Upon the issuance of permit – If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: / /	14B. Date of anticipated Start-Up if a permit is granted: Upon the issuance of permit

14C. Provide a **Schedule** of the planned **Installation** of/**Change** to and **Start-Up** of each of the units proposed in this permit application as **Attachment C** (if more than one unit is involved).

15. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application:
Hours Per Day 24 Days Per Week 7 Weeks Per Year 52

16. Is demolition or physical renovation at an existing facility involved? ☐ **YES** ☒ **NO**

17**. Risk Management Plans.** If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see www.epa.gov/ceppo), submit your **Risk Management Plan (RMP)** to U. S. EPA Region III.

18**. Regulatory Discussion.** List all Federal and State air pollution control regulations that you believe are applicable to the proposed process *(if known).* A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance *(if known).* Provide this information as **Attachment D.**

Section II. Additional attachments and supporting documents.

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

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

21. Provide a **Plot Plan,** e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as **Attachment E** (Refer to ***Plot Plan Guidance***) **.**

– Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).

22. Provide a **Detailed Process Flow Diagram(s)** showing each proposed or modified emissions unit, emission point and control device as **Attachment F.**

23. Provide a **Process Description** as **Attachment G.**

– Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).

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

24. Provide **Material Safety Data Sheets (MSDS)** for all materials processed, used or produced as **Attachment H.**

– For chemical processes, provide a MSDS for each compound emitted to the air.

25. Fill out the **Emission Units Table** and provide it as **Attachment I.**

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J.**

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K.**

28. Check all applicable **Emissions Unit Data Sheets** listed below:

☐ Bulk Liquid Transfer Operations	☒ Haul Road Emissions	☐ Quarry
☐ Chemical Processes	☐ Hot Mix Asphalt Plant	☐ Solid Materials Sizing, Handling and Storage Facilities
☐ Concrete Batch Plant	☐ Incinerator	☐ Storage Tanks
☐ Grey Iron and Steel Foundry	☐ Indirect Heat Exchanger	
☐ General Emission Unit, specify		

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L.**

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

☐ Absorption Systems	☐ Baghouse	☐ Flare
☐ Adsorption Systems	☐ Condenser	☐ Mechanical Collector
☐ Afterburner	☐ Electrostatic Precipitator	☐ Wet Collecting System

☐ Other Collectors, specify

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M.**

30. Provide all **Supporting Emissions Calculations** as **Attachment N,** or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O.**

➢ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and ***Example Legal Advertisement*** for details). Please submit the **Affidavit of Publication** as **Attachment P** immediately upon receipt.

33**. Business Confidentiality Claims.** Does this application include confidential information (per 45CSR31)?

☐ **YES** ☒ **NO**

➢ If **YES,** identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's *"**Precautionary Notice – Claims of Confidentiality"*** guidance found in the ***General Instructions*** as **Attachment Q.**

Section III. Certification of Information

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable **Authority Form** below:

☒ Authority of Corporation or Other Business Entity	☐ Authority of Partnership
☐ Authority of Governmental Agency	☐ Authority of Limited Partnership

Submit completed and signed **Authority Form** as **Attachment R.**

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

35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

Certification of Truth, Accuracy, and Completeness

I, the undersigned ☐ **Responsible Official** / ☒ **Authorized Representative,** hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

Compliance Certification

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

SIGNATURE Barry S Schatz *(Please use blue ink)* DATE: 6-8-2015 *(Please use blue ink)*

35B. Printed name of signee: Barry Schatz		35C. Title: Sr. Environmental and Regulatory Manager
35D. E-mail: bschatz@anteroresources.com	36E. Phone: (303)357-7276	36F. FAX: (303) 357-7315
36A. Printed name of contact person (if different from above):		36B. Title:
36C. E-mail:	36D. Phone:	36E. FAX:

PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

- ☒ **Attachment A: Business Certificate**
- ☒ **Attachment B: Map(s)**
- ☒ **Attachment C: Installation and Start Up Schedule**
- ☒ **Attachment D: Regulatory Discussion**
- ☒ **Attachment E: Plot Plan**
- ☒ **Attachment F: Detailed Process Flow Diagram(s)**
- ☒ **Attachment G: Process Description**
- ☒ **Attachment H: Material Safety Data Sheets (MSDS)**
- ☒ **Attachment I: Emission Units Table**
- ☒ **Attachment J: Emission Points Data Summary Sheet**
- ☒ **Attachment K: Fugitive Emissions Data Summary Sheet**
- ☒ **Attachment L: Emissions Unit Data Sheet(s)**
- ☐ **Attachment M: Air Pollution Control Device Sheet(s)**
- ☒ **Attachment N: Supporting Emissions Calculations**
- ☒ **Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans**
- ☒ **Attachment P: Public Notice**
- ☐ **Attachment Q: Business Confidential Claims**
- ☒ **Attachment R: Authority Forms**
- ☐ **Attachment S: Title V Permit Revision Information**
- ☒ **Application Fee**

Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.

FOR AGENCY USE ONLY – IF THIS IS A TITLE V SOURCE:

- ☐ ***Forward 1 copy of the application to the Title V Permitting Group and:***
- ☐ ***For Title V Administrative Amendments:***
  - ☐ ***NSR permit writer should notify Title V permit writer of draft permit,***
- ☐ ***For Title V Minor Modifications:***
  - ☐ ***Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,***
  - ☐ ***NSR permit writer should notify Title V permit writer of draft permit.***
- ☐ ***For Title V Significant Modifications processed in parallel with NSR Permit revision:***
  - ☐ ***NSR permit writer should notify a Title V permit writer of draft permit,***
  - ☐ ***Public notice should reference both 45CSR13 and Title V permits,***
  - ☐ ***EPA has 45 day review period of a draft permit.***

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

Attachment A

Current Business Certificate

State of West Virginia

Certificate

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

ANTERO RESOURCES CORPORATION

a corporation formed under the laws of Delaware, which is authorized to transact business in West Virginia by a Certificate of Authority has filed in my office as required by the provisions of the West Virginia Code, a copy of an amendment to its Articles of Incorporation authenticated by the proper office of the state or country of its incorporation and was found to conform to law.

Therefore, I issue this

CERTIFICATE OF AMENDMENT TO CERTIFICATE OF AUTHORITY

Given under my hand and the Great Seal of the State of West Virginia on this day of June 10, 2013

Natalie E Tennant

Secretary of State

FILED

JUN 10 2013

IN THE OFFICE OF SECRETARY OF STATE

Natalie E. Tennant
Secretary of State
1900 Kanawha Blvd E
Bldg 1, Suite 157-K
Charleston, WV 25305

Penney Barker, Manager
Corporations Division
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvsos.com
E-mail: business@wvsos.com

Office Hours: Monday – Friday
8:30 a.m. – 5:00 p.m. ET

FILE ONE ORIGINAL
(Two if you want a filed stamped copy returned to you)
FEE: $25.00

APPLICATION FOR AMENDED CERTIFICATE OF AUTHORITY

****** In accordance with the provisions of the West Virginia Code, the undersigned corporation hereby **** applies for an Amended Certificate of Authority and submits the following statement:**

1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation

2. Date Certificate of Authority was issued in West Virginia: 6/25/2008

3. Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)

4. Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)

5. Other amendments:
(attach additional pages if necessary)

6. **Name and phone number of contact person.** (This is optional, however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)

Alvyn A. Schopp — Contact Name
(303) 357-7310 — Phone Number

7. **Signature information** (See below ******Important Legal Notice Regarding Signature*):

Print Name of Signer: Alvyn A. Schopp Title/Capacity: Authorized Person

Signature: Alvyn A. Schopp **Date:** June 10, 2013

******Important Legal Notice Regarding Signature*: **Per West Virginia Code §31D-1-129. Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.**

Delaware

The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF AMENDMENT OF "ANTERO RESOURCES APPALACHIAN CORPORATION", CHANGING ITS NAME FROM "ANTERO RESOURCES APPALACHIAN CORPORATION" TO "ANTERO RESOURCES CORPORATION", FILED IN THIS OFFICE ON THE TENTH DAY OF JUNE, A.D. 2013, AT 9:37 O'CLOCK A.M.

A FILED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS.

Jeffrey W. Bullock, Secretary of State

4520810 8100

130754186

AUTHENTICATION: 0496546

DATE: 06-10-13

You may verify this certificate online at corp.delaware.gov/authver.shtml

State of Delaware
Secretary of State
Division of Corporations
Delivered 09:37 AM 06/10/2013
FILED 09:37 AM 06/10/2013
SRV 130754186 - 4520810 FILE

AMENDMENT TO THE AMENDED AND RESTATED CERTIFICATE OF INCORPORATION OF ANTERO RESOURCES APPALACHIAN CORPORATION

Antero Resources Appalachian Corporation (the "Corporation"), a corporation organized and existing under the laws of the State of Delaware, hereby certifies as follows:

1. The original Certificate of Incorporation of the Corporation was filed under the name Antero Resources Barnett Corporation with the filing of the original Certificate of Incorporation of the Corporation with the Secretary of State of the State of Delaware on March 18, 2008.

2. This Amendment to the Amended and Restated Certificate of Incorporation has been duly adopted and approved in accordance with Sections 242 of the General Corporation Law of the State of Delaware.

3. Article FIRST of the Amended and Restated Certificate of Incorporation is hereby amended to read in its entirety as follows:

FIRST. The name of the Corporation is Antero Resources Corporation.

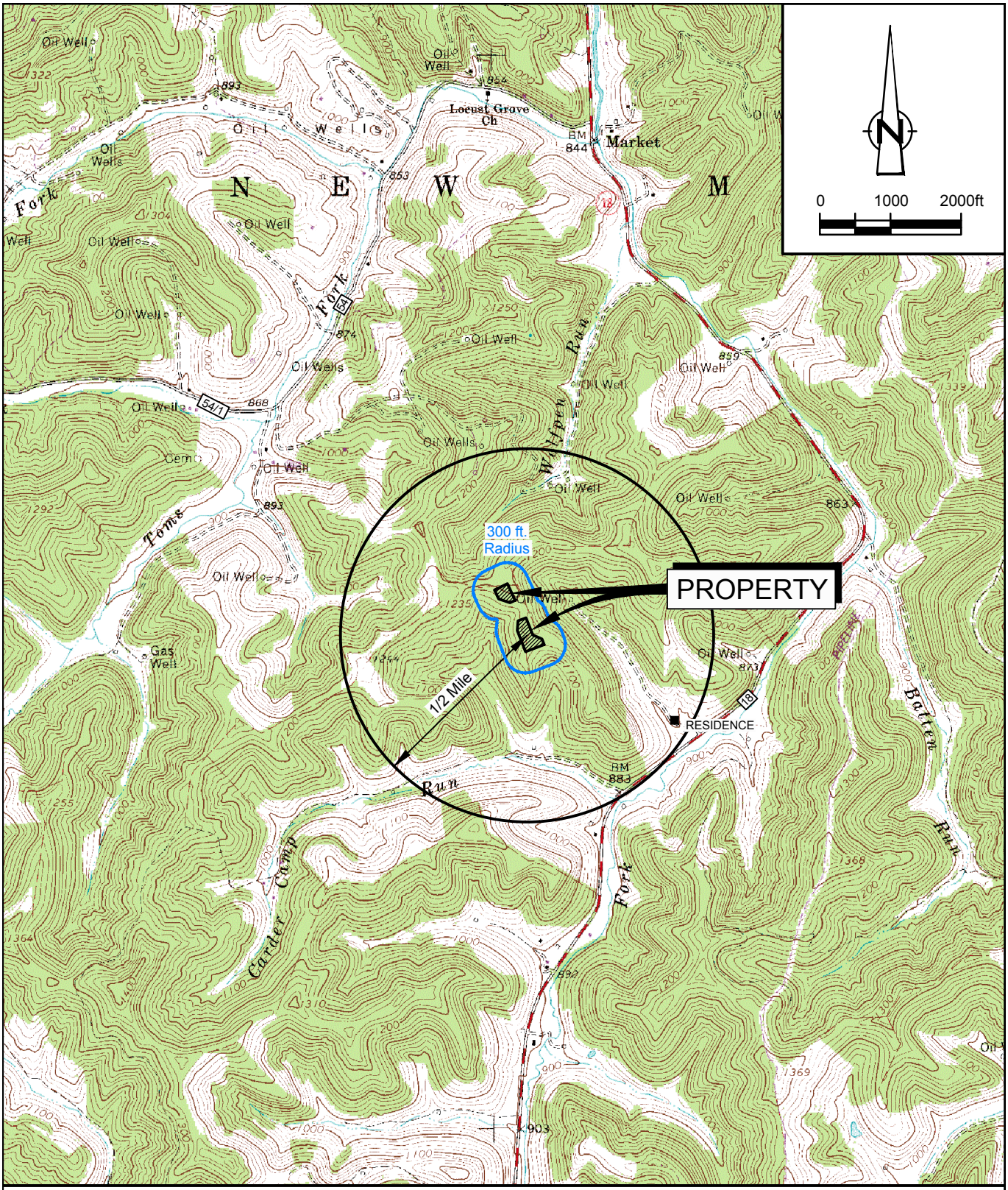
IN WITNESS WHEREOF, the Corporation has caused this Certificate of Amendment to be executed by its duly authorized officer on the 10th day of June, 2013.

ANTERO RESOURCES APPALACHIAN CORPORATION

By: _____
Name: Alvyn A. Schopp
Title: Vice President of Accounting & Administration / Treasurer

Attachment B

Site Location Map



SOURCE: USGS QUADRANGLE MAP;
NEW MILTON, WEST VIRGINIA

SITE COORDINATES: LAT. 39.186011, LONG. -80.706206

CPA

Attachment B

AREA MAP
HINTER HEIRS FWI
ANTERO RESOURCES
Doddridge County, West Virginia

Attachment C

Installation and Start-up Schedule

Attachment C

Installation and Start-up Schedule
Hinter Heirs FWI
Antero Resources Corporation
Doddridge County, West Virginia

Proposed Changes	Date
Install permanent FWI engines	Upon issuance of permit
Startup	Upon issuance of permit

Attachment D

Regulatory Discussions

Attachment D

Regulatory Requirements
Hinter Heirs FWI
Antero Resources Corporation
Doddridge County, West Virginia

Below are the applicable State and Federal regulations. Each emission source and corresponding air pollutant emissions were evaluated to determine regulatory applicability.

STATE REGULATORY APPLICABILITY

45CSR2 (To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

The purpose of 45CSR2 (To Prevent and Control Particulate Air Pollution from Combustion of Indirect Heat Exchangers) is to establish emission limitations for smoke and particulate matter which are discharged from fuel burning units.

45CSR2 defines fuel burning unit as any furnace, boiler apparatus, device, mechanism, stack or structure used in the process of burning fuel or other combustible material for the primary purpose of producing heat or power by indirect heat transfer. Indirect heat exchangers are devices that combust any fuel and produce steam or heats water or any heat transfer medium. 45CSR2.10(a), (b) and (c) provide the three categories of fuel burning units for the purpose of this rule. The Facility's diesel engines (FWIENG001 and FWIENG002) do not belong to any of the three categories and therefore are not subject to this rule. However, the engine manufacturer has submitted the engines to EPA for certificate of conformity; the engines are compliant with the emissions standards for off-road diesel engines.

*4*5CSR10 (To Prevent and Control Air Pollution from the Emission of Sulfur Oxides)

The purpose of this rule is to prevent and control air pollution from the emissions of sulfur dioxide. The combustion of the diesel fuel results in the emissions of sulfur dioxide, therefore this rule applies to the engines. The maximum sulfur dioxide emissions were calculated using AP-42 factors and 8760 hours of operation. The engines will not exceed the permitted limits.

45CSR13 (Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation)

45CSR13 applies to a stationary source defined in 45CSR13 Section 2.24.a which is any building, structure, facility, installation, or emission unit or combination thereof which is subject to any substantive requirement of an emission control rule promulgated by the Secretary. This rule applies to the fresh water impoundment engines. Antero Resources has published the required Class I legal advertisement notifying the public of their permit application, and paid the appropriate application fee (construction).

The diesel engines potential to emit will not exceed the major source threshold of 100 TPY of any air pollutant and 10 TPY of any hazardous air pollutant (HAP) or 25 TPY of any combination of HAPs. The calculation of potential to emit included all of the emission sources that belong to the same industrial grouping, are located on contiguous or adjacent properties, and are under the control of the same person. The nearest emission source that belongs to the same industrial grouping and under the control of the same person but not located on contiguous or adjacent property is the Cline Well Pad. This well pad operates independently and is approximately 1,900 feet east of the FWI. Further, the fresh water impoundment (FWI) operates independently supplying water to several nearby well pads.

FEDERAL REGULATORY APPLICABILITY

40 CFR §60 New Source Performance Standards

40 CFR §60 NSPS may apply to the Site if there are affected stationary sources constructed after the date of publication of the applicable parts of this standard.

Subpart A General Provisions

This subpart contains requirements for emission sources such as engines and is therefore applicable. The Site is subject to the requirements of this subpart, specifically the requirement to obtain a permit for the facility emission sources (§60.1) and notification and recordkeeping (§60.7). The only sources of emissions from this site are the diesel engines; therefore the site is subject only to NSPS IIII and NESHAP ZZZZ requirements.

Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines)

This subpart applies to stationary compression ignition (CI) internal combustion engines (ICE) specified in 40 CFR 60.4200(a)(2) through (a)(4). The Facility has two stationary ICE (FWIENG001 and FWIENG002) with maximum engine power of 600 HP (447.8 kW). The two engines have displacement of 13.5 L and 18.1 L. These are subject to 40 CFR 60.4204 (b), which covers stationary CI ICE with a displacement of less than 30 liters. The manufacturer has submitted these engines to EPA for certificate of conformity with the emission standards. The actual EPA emission test results were used in determining emissions from the diesel engines. The Facility will comply with the requirements specified in 40 CFR 60.4211 as applicable.

40 CFR §61 National Emissions Standards for Hazardous Air Pollutants

40 CFR §61 applies to each of the following sources that are intended to operate in volatile hazardous air pollutant (VHAP) service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices.

The site will not handle a fluid that is at least 10 percent by weight a VHAP, therefore this section does not apply.

40 CFR §63 National Emission Standards for Hazardous Air Pollutants for Source Categories

40 CFR §63 may apply to the site since it has the potential to emit hazardous air pollutants (HAP) and may be subject to a standard, limitation, prohibition, or other federally enforceable requirement of this part.

Subpart A General Provisions

The site HAP emissions are less than 25 tpy for total HAPs and less than 10 tpy for any single HAP, therefore the site is not a major source of HAPs. There are HAP emissions from the site and is therefore considered an area source of HAPs.

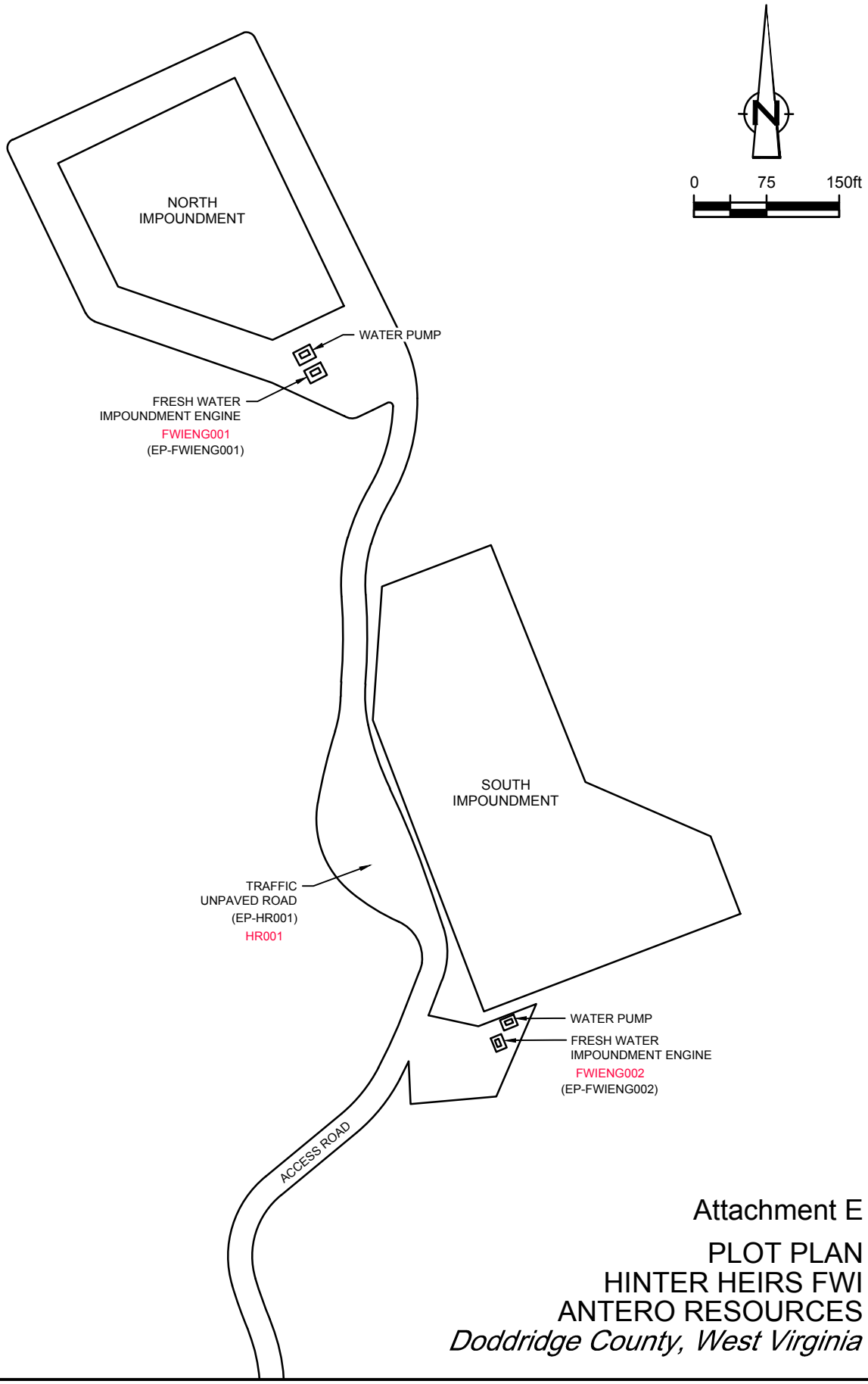
A copy of this applicability determination will be kept as specified in 40 CFR §63.10(b)(3) pertaining to recordkeeping.

Subpart ZZZZ National Emission Standard for Reciprocating Ignition Internal Combustion Engines)

This subpart establishes emission standards for hazardous air pollutants (HAPs) emitted from stationary internal combustion engines located at major and area sources of HAP emissions. The two engines in the Facility (FWIENG001 and FWIENG002) are subject to the area source requirements. However, since these engines are already subject to 40 CFR 60 Subpart IIII, no further requirements apply to these engines under this subpart. The Facility will demonstrate compliance through 40 CFR 60 Subpart IIII.

Attachment E

Plot Plan



Attachment E

PLOT PLAN
HINTER HEIRS FWI
ANTERO RESOURCES
Doddridge County, West Virginia

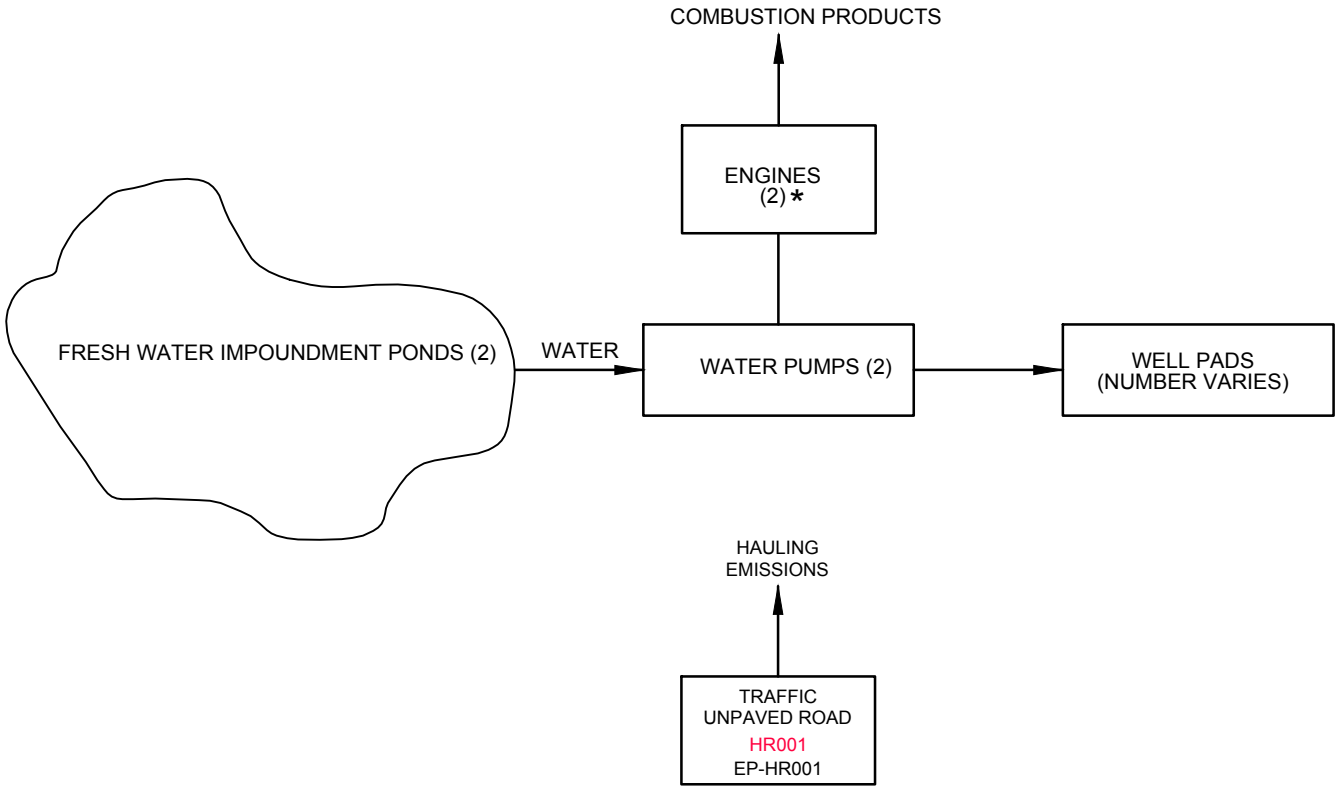
82715-00(198)GN-WA002 APR 17/2015

Attachment F

Process Flow Diagram

* ENGINES (2)

●	FWIENG001	EP-FWIENG001
●	FWIENG002	EP-FWIENG002



Attachment F

PROCESS FLOW DIAGRAM - ANTERO RESOURCES HINTER HEIRS FWI

Doddridge County, West Virginia

Attachment G

Process Description

Attachment G

Process Description
Hinter Heirs FWI
Antero Resources Corporation
Doddridge County, West Virginia

The Fresh Water Impoundment (FWI) collects and stores water for use in the nearby natural gas and oil production facilities. The FWI has two diesel engines (FWIENG001-002) that each drives a water pump. The pump feeds water into the water impoundment and then out into the water distribution system supplying water requirements of various natural gas and oil production facilities.

The air contaminants from the FWI are the products of diesel combustion from the engines (NOx, CO, SO2, VOC) and particulate matter (PM) emissions from unpaved roads when service vehicles enter the site. The air contaminants are released into the atmosphere. The engines use off the road low sulfur diesel fuel oil. The potential to emit was calculated using actual emissions for NOx, CO, and PM from certification tests conducted by EPA for diesel engines at the FWI. The certification emission test results were obtained from the EPA website. Other air contaminants such as SO2, VOC and HAPs were calculated using AP-42 emission factors for non-road diesel engines. The engines that drive the water pumps operate only as needed based on water requirement of the well pads; however, for purposes of determining potential to emit, the total of 8760 hours per engine, per year was used in the calculation. Calculations are in Table 1 of Attachment E. The road emission calculations are in Table 2 of Attachment E.

The FWI operates independently serving several natural gas and oil production facilities. The nearest emission source that belongs to the same industrial grouping and under the control of the same person but not located on contiguous or adjacent property is the Cline Well Pad. This well pad operates independently and is approximately 1,900 feet east of the FWI.

Attachment H

Material Safety Data Sheets

Attachment H

Description of Material Safety Data Sheets (MSDS)
Hinter Heirs FWI
Antero Resources Corporation
Doddridge County, West Virginia

The only material at the Fresh Water Impoundment is the diesel fuel for the engines. No Material Safety Data Sheet (MSDS) for diesel is included as attachment.

Attachment I

Emission Units Table

Attachment I: Emission Units Data Sheet

(includes all emission units and air pollution control devices that will be part of this permit application review, regardless of permitting status)

Emission Unit ID1	Emission Point ID2	Emission Unit Description	Year Installed/	Design Capacity	Type3 and Date of Change	Control Device 4
FWIENG001	EP-FWIENG001	Freshwater Impoundment Engine	2015	600 HP	New	N/A
FWIENG002	EP-FWIENG002	Freshwater Impoundment Engine	2015	600 HP	New	N/A

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

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

3 New, modification, removal.

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

Attachment J

Emission Points Data Summary Sheet

Attachment J

Emission Points Data Summary Sheet

Table 1: Emissions Data

Emission Point ID No. *(Must match Emission Units Table & Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		All Regulated Pollutants - Chemical Name/CAS[3] *(Speciate VOCs & HAPS)*	Maximum Potential Uncontrolled Emissions [4]		Maximum Potential Controlled Emissions [5]		Emission Form or Phase *(At exit conditions, Solid, Liquid or Gas/Vapor)*	Est. Method Used [6]
		ID No.	Source	ID No.	Device Type		lb/hr	ton/yr	lb/hr	ton/yr		
EP-FWIENG001, EP-FWIENG002	n/a	FWIENG001, FWIENG002	Freshwater Impoundment Engine	N/A		CO (630080)	3.1589	13.8358	3.1589	13.8358	Gas/Vapor/ Solid (for PM)	MB AP-42
						NOx (10102439)	6.6534	29.1417	6.6534	29.1417		
						Pb (7439-92-1)	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
						CO2 Equivalent N2O (10024972), CO2	1380.00	6044.39	1379.9979	6044.3907		
						PM,PM10, PM2.5	0.2270	0.9945	0.2270	0.9945		
						Acetaldehyde (75070)	0.0075	0.0330	0.0075	0.0330		
						Acrolein (107028)	0.0009	0.0040	0.0009	0.0040		
						Benzene (71432)	0.0092	0.0401	0.0092	0.0401		
						Toluene (108883)	0.0040	0.0176	0.0040	0.0176		
						Naphthalene (91203)	0.0007	0.0033	0.0007	0.0033		
						1,3-Butadiene (1106990)	0.0004	0.0017	0.0004	0.0017		
						o,m,p-xylenes (95476,108383,106423)	0.0028	0.0122	0.0028	0.0122		
						Formaldehyde (50000)	0.0116	0.0507	0.0116	0.0507		
						Total VOCs	3.0196	13.2260	3.0196	13.2260		
						Total SO_2	2.4604	10.7764	2.4604	10.7764		
EP-HR001	n/a	HR001	Road	N/A		PM,PM10, PM2.5	0.3467	0.1265	0.1733	0.0633	Solid	MB

The EMISSION POINTS DATA 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 EMISSION POINTS DATA 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 Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).

3 List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. **DO NOT LIST** H_2, H_2O, N_2, O_2, and Noble Gases.

4 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).

5 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/20minute batch).

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

7 Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m_3) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO , use units of ppmv (See 45CSR10).

Attachment J

EMISSION POINTS DATA SUMMARY SHEET

Table 2: Release Parameter Data

Emission Point ID No. *(Must match Emission Units Table)*	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (oF)	Volumetric Flow 1	Velocity (fps)	Ground Level *(Height above mean sea level)*	Stack Height 2 *(Release height of emissions above ground level)*	Northing	Easting
EP-FWIENG001, EP-FWIENG002	N/A	N/A	N/A	N/A	1113	N/A	4337.459	525.37

1 Give at operating conditions. Include inerts.

2 Release height of emissions above ground level.

Attachment K

Fugitive Emissions Data Summary Sheet

Attachment K

Description of Fugitive Emissions
Hinter Heirs FWI
Antero Resources Corporation
Doddridge County, West Virginia

Fugitive emissions at the FWI are emitted when service vehicles enter the facility. The facility is flat and unpaved. Fugitive emissions were calculated using AP-42 factors. Detailed calculations are shown on Table 4.

Attachment K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process emissions are not typically considered to be fugitive, and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA 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).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS
1.) Will there be haul road activities? ☒ Yes ☐ No ☒ If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.) Will there be Storage Piles? ☐ Yes ☒ No ☐ If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.) Will there be Liquid Loading/Unloading Operations? ☐ Yes ☒ No ☐ If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.) Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)? ☐ Yes ☒ No ☐ If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.) Will there be General Clean-up VOC Operations? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.) Will there be any other activities that generate fugitive emissions? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.
If you answered "NO" to all of the items above, it is not necessary to complete the following table, "Fugitive Emissions Summary."

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		See Fugitive Summary Sheet		See Fugitive Summary Sheet		
Unpaved Haul Roads		Does not apply		Does not apply		
Storage Pile Emissions		Does not apply		Does not apply		
Loading/Unloading Operations		Does not apply		Does not apply		
Wastewater Treatment Evaporation & Operations		Does not apply		Does not apply		
Equipment Leaks		Does not apply		Does not apply		
General Clean-up VOC Emissions		Does not apply		Does not apply		
Other		Does not apply		Does not apply		

[1] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. DO NOT LIST H_2, H_2O, N_2, O_2, 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; O = other (specify).

Attachment K
Fugitive Emissions Data 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	n/a					
Unpaved Haul Roads	PM, PM10, PM2.5	0.3467	0.1265	0.1733	0.0633	MB

[1] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. DO NOT LIST H_2, H_2O, N_2, O_2, 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; O = other (specify).

Attachment L

Emission Unit Data Sheets

Attachment L: Diesel Burning Units
Emission Data Sheet

Complete the information on this data for each Diesel Engine and Diesel fueled equipment

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 Capacity
FWIENG001	EP-FWIENG001	Freshwater Impoundment Engine	2015	New	--	600 HP
FWIENG002	EP-FWIENG002	Freshwater Impoundment Engine	2015	New	--	600 HP

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.

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.

Attachment L

FUGITIVE EMISSIONS FROM UNPAVED HAULROADS

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

ᵖM-10

k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	5.1	5.1
p =	Number of days per year with precipitation >0.01 in.	150	150

Item Number	Description	Number of Wheels	Mean Vehicle Weight (tons)	Mean Vehicle Speed (mph)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1	Pick Up Truck	4	3	10	1	1.0	730	N/A	50
2									
3									
4									
5									
6									
7									
8									

Source: *AP-42 Fifth Edition – 13.2.2 Unpaved Roads*

E = k × 5.9 × (s ÷ 12) × (S ÷ 30) × (W ÷ 3)0.7 × (w ÷ 4)0.5 × ((365 – p) ÷ 365) = lb/Vehicle Mile Traveled (VMT) Where:

		PM	PM-10
k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	5.1	5.1
S =	Mean vehicle speed (mph)	10	10
W =	Mean vehicle weight (tons)	3	3
w =	Mean number of wheels per vehicle	4	4
p =	Number of days per year with precipitation >0.01 in.	150	150

For lb/hr: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] = lb/hr

For TPY: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] × [Ton ÷ 2000 lb] = Tons/year

SUMMARY OF UNPAVED HAULROAD EMISSIONS

	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
Item No.	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	0.3467	0.1265	0.1733	0.0633	0.1560	0.0569	0.0780	0.0285
2								
3								
4								
5								
TOTALS	0.3467	0.1265	0.1733	0.0633	0.1560	0.0569	0.0780	0.0285

Attachment N

Supporting Emission Calculations

Table 1

Facility Information
Hinter Heirs FWI
Doddridge, West Virginia
Antero Resources Corporation

Oil and Gas Site General Information

Administrative Information	
Company Name	Antero Resources Corporation
Facility/Well Name	Hinter Heirs FWI
Nearest City/Town	New Milton
API Number/SIC Code	1311
Latitude/Longitude	39.186011, -80.706206
County	Doddridge

Technical Information	
Are there any sour gas streams at this site?	No
Is this site currently operational?	Yes

Equipment/Processes at Site	
Equipment/Process Types	**How many for this site?**
Diesel Engines	2

Table 2

Permit Summary
Hinter Heirs FWI
Doddridge, West Virginia
Antero Resources Corporation

Pollutant		Emissions			Threshold Exceeded?	
		Uncontrolled	Controlled	Threshold	Uncontrolled	Controlled
VOC	lbs/hr	3.0196	3.0196	6		
	tons/yr	13.2260	13.2260	10	**Yes**	**Yes**
NO_X	lbs/hr	6.6534	6.6534	6	**Yes**	**Yes**
	tons/yr	29.1417	29.1417	10	**Yes**	**Yes**
CO	lbs/hr	3.1589	3.1589	6		
	tons/yr	13.8358	13.8358	10	**Yes**	**Yes**
SO_2	lbs/hr	2.4604	2.4604	6		
	tons/yr	10.7764	10.7764	10	**Yes**	**Yes**
$PM_{2.5}$	lbs/hr	0.00E+00	0.00E+00	6		
	tons/yr	0.00E+00	0.00E+00	10		
PM_{10}	lbs/hr	0.3830	0.3050	6		
	tons/yr	1.0514	1.0229	10		
Lead	lbs/hr	0.00E+00	0.00E+00	6		
	tons/yr	0.00E+00	0.00E+00	10		
Total HAPs	lbs/hr	0.0371	0.0371	2		
	tons/yr	0.1625	0.1625	5		
Total TAPs	lbs/hr	0.0207	0.0207	1.14		
n-Hexane	lbs/hr	0.0000	0.0000			
	tons/yr	0.0000	0.0000			
Toluene	lbs/hr	0.0040	0.0040			
	tons/yr	0.0176	0.0176			
Ethylbenzene	lbs/hr	0.0000	0.0000			
	tons/yr	0.0000	0.0000			
Xylenes	lbs/hr	0.0028	0.0028			
	tons/yr	0.0122	0.0122			
Benzene	lbs/hr	0.0092	0.0092			
	tons/yr	0.0401	0.0401			

Enter any notes here:	1. Please see Attachment J – Emission Points Data Summary Sheet and Attachment K-Fugitive Emissions Data Summary Sheet for sitewide sources and breakdown of emission quantities.

Table 3

Fresh Water Impoundment (FWI) Engine Emissions
Hinter Heirs FWI
Doddridge, West Virginia
Antero Resources Corporation

FWIENG001

Manufacturer	CATERPILLAR
Model	C18
Power (hp)	600
Operating Hours/Year	8760
Fuel Consumption (gal/hr)	35.7
Heat Value (Btu/gal)	137380

Pollutant	Emission Factors		Engine Emissions	
	g/hp-hr	lb/MMBtu	lb/hr	tpy
NOx	2.56		3.39	14.83
CO	1.94		2.57	11.24
SO2	0.93		1.23	5.39
PM	0.10		0.13	0.56
VOC	1.14		1.51	6.61
$CO2_e$	521.63		690.00	3022.20
HAPS				
Benzene		9.33E-04	4.58E-03	2.00E-02
1,3-Butadiene		3.91E-05	1.92E-04	8.40E-04
Toluene		4.09E-04	2.01E-03	8.79E-03
Xylenes		2.85E-04	1.40E-03	6.12E-03
Formaldehyde		1.18E-03	5.79E-03	2.53E-02
Acetaldehyde		7.67E-04	3.76E-03	1.65E-02
Acrolein		9.25E-05	4.54E-04	1.99E-03
Napthelene		8.48E-05	3.33E-04	1.46E-03

FWIENG002

Manufacturer	John Deere
Model	6135HF485
Power (hp)	600
Operating Hours/Year	8760
Fuel Consumption (gal/hr)	35.7
Heat Value (Btu/gal)	137380

Pollutant	Emission Factors		Engine Emissions	
	g/hp-hr	lb/MMBtu	lb/hr	tpy
NOx	2.47		3.27	14.31
CO	0.45		0.59	2.59
SO2	0.93		1.23	5.39
PM	0.07		0.10	0.43
VOC	1.14		1.51	6.61
$CO2_e$	521.63		690.00	3022.20
HAPS				
Benzene		9.33E-04	4.58E-03	2.00E-02
1,3-Butadiene		3.91E-05	1.92E-04	8.40E-04
Toluene		4.09E-04	2.01E-03	8.79E-03
Xylenes		2.85E-04	1.40E-03	6.12E-03
Formaldehyde		1.18E-03	5.79E-03	2.53E-02
Acetaldehyde		7.67E-04	3.76E-03	1.65E-02
Acrolein		9.25E-05	4.54E-04	1.99E-03
Napthelene		8.48E-05	4.16E-04	1.82E-03

	lb/hr	tpy
TOTAL Uncontrolled VOC	3.0196	13.2260
TOTAL Uncontrolled NOx	6.6534	29.1417
TOTAL Uncontrolled HAPs	0.0371	0.1625
TOTAL Uncontrolled TAPs (Benzene)	0.0092	0.0401
TOTAL Uncontrolled TAPs (Formaldehyde)	0.0116	0.0507
TOTAL CO2e Emissions	1380.00	6044.39

Notes:

1. Emissions for NOx, CO, and PM are based on EPA certification actual test results (in g/kw-hr) for nonroad diesel fueled engines (http://www.epa.gov/otaq/certdata.htm#early-lgeng). Everything else is based on AP-42 Emission factors for diesel fueled nonroad industrial engines

Table 4

Fresh Water Impoundment (FWI) Road Emissions
Hinter Heirs FWI
Ritchie County, West Virginia
Antero Resources Corporation

	PM	PM10
Particle Size Multiplier (k)	0.8	0.36
Silt Content of Road Surface Material (s) (%)	5.1	5.1
Days per Year with Precipitation > 0.01 in (p)	150	150
Control Efficiency for Watering [1] (%)	50	50

Pick Up Truck Trip Calculation	
No of Trips Per day	2
Trips Per Year	730

	# of Wheels	Mean Vehicle Weight (W) (tons)	Mean Vehicle Speed (S) (mph)	Miles Per Trip (miles)	Maximum Trips per Hour	Maximum Trips per Year	Vehicle Miles Travelled (miles/hr)	Vehicle Miles Travelled (miles/year)	PM (lbs/VMT)	PM10 (lbs/VMT)
Pick Up Truck	4	3	10	1	1	730	1.0000	730.0000	0.3467	0.1560

	Uncontrolled Emissions						Controlled Emissions					
	PM			PM10			PM			PM10		
	(lbs/hr)	(lbs/year)	(tpy)	(lbs/hr)	(lbs/year)	(tpy)	(lbs/hr)	(lbs/year)	(tpy)	(lbs/hr)	(lbs/year)	(tpy)
Pick Up Truck Total Emissions	0.3467	253.0762	0.1265	0.1560	113.8843	0.0569	0.1733	126.5381	0.0633	0.0780	56.9421	0.0285

Enter any notes here:	1 EPA, AP-42, Volume I, Section 13.2.2 Unpaved Roads (11/06); assume 2:1 moisture ratio Section 13.2.2 Unpaved Roads (11/06) Source: Attachment L, Fugitive Emissions from Unpaved Haul Roads, Rev 03/2007, West Virginia Department of Environmental Protection

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF TRANSPORTATION AND AIR QUALITY
WASHINGTON, DC 20460

CERTIFICATE OF CONFORMITY
2010 MODEL YEAR

Manufacturer:	**CATERPILLAR, INC.**
Engine Family:	**ACPXL18.1ESK**
Certificate Number:	**CPX-NRCI-10-01**
Intended Service Class:	**NR 8 (450-560)**
Fuel Type:	**DIESEL**
FELs:	NMHC +NOx: **N/A** NOx: **N/A** PM: **N/A**
Effective Date:	**9/23/2009**
Date Issued:	**9/23/2009**

Karl J. Simon, Director
Compliance and Innovative Strategies Division
Office of Transportation and Air Quality

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60 and Part 89, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following stationary and nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and 89, and produced in the stated model year.

This certificate of conformity covers only those new stationary and nonroad compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and 89 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60 and 89.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 89.129-96 and 89.506-96 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to a revocation or suspension of this certificate for reasons specified in 40 CFR Part 89. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void ab initio for other reasons specified in 40 CFR Part 89.

This certificate does not cover stationary and nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

CATERPILLAR®

C18 Diesel Oilfield Generator Set

545 ekW
(680 kVA)
60 Hz 480 Volts
1800 rpm

Image shown may not reflect actual package.

CATERPILLAR® ENGINE SPECIFICATIONS

C18 In-Line 6, 4-Stroke-Cycle water-cooled diesel

Bore	145 mm (5.71 in.)
Stroke	183 mm (7.2 in.)
Displacement	18.13 L (1106.36 cu. in.)
Compression Ratio	14.5:1
Aspiration	Air-to-Air Aftercooled
Fuel System	MEUI
Governor Type	Caterpillar® ADEM™ A4 control system
Package Weight (estimated)	5032.61 kg (11,095 lb.)

Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

FEATURES

Ready to Run
- Shipped from the factory complete and ready to run

Fuel/Emissions Strategy
- Tier 2

Enclosures (design to order)
- Sound attenuated
- Weather protective

Single-Source Supplier
- Fully prototype-tested with certified torsional vibration analysis available
- Factory-designed systems built at Caterpillar ISO 9001:2000 certified facilities

Worldwide Product Support
- Caterpillar dealers provide extensive post-sale support including maintenance and repair agreements.
- Caterpillar dealers fill 99.7 percent of parts orders within 24 hours.
- Caterpillar dealers have over 2,100 dealer branch stores operating in 200 countries.
- The Cat® S•O•S℠ program cost-effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products.

Cat® C18 Tier 2 ATAAC Diesel Engine
- Utilizes ACERT™ Technology
- Reliable, rugged, durable design
- Field-proven in thousands of applications worldwide
- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic engine control

Cat Generator
- Designed to match performance and output characteristics of Caterpillar diesel engines
- 2/3 pitch minimizes harmonic distortion and facilitates parallel operation
- UL 1446 Recognized Class H Insulation

Cat EMCP 3 Control Panels
- EMCP 3.1 offers basic engine/generator monitoring, metering, and protection.
- Segregated low voltage (AC/DC) accessory box provides single point access to accessory connections
- Panel lights

Web Site

For all your petroleum power requirements, visit www.cat-oilandgas.com.

STANDARD EQUIPMENT

Air Inlet System
- Dual element air cleaner
- Service indicator

Control Panels
- EMCP 3.1 (package mounted)

Controls
- Electronic governor

Cooling System
- Radiator with guard sized for 50° C
- Low coolant level sensor
- Coolant level sight gauge
- Coolant drain line with valve
- Fan and belt guards
- Caterpillar Extended Life Coolant

Exhaust System
- Turbo outlet elbow

Fuel System
- Primary fuel filter with integral water separator
- Secondary fuel filters
- Fuel priming pump
- Fuel pressure gauge
- Flexible fuel lines

Generator
- Self excited
- Class H insulation
- Class H temperature rise
- Random wound
- Voltage regulator
- Power terminal strip connections
- IP23 Protection
- CDVR 3-phase sensing
- Power center

Governor
- ADEM™ A4

Lube System
- Lubricating oil and filter
- Oil drain line with valves
- Fumes disposal
- Dipstick

Mounting System
- Oilfield skid base
- Hard mounted

Starting/Charging System
- 45-amp charging alternator
- 24-volt starting motor(s)
- Batteries with rack and cables
- Battery disconnect switch

General
- Paint — Caterpillar yellow except rails and radiators (gloss black)
- Flywheel and flywheel housing — SAE No. 1

OPTIONAL EQUIPMENT

Air Inlet System
- Heavy-duty air cleaner with precleaner

Control Panels
- EMCP 3.2 provides comprehensive monitoring, metering, and protection including: power metering, protective relaying and MODBUS communication.
- EMCP 3.3 provides all of the EMCP 3.2 features and adds the ability to expand the system for advanced engine and generator monitoring.
- Local alarm and remote annunciator modules
- Narrow base

OPTIONAL EQUIPMENT (continued)

Exhaust System
- Industrial, residential, and critical mufflers
- Stainless steel exhaust flex and ANSI weld flange

Generator
- Permanent magnet conversion for self-excited generators
- Oversize and premium generators
- Space heaters only available with permanent magnet excitation generators

Governor
- Load share module

Starting/Charging System
- Jacket water heater
- Block heater
- Oversize batteries

SPECIFICATIONS

Cat Generator

Voltage	480 V
Excitation	Self excited
Pitch	2/3
Number of poles	4
Number of leads	12
Insulation	UL 1446 Recognized Class H with tropicalization and antiabrasion
	(consult your Caterpillar dealer for available voltages)
IP Rating	Drip Proof IP22
Alignment	Pilot Shaft
Overspeed capability	125% of rated
Wave form deviation (line-to-line)	2%
Voltage regulation	Less than ± 1/2% (steady state)
	Less than ± 1/2% (with 3% speed change)
Harmonic Distortion	Less than 5%

Cat Control Panel

EMCP 3 Series Controls
24-Volt DC control
EMCP 3.1 (standard)
- CSA/CE

NEMA 1, IP22 enclosure
- Run/Auto/Stop control
- True RMS metering, 3-phase
- Speed adjust

Voltage adust (optional)
- Digital indication for:
  - rpm
  - Operating hours
  - Oil pressure
  - Coolant temperature
  - System DC volts
  - L-L volts, L-N volts, phase amps, Hz
  - ekW, kVA, kVAR, kW-hr, % kW, PF (*)
- Shutdowns
  - Low oil pressure
  - High coolant temperature
  - Overspeed
  - Emergency stop
  - Failure to start (overcrank)
- Programmable protective relaying functions: (*)
  - Under and over voltage
  - Under and over frequency
  - Reverse power
  - Overcurrent
- MODUS isolated data link (RS-485 half-duplex) supports serial communication at data rate up to 115.2 kbaud (*)

(*) Available on EMCP 3.2 and EMCP 3.3

Single location customer connector point

Consult your Caterpillar dealer for available voltages

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF TRANSPORTATION AND AIR QUALITY
WASHINGTON, DC 20460

CERTIFICATE OF CONFORMITY
2010 MODEL YEAR

Manufacturer:	**JOHN DEERE POWER SYSTEMS**
Engine Family:	**AJDXL13.5900**
Certificate Number:	**JDX-NRCI-10-31**
Intended Service Class:	**NR 6 (130-225) NR 7 (225-450) NR 8 (450-560)**
Fuel Type:	**DIESEL**
FELs: g/kW-hr	NMHC + NOx: **N/A** NOx: **N/A** PM: **N/A**
Effective Date:	**10/7/2010**
Date Issued:	**10/7/2010**

Karl J. Simon, Director
Compliance and Innovative Strategies Division
Office of Transportation and Air Quality

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60 and Part 89, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following stationary and nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and 89, and produced in the stated model year.

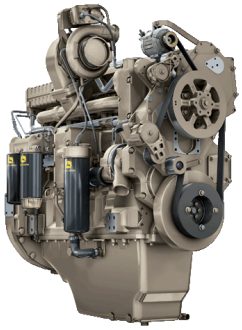
This certificate of conformity covers only those new stationary and nonroad compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and 89 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60 and 89.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 89.129-96 and 89.506-96 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to a revocation or suspension of this certificate for reasons specified in 40 CFR Part 89. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void ab initio for other reasons specified in 40 CFR Part 89.

This certificate does not cover stationary and nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

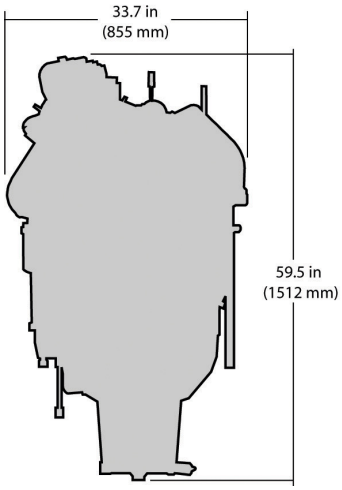
PowerTech Plus 6135H Diesel Engine

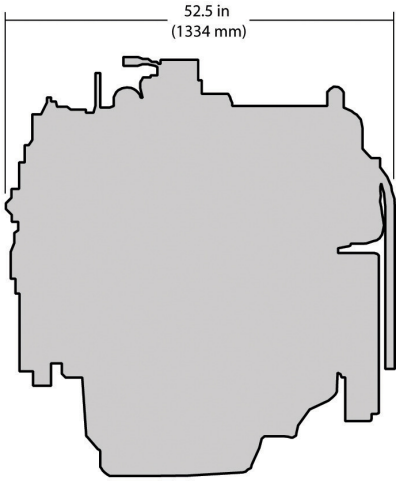
Industrial Engine Specifications



6135H shown

Dimensions





Certifications

CARB
EPA Tier 3
EU Stage III A

General data

Model	6135HF485
Number of cylinders	6
Displacement - L (cu in)	13.5 (824)
Bore and Stroke-- mm (in)	132 x 165 (5.20 x 6.50)
Compression Ratio	16.0:1
Engine Type	In-line, 4-Cycle

Aspiration	Turbocharged and air-to-air aftercooled
Length - mm (in)	1334 (52.5)
Width - mm (in)	855 (33.7)
Height-- mm (in)	1512 (59.5)
Weight, dry-- kg (lb)	1493 (3291)

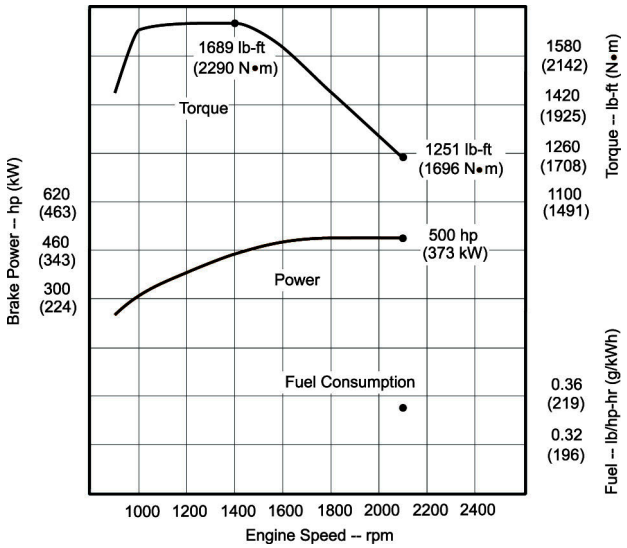
Intermittent BHP is the power rating for variable speed and load applications where full power is required intermittently.

Heavy duty - see application ratings/definitions, engine performance curves.

Continuous BHP is the power rating for applications operating under a constant load and speed for long periods of time.

Power output is within + or - 5% at standard SAE J 1995 and ISO 3 046.

Performance curve



Performance data

Intermittent rated speed	373 kW (500 hp) @ 2100 rpm
Peak power	373 kW (500 hp) @ 2100 rpm
Power bulge %	0% @ NA rpm
Peak torque	2290 N.m (1689 ft-lb) @ 1400 rpm
Torque rise %	35% @ 1400 rpm

Features and benefits

4-Valve Cylinder Head

- The 4-valve cylinder head provides excellent airflow resulting in greater low-speed torque and better transient response. Cross flow design

Electronic Unit Injector (EUI) and Engine Control Unit (ECU)

- The EUI fuel system provides variable common-rail pressure, multiple injections, and higher injection pressures, up to 2000 bar (29,000 psi). It also controls fuel injection timing and provides precise control for start, duration, and end of injection

Cooled Exhaust Gas Recirculation (EGR)

- EGR cools and mixes measured amounts of cooled exhaust gas with incoming fresh air to lower peak combustion temperatures, thereby reducing NOx

Variable Geometry Turbocharger (VGT)

- Varies exhaust pressure based on load and speed to insure proper EGR flow; greater low-speed torque, quicker transient response, higher peak torque, and best-in-class fuel econo my.

Air-to-Air Aftercooled

- This is the most efficient method of cooling intake air to help reduce engine emissions while maintaining low-speed torque, transient response time, and peak torque. It enables an engine to meet emissions regulations with better fuel economy and the lowest installed costs

Compact Size

- Horsepower/displacement ratio is best-in-class
- Lower installed cost
- Mounting points are the same as Tier 2/Stage II engine models

Engine Performance

- Multiple rated speeds to further reduce noise and improve fuel economy
- New higher peak torque ratings
- Better transient response time
- Greater levels of low speed torque
- Higher levels of power bulge

John Deere Electronic Engine Controls

- Electronic engine controls monitor critical engine functions, providing warning and/or shutdown to prevent costly engine repairs and eliminate the need for add-on governing components all lowering total installed costs. Snapshot diagnostic data that can be retrieved using commonly available diagnostic service tools
- Controls utilize new common wiring interface connector for vehicles or a vailable OEM instrumentation packages; new solid conduit and "T" connectors to reduce wiring stress and provide greater durability and improved appearance
- Factory-installed, engine mounted ECU or remote-mounted ECU comes with wiring harness and associated components. Industry-standard SAE J1939 interface communicates with other vehicle systems, eliminating redundant sensors and reducing vehicle installed cost

Additional Features

- Gear-driven auxiliary drives; 500-hour oil change; self-adjusting poly-vee fan drive; R.H. and L.H. engine-mounted fuel filters; single-piece low friction piston; optional rear PTO; low-pressure fuel system with "auto-prime" feature; directed top-liner cooling

John Deere Power Systems
3801 W. Ridgeway Ave.
PO Box 5100
Waterloo, IA 50704-5100
Phone: 1-800-533-6446
Fax: 319.292.5075

John Deere Power Systems
Usine de Saran
La Foulonnerie - B.P. 11.13
45401 Fleury les Aubrais Cedex
France
Phone: 33.2.38.82.61.19
Fax: 33.2.38.82.60.00

All values at rated speed and power with standard options unless otherwise noted. Specifications and design subject to change without notice.

Attachment O

Monitoring/Recordkeeping/Reporting/Testing Plans

Attachment O

Proposed Monitoring, Recordkeeping, Reporting, and Testing
Hinter Heirs FWI
Antero Resources Corporation
Doddridge County, West Virginia

The Facility will perform the following to demonstrate compliance with emission limits and operating parameters:

1) Monitor engine setting adjustments to ensure these are consistent with manufacturer's instructions.
2) Maintain records of hours of operations of the engines.
3) Maintain records of maintenance performed on engines.
4) Documentation from manufacturer that engine is certified to meet emission standards

These records will be maintained on site or in a readily available off-site location for a period of 5 years.

Attachment P

Public Notice

Attachment P

Air Quality Permit Notice
Notice of Application
Hinter Heirs FWI
Antero Resources Corporation
Doddridge, West Virginia

Notice is given that Antero Resources Corporation has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Construction Permit (45CSR13) for a Fresh Water Impoundment facility located near 0.5 mile Northwest of the intersection of Carder Camp Road and Rte 18 in Doddridge, West Virginia.

The latitude and longitude coordinates are: 39.186011 degrees N and -80.706206 degrees W

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

Pollutants	TOTALS (tpy):
VOC	13.2260
NO_X	29.1417
CO_{2e}	6044.4
CO	13.8358
SO_2	10.7764
$PM_{2.5}$	0.0000
PM_{10}	0.9945
Lead	0.00E+00
Total HAPs	0.1625
Benzene	0.0401
Formaldehyde	0.0507
Xylenes	0.0122

Startup is planned to begin upon issuance of the permit. 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 __ day of _____, 2015

By: Antero Resources Corporation
Barry Schatz
Senior Environmental & Regulatory Manager
1615 Wynkoop Street
Denver, CO 80202

Attachment R

Authority Forms

Attachment R
AUTHORITY OF CORPORATION
OR OTHER BUSINESS ENTITY (DOMESTIC OR FOREIGN)

TO: The West Virginia Department of Environmental Protection, Division of Air Quality

DATE: January 23, 2015

ATTN.: Director

Corporation's / other business entity's Federal Employer I.D. Number 80-0162034

The undersigned hereby files with the West Virginia Department of Environmental Protection, Division of Air Quality, a permit application and hereby certifies that the said name is a trade name which is used in the conduct of an incorporated business or other business entity.

Further, the corporation or the business entity certifies as follows:

(1) Barry Schatz (is/are) the authorized representative(s) and in that capacity may represent the interest of the corporation or the business entity and may obligate and legally bind the corporation or the business entity.

(2) The corporation or the business entity is authorized to do business in the State of West Virginia.

(3) If the corporation or the business entity changes its authorized representative(s), the corporation or the business entity shall notify the Director of the West Virginia Department of Environmental Protection, Division of Air Quality, immediately upon such change.

President or Other Authorized Officer
(Vice President, Secretary, Treasurer or other official in charge of a principal business function of the corporation or the business entity)

(If not the President, then the corporation or the business entity must submit certified minutes or bylaws stating legal authority of other authorized officer to bind the corporation or the business entity).

Secretary

Name of Corporation or business entity

Attachment

Application Fee