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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Jim Justice , Governor  
Austin Caperton , Cabinet Secretary  
www.dep.wv.gov

Tuesday, March 14, 2017  
WELL WORK PERMIT  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION (A)  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit approval for ENTERPRISE UNIT 2H  
47-017-06802-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

Operator's Well Number: ENTERPRISE UNIT 2H  
Farm Name: S & S VENTURES, LLC  
U.S. WELL NUMBER: 47-017-06802-00-00  
Horizontal 6A / New Drill  
Date Issued: 3/14/2017

Promoting a healthy environment.

03/17/2017

WW-6B  
(04/15)

API NO. 47-017 - 06802  
OPERATOR WELL NO. Enterprise Unit 2H  
Well Pad Name: Brooks Pad

12/21

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

1) Well Operator: Antero Resources Corporation 494507062 017-Doddridge Greenbrier New Milton  
Operator ID County District Quadrangle

2) Operator's Well Number: Enterprise Unit 2H Well Pad Name: Brooks Pad

3) Farm Name/Surface Owner: S&S Ventures, LLC Public Road Access: CR 25/10

4) Elevation, current ground: ~1399' Elevation, proposed post-construction: ~1364'

5) Well Type (a) Gas  Oil  Underground Storage

Other \_\_\_\_\_

(b) If Gas Shallow  Deep

Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus Shale: 7600' TVD, Anticipated Thickness- 60 feet, Associated Pressure- 3250#

8) Proposed Total Vertical Depth: 7600' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 19500' MD

11) Proposed Horizontal Leg Length: 10860'

12) Approximate Fresh Water Strata Depths: 249', 327', 550'

13) Method to Determine Fresh Water Depths: Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: 1619', 1851', 2073', 2509'

15) Approximate Coal Seam Depths: 392', 542', 1007'

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes  No

(a) If Yes, provide Mine Info: Name: \_\_\_\_\_  
Depth: \_\_\_\_\_  
Seam: \_\_\_\_\_  
Owner: \_\_\_\_\_

DAG  
12/28/16

18)

**CASING AND TUBING PROGRAM**

<u>TYPE</u>	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20"	New	H-40	94#	40'	40'	CTS, 38 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	48#	615' *see #19	615' *see #19	CTS, 854 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2450'	2450'	CTS, 998 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	19500'	19500'	4970 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

<u>TYPE</u>	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	30"	24"	0.438"	1530	50	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	1000	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12,630	2500	Lead-H/POZ & Tab - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

**PACKERS**

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

DAF  
12/28/16

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale.  
\*Antero will be air drilling the fresh water string which makes it difficult to determine when fresh water is encountered. Therefore, we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

Anticipated Max Pressure - 9300 lbs  
Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 24.12 acres

22) Area to be disturbed for well pad only, less access road (acres): 5.59 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers  
Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.  
Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.  
Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

24) Describe all cement additives associated with each cement type:

Conductor: no additives, Class A cement.  
Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake  
Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat  
Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51  
Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.  
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.  
Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.  
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

\*Note: Attach additional sheets as needed.

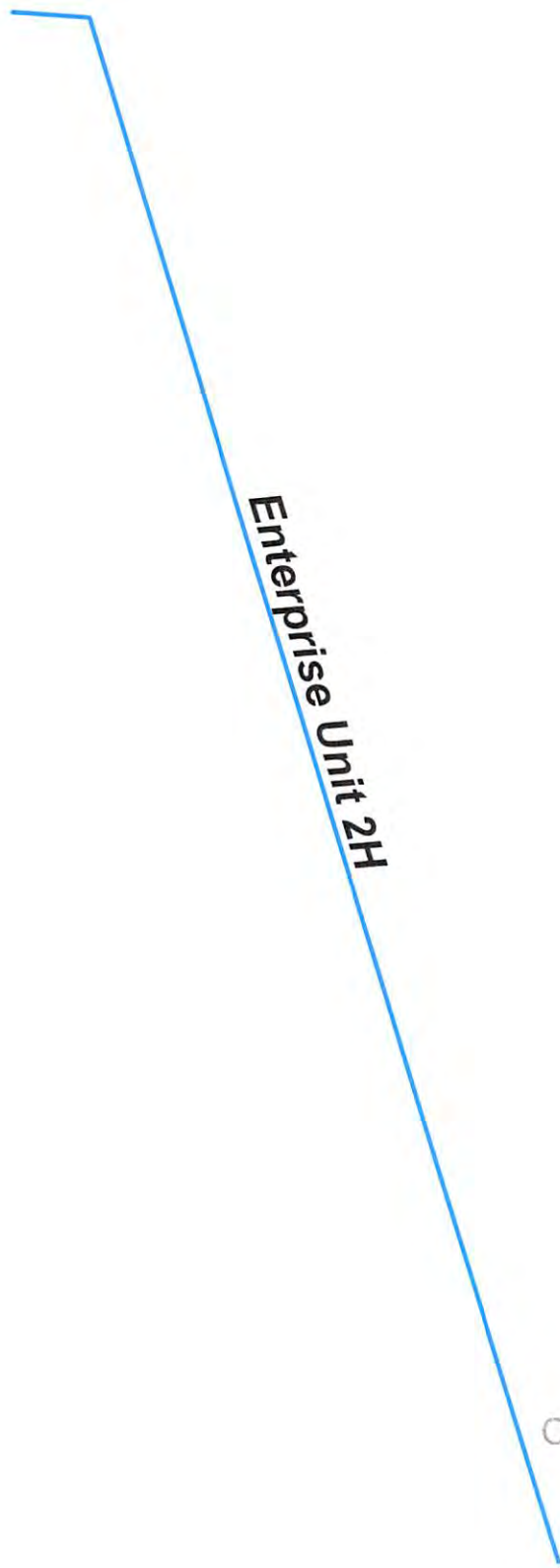
DAF  
12/28/16





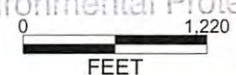
47 0 17 0 6 8 0 2

*\*No wells within reason of frac propagation*



**Enterprise Unit 2H**

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03/17/2017

WW-9  
(4/16)

API Number 47 - 017 -  
Operator's Well No. Enterprise Unit 2H

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Antero Resources Corporation OP Code 494507062

Watershed (HUC 10) Headwaters Middle Island Creek Quadrangle New Milton

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes  No

Will a pit be used? Yes  No

If so, please describe anticipated pit waste: No pit will be used at this site (Drilling and Flowback Fluids will be stored in tanks. Cuttings will be tanked and hauled off site.)

Will a synthetic liner be used in the pit? Yes  No  If so, what ml.? N/A

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number \*UIC Permit # will be provided on Form WR-34 )
- Reuse (at API Number Future permitted well locations when applicable. API# will be provided on Form WR-34 )
- Off Site Disposal (Supply form WW-9 for disposal location) (Meadowfill Landfill Permit #SWF-1032-98)
- Other (Explain Northwestern Landfill Permit #SWF-1025/WV0109410)

Will closed loop system be used? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Surface - Air/freshwater, Intermediate - Dust/Stiff Foam, Production - Water Based Mud

-If oil based, what type? Synthetic, petroleum, etc. N/A

Additives to be used in drilling medium? Please See Attachment

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Stored in tanks, removed offsite and taken to landfill.

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

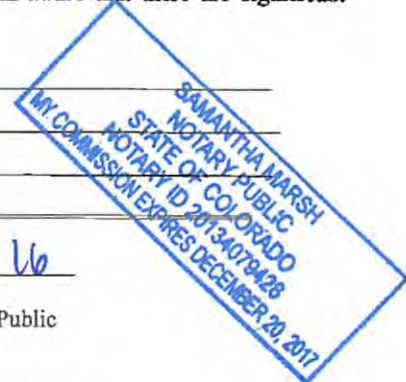
-Landfill or offsite name/permit number? Meadowfill Landfill (Permit #SWF-1032-98), Northwestern Landfill (Permit # SWF-1025/WV0109410)

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature *Cole Kilstrom*  
Company Official (Typed Name) Cole Kilstrom  
Company Official Title Environmental & Regulatory Manager



Subscribed and sworn before me this 19th day of December, 20 16

Samantha Marsh Notary Public

My commission expires December 20, 2017

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12/28/16

03/17/2017

**Antero Resources Corporation**

Proposed Revegetation Treatment: Acres Disturbed 24.12 acres Prevegetation pH \_\_\_\_\_

Lime 2-4 Tons/acre or to correct to pH 6.5

Fertilizer type Hay or straw or Wood Fiber (will be used where needed)

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

Well Pad (5.52 acres) + Access Road A (9.40 acres) Access Road B (0.37 acres) Access Road C (0.19 acres) + Water Containment Pad (1.14 acres) + Engineered Fill Piles A, B, C & F (4.71 acres) + Topsoil/Engineered Fill Pile D & E (2.72 acres) = 24.12 Acres

**Seed Mixtures**

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Tall Fescue	45	Tall Fescue	45
Perennial Rye	20	Perennial Rye Grass	20

\*or type of grass seed requested by surface owner

\*or type of grass seed requested by surface owner

**Attach:**

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: 

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Title: Dil + Gas Inspect Date: 12/28/16

Field Reviewed?  Yes  No

## ***Form WW-9 Additives Attachment***

### **SURFACE INTERVAL**

1. Fresh Water
2. Soap –Foamer AC
3. Air

### **INTERMEDIATE INTERVAL**

#### ***STIFF FOAM RECIPE:***

- 1) 1 ppb Soda Ash / Sodium Carbonate-Alkalinity Control Agent
- 2) 1 ppb Conqor 404 ( 11.76 ppg) / Corrosion Inhibitor
- 3) 4 ppb KLA-Gard ( 9.17 ppg) / Amine Acid Complex-Shale Stabilizer
- 4) 1ppb Mil Pac R / Sodium Carboxymethylcellulose-Filtration Control Agent
- 5) 12 ppb KCL / Potassium Chloride-inorganic Salt
- 6) Fresh Water 80 bbls
- 7) Air

### **PRODUCTION INTERVAL**

1. Alpha 1655  
Salt Inhibitor
2. Mil-Carb  
Calcium Carbonate
3. Cottonseed Hulls  
Cellulose-Cottonseed Pellets – LCM
4. Mil-Seal  
Vegetable, Cotton & Cellulose-Based Fiber Blend – LCM
5. Clay-Trol  
Amine Acid Complex – Shale Stabilizer
6. Xan-Plex  
Viscosifier For Water Based Muds
7. Mil-Pac (All Grades)  
Sodium Carboxymethylcellulose – Filtration Control Agent
8. New Drill  
Anionic Polyacrylamide Copolymer Emulsion – Shale Stabilizer
9. Caustic Soda  
Sodium Hydroxide – Alkalinity Control
10. Mil-Lime  
Calcium Hydroxide – Lime
11. LD-9  
Polyether Polyol – Drilling Fluid Defoamer
12. Mil Mica  
Hydro-Biotite Mica – LCM

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13. Escaid 110  
Drilling Fluid Solvent – Aliphatic Hydrocarbon
14. Ligco  
Highly Oxidized Leonardite – Filtration Control Agent
15. Super Sweep  
Polypropylene – Hole Cleaning Agent
16. Sulfatrol K  
Drilling Fluid Additive – Sulfonated Asphalt Residuum
17. Sodium Chloride, Anhydrous  
Inorganic Salt
18. D-D  
Drilling Detergent – Surfactant
19. Terra-Rate  
Organic Surfactant Blend
20. W.O. Defoam  
Alcohol-Based Defoamer
21. Perma-Lose HT  
Fluid Loss Reducer For Water-Based Muds
22. Xan-Plex D  
Polysaccharide Polymer – Drilling Fluid Viscosifier
23. Walnut Shells  
Ground Cellulosic Material – Ground Walnut Shells – LCM
24. Mil-Graphite  
Natural Graphite – LCM
25. Mil Bar  
Barite – Weighting Agent
26. X-Cide 102  
Biocide
27. Soda Ash  
Sodium Carbonate – Alkalinity Control Agent
28. Clay Trol  
Amine Acid complex – Shale Stabilizer
29. Sulfatrol  
Sulfonated Asphalt – Shale Control Additive
30. Xanvis  
Viscosifier For Water-Based Muds
31. Milstarch  
Starch – Fluid Loss Reducer For Water Based Muds
32. Mil-Lube  
Drilling Fluid Lubricant

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**911 Address**  
**308 Beech Lick Road**  
**Salem, WV 26426**

## **Well Site Safety Plan**

### **Antero Resources**

**Well Name:** Radabaugh Unit 1H & 2H, Broome Unit 1H, 2H  
& 3H, Enterprise Unit 1H & 2H

**Pad Location:** **BROOKS PAD**  
Doddridge County/Greenbrier District

**GPS Coordinates:**

**Entrance** - Lat 39°10'47.36"/Long -80°37'50.60" (NAD83)

**Pad Center** - Lat 39°11'16.03"/Long -80°38'22.99" (NAD83)

**Driving Directions:**

Drive southeast out of New Milton on Co Rte 25/Meathouse Fork for 5.8 Miles

Turn right onto Co Rte 25/10. Go 0.3 miles

Turn right on onto Antero access road. When access road forks, keep left and continue into Brooks Pad.

**EMERGENCY (24 HOUR) CONTACT 1-800-878-1373**

*[Handwritten signature]*  
12/28/16

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<b><u>Charles Sherwood et ux et al Lease 21054</u></b>			
Charles Sherwood	Tenmile Land, LLC	1/8	256/389
Tenmile Land, LLC	Antero Resources Appalachian Corporation	Assignment	0262/0422
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Franklin Maxwell Heirs Limited Partnership No. 1, LLP Lease</u></b>			
Franklin Maxwell Heirs et al	Antero Resources Appalachian Corporation	1/8	0277/0150
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Jeanette M. Jones Lease 22061</u></b>			
Jeanette M. Jones	Antero Resources Appalachian Corporation	1/8	0258/0482
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>French H. Cox Lease 22059</u></b>			
French H. Cox	Antero Resources Appalachian Corporation	1/8+	0292/0164
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Gore Corporation Lease 20207</u></b>			
Gore Corporation	Bluestone Energy Partners	1/8	0245/0539
Bluestone Energy Partners	Antero Resources Appalachian Corporation	Merger	0288/0001
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Millard Dennison et al Lease</u></b>			
Millard Dennison, et ux	J & J Enterprises, Inc.	1/8	0118/0665
J & J Enterprises, Inc.	Eastern American Energy Corporation	Assignment	0159/0139
Eastern American Energy Corporation	Energy Corporation of America	Merger	0240/0498
Energy Corporation of America	Antero Resources Corporation	Assignment	0313/0152
<b><u>Robert M. Nicholson Lease</u></b>			
Robert M. Nicholson, heir of Meredith D. Nicholson	Antero Resources Corporation	1/8+	343/396
<b><u>Wilma J. Nicholson Lease</u></b>			
Wilma Nicholson	Bluestone Minerals	1/8	0205/0670
Bluestone Minerals	BEP Merger Sub, LP	Merger	0288/0001
BEP Merger Sub, LP	Antero Resources Appalachian Corporation	Merger	0288/0001
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Janette G. Nicholson &amp; Teresa Webb Lease</u></b>			
Janette Nicholson & Teresa Webb	Antero Resources Corporation	1/8	0318/0402

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WV Department of  
Environmental Protection

\*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>C. Dale Nicholson et ux Lease 21782</u>	C. Dale Nicholson et ux Triangle Oil Co. Southern Triangle Oil Co. Professional Oilfield Services Inc. Bluestone Energy Partners Antero Resources Appalachian Corporation	Triangle Oil Co. Southern Triangle Oil Co. Professional Oilfield Services Inc. Bluestone Energy Partners Antero Resources Appalachian Corporation Antero Resources Corporation	1/8 Assignment Assignment Assignment Merger Name Change	0070/0139 0072/0301 0194/0277 0246/0181 DB 0288/0001 Exhibit 1

\*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Antero Resources Corporation DEC 21 2016  
 By: Kevin Kilstrom  
 Its: Senior Vice President of Production

Department of  
Environmental Protection



**FORM WW-6A1  
EXHIBIT 1**

**FILED**

**JUN 10 2013**

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



Penny Barker, Manager  
Corporations Division  
Tel: (304)558-8000  
Fax: (304)558-8381  
Website: [www.wvsos.com](http://www.wvsos.com)  
E-mail: [business@wvsos.com](mailto:business@wvsos.com)

**APPLICATION FOR  
AMENDED CERTIFICATE  
OF AUTHORITY**

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**

\*\*\*\* 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 (303) 367-7310  
Contact Name Phone Number
7. Signature information (See below Important Legal Notice Regarding Signature):  
Print Name of Signer: Alvyn A. Schopp Title/Capacity: Authorized Person  
Signature: [Handwritten Signature] Date: June 10, 2013

**\*Important Legal Notice Regarding Signature:** Per West Virginia Code §31D-1-129. Penalty for signing false documents. 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.

Form CF-1

Issued by the Office of the Secretary of State

Revised 4/13

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Oil and Gas  
DEC 31 2016  
WV Department of  
Environmental Protection



**Antero Resources**  
**Well No. Enterprise Unit 2H**  
**Antero Resources Corporation**

Line	Bearing	Distance
L1	S 81°18' E	513.7'
L2	S 87°15' E	934.9'
L3	N 22°41' W	164.3'
L4	N 23°20' E	809.0'
L5	S 83°30' E	509.2'

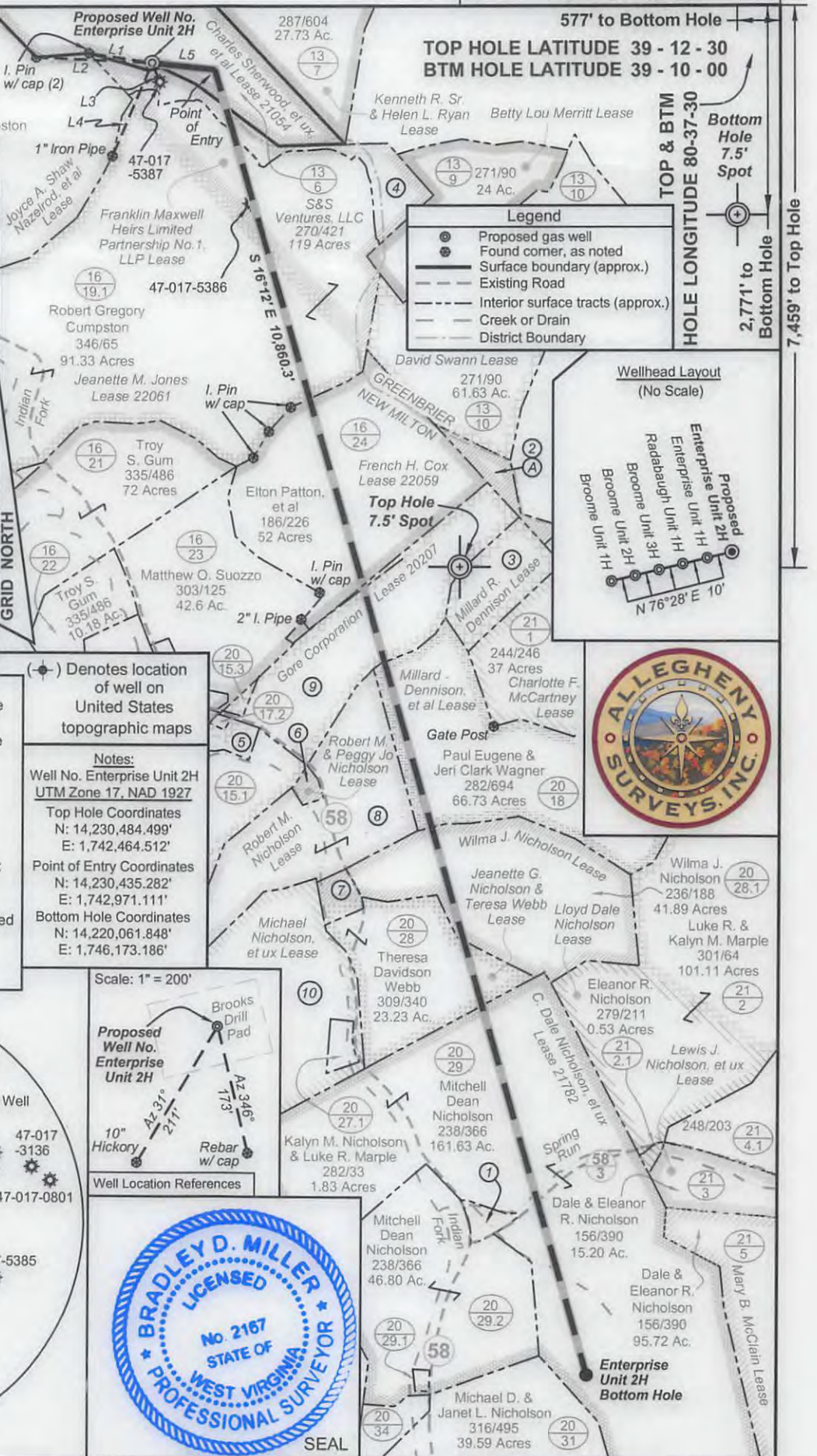
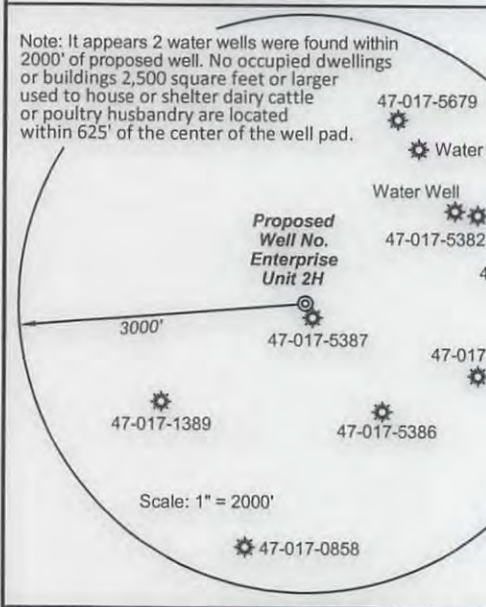
TM-Par	Owner	DB/Pq	Acres
1	20-29.3 Mitchell D. Nicholson	193/397	1.88
2	16-26 L. Bassell Maxwell & Mary H. Holland	90/378	3.45
3	16-25 Roger L. & Jeffrey D. Wright	244/246	11.0
4	16-19 p/o Antero Resources Corp.	329/432	87.27
5	20-15 Wilma J. Nicholson	236/188	2.68
6	20-17.1 Robert M. & Peggy Jo Nicholson	225/81	1.10
7	20-28.3 Wilma J. Nicholson	267/39	2.49
8	20-17 Edward Lee & John D. Cumpston	294/686	35.94
9	20-15.2 Robert K. & Betty L. Swiger	260/696	29.32
10	20-27 Michael Dale Nicholson	283/353	51.62

**Leases**  
 A Franklin Maxwell Heirs Limited Partnership No. 1, LLP Lease

**I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.**

*Bradley D. Miller*  
**Bradley D. Miller, P.S. 2167**

**Notes:**  
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
 Well No. Enterprise Unit 2H Top Hole coordinates are  
 N: 252,526.60 Latitude: 39°11'15.74"  
 E: 1,676,914.51 Longitude: 80°38'23.46"  
 Bottom Hole coordinates are  
 N: 242,039.85 Latitude: 39°09'32.54"  
 E: 1,680,450.33 Longitude: 80°37'36.89"  
 UTM Zone 17, NAD 1983  
 Top Hole Coordinates: Bottom Hole Coordinates:  
 N: 4,337,678.550m N: 4,334,501.757m  
 E: 531,118.835m E: 532,249.295m  
 Plat orientation and corner and well references are based upon the grid north meridian.  
 Well location references are based upon the magnetic meridian.



FILE NO: 68-30-NM-13  
 DRAWING NO: Enterprise 2H Well 12-16  
 SCALE: 1" = 1200'  
 MINIMUM DEGREE OF ACCURACY: Submeter  
 PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

**STATE OF WEST VIRGINIA**  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 OFFICE OF OIL AND GAS

DATE: December 16 2016  
 OPERATOR'S WELL NO. Enterprise Unit 2H  
 API WELL NO: 47 - 017 - 06802  
 STATE COUNTY PERMIT

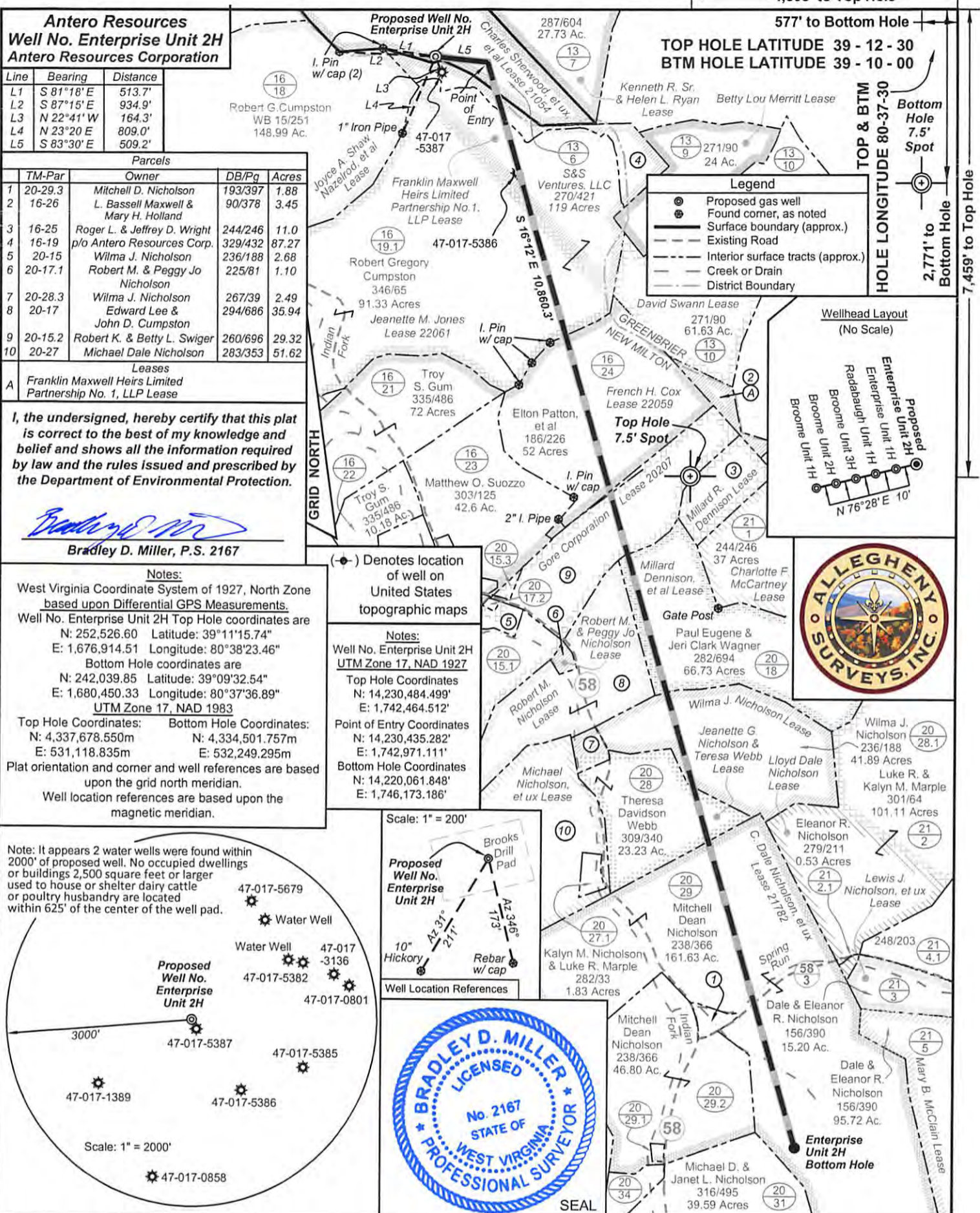
WELL TYPE:  OIL  GAS  LIQUID INJECTION WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
 Proposed: 1364'  
 LOCATION: ELEVATION: Existing: 1399' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: New Milton  
 DISTRICT: Greenbrier Millard Dennison, et al; C. Dale Nicholson, et ux; Gore Corporation; Wilma J. Nicholson; COUNTY: Doddridge 32; 70;  
 SURFACE OWNER: S & S Ventures, LLC Franklin Maxwell Heirs Limited Partnership No. 1, LLP; Jeanette G. Nicholson & Teresa Webb; ACREAGE: 119 210; 80;  
 ROYALTY OWNER: Charles Sherwood, et ux, et al; Jeanette M. Jones; French H. Cox LEASE NO: 21054; 22061; 22059 ACREAGE: 146.5; 256; 43.42;  
 PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TVD 7,600'  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: MD 19,500'

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
 Denver, CO 80202 Charleston, WV 25313



03/17/2017





**Antero Resources**  
**Well No. Enterprise Unit 2H**  
**Antero Resources Corporation**

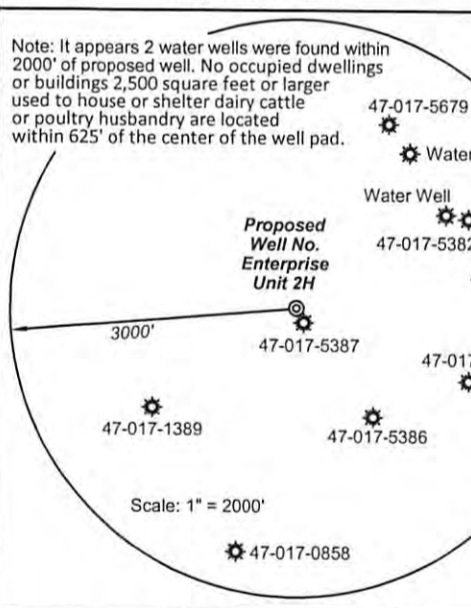
Line	Bearing	Distance
L1	S 81°18' E	513.7'
L2	S 87°15' E	934.9'
L3	N 22°41' W	164.3'
L4	N 23°20' E	809.0'
L5	S 83°30' E	509.2'

TM-Par	Owner	DB/Pg	Acres
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8	20-17 Edward Lee & John D. Cumpston	294/686	35.94
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10	20-27 Michael Dale Nicholson	283/353	51.62

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*Bradley D. Miller*  
**Bradley D. Miller, P.S. 2167**

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Top Hole Coordinates: Bottom Hole Coordinates:  
N: 4,337,678.550m N: 4,334,501.757m  
E: 531,118.835m E: 532,249.295m  
Plat orientation and corner and well references are based upon the grid north meridian.  
Well location references are based upon the magnetic meridian.



(●) Denotes location of well on United States topographic maps

**Notes:**  
Well No. Enterprise Unit 2H UTM Zone 17, NAD 1927  
Top Hole Coordinates  
N: 14,230,484.499'  
E: 1,742,464.512'  
Point of Entry Coordinates  
N: 14,230,435.282'  
E: 1,742,971.111'  
Bottom Hole Coordinates  
N: 14,220,061.848'  
E: 1,746,173.186'



FILE NO: 68-30-NM-13  
DRAWING NO: Enterprise 2H Well 12-16  
SCALE: 1" = 1200'  
MINIMUM DEGREE OF ACCURACY: Submeter  
PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
**OFFICE OF OIL AND GAS**

DATE: December 16 2016  
OPERATOR'S WELL NO. Enterprise Unit 2H  
API WELL NO: 47 - 017 - 0802  
STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION WASTE DISPOSAL  
(IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
Proposed: 1364'  
LOCATION: ELEVATION: Existing: 1399' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: New Milton  
DISTRICT: Greenbrier Millard Dennison, et al; COUNTY: Doddridge 32; 70;  
SURFACE OWNER: S & S Ventures, LLC Franklin Maxwell Heirs Limited Partnership No. 1, LLP; ACREAGE: 119 210; 80;  
ROYALTY OWNER: Charles Sherwood, et ux, et al; Jeanette M. Jones; French H. Cox LEASE NO: 21054; 22061; 22059 ACREAGE: 146.5; 256; 43.42;  
PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) TVD 7,600'  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: MD 19,500'

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
Denver, CO 80202 Charleston, WV 25313





December 19, 2016

Antero Resources  
1615 Wynkoop Street  
Denver, CO 80202  
Office 303.357.7310  
Fax 303.357.7315

West Virginia Department of Environmental Protection  
Chief, Office of Oil and Gas  
Attn: Mr. James Martin  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

RE: Enterprise Unit 2H  
Quadrangle: New Milton  
Doddridge County/ Greenbrier District, West Virginia

Mr. Martin:

Antero Resources Corporation (Antero) is submitting the following application for a new well work permit for the Enterprise Unit 2H horizontal shallow well. As an authorized representative, I certify that Antero has the right to extract, produce or market the oil or gas for all leases through which the Enterprise Unit 2H horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

Brett Kuhn  
Landman

A handwritten signature in black ink, appearing to read "Brett Kuhn", with a long horizontal flourish extending to the right.

RECEIVED  
Office of Oil and Gas

DEC 21 2016

WV Department of  
Environmental Protection

03/17/2017



**STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE CERTIFICATION**

Date of Notice Certification: 12/20/2016

API No. 47- 017 - \_\_\_\_\_  
 Operator's Well No. Enterprise Unit 2H  
 Well Pad Name: Brooks Pad

**Notice has been given:**

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>531118.835m</u>
County: <u>Doddridge</u>	UTM NAD 83 Northing: <u>4337678.550m</u>
District: <u>Greenbrier</u>	Public Road Access: <u>CR 25/10</u>
Quadrangle: <u>New Milton</u>	Generally used farm name: <u>S&amp;S Ventures, LLC</u>
Watershed: <u>Headwaters Middle Island Creek</u>	

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p><b>OOG OFFICE USE ONLY</b></p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
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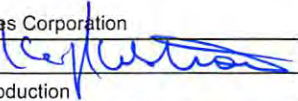
**Required Attachments:**

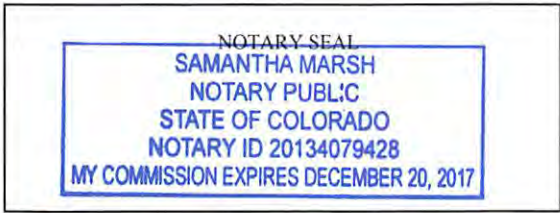
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

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 Office of Oil and Gas  
 DEC 21 2016  
 WV Department of  
 Environmental Protection

**Certification of Notice is hereby given:**

THEREFORE, I Kevin Kilstrom, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator:	<u>Antero Resources Corporation</u>	Address:	<u>1615 Wynkoop Street</u>
By:	<u>Kevin Kilstrom</u> 		<u>Denver, CO 80202</u>
Its:	<u>Senior VP of Production</u>	Facsimile:	<u>303-357-7315</u>
Telephone:	<u>303-357-7310</u>	Email:	<u>kquackenbush@anteroresources.com</u>



Subscribed and sworn before me this 20<sup>th</sup> day of December 2016  
Samantha Marsh Notary Public  
 My Commission Expires 12-20-2017

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [deprivacyofficer@wv.gov](mailto:deprivacyofficer@wv.gov).

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Office of Oil and Gas

DEC 21 2016

WV Department of  
Environmental Protection



**STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF APPLICATION**

**Notice Time Requirement:** notice shall be provided no later than the **filing date of permit application.**

**Date of Notice:** 12/20/2016 **Date Permit Application Filed:** 12/20/2016

**Notice of:**

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

**Delivery method pursuant to West Virginia Code § 22-6A-10(b)**

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice  WSSP Notice  E&S Plan Notice  Well Plat Notice is hereby provided to:

SURFACE OWNER(s)  
Name: PLEASE SEE ATTACHMENT  
Address: \_\_\_\_\_

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Road and/or Other Disturbance)  
Name: PLEASE SEE ATTACHMENT  
Address: \_\_\_\_\_

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE  
Name: PLEASE SEE ATTACHMENT  
Address: \_\_\_\_\_

COAL OPERATOR  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

WATER PURVEYOR(s)/OWNER(s) OF WATER WELL, SPRING OR OTHER WATER SUPPLY SOURCE  
Name: NONE LOCATED WITHIN 1500'  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD  
Name: Office of Oil and Gas  
Address: \_\_\_\_\_

\*PLEASE NOTE THE ADDITIONAL SURFACE TRACTS WITH DISTURBANCE SHOWN ON PAD DESIGN ARE NOT OVERLYING THE OIL & GAS LEASEHOLD BEING DEVELOPED BY THE PROPOSED WELL; THEREFORE, ARE NOT REQUIRED TO BE NOTIFIED PER WV CODE 22-6A-10.

\*Please attach additional forms if necessary

WV Department of  
Environmental Protection

03/17/2017

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

**This Notice Shall Include:**

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Well Location Restrictions**

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items



examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

**Water Well Testing:**

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

**Water Testing Laboratories:**

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

**Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:**

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

**Written Comment:**

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

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DEC 21 2016

WV Department of  
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Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

**Time Limits and Methods for Filing Comments.**

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

**Comment Requirements**

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

**Permit Denial or Condition**

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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WW-6A  
(8-13)

API NO. 47- 017 -  
OPERATOR WELL NO. Enterprise Unit 2H  
Well Pad Name: Brooks Pad

**Notice is hereby given by:**

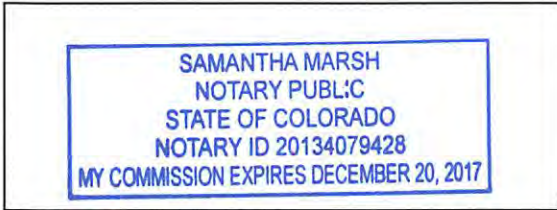
Well Operator: Antero Resources Corporation  
Telephone: (303) 357-7310  
Email: kquackenbush@anteroresources.com



Address: 1615 Wynkoop Street  
Denver, CO 80202  
Facsimile: 303-357-7323

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).



Subscribed and sworn before me this 20<sup>th</sup> day of December 2016  
Samantha Marsh Notary Public  
My Commission Expires 12-20-2017

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**WW-6A Notice of Application Attachment (BROOKS PAD):**

**List of Surface Owner(s) with Proposed Disturbance associated with Brooks Well Pad:**

**WELL PAD**

**TM 13 PCL 6**

**Owner:** Robert & Genevieve Clevenger  
**Address:** 1582 Halls Road  
Colliers, WV 26035

**Owner:** S&S Ventures, LLC  
**Address:** 1045 Virginia Ave  
Hagerstown, MD 21740

**TM 16 PCL 18**

**Owner:** Robert G. Cumpston  
**Address:** 1402 Coburns Creek Road  
Clarksburg, WV 26301

**TM 16 PCL 19**

**Owner:** Antero Resources Corporation  
**Address:** 1615 Wynkoop St  
Denver, CO 80202

**ROAD AND/OR OTHER DISTURBANCE – Please note the additional surface tracts with disturbance shown on the pad design are NOT overlying the Oil & Gas leasehold being developed by the proposed well; therefore, are not required to be notified per WV Code 22-6A-10.**

**TM 16 PCL 24**

**Owner:** Elton D. Patton  
**Address:** 30 Janette Dr.  
Poca, WV 25159

**TM 16 PCL 24**

**Owner:** Dwight B. Patton  
**Address:** P.O. Box 381  
Mount Nebo, WV 26679

**TM 16 PCL 24**

**Owner:** John D. Patton  
**Address:** 463 18<sup>th</sup> St.  
Dunbar, WV 25064

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**WW-6A Notice of Application Attachment cont. (BROOKS PAD):**

**COAL OWNER OR LESSEE**

**Owner:** Consolidation Coal Company – CONSOL Energy, Inc.  
CNX Center - Engineering & Ops. Support – Coal  
Attn: Analyst

**Address:** 1000 CONSOL Energy Dr.  
Canonsburg, PA 15317



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**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
**NOTICE OF PLANNED OPERATION**

**Notice Time Requirement:** notice shall be provided no later than the **filing date of permit application.**

**Date of Notice:** 12/20/2016      **Date Permit Application Filed:** 12/20/2016

**Delivery method pursuant to West Virginia Code § 22-6A-16(c)**

- CERTIFIED MAIL                                       HAND  
RETURN RECEIPT REQUESTED                                      DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

**Notice is hereby provided to the SURFACE OWNER(s)**

(at the address listed in the records of the sheriff at the time of notice):

Name: <u>PLEASE SEE ATTACHMENT</u>	Name: _____
Address: _____	Address: _____
_____	_____

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>531118.835m</u>
County: <u>Doddridge</u>		Northing: <u>4337678.550m</u>
District: <u>Greenbrier</u>	Public Road Access: <u>CR 25/10</u>	
Quadrangle: <u>New Milton</u>	Generally used farm name: <u>S&amp;S Ventures, LLC</u>	
Watershed: <u>Headwaters Middle Island Creek</u>		

**This Notice Shall Include:**

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

Well Operator: <u>Antero Resources Corporation</u>	Address: <u>1615 Wynkoop Street</u>
Telephone: <u>(303) 357-7310</u>	<u>Denver, CO 80202</u>
Email: <u>smarsh@anteroresources.com</u>	Facsimile: <u>303-357-7315</u>

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

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03/17/2017



## WW-6A4 Notice of Intent to Drill Attachment:

### Surface Owners:

Tax Parcel ID: 13-6

**Owner:** Robert & Genevieve Clevenger  
**Address:** 1582 Halls Rd.  
Colliers, WV 26035

**Owner:** S & S Ventures, LLC  
**Address:** 1045 Virginia Ave.  
Hagerstown, MD 21740

### Surface Owners:

Tax Parcel ID: 16-18

**Owner:** Robert G. Cumpston  
**Address:** 1402 Coburns Creek Rd.  
Clarksburg, WV 26301

### Surface Owners:

Tax Parcel ID: 16-19

**Owner:** Antero Resources Corp.  
**Address:** 1615 Wynkoop St.  
Denver, CO 80202

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### WW-6A5 Notice of Planned Operation Attachment (BROOKS PAD):

#### List of Surface Owner(s) with Proposed Disturbance associated with Brooks Well Pad:

**WELL PAD**

**TM 13 PCL 6**

**Owner:** Robert & Genevieve Clevenger  
**Address:** 1582 Halls Road  
Colliers, WV 26035

**Owner:** S&S Ventures, LLC  
**Address:** 1045 Virginia Ave  
Hagerstown, MD 21740

**TM 16 PCL 18**

**Owner:** Robert G. Cumpston  
**Address:** 1402 Coburns Creek Road  
Clarksburg, WV 26301

**TM 16 PCL 19**

**Owner:** Antero Resources Corporation  
**Address:** 1615 Wynkoop St  
Denver, CO 80202

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
**Division of Highways**

1900 Kanawha Boulevard East • Building Five • Room 110  
Charleston, West Virginia 25305-0430 • (304) 558-3505

Earl Ray Tomblin  
Governor

Paul A. Mattox, Jr., P. E.  
Secretary of Transportation/  
Commissioner of Highways

December 2, 2016

James A. Martin, Chief  
Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304

Subject: DOH Permit for the Brooks Pad, Doddridge County  
Enterprise Unit 2H Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #04-2013-1004 which has been issued to Antero Resources Corporation for access to the State Road for a well site located off of County Route 25/10 in Doddridge County.

The operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton, P.E.  
Regional Maintenance Engineer  
Central Office O&G Coordinator

Cc: Kara Quackenbush  
Antero Resources Corporation  
CH, OM, D-4  
File

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# List of Anticipated Additives Used for Fracturing or Stimulating Well

Additives	Chemical Abstract Service Number (CAS #)
Fresh Water	7732-18-5
2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1
Ammonium Persulfate	7727-54-0
Anionic copolymer	Proprietary
Anionic polymer	Proprietary
BTEX Free Hydrotreated Heavy Naphtha	64742-48-9
Cellulase enzyme	Proprietary
Demulsifier Base	Proprietary
Ethoxylated alcohol blend	Mixture
Ethoxylated Nonylphenol	68412-54-4
Ethoxylated oleylamine	26635-93-8
Ethylene Glycol	107-21-1
Glycol Ethers	111-76-2
Guar gum	9000-30-0
Hydrogen Chloride	7647-01-0
Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8
Isopropyl alcohol	67-63-0
liquid, 2,2-dibromo-3-nitrilopropionamide	10222-01-2
Microparticle	Proprietary
Petroleum Distillates (BTEX Below Detect)	64742-47-8
Polyacrylamide	57-55-6
Propargyl Alcohol	107-19-7
Propylene Glycol	57-55-6
Quartz	14808-60-7
Sillica, crystalline quartz	7631-86-9
Sodium Chloride	7647-14-5
Sodium Hydroxide	1310-73-2
Sugar	57-50-1
Surfactant	68439-51-0
Suspending agent (solid)	14808-60-7
Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7
Solvent Naphtha, petroleum, heavy aliph	64742-96-7
Soybean Oil, Me ester	67784-80-9
Copolymer of Maleic and Acrylic Acid	52255-49-9
DETA phosphonate	15827-60-8
Hexamethylene Triamine Penta	34690-00-1
Phosphino Carboxylic acid polymer	71050-62-9
Hexamethylene Diamine Tetra	23605-75-5
2-Propenoic acid, polymer with 2 propenamide	9003-06-9
Hexamethylene diamine penta (methylene phosphonic acid)	23605-70-9
Diethylene Glycol	111-46-6
Methenamine	100-97-0
Polyethylene polyamine	68603-67-8
Coco amine	61791-14-8
2-Propyn-1-ol compound with methyloxirane	38172-91-7



# Antero Resources Corporation Site Construction Plan for Brooks Pad

*Antero Resources Corporation (Antero) is submitting the following Site Construction Plan in compliance with §35-8-5.5. This plan is submitted in conjunction with Brooks Pad Site Design, Construction Plan, & Erosion and Sediment Control Plans prepared in accordance with the West Virginia Code of State Rules, Division of Environmental Protection and Office of Oil and Gas, and certified by Allegheny Surveys, Inc., a West Virginia registered professional engineer.*

---

**Requirement §5.5.a.** *The plan should describe the nature and purpose of the construction project and identify the procedures for construction that will be used to achieve site stability. The plan shall be considered conditions of the permit and be enforceable as such.*

## **Antero Response**

The nature and purpose of the subject project is to perforate, fracture, and complete one or more horizontal shallow wells. Procedures to achieve site stability include seeding and mulching of earth disturbed areas and implementation of erosion and sediment best management practices (BMPs). Details of seeding and mulching rates as well as procedures for installation and maintenance of erosion and sediment BMPs are outlined on page 3 of “Brooks Pad Site Design, Construction Plan, & Erosion and Sediment Control Plans” (Site Design) prepared and certified by Allegheny Surveys, Inc. of West Virginia.

These procedures will be considered as conditions of the permit and shall be inspected and maintained for continual compliance measures outlined in §35-8-5.5.

**Requirement §5.5.b.1** *A vicinity map location the site in relation to the surrounding area and roads;*

## **Antero Response**

Please refer to the vicinity map on page 1 for the location the site in relation to the surrounding area and roads.

**Requirement §5.5.b.1** *A plan view site map at a scale of one inch equal to one hundred feet (1"=100') or greater that shows appropriate detail of all site features and:*

**Requirement §5.5.b.A.** *Clearly identifies the limit of disturbance for the project;*

## **Antero Response**

The limit of disturbance for the Brooks Pad can be found on “Plan Sheet Index” on pages 5 of the Site Design.

**Requirement §5.5.b.2.B.** *Provides existing topographic information on a contour interval that affords sufficient detail to illustrate site terrain conditions*

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**Antero Response**

Please refer to the "Existing Conditions" maps on page 4 of the Site Design for the current topographic conditions for the constructed pad on a contour interval that affords sufficient detail to illustrate site terrain conditions.

*Requirement §5.5.b.2.C. Identifies proposed cut and fill areas with grading contours at an interval that provides sufficient detail to accurately depict slope ratios, indicating top and bottom of slopes; and*

**Antero Response**

Please refer to the "Country Road Access Map," "Site Plans," "Well Pad Baseline Profile & Cross Sections," "Engineered Fill Piles C, D, E, & F Baseline Profile & Cross Sections," and "Access Road A Cross Sections" on pages 6-14 of the Site Design for proposed cut and fill areas with grading contours.

*Requirement §5.5.b.2.D. Identifies any existing structures, roads, water bodies, and other critical areas within the area that would most likely be affected by the construction.*

**Antero Response**

Please refer to "Plan Sheet Index" of the Site Design on page 5 for the map identifying any structures, roads, water bodies, and other critical areas within the area of interest that would be most likely affected by construction.

*Requirement §5.5.b.3. A cross-section of the length and width of the location, providing cut and fill volumes; and*

**Antero Response**

Please refer to the "Country Road Access Map," "Site Plans," "Well Pad Baseline Profile & Cross Sections," "Engineered Fill Piles C, D, E, & F Baseline Profile & Cross Sections," and "Access Road A Cross Sections" on pages 6-14 for a cross-section of the location. The cut and fill volumes can be found in "Schedule of Quantities" on page 2.

*Requirement §5.5.b.4. Any other engineering designs or drawings necessary to construct the project.*

**Antero Response**

All other engineering designs and drawings necessary to construct this project are included in the Site Design.

*Requirement §5.5.c. At a minimum, site construction shall be conducted in accordance with the following criteria:*

**Antero Response**

All Antero contractors shall be notified of and comply with the measures outlined in Section 5.5.c. of §35-8-5.5.

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*Requirement §5.5.c.1. All woody material, brush, and trees shall be cleared from the site area and kept to the minimum necessary for proper construction, including the installation of necessary sediment controls. Trees six inches in diameter and larger shall be cut and logs stacked;*

03/17/2017



**Antero Response**

The Site Design outlines measures to maintain compliance with Section 201 of the WVDOH Specifications which outlines clearing and grubbing measures. Please refer to Construction, Erosion, & Sediment Control Notes on page 3 of the Site Design.

*Requirement §5.5.c.2. Topsoil shall be removed from construction areas and stockpiled for reuse during reclamation. In woodland areas, tree stumps, large roots, large rocks, tree and leaf debris, and ground vegetation shall be removed prior to actual site constructions;*

**Antero Response**

The Site Design outlines procedures for stripping and stocking topsoil. Please refer to Construction, Erosion, & Sediment Control Notes on page 3 of the Site Design. In addition, soil for stockpiling and use as fill shall be further compliant with measures outlined in Section 5.5.c.2. of §35-8-5.5.

*Requirement §5.5.c.3. No embankment fill shall be placed on frozen material;*

**Antero Response**

All Antero contractors shall be notified of and comply with measures outlined in Section 5.5.c.3. of §35-8-5.5.

*Requirement §5.5.c.4. The fill material shall be clean mineral soil, free of roots, woody vegetation, stumps, sod, large rocks, frozen soil or other objectionable material;*

**Antero Response**

The Site Design outlines procedures for stripping and stocking topsoil. Please refer to Construction, Erosion, & Sediment Control Notes on page 3 of the Site Design. In addition, soil shall be further defined to the measures outlined in Section 5.5.c.4 of §35-8-5.5.

*Requirement §5.5.c.5. Embankment material shall exhibit adequate soil strength and contain the proper amount of moisture to ensure that compaction will be achieved;*

**Antero Response**

All Antero contractors shall be notified of and comply with measures outlined in Section 5.5.c.5. of §35-8-5.5.

*Requirement §5.5.c.6. Earthen fill slopes should be constructed with slopes no steeper than a ratio of two to one (2:1);*

**Antero Response**

The Site Design outlines all earthen fill slopes to be constructed with slopes no steeper than a ratio of two to one (2:1).

*Requirement §5.5.c.7. Fill material will be placed in lifts or layers over the length of the fill. Lift thickness of soil shall be as thin as the suitable random excavated material will permit, typically from six to twelve (12) inches; and*

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03/17/2017

**Antero Response**

Please refer to the Construction, Erosion, & Sediment Control Notes on page 3 of the Site Design. Fill shall be placed in horizontal lifts of maximum loose depth of 12 inches. Compaction will be performed with a compactor with a minimum of five ton static drum weight vibratory roller or five ton static drum weight sheeps footed compactor as appropriate for the type of soil material at the site or other compactor approved by the Engineer.

*Requirement §5.5.c.8. The size of rock lifts shall not exceed thirty-six (36) inches. The rock shall not be greater in any dimension than thirty-six (36) inches;*

**Antero Response**

All Antero contractors shall be notified of and comply with measures outlined in Section 5.5.c.8. of §35-8-5.5.

*Requirement §5.5.c.9. Compaction shall be obtained by compaction equipment or by routing the hauling equipment over the fill so that the entire surface of each fill lift is compacted by at least one wheel or tread track of equipment or by a compactor. Each lift shall be compacted before beginning the next lift;*

**Antero Response**

Compaction compliance measures are outlined in the Construction, Erosion, & Sediment Control Notes on page 3. Compaction is required with a compactor with a minimum of five ton static drum weight vibratory roller or five ton static drum weight sheeps footed compactor as appropriate for the type of soil material at the site or other compactor approved by the Engineer.

*Requirement §5.5.c.10. Surface water diversion ditches shall be constructed above the disturbed area to intercept water and to divert surface water runoff around the site; and*

**Antero Response**

Construction, Erosion and Sediment Notes on page 3 of the Site Design identifies the surface diversions used to prevent surface water and subsurface water from flowing on to the well pad and coming into contact with the stormwater associated with the well pad. Additional Erosion & Sediment BMPs will be used to prevent sediment discharges from the project.

*Requirement §5.5.c.11. In areas of steep terrain, a terraced bench shall be constructed at the base of the slope where fill is to be placed, creating a toe foundation and aid in holding fill material. Additional terracing shall be constructed from each additional fifty (50) vertical feet of slope and shall be a minimum of ten (10) feet wide.*

**Antero Response**

All Antero contractors shall be notified of and comply with the measures outlined in Section 5.5.c.11. of §35-8-5.5.

RECEIVED  
Office of Oil and Gas

DEC 21 2016

WV Department of  
Environmental Protection

03/17/2017



## Antero Resources Corporation Erosion and Sediment Control Plan for Brooks Pad

*Antero Resources Corporation (Antero) is submitting the following narrative and set of drawings in compliance with §35-8-5.4. This plan is submitted in conjunction with the Brooks Pad Site Design, Construction Plan, & Erosion & Sediment Control Plan prepared in accordance with the West Virginia Code of State Rules, Division of Environmental Protection and Office of Oil and Gas, and certified by Allegheny Surveys, Inc., a West Virginia registered professional engineer.*

---

**Requirement §5.4.b.1.** *A general sequence of events that describe in relative terms how and when each construction phase (i.e. clearing and grubbing, mass grading, stabilization) will occur and when each erosion and sediment control best management practice (“BMP”) will be installed;*

### **Antero Response:**

The following includes a general sequence of events that describe in relative terms how and when each construction phase is anticipated to occur and erosion and sediment control BMPs to be installed. Please refer to the Brooks Pad Site Design, Construction Plan, and Erosion & Sediment Control Plan (Site Design) prepared and certified by Allegheny Surveys, Inc. for specific construction measures. Compliance with the measures outlined in the Site Construction Plan (§35-8-5.4) submitted in conjunction with this plan will also be maintained.

- 1) A pre-construction conference will be held on site with contractor to review the construction drawing and provide any requested guidance.
- 2) Construct the construction entrance.
- 3) Construct all proposed sediment control devices as soon as clearing and grubbing operations allow. Diversions and sediment basins shall be seeded and mulched immediately.
- 4) Clear and grub, remove topsoil and place at an area determined in the field where erosion will not take place. Topsoil stockpile to be seeded and mulched. Silt fence shall be constructed around topsoil stockpiles.
- 5) Grading operations as required. Cut slopes and fill slopes shall be top soiled if needed. Ditch lines shall be cleaned. All ditches will have at least grass lining protection or greater based on ditch slope with the following determination; 0 to 3% - grass lined, 3 to 9% - jute matting, and 9% or greater-TR M.
- 6) Culvert inlet and outlet protection shall be constructed immediately upon placement of inlets and culverts. Installation of matting and/or rip rap to occur once ditches are constructed.
- 7) When final grade is achieved, topsoil to be placed on all disturbed areas not lined. Seed all disturbed areas as required. A soil sample should be taken and tested to determine recommended rates. If no soils sample is taken the following rates should be applied as a minimum: Lime at a rate of 4 tons per acre. Fertilize at a rate of 500 lbs. of 10-20-10 per acre. Seed with 45 lbs. per acre of tall fescue and 20 lbs. per acre of perennial rye grass.
- 8) Lime, fertilizer, and seed will be applied by hand or using a hydro-seeder. Hydro-mulch products shall be installed in accordance with manufacturer’s specifications.
- 9) Final seeding must occur within 7 days of final grading.

- 10) When site is stabilized with established turf growth over 70%, all erosion and sediment control measures can be removed and repair/stabilize those areas in accordance with state standards.
- 11) Make modifications for permanent storm water management.
- 12) Final site inspection.
- 13) A notice of termination shall be filed with WVDEP upon final stabilization.

**Requirement §5.4.b.2.** *A description of the stabilization methods to be used, including the application rates for temporary and permanent seeding and mulching, and provide the timeframes for establishing stabilization*

**Antero Response:**

Stabilization methods used include seeding and mulching of disturbed areas as well as the implementation of erosion and sediment control BMPs. Please refer to Construction, Erosion, & Sediment Control Notes on page 3 for detailed descriptions of the different stabilization methods to be used. Seeding and mulching is to be in accordance with the WVDOT Standard Specifications unless specified otherwise in the plans or unless specified otherwise by the construction engineer or Antero representative. Please refer to number 11 under Erosion Control Notes on page 3 of the Site Design for more specific information regarding application, liming, and mulching rates.

Erosion and sediment BMPs will be constructed, stabilized, and functional before site disturbance begins within the tributary areas of those BMPs. In a timely manner after earth disturbance activities cease, Antero shall stabilize any areas disturbed by the activities. During non-germination periods, mulch must be applied at the specified rates. Disturbed areas which are not at finish grade and which will be re-disturbed within 1 year will be stabilized in accordance with the temporary vegetative stabilization and specifications. Disturbed areas which are finished grade or which will not be re-disturbed within 1 year will be stabilized in accordance with the permanent vegetative stabilization specification. Please refer to "Construction, Erosion, & Sediment Control Notes" on page 3 for more information regarding timeframes for establishing stabilization and erosion and sediment BMPs.

The site shall be considered to have achieved full stabilization when it has a minimum uniform 70% perennial vegetative cover or other permanent non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics to resist sliding and other movements. Until the site achieves final stabilization, Antero will assure that the best management practices (BMPs) are implemented, inspected, operated, and maintained. As such, Antero will maintain written inspection logs. All maintenance work, including cleaning, repair, replacement, regarding, and re-stabilization shall be performed immediately upon discovery of deficiency. After final stabilization has been achieved, temporary erosion and sediment BMPs controls will be removed. Areas disturbed during removal of the BMPs will be stabilized immediately.

**Requirement §5.4.b.3.** *Details of specifications for the erosion and sediment control BMPs employed on the project.*

**Antero Response:**

Please refer to the "Construction, Erosion, & Sediment Control Notes" on page 3 and "Details" on page 15 in the Site Design for specifications including instructions for installation, inspection, and maintenance for erosion and sediment control BMPs employed at this site.



**Requirement §5.4.c.1.** *A vicinity map locating the site in relation to the surrounding area and roads;*

**Antero Response:**

A "Vicinity Map" locating the site in relation to the surrounding area and roads is included on page 1 the Site Design .

**Requirement §5.4.c.2.** *A plan view site map at a scale of one inch equal to one hundred feet (1"=100') or greater, showing appropriate detail of all site features, including the identification of site access that provides for a stabilized construction entrance and exit to reduce tracking of sediment onto public or private roads; and*

**Antero Response:**

"Site Plans" maps are included on pages 7-11 of the Site Design. Specific design and layout and inspection and maintenance notes for a stabilized construction entrance are included in the "Construction, Erosion, & Sediment Control Notes" verbiage on page 3.

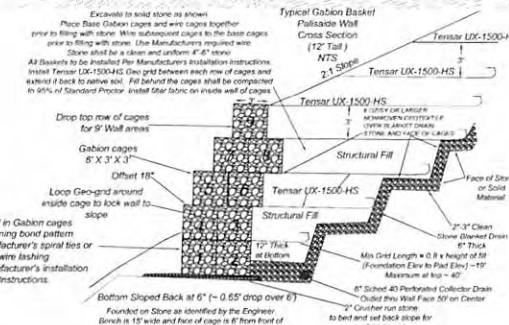
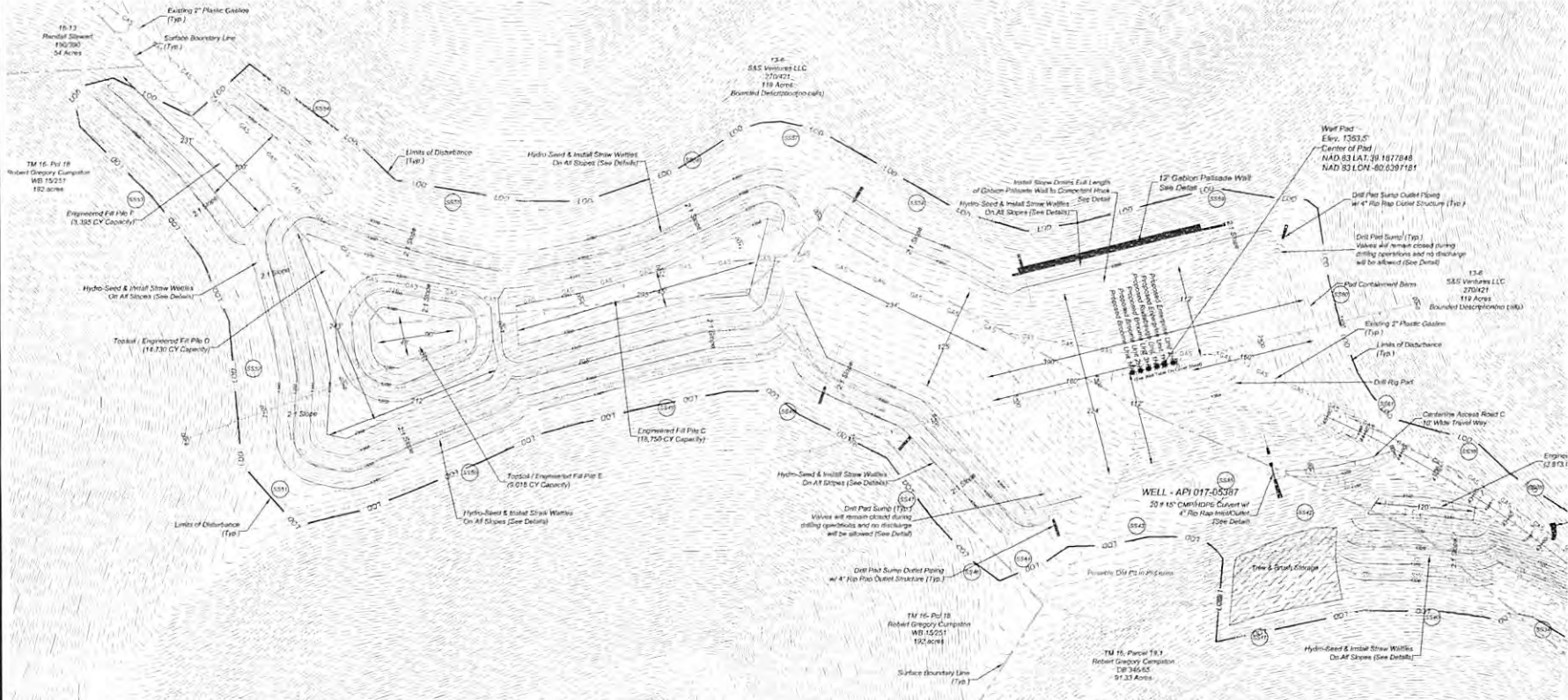
**Requirement §5.4.c.3.** *The location of all proposed erosion and sediment control BMPs*

**Antero Response:**

"Site Plans" maps included on pages 7-11 of the Site Design locate all proposed erosion and sediment control BMPs.



# SITE PLAN (5) - WELL PAD



All existing road being widened shall be proof rolled with a loaded 40 ton Articulated Truck. Any areas that pump shall be excavated to competent stone and reconstructed with Tensar TX-190 under each 12" lift or as directed by the Inspector or Engineer.

**APPROVED WVDEP OOG**  
Modification 3/10/2017

Legend	
---	Existing 2" Contour
---	Existing 10" Contour
---	Existing Ties Line
---	Existing Utility Line / Pole
---	Surface Owner Property Line
---	Existing Gas Line CL
---	Limits of Disturbance
---	Proposed Diversion Ditch
---	Proposed 2" Contour
---	Proposed 10" Contour
---	Proposed Super Silt Fence
---	Proposed Check Dam
---	Proposed Culvert W/ Inlet & Outlet Protection
---	Proposed Straw Wattles
---	Proposed Silt Sox w/ Diameter
---	Proposed 2" Contour
---	Proposed 10" Contour
---	Proposed Rip-Rap
---	Silt Sox Diameter in inches
---	Super Silt Fence Can be Substituted for Silt Sox of any Size

Note: All Fill Benches Shall Have Bench/Side Slope Under Drains. See Details (Sheet 15).

DATE	REVISIONS
5-13-14	Updated Owner Information and Tables
9-8-14	Revised Well Layout Configuration
12-14-16	Revised Well Layout Configuration (Sheets 1, 5, 10-11, & Added 17-15)



Allegheny Surveys, Inc.  
172 Thompson Drive  
Bridgeport, WV 26330  
(304) 848-5035



L&W ENTERPRISES, INC.  
13-A  
270421  
112 Acres  
Bounded Description (see)



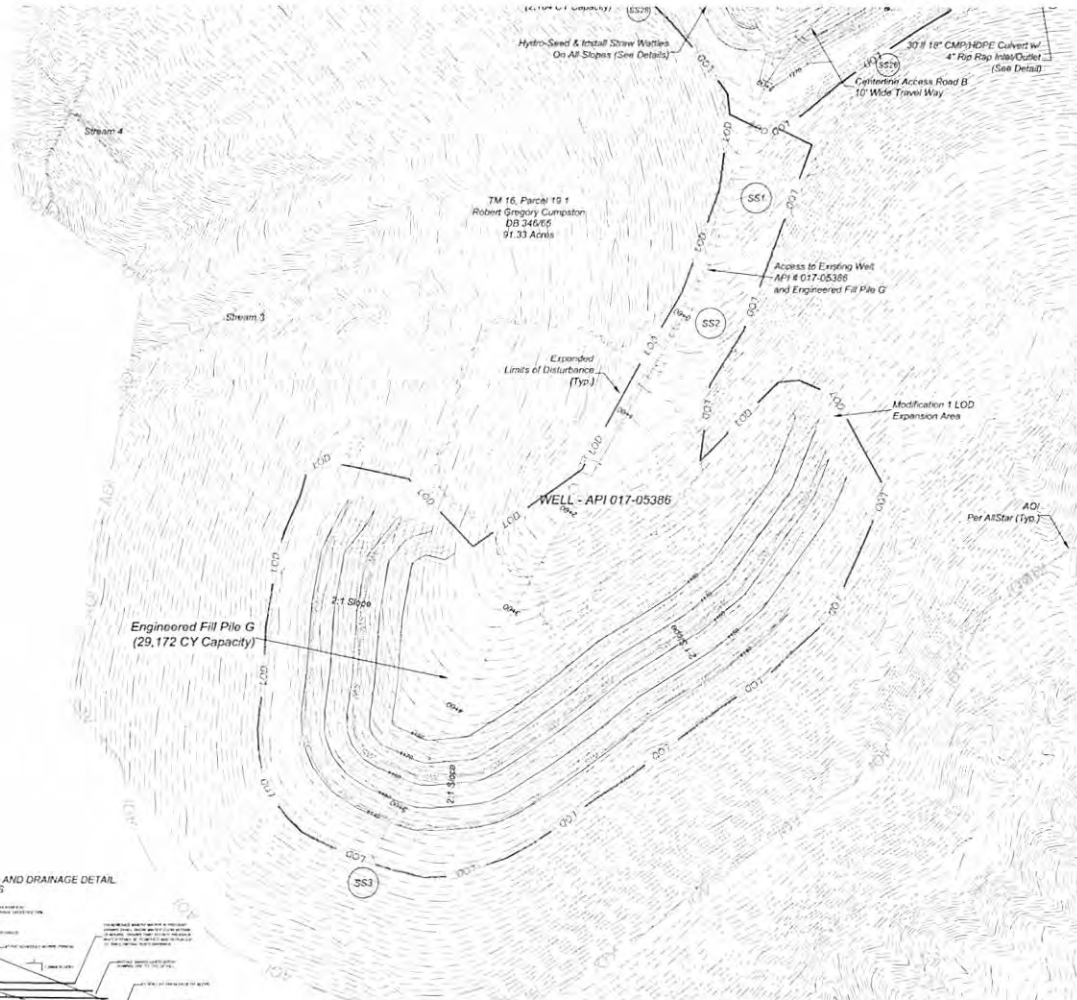
ANTERO RESOURCES  
THIS DOCUMENT PREPARED FOR ANTERO RESOURCES CORPORATION

SITE PLAN (5) - WELL PAD  
BROOKS PAD  
NEW MILTON - GREENSBURGER DISTRICT  
DODDGE COUNTY, WV

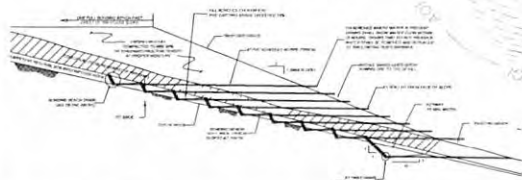
Date: 4/24/14  
Scale: 1" = 60'  
Designed by: CWB/CWM  
File No: Antero 94-304-01  
Page: 11 of 18



# SITE PLAN 6 -ENGINEERED FILL PILE G (Modification 1)



TYPICAL KEYWAY, BENCH, AND DRAINAGE DETAIL  
NTS



- NOTES:
1. KEYWAY DIMENSIONS SHALL BE A MINIMUM OF 13 FEET WIDE OR AS REQUIRED ON THE GEOTECHNICAL REPORT AND CROSS SECTIONS. ALL KEYWAY PILES SHALL BE PLACED AT THE INTERIOR OF THE RECOMMENDED BENCH.
  2. ALL DIMENSIONS OF PROJECT SHALL BE REFERENCE AND RECORDED INTO THE PILE & FILL AS RECOMMENDED.
  3. ALL EXISTING UTILITIES SHALL BE 10 FEET WIDE AND LOCATED EXTERIOR TO THE RECOMMENDED BENCH.
  4. WHERE SAFETY CONCERNS PROHIBIT INSTALLATION OF KEYWAY OR BENCHING PILES, FRAMES SHALL, SUBSTITUTE AT THE PRATE GRADIENTS.

**APPROVED**  
**WVDEP OOG**  
Modification  
3 / 10 / 2017



Legend			
--- 10' ---	Existing 10' Contour	--- 2' ---	Proposed 2' Contour
---	Existing Tree Line	--- 10' ---	Proposed 10' Contour
--- E ---	Existing Utility Line / Pole	--- 2' ---	Proposed 2' Contour
---	Surface Owner Property Line	--- 10' ---	Proposed 10' Contour
---	Existing Gas Line CL	--- 2' ---	Proposed 2' Contour
---	LOD	--- 10' ---	Proposed 10' Contour
---	Limits of Disturbance	--- 2' ---	Proposed 2' Contour
---	Proposed Diversion Ditch	--- 10' ---	Proposed 10' Contour
---	Proposed 2' Contour	--- 2' ---	Proposed 2' Contour
---	Proposed 10' Contour	--- 10' ---	Proposed 10' Contour
---	Proposed Super Silt Fence	--- 2' ---	Proposed 2' Contour
---	Proposed Check Dam	--- 10' ---	Proposed 10' Contour
---	Proposed Culvert W/ Inlet & Outlet Protection	--- 2' ---	Proposed 2' Contour
---	Proposed Straw Wattles	--- 10' ---	Proposed 10' Contour
---	Proposed Silt Sock w/ Diameter	--- 2' ---	Proposed 2' Contour
---	Proposed 2' Contour	--- 10' ---	Proposed 10' Contour
---	Proposed 10' Contour	--- 2' ---	Proposed 2' Contour
---	Proposed Rip Rap	--- 10' ---	Proposed 10' Contour
---	Silt Sock Diameter in Inches	---	---
---	Super Silt Fence Can be Substituted for Silt Sock of any Size	---	---

DATE	REVISIONS	Date: 4/24/14
12-14-16	Revised Well Layout Configuration (Sheets 1, 5, 10-11, & Added 17-18)	Scale: 1" = 50'
		Prepared By: CKW/CKM
		File No. A-2016-04-03-13
		Page: 17 of 18

Allegheny Surveyors, Inc.  
172 Thompson Drive  
Bridgeport, WV 26330  
(304) 848-5035



L&W ENTERPRISES, INC.  
100 W. MAIN ST., SUITE 100  
PETERSBURG, VA 23104  
(804) 752-1111



**ANTERO RESOURCES**  
THIS DOCUMENT PREPARED FOR  
ANTERO RESOURCES CORPORATION

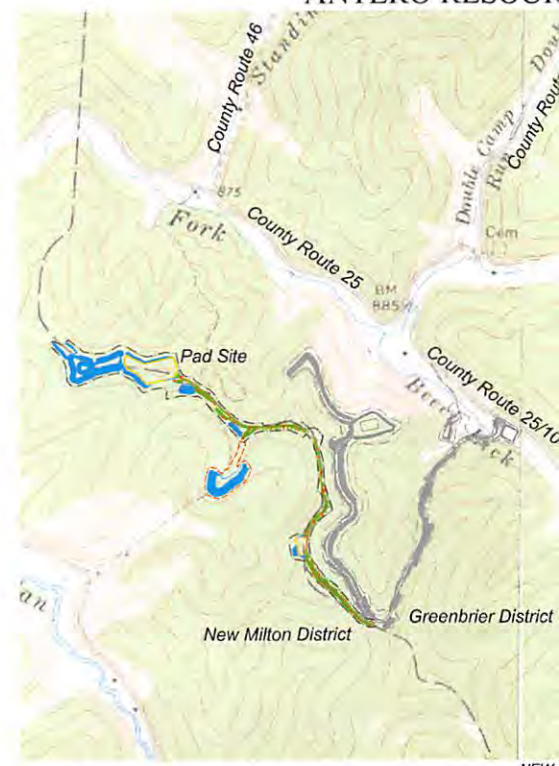
ENGINEERED FILL PILE G  
SITE PLAN 6  
BROOKS PAD  
NEW MILTON / GREENBRIER DISTRICT  
DODDRIEGE COUNTY, WV

# BROOK

(INCLUDES M...  
SITE DESIGN, CON...  
EROSION & SEDIM...  
ANTERO RESOUR



West Virginia State Plane Coordinate System  
North Zone, NAD83  
Elevations Based on NAVD88  
Established By Survey Grade GPS & OPUS Post-Processing



Well Table		
<b>Proposed Broome Unit 1H</b> WV-N NAD 83 N: 252551.2 WV-N NAD 83 E: 1645425.2 WV-N NAD 27 N: 252514.9 WV-N NAD 27 E: 1676865.9 Lat. NAD 83: -80.187761 Lon. NAD 83: -80.639843 Lat. NAD 27: 39.187673 Lon. NAD 27: -80.640022 UTM 17 NAD 83 (m) N: 4337674.7 UTM 17 NAD 83 (m) E: 531104.1	<b>Proposed Broome Unit 2H</b> WV-N NAD 83 N: 252553.7 WV-N NAD 83 E: 1645434.9 WV-N NAD 27 N: 252517.3 WV-N NAD 27 E: 1676875.5 Lat. NAD 83: 39.187769 Lon. NAD 83: -80.639809 Lat. NAD 27: 39.187680 Lon. NAD 27: -80.639988 UTM 17 NAD 83 (m) N: 4337675.5 UTM 17 NAD 83 (m) E: 531107.0	<b>Proposed Broome Unit 3H</b> WV-N NAD 83 N: 252555.7 WV-N NAD 83 E: 1645444.6 WV-N NAD 27 N: 252519.4 WV-N NAD 27 E: 1676885.2 Lat. NAD 83: 39.187774 Lon. NAD 83: -80.639775 Lat. NAD 27: 39.187686 Lon. NAD 27: -80.639954 UTM 17 NAD 83 (m) N: 4337676.2 UTM 17 NAD 83 (m) E: 531109.9
<b>Proposed Radabaugh Unit 1H</b> WV-N NAD 83 N: 252558.2 WV-N NAD 83 E: 1645454.2 WV-N NAD 27 N: 252521.8 WV-N NAD 27 E: 1676894.9 Lat. NAD 83: 39.187781 Lon. NAD 83: -80.639741 Lon. NAD 27: 39.187693 Lon. NAD 27: -80.639920 UTM 17 NAD 83 (m) N: 4337677.0 UTM 17 NAD 83 (m) E: 531112.9	<b>Proposed Enterprise Unit 1H</b> WV-N NAD 83 N: 252560.6 WV-N NAD 83 E: 1645463.9 WV-N NAD 27 N: 252524.2 WV-N NAD 27 E: 1676904.5 Lat. NAD 83: 39.187788 Lon. NAD 83: -80.639707 Lat. NAD 27: 39.187700 Lon. NAD 27: -80.639886 UTM 17 NAD 83 (m) N: 4337677.8 UTM 17 NAD 83 (m) E: 531115.8	<b>Proposed Enterprise Unit 2H</b> WV-N NAD 83 N: 252563.0 WV-N NAD 83 E: 1645473.9 WV-N NAD 27 N: 252526.6 WV-N NAD 27 E: 1676914.5 Lat. NAD 83: 39.187795 Lat. NAD 83: -80.639672 Lat. NAD 27: 39.187707 Lon. NAD 27: -80.639851 UTM 17 NAD 83 (m) N: 4337678.6 UTM 17 NAD 83 (m) E: 531118.8

**Project Contacts**

**Antero Resources Corporation**  
535 White Oaks Blvd.  
Bridgeport, WV 26330  
Phone: 304-842-4100  
Fax: 304-842-4102

**Eli Wagoner, Environmental Field Manager**  
Office: 304-842-4068; Cell: 304-476-9770

**Robert Wirks, Design Manager**  
Office: 304-842-4401; Cell: 304-627-7405

**Aaron Kunzler, Construction Manager**  
Office: 304-842-4191; Cell: 304-641-8242

**Surveyor & Engineer**

**Bill Yetzer, PS, EI - Allegheny Surveys Inc.**  
304-848-5035 Off. 304-619-4937 Cell

**Kirk Wilson, PE - L&W Enterprises, Inc**  
304-257-4818 Off. 304-668-0365 Cell

**Well Location Restrictions:**

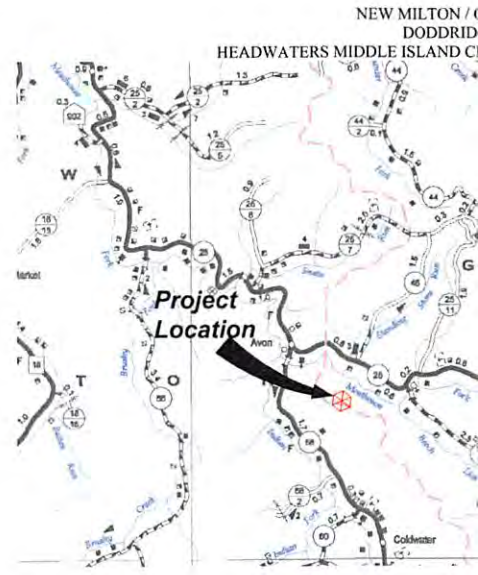
- All Pad construction complies with the following restrictions.
- \* 250' from an existing well or developed spring used for human or domestic animals.
  - \* 625' from occupied dwelling or barn greater than 2500 SF used for poultry or dairy measured from the center of the pad.
  - \* 100' from edge of disturbance to wetlands, perennial streams, natural or artificial lake, pond or reservoir.
  - \* 300' from edge of disturbance to a naturally reproducing trout stream.
  - \* 1000' of a surface or ground water intake to a public water supply.

FLOODPLAIN CONDITIONS	
DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN:	NO
PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR:	NO
HEC-RAS STUDY COMPLETED:	N/A
FLOODPLAIN SHOWN ON DRAWINGS:	N/A
FIRM MAP NUMBER(S) FOR SITE:	54017C0235C
ACREAGES OF CONSTRUCTION IN FLOODPLAIN:	0.00 Acres

MISS Utility of West Virginia  
1-800-245-4848  
West Virginia State Law  
(Section XIV: Chapter 24-C)  
Requires that you call two business  
days before you dig in the state of  
West Virginia.  
**IT'S THE LAW!!**



**Know what's below.  
Call before you dig.**



03/17/2017



# S PAD

MODIFICATION 1)  
CONSTRUCTION PLAN, &  
SEDIMENT CONTROL PLANS  
ANTERO RESOURCES CORPORATION



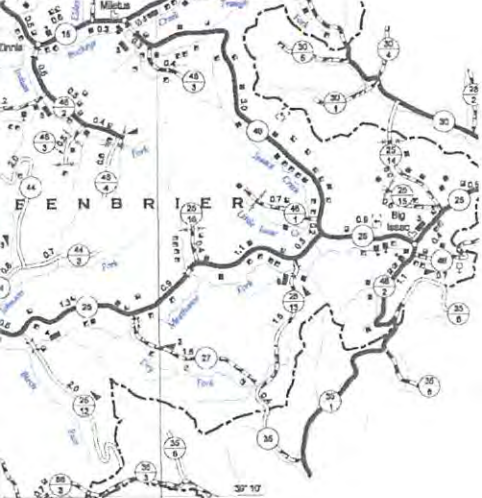
SECTION QUAD

2000 3000

NORTHINGS	EASTINGS
7920.68 m	E=532343.93 m
7916.90 m	E=531895.45 m
7677.41 m	E=531114.85 m
7062.01 m	E=531626.37 m
LATITUDE LONGITUDE	
86378	-80.625494
79822	-80.630721
87785	-80.639718
82221	-80.633824

\*NOTE: No Streams or Wetlands Were Impacted by this Design or Modification 1

## GREENBRIER DISTRICT COUNTY, WV MEATHOUSE FORK WATERSHEDS



Property Owner Information - Brooks Pad					
New Milton / Greenbrier District - Doddridge County					
Owner	TM/Parcel	Deed/Page	Total Acres	Type of Disturbance	Acreage
Mary Gray Trust 1989	16/26	263/95	3.45	Access Road A	0.12
				Total	0.12
Elton D. Patton, et al	16/24	186/226	52	Access Road A	0.76
				Total	0.76
Chad W. Johnson, et al	13/10	271/90	61.631	Access Road A	1.49
				Total	1.49
Chad W. Johnson, et al	13/9	271/90	24	Access Road A	0.61
				Total	0.61
Antero Resources Corporation	16/19	128/8	146	Water Containment Pad	0.26
				Access Road A	0.17
				Total	0.43
Antero Resources Corporation	16/19	128/8	32.4	Access Road A	3.29
				Access Road B	0.37
				Access Road C	0.05
				Water Containment Pad	0.88
				Fill Pile A	0.34
				Fill Pile B	0.77
				Well Pad	2.56
				Fill Pile C	0.05
				Total	8.31
S & S Ventures, LLC	13/6	270/421	119	Access Road A	2.96
				Bounded Description (no calls)	0.14
				Fill Pile A	0.12
				Fill Pile B	0.22
				Well Pad	2.77
				Fill Pile C	1.27
				Topsoil/Fill Pile D & E	0.80
				Fill Pile F	0.45
				Total	8.73
Robert Gregory Cumpston	16/18	WB 15/251	192	Well Pad	0.26
				Fill Pile C	0.93
				Topsoil/Fill Pile D & E	1.92
				Fill Pile F	0.56
				Total	3.67
				Grand Total	24.12

Modification Plan Property Owner Information - Brooks Pad					
New Milton / Greenbrier District - Doddridge County					
Owner	TM/Parcel	Deed/Page	Total Acres	Type of Disturbance	Acreage
Antero Resources Corporation	16/19	128/8	146	Engineered Fill Pile G	1.97
				Total	1.97
Antero Resources Corporation	16/19	128/8	32.4	Engineered Fill Pile G	1.86
				Total	1.86
				Grand Total	3.83

LOD Area (ac)	
Road A (4,505 feet)	9.40
Road B (218 feet)	0.37
Road C (134 feet)	0.19
Well Pad	5.59
Water Containment Pad	1.14
Engineered Fill Pile A	0.46
Engineered Fill Pile B	0.99
Engineered Fill Pile C	2.25
Topsoil / Engineered Fill Pile D & E	2.72
Engineered Fill Pile F	1.01
<b>Total Affected Area</b>	<b>24.12</b>
<b>Total Wooded Acres Disturbed</b>	<b>16.74</b>
<b>Total Linear Feet of Access Road</b>	<b>4,857</b>

Modification LOD Area (ac)	
Engineered Fill Pile G	3.83
<b>Total Affected Area</b>	<b>3.83</b>
<b>Total Wooded Acres Disturbed</b>	<b>3.02</b>
<b>Total Linear Feet of Access Road</b>	<b>0</b>

### DRAWING INDEX

- COVER SHEET/LOCATION MAP
- SCHEDULE OF QUANTITIES
- CONSTRUCTION, EROSION, & SEDIMENT CONTROL NOTES
- EXISTING CONDITIONS
- PLAN SHEET INDEX
- COUNTY ROAD ACCESS MAP
- 7-11 SITE PLANS
- WELL PAD BASELINE PROFILE & CROSS SECTIONS
- ENGINEERED FILL PILES C, D, E, & F BASELINE PROFILE & CROSS SECTIONS
- ACCESS ROAD A CROSS SECTIONS
- DETAILS
- RECLAMATION PLAN
- ENGINEERED FILL PAD G SITE PLAN (MODIFICATION 1)
- ENGINEERED FILL PAD G PROFILES AND CROSS SECTIONS (MODIFICATION 1)

DATE	REVISIONS	Scale: N/A
9-8-14	Revised Well Layout Configuration (Sheets: 1, 10-11, & 16)	Designed By: CKW/CKM
10-6-14	Modification 1 - Added Spoil Pad G	File No. Antero 94-30-G-13
12-14-16	Revised Well Layout Configuration (Sheets 1, 5, 10-11, & Added 17-18)	Page 1 of 18

*Handwritten signature and date: 12/28/16*



Allegheny Surveys, Inc.  
172 Thompson Drive  
Bridgeport, WV 26330  
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L&W ENTERPRISES, INC.

PH: 304.645.4815  
FAX: 304.252.2234  
PETERSBURG, WV 26101 EMAIL: KIRK.WILSON@OUTLOOK.COM



THIS DOCUMENT PREPARED FOR ANTERO RESOURCES CORPORATION

COVER SHEET/LOCATION MAP  
**BROOKS PAD**  
NEW MILTON / GREENBRIER DISTRICT  
DODDRIERGE COUNTY, WV

Date: 4/24/14

03/17/2017