



**west virginia** department of environmental protection

Office of Oil and Gas  
601 57th Street SE  
Charleston, WV 25304  
(304) 926-0450  
(304) 926-0452 fax

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
www.dep.wv.gov

February 26, 2016

**WELL WORK PERMIT**

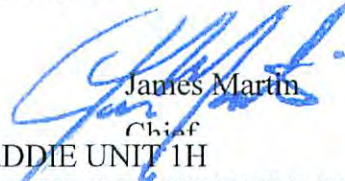
**Horizontal 6A Well**

This permit, API Well Number: 47-1706764, issued to ANTERO RESOURCES CORPORATION, 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 all 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 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.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-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) 926-0499 ext. 1654.



James Martin  
Chief

Operator's Well No: ADDIE UNIT 1H  
Farm Name: ANTERO RESOURCES CORPOR/  
**API Well Number: 47-1706764**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 02/26/2016

**Promoting a healthy environment.**

**02/26/2016**



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

1) Well Operator: Antero Resources Corporation 494488557 017- Doddridge West Union West Union 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Addie Unit 1H Well Pad Name: Addie Pad

3) Farm Name/Surface Owner: Antero Resources Corporation Public Road Access: WV 18

4) Elevation, current ground: ~895 Elevation, proposed post-construction: 890'

5) Well Type (a) Gas  Oil \_\_\_\_\_ Underground Storage \_\_\_\_\_  
Other \_\_\_\_\_

(b) If Gas Shallow  Deep \_\_\_\_\_  
Horizontal  \_\_\_\_\_

*Deeper than  
1-29-16*

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus Shale: 6900' TVD, Anticipated Thickness- 60 feet, Associated Pressure- 3100#

8) Proposed Total Vertical Depth: 6900' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 14800' MD

11) Proposed Horizontal Leg Length: 6528'

12) Approximate Fresh Water Strata Depths: 59', 175', 345'

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

14) Approximate Saltwater Depths: 650'

15) Approximate Coal Seam Depths: 516'

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: \_\_\_\_\_

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	54.5#/48#	400'	400' *See #19	CTS, 556 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2400'	2400'	CTS, 977 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	14800'	14800'	CTS, 3693 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

*Duane H...  
1-29-16*

<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	Leak-HPOZ & Tai - 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			



WW-6B  
(10/14)

API NO. 47- 017 - 06764  
OPERATOR WELL NO. Addie Unit 1H  
Well Pad Name: Addie Pad

**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 freshwater 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): 17.35 acres

22) Area to be disturbed for well pad only, less access road (acres): 6.99 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.

WW-9  
(2/15)

API Number 47 - 017 - 06764  
Operator's Well No. Addie Unit 1H

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 494488557

Watershed (HUC 10) Headwaters Middle Island Creek Quadrangle West Union 7.5'

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 \_\_\_\_\_ )
- 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 \_\_\_\_\_ )

*By: Bryan Ham  
1-29-16*

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)

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.

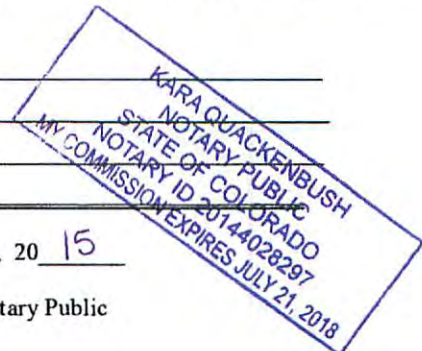
I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations 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 Manager, Environmental & Regulatory Manager



Subscribed and sworn before me this 6 day of November, 20 15

*Kara Quackenbush* Notary Public

My commission expires July 21, 2018

02/26/2016



17-06764

Form WW-9

Operator's Well No. Addie Unit 1H

**Antero Resources Corporation**

Proposed Revegetation Treatment: Acres Disturbed 17.35 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

Access Road "A" (4.76) + Well Pad (6.99) + Water Containment Pad (2.36) + Excess/Topsoil Material Stockpiles (3.24) = 17.35 Acres

**Seed Mixtures**

**Temporary**

**Permanent**

Seed Type	lbs/acre
<u>Annual Ryegrass</u>	<u>40</u>

Seed Type	lbs/acre
<u>Crownvetch</u>	<u>10-15</u>
<u>Tall Fescue</u>	<u>30</u>

See attached Table IV-3 for additional seed type (Addie Pad Design Page 23)

See attached Table IV-4a for additional seed type (Addie Pad Design Page 23)

\*or type of grass seed requested by surface owner

\*or type of grass seed requested by surface owner

Attach:

Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Bryan Harris

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

Title: Inspector Date: 1-29-16

Field Reviewed?  Yes  No

17-06764



**911 Address**  
**8 Slaughter Run**  
**West Union, WV 26456**

# **Well Site Safety Plan**

## **Antero Resources**

*Bryan Ham*  
*1-29-16*

**Well Name:** Michels Unit 1H, Michels Unit 2H, Warrior Unit 1H, Warrior Unit 2H, Addie Unit 1H, Addie Unit 2H, Cobra Unit 1H, Cobra Unit 2H

**Pad Location:** ADDIE PAD  
Doddridge County/West Union District

**GPS Coordinates:** Lat 39°20'0.98"/Long -80°48'19.81" (NAD83)

### **Driving Directions:**

From intersection of WV-18 and HWY 50 (exit for West Union, WV): Turn off of HWY 50 onto WV-18 N and follow for ~0.6mi, when you come to a T at Main St turn right. Take your first left immediately after the bridge onto Davis St./Old U.S. 50 W and follow for 0.4 mi. Take a right onto WV-18N/ Sistersville Pike and follow for ~5.5 mi. Access Road for Addie Pad will be on the right hand side and pad will be up on the ridge.

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

**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

**RECEIVED**  
**Office of Oil and Gas**  
**DEC 10 2015**  
**WV Department of**  
**Environmental Protection**



17-06764

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

**RECEIVED**  
**Office of Oil and Gas**

DEC 10 2015

**WV Department of  
Environmental Protection**

02/26/2016

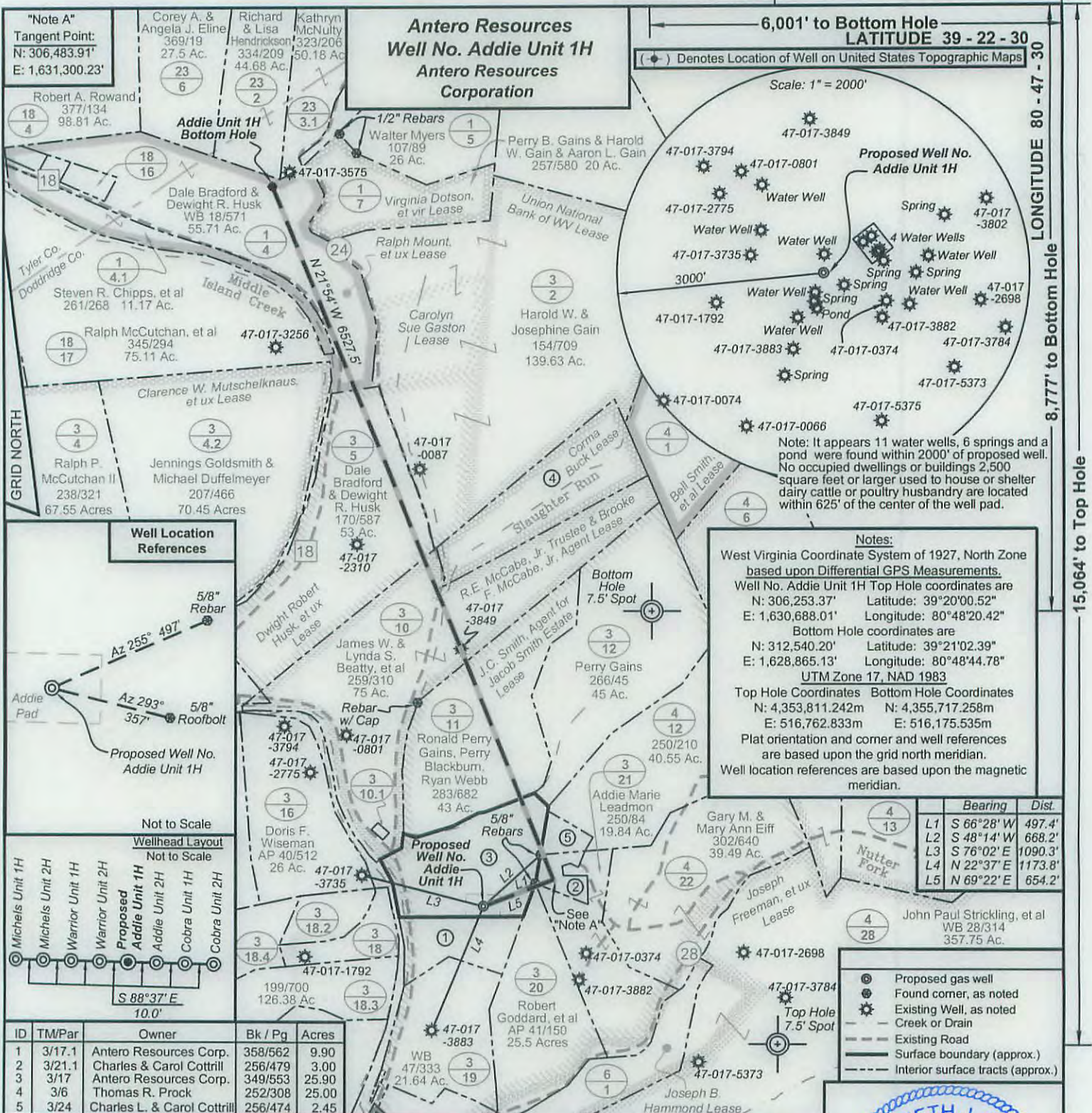


4,178' to Top Hole

6,001' to Bottom Hole  
LATITUDE 39 - 22 - 30

LONGITUDE 80 - 47 - 30

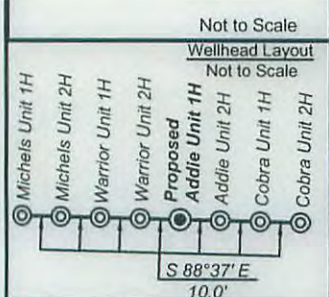
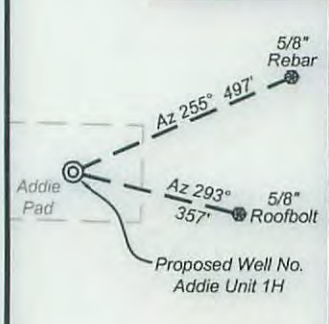
15,064' to Top Hole



**Notes:**  
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
 Well No. Addie Unit 1H Top Hole coordinates are  
 N: 306,253.37' Latitude: 39°20'00.52"  
 E: 1,630,688.01' Longitude: 80°48'20.42"  
 Bottom Hole coordinates are  
 N: 312,540.20' Latitude: 39°21'02.39"  
 E: 1,628,865.13' Longitude: 80°48'44.78"  
 UTM Zone 17, NAD 1983  
 Top Hole Coordinates Bottom Hole Coordinates  
 N: 4,353,811.242m N: 4,355,717.258m  
 E: 516,762.833m E: 516,175.535m  
 Plat orientation and corner and well references are based upon the grid north meridian.  
 Well location references are based upon the magnetic meridian.

Bearing	Dist.
L1 S 66°28' W	497.4'
L2 S 48°14' W	668.2'
L3 S 76°02' E	1090.3'
L4 N 22°37' E	1173.8'
L5 N 69°22' E	654.2'

**Well Location References**



ID	TM/Par	Owner	Bk / Pg	Acres
1	3/17.1	Antero Resources Corp.	358/562	9.90
2	3/21.1	Charles & Carol Cottrill	256/479	3.00
3	3/17	Antero Resources Corp.	349/553	25.90
4	3/6	Thomas R. Prock	252/308	25.00
5	3/24	Charles L. & Carol Cottrill	256/474	2.45

*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.*

*Kenneth J. Plum*  
**Kenneth J. Plum, P.S. 2216**



FILE NO: 55-30-WU-15  
 DRAWING NO: 55-15 Addie 1H Well Plat  
 SCALE: 1" = 1200'  
 MINIMUM DEGREE OF ACCURACY: Submeter  
 PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

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

DATE: February 11 20 16  
 OPERATOR'S WELL NO. Addie Unit 1H  
 API WELL NO 444  
 47 - 017 - 06764  
 STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION: Proposed 890' Existing 895' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union  
 DISTRICT: West Union COUNTY: Doade  
 SURFACE OWNER: Antero Resources Corp. Ralph Mount, et ux J.C. Smith, Agent for Jacob Smith Estate ACREAGE: 25.9  
 ROYALTY OWNER: R. E. McCabe, Jr. Trustee & Brooke F. McCabe, Jr. Agent LEASE NO: ACREAGE: 53; 290; 75; 68  
 PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ 6,900' TVD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 14,800' MD

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



4,178' to Top Hole

6,001' to Bottom Hole

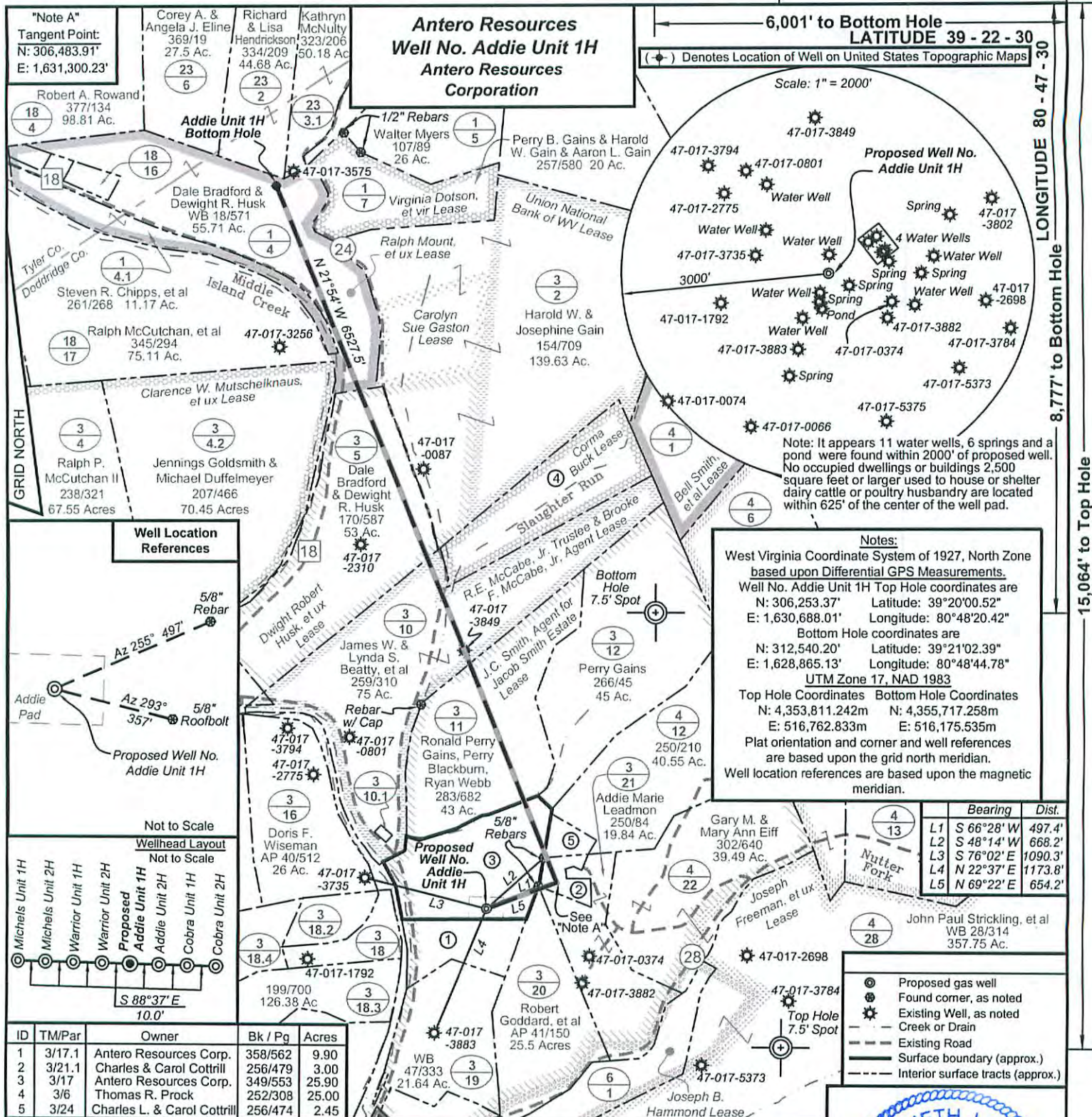
LATITUDE 39 - 22 - 30

(+) Denotes Location of Well on United States Topographic Maps

LONGITUDE 80 - 47 - 30

8,777' to Bottom Hole

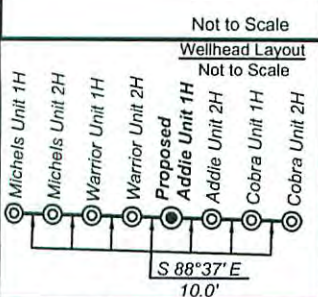
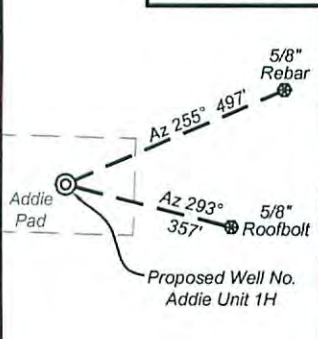
15,064' to Top Hole



**Notes:**  
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
 Well No. Addie Unit 1H Top Hole coordinates are  
 N: 306,253.37" Latitude: 39°20'00.52"  
 E: 1,630,688.01" Longitude: 80°48'20.42"  
 Bottom Hole coordinates are  
 N: 312,540.20" Latitude: 39°21'02.39"  
 E: 1,628,865.13" Longitude: 80°48'44.78"  
**UTM Zone 17, NAD 1983**  
 Top Hole Coordinates Bottom Hole Coordinates  
 N: 4,353,811.242m N: 4,355,717.258m  
 E: 516,762.833m E: 516,175.535m  
 Plat orientation and corner and well references are based upon the grid north meridian.  
 Well location references are based upon the magnetic meridian.

	Bearing	Dist.
L1	S 66°28' W	497.4'
L2	S 48°14' W	668.2'
L3	S 76°02' E	1090.3'
L4	N 22°37' E	1173.8'
L5	N 69°22' E	654.2'

**Well Location References**



ID	TM/Par	Owner	Bk / Pg	Acres
1	3/17.1	Antero Resources Corp.	358/562	9.90
2	3/21.1	Charles & Carol Cottrill	256/479	3.00
3	3/17	Antero Resources Corp.	349/553	25.90
4	3/6	Thomas R. Prock	252/308	25.00
5	3/24	Charles L. & Carol Cottrill	256/474	2.45

*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.*

*Kenneth J. Plum*  
**Kenneth J. Plum, P.S. 2216**



FILE NO: 55-30-WU-15  
 DRAWING NO: 55-15 Addie 1H Well Plat  
 SCALE: 1" = 1200'  
 MINIMUM DEGREE OF ACCURACY: Submeter  
 PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

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

DATE: February 11 2016  
 OPERATOR'S WELL NO. Addie Unit 1H  
 API WELL NO. 47-017-06764  
 STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
 LOCATION: ELEVATION: Proposed 890' Existing 895' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union  
 DISTRICT: West Union RALPH MOUNT, et ux COUNTY: Doddridge  
 SURFACE OWNER: Antero Resources Corp. J.C. Smith, Agent for Jacob Smith Estate ACREAGE: 25.9  
 ROYALTY OWNER: R. E. McCabe, Jr. Trustee & Brooke F. McCabe, Jr. Agent LEASE NO: ACREAGE: 53; 290; 75; 68  
 PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 14,800' MD 6,900' TVD

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



17-06764

Operator's Well Number Addie Unit 1H

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>J.C. Smith, Agent for Jacob Smith Estate Lease</u></b>			
J.C. Smith, Agent for Jacob Smith Estate	W.H. Mossor	1/8	0063/0250
W.H. Mossor	Term Energy Corporation	Assignment and Bill of Sale	0116/0519
Term Energy Corporation	Antero Resources Appalachian Corporation	*Partial Assignment of Oil & Gas Leases	DB 0271/0199
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>R.E. McCabe, Jr., Trustee and Brooke F. McCabe, Jr., Agent Lease</u></b>			
R.E. McCabe, Jr., Trustee and Brooke F. McCabe, Jr., Agent	Bojacque, Inc.	1/8	0154/0376
Bojacque, Inc.	Stonewall Gas Company	Assignment	0158/0520
Stonewall Gas Company	Dominion Appalachian Development, Inc.	Certificate of Withdrawal	Exhibit 2
Dominion Appalachian Development, Inc.	Dominion Appalachian Development, LLC	Merger	Exhibit 3
Dominion Appalachian Development, LLC	Consol Gas Appalachian Development, LLC	Name Change	DB 0286/0108
Consol Gas Appalachian Development, LLC	Consol Gas Reserves, Inc.	Certificate of Merger	DB 0286/0121
Consol Gas Reserves, Inc.	Consol Gas Company	Certificate of Merger	DB 0286/0133
Consol Gas Company	CNX Gas Company, LLC	Notice of Name Change	DB 0292/0469
CNX Gas Company, LLC	Antero Resources Corporation	*Partial Term Assignment	0317/0379
<b><u>Corma Buck Lease</u></b>			
Corma Buck	Key Oil Company	1/8	0106/0707
Key Oil Company	J & J Enterprises, Inc.	Assignment	0111/0326
J & J Enterprises, Inc.	Eastern American Energy Corporation	Confirmatory Deed & Assignment	0159/0139
Eastern American Energy Corporation	Energy Corporation of America	Confirmatory Deed & Assignment	0240/0498
Energy Corporation of America	Antero Resources Appalachian Corporation	*Partial Assignment of Oil and Gas Leases	0272/0307
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Dwight Robert Hush, et ux Lease</u></b>			
Dwight Robert Hush, et ux	Antero Resources Appalachian Corporation	1/8+	0290/0393
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

**RECEIVED**  
**Office of Oil and Gas**  
**DEC 10 2015**  
**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.

**\*\*CONTINUED ON NEXT PAGE\*\***



17-06744

WW-6A1  
(5/13)

Operator's Well No. Addie Unit 1H

**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>Ralph Mount, et ux Lease</u>	Ralph Mount, et ux Antero Resources Appalachian Corporation	Clarence W. Mutschelknaus Antero Resources Corporation	1/8 *Partial Assignment of Oil & Gas Leases	0147/0219 0337/0423

\*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  
 By: Kevin Kilstrom  
 Its: VP, Production

**RECEIVED**  
**Office of Oil and Gas**  
 DEC 10 2015  
**WV Department of**  
**Environmental Protection**

17-06764



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

November 6, 2015

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: Addie Unit 1H  
Quadrangle: West Union 7.5'  
Doddridge County/West Union District, West Virginia

Mr. Martin:

Antero Resources Corporation (Antero) is submitting the following application for a new well work permit for the Addie Unit 1H horizontal shallow well. As an authorized representative, I certify that Antero has the right to extract, produce or market the oil or gas from all leases through which the Addie Unit 1H horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

A handwritten signature in blue ink, appearing to read "Thomas Kuhn", is written over a horizontal line.

Thomas Kuhn  
Landman

RECEIVED  
Office of Oil and Gas  
DEC 10 2015  
WV Department of  
Environmental Protection

02/26/2016



FORM WW-6A1  
EXHIBIT 1

17-06764

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.wvscs.com](http://www.wvscs.com)  
E-mail: [business@wvscs.com](mailto:business@wvscs.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:

- Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
- Date Certificate of Authority was issued in West Virginia: 6/25/2008
- Corporate name has been changed to: Antero Resources Corporation  
(Attach one Certified Copy of Name Change as filed in home State of Incorporation.)
- Name the corporation elects to use in WV: Antero Resources Corporation  
(due to home state name not being available)
- Other amendments: \_\_\_\_\_  
(attach additional pages if necessary)
- 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
- 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 document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.

Form CF-4

Issued by the Office of the Secretary of State

WV013 - 04/16/2013 Website: [www.kanawha.com](http://www.kanawha.com)

RECEIVED  
Office of Oil and Gas

DEC 10 2013  
WV Department of  
Environmental Protection

02/26/2016

**FORM WW-6A1  
EXHIBIT 2, PAGE 1**

COMMONWEALTH OF VIRGINIA  
STATE CORPORATION COMMISSION  
Clerk of the Commission  
P. O. Box 1197, 1300 East Main Street  
Richmond, VA 23209

ARTICLES OF MERGER  
**DOMINION APPALACHIAN DEVELOPMENT, INC.** *Dan*  
a Virginia corporation  
**STONEWALL GAS COMPANY**  
a Virginia corporation

The undersigned corporations, pursuant to Title 13.1, Chapter 9, Article 12 of the Code of Virginia, hereby execute the following Articles of Merger and set forth:

**ARTICLE I**

The Plan of Merger (the "Plan") made and entered into as of the 31st day of August, 1998 by and between the undersigned corporations and attached hereto as Exhibit A provides for the **merger of Stonewall Gas Company into Dominion Appalachian Development, Inc.** The Plan constitutes the "Plan of Merger" for the purposes of Article 12 of the Virginia State Corporation Act.

**ARTICLE II**

The Plan was adopted by the written consent of the sole shareholder of Stonewall Gas Company.

**ARTICLE III**

The Plan was adopted by the written consent of the sole shareholder of Dominion Appalachian Development, Inc.

**ARTICLE IV**

These Articles of Merger shall become effective on September 30, 1998.

USDOMRESVAARTICL.MRG

**RECEIVED**  
Office of Oil and Gas  
DEC 10 2015  
WV Department of  
Environmental Protection



17-06764

IN WITNESS WHEREOF, Dominion Appalachian Development, Inc. and Stonewall Gas Company have caused these Articles of Merger to be executed as of the 31 day of August, 1998..

DOMINION APPALACHIAN  
DEVELOPMENT, INC.,  
a Virginia corporation

By: Thomas N. Cheek  
Name: Thomas N. Cheek  
Its: Vice President

STONEWALL GAS COMPANY,  
a Virginia corporation

By: G. E. Lake, Jr.  
Name: G. E. Lake, Jr.  
Its: Sr. Vice President

RECEIVED  
Office of Oil and Gas  
DEC 10 2015  
WV Department of  
Environmental Protection

17-06764

AC

# State of West Virginia



## Certificate

I, Betty Ireland, Secretary of State of the State of West Virginia, hereby certify that

**DOMINION APPALACHIAN DEVELOPMENT, INC.**  
(a Virginia corporation)

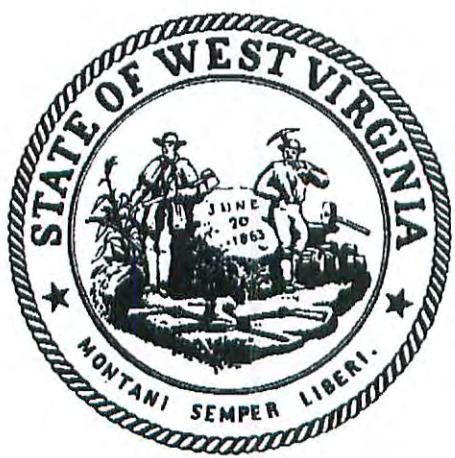
filed an application for Conversion in my office as required by the provisions of the West Virginia Code and was found to conform to law.

Therefore, I issue this

### CERTIFICATE OF CONVERSION

converting the corporation to

**DOMINION APPALACHIAN DEVELOPMENT, LLC**  
(a Virginia Limited Liability Company)



Given under my hand and the Great Seal of the State of

West Virginia on

RECEIVED  
Office of Oil and Gas  
February 25, 2006

DEC 10 2015

*Betty Ireland*  
WV Department of  
Environmental Protection

Secretary of State

02/26/2016



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

Date of Notice Certification: 12/09/2015

API No. 47- 017 - 06764  
Operator's Well No. Addie Unit 1H  
Well Pad Name: Addie 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>516762.833m</u>
County: <u>Doddridge</u>	Northing: <u>4353811.242m</u>
District: <u>West Union</u>	Public Road Access: <u>WV 18</u>
Quadrangle: <u>West Union 7.5'</u>	Generally used farm name: <u>Antero Resources Corporation</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 checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 40px;"><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 type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
---	---

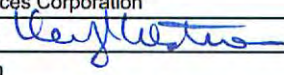
**Required Attachments:**

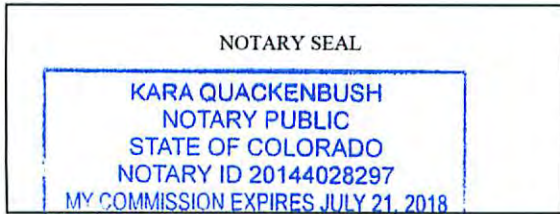
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Affidavits of Publication 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.

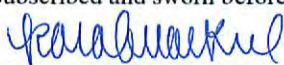
**WV Department of Environmental Protection**  
 02/26/2016

**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>VP, Production</u>	Facsimile:	<u>303-357-7315</u>
Telephone:	<u>303-357-7310</u>	Email:	<u>asteale@anteroresources.com</u>



Subscribed and sworn before me this 9 day of December 2015  
  
 \_\_\_\_\_ Notary Public  
 My Commission Expires July 21, 2018

**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).

RECEIVED  
Office of Oil and Gas  
DEC 10 2015  
WV Department of  
Environmental Protection  
12/26/2015



**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:** 12/10/2015 **Date Permit Application Filed:** 12/10/2015

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

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

SURFACE OWNER(s) (Impoundments or Pits)  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE  
Name: NO DECLARATIONS ON RECORD WITH COUNTY  
Address: \_\_\_\_\_

COAL OPERATOR  
Name: NO DECLARATIONS ON RECORD WITH COUNTY  
Address: \_\_\_\_\_

WATER PURVEYOR(s)/OWNER(s) OF WATER WELL,  
SPRING OR OTHER WATER SUPPLY SOURCE  
Name: PLEASE SEE ATTACHMENT  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

\*Please attach additional forms if necessary.

**RECEIVED**  
**Office of Oil and Gas**

**DEC 10 2015**

**WV Department of  
Environmental Protection**  
**02/26/2016**

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

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

**WELL PAD DISTURBANCE:**

**TM 6 PCLS 5**

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

**WATER SOURCE OWNERS: These owners of water sources, within 1500' of the well pad, were notified of all well work permit applications.**

**TM 03/10.1**

1 Water Well: 1098' (WW1)  
**Owner:** James W. & Lynda S. Beatty ✓  
**Address:** PO Box 295  
West Union, WV 26456

**TM 03/17 & 3/17.1**

TM 3/17 – 1 Water Well: 273' (WW3)  
TM 3/17.1 – 1 Water Well: 305' (WW9) + 2 Springs: 345' (SP4) & 432' (SP5) ✓  
**Owner:** Antero Resources Corporation  
**Address:** 1615 Wynkoop St.  
Denver, CO 80202

**TM 03/21.1 & 3/24**

TM 3/21.1 – 1 Water Well: 733' (WW4) + 1 Spring: 889' (SP2) ✓  
TM 3/24 – 1 Water Well: 879' (WW5)  
**Owner:** Charles L. & Carol J. Cottrill  
**Address:** 3839 Smithton Rd.  
West Union, WV 26456

**TM 03/21**

2 Water Wells: 834' (WW-6A) & 881' (WW6) ✓  
**Owner:** Addie Marie Leadmon  
**Address:** 87 Spruce St.  
Elizabeth, WV 26143

**TM 04/22**

1 Water Well: 1324' (WW8) + 1 Spring: 1339' (SP3) ✓  
**Owner:** Gary M. & Mary Ann Eiff  
**Address:** 12954 Soundings Rd.  
Lusby, MD 20657

RECEIVED  
Office of Oil and Gas

DEC 10 2015

WV Department of  
Environmental Protection

02/26/2016

REC  
Office of



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

**CONTINUED:**

**TM 03/19**

1 Pond: 518' (PD1)

**Owner:** Skylar Ora & Clifford Warren  
Montgomery, et al

**Address:** 1607 Rayon Dr.  
Parkersburg, WV 26101

**WATER SOURCE OWNERS: Greater than 1500'**

**\*NOTE: On attached water well map, 2 other water wells and 2 springs are identified, but they are located greater than 1500' from the subject well pad location.**

**TM 03/10**

1 Water Well: 1567' (WW2)

**Owner:** James W. & Lynda S. Beatty

**Address:** PO Box 295  
West Union, WV 26456

**TM 04/22**

1 Water Well: 1544' (WW7) + 1 Spring: 1954' (SP1)

**Owner:** Gary M. & Mary Ann Eiff

**Address:** 12954 Soundings Rd.  
Lusby, MD 20657

**TM 03/19**

1 Spring: 1576' (SP6)

**Owner:** Skylar Ora & Clifford Warren  
Montgomery, et al

**Address:** 1607 Rayon Dr.  
Parkersburg, WV 26101

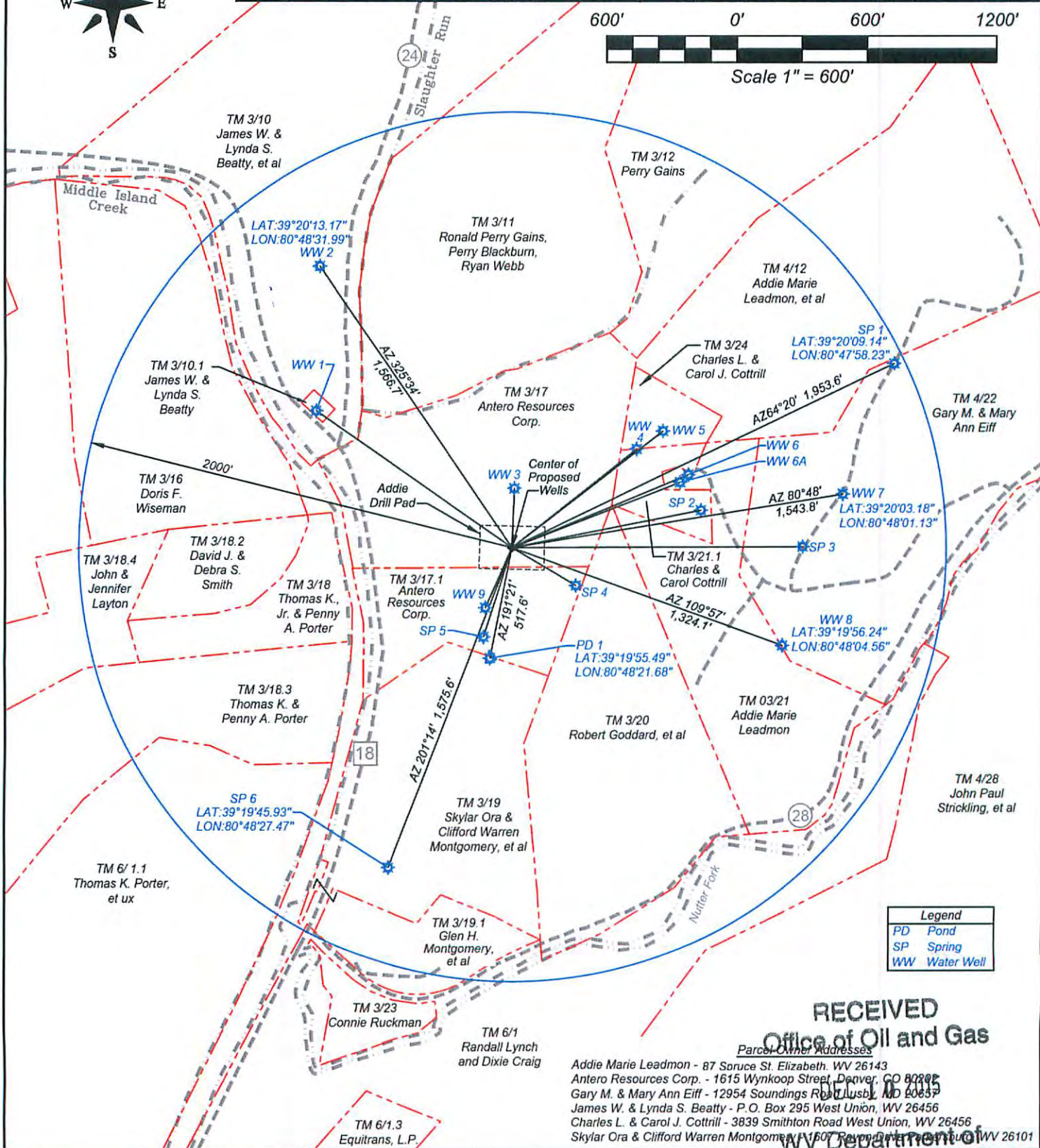
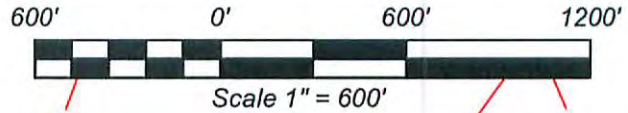
EIVED  
Oil and Gas  
JEC 10 2015  
WV Department of  
Environmental Protection  
02/26/2016



### Addie Drill Pad Water Well & Spring Map



ID	LAT/LONG	AZ/DIST	ID	LAT/LONG	AZ/DIST
WW 1	LAT:39°20'06.59" LON:80°48'32.07"	AZ 304°49' 1,098.4'	WW 9	LAT:39°19'57.75" LON:80°48'22.00"	AZ 203°54' 304.7'
WW 3	LAT:39°20'03.22" LON:80°48'20.39"	AZ 02°17' 273.2'	WW 10	LAT:39°19'41.58" LON:80°48'29.32"	AZ 200°46' 2,038.2'
WW 4	LAT:39°20'05.07" LON:80°48'13.22"	AZ 51°55' 733.3'	SP 2	LAT:39°20'02.35" LON:80°48'09.41"	AZ 78°51' 889.3'
WW 5	LAT:39°20'05.91" LON:80°48'11.70"	AZ 52°33' 879.2'	SP 3	LAT:39°20'00.75" LON:80°48'03.44"	AZ 89°51' 1,339.0'
WW 6	LAT:39°20'03.95" LON:80°48'10.17"	AZ 67°39' 881.4'	SP 4	LAT:39°19'58.83" LON:80°48'16.68"	AZ 120°43' 344.6'
WW 6A	LAT:39°20'03.60" LON:80°48'10.64"	AZ 68°52' 833.5'	SP 5	LAT:39°19'56.44" LON:80°48'22.08"	AZ 197°46' 432.0'



Legend	
PD	Pond
SP	Spring
WW	Water Well

**RECEIVED**  
**Office of Oil and Gas**

Parcel Owner Addresses  
 Addie Marie Leadmon - 87 Spruce St. Elizabeth, WV 26143  
 Antero Resources Corp. - 1615 Wynkoop Street, Denver, CO 80202  
 Gary M. & Mary Ann Eiff - 12954 Soundings Road Lusby, MD 20657  
 James W. & Lynda S. Beatty - P.O. Box 295 West Union, WV 26456  
 Charles L. & Carol J. Cottrill - 3839 Smithton Road West Union, WV 26456  
 Skylar Ora & Clifford Warren Montgomery, et al - 1607 Republic Road West Union, WV 26101



**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 specified 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 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

RECEIVED  
Office of Oil and Gas  
DEC 15 2013  
WV Department of  
Environmental Protection  
02/26/2016



WW-6A  
(8-13)

API NO. 47-017 - 067164  
OPERATOR WELL NO. Addie Unit 1H  
Well Pad Name: Addie Pad

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

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.**

02/26/2016



**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.

RECEIVED  
Office of Oil and Gas  
DEC 10 2015  
WV Department of  
Environmental Protection  
02/26/2016



WW-6A  
(8-13)

API NO. 47-017 - 06764  
OPERATOR WELL NO. Addie Unit 1H  
Well Pad Name: Addie Pad

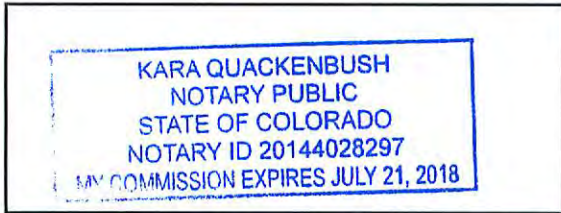
**Notice is hereby given by:**

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

Address: 1615 Wynkoop Street  
Denver, CO 80202  
Facsimile: 303-357-7315

**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 10 day of December 2015  
Kara Quackenbush Notary Public  
My Commission Expires July 21, 2018

RECEIVED  
Office of Oil and Gas  
DEC 10 2015  
WV Department of  
Environmental Protection  
2016



17-06764

WW-6A3  
(1/12)

Operator Well No. Addie Unit 1H

Multiple Wells on the Addie Pad

**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
**NOTICE OF ENTRY FOR PLAT SURVEY**

**Notice Time Requirement:** Notice shall be provided at least **SEVEN (7)** days but no more than **FORTY-FIVE (45)** days prior to entry

**Date of Notice:** 8/6/2015      **Date of Planned Entry:** \*8/16/2015

\*Please note that this is an estimated date. Antero may begin surveying seven (7) days but no more than forty-five (45) after your receipt of this notice (whichever comes first).

**Delivery method pursuant to West Virginia Code § 22-6A-10a**

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

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

**Notice is hereby provided to:**

SURFACE OWNER(s)  
 Name: Antero Resources Corporation  
 Address: 1615 Wynkoop St.  
Denver, CO 80202  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

COAL OWNER OR LESSEE  
 Name: NO DECLARATIONS ON RECORD WITH COUNTY  
 Address: \_\_\_\_\_  
 \_\_\_\_\_

MINERAL OWNER(s)  
 Name: Mary Maxine Welch  
 Address: PO Box 4308  
Parkersburg, WV 26104  
 \*please attach additional forms if necessary

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>Approx. 39.333605, -80.805504</u>
County: <u>Doddridge</u>	Public Road Access: <u>WV 18</u>
District: <u>West Union</u>	Watershed: <u>Headwaters Middle Island Creek</u>
Quadrangle: <u>West Union 7.5'</u>	Generally used farm name: <u>Antero Resources Corporation</u>

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production 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). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

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

Address: 1615 Wynkoop Street  
Denver, CO 80202  
 Facsimile: (303) 357-7315

**RECEIVED**  
**Office of Oil and Gas**

**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 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).

DEC 10 2015  
WV Department of  
Environmental Protection

Tax Map 3 Parcel 17  
02/28/2016  
Tax Map 3 Parcel 17.1



17-06764

WW-6A5  
(1/12)

Operator Well No. Addie Unit 1H

**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:** 12/10/2015      **Date Permit Application Filed:** 12/10/2015

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

Name: \_\_\_\_\_  
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>516762.833m</u>
County: <u>Doddridge</u>		Northing: <u>4353811.242m</u>
District: <u>West Union</u>	Public Road Access: <u>WV 18</u>	
Quadrangle: <u>West Union 7.5'</u>	Generally used farm name: <u>Antero Resources Corporation</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: Antero Resources Corporation  
Telephone: (303) 357-7310  
Email: asteale@anteroresources.com

Address: 1615 Wynkoop Street  
Denver, CO 80202  
Facsimile: 303-357-7315

**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).

RECEIVED  
Office of Oil and Gas  
DEC 10 2015  
WV Department of  
Environmental Protection

02/26/2016



17-06764



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

May 29, 2015

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 Addie Pad, Doddridge County  
Addie Unit 1H Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #04-2015-0281 issued to Antero Resources Corporation for access to the State Road for a well site located off of WV Route 18 in Doddridge County.

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: Ashlie Steele  
Antero Resources Corporation  
CH, OM, D-6  
File

RECEIVED  
Office of Oil and Gas

DEC 10 2015

WV Department of  
Environmental Protection

02/26/2016

17-06764

## 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

RECEIVED  
Office of Oil and Gas

DEC 10 2015

WV Department of  
Environmental Protection

02/26/2016



## Antero Resources Corporation Site Construction Plan for Addie Well Pad & Water Containment 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 the Addie Well Pad & Water Containment Pad Site Design & Construction Plan, Erosion & 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 Navitus Engineering 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 2 of "Addie Well Pad & Water Containment Pad Site Design & Construction Plan, Erosion & Sediment Control Plans" (Site Design) prepared and certified by Navitus Engineering 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.2.** *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 Addie Well Pad & Water Containment Pad can be found on "Overall Plan Sheet Index & Volumes," "Access Road & Water Containment Pad Plan," and "Access Road, Water Containment Pad & Well Pad Plan," maps are included on pages 8-10 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*

RECEIVED  
Office of Oil and Gas  
DEC 10 2015  
WV Department of  
Environmental Protection  
02/26/2016

**Antero Response**

Please refer to the "Existing Conditions" maps on page 6 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 "Overall Plan Sheet Index & Volumes," "Access Road & Water Containment Pad Plan," and "Access Road, Water Containment Pad & Well Pad Plan," maps are included on pages 8-10 as well as the "Well Pad Grading Plan," "Water Containment Pad Grading Plan," "Access Road Profiles," "Access Road Sections," "Well Pad & Water Containment Pad Sections," and "Well Pad Sections" on page 11-17 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 "Overall Plan Sheet Index & Volumes," "Access Road & Water Containment Pad Plan," and "Access Road, Water Containment Pad & Well Pad Plan," maps are included on pages 8-10 for the maps 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 "Access Road Profiles," "Access Road Sections," "Well Pad & Water Containment Pad Sections," "Well Pad Sections," and "Stream Crossing 'A' & Gabion Wall Details," on page 13-17 for a cross-section of the location. The cut and fill volumes can be found in "Material Quantities" on page 4.

*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.

RECEIVED  
Office of Oil and Gas  
DEC 10 2015

WV Department of  
Environmental Protection  
02/26/2016



**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*

**Antero Response**

Please refer to the Construction and E&S Control Notes on page 2 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 and E&S Notes on page 2. 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 and E&S Control Notes on page 2 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 10 2015

WV Department of  
Environmental Protection

02/26/2016

**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;

**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 and E&S Control Notes on page 2 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 and E&S Control Notes on page 2 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 and E&S Control Notes on page 2 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 §3.2.b.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).



## Antero Resources Corporation Erosion and Sediment Control Plan for Addie Well Pad & Water Containment 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 Addie Well Pad & Water Containment Pad Site Design & Construction Plan, Erosion & 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 Navitus Engineering 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 Addie Well Pad & Water Containment Pad Site Design & Construction Plan, Erosion & Sediment Control Plans (Site Design) prepared and certified by Navitus Engineering 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 with the contactor and the appropriate erosion and sediment control inspector 48 hours prior to beginning work to review the construction drawings and provide any requested guidance.
2. Stake the limits of construction and mark/flag all identified wetlands, streams, and other areas of concern for construction activities. Install signs to designate the areas and orange safety fence to identify important project attributes such as approved access roads, no refueling zones, wetlands/steam bounds, Etc.
3. Construct the rock construction entrance. All vehicles entering and exiting the site shall do so via the rock construction entrance.
4. Construction all BMP's as soon as clearing and grubbing operations allow. Diversions and sediment trap(s)/basin(s) shall be seeded and mulched immediately.
5. If applicable, convey upslope drainage around the Access Road, and Pad areas by constructing all diversion berm(s) and/or compost filter sock diversion(s) as shown on the plans.
6. Clear and grub the site. All woody material, brush, trees, stumps, large roots, boulder and debris 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 diameter and larger shall be cut and logs stacked. Smaller trees, brush, & stumps shall be cut and/or grubbed and windrowed in appropriate areas for use as sediment barriers at water drainage outlets (as shown on the plans), windrowed below the well site, used for wildlife habitat, burned (as per WV forest fire laws), removed from site, or disposed of by other methods approved by WV DEP.
7. If applicable, install all wetland or stream crossings as shown on the plans.

RECEIVED  
Office of Oil and Gas  
DEC 10 2015  
WV Department of  
Environmental Protection

02/26/2016

8. Strip the topsoil from the access road. Prior to placing any fill, the exposed subgrade shall be compacted and proof rolled to produce a stable and unyielding site. All stripped topsoil shall be stockpiled in areas shown in the plans, or re-spread at an approximate depth of 2-4 inches on all proposed 2:1 or flatter slopes, and immediately stabilized. Additional BMP measures shall be constructed around topsoil stockpiles, if necessary.
9. Construct the access road. All fill areas, including excess material stockpiles, shall be "Keyed In" and compacted in horizontal lifts with a maximum loose lift thickness of 12" and maximum particle size as outlined in the geotechnical report. All fill shall be compacted by a vibrating sheepsfoot roller to 95% per the standard proctor test (ASTM – D698). Moisture content will be controlled in accordance with the standard proctor test (ASTM – D698) Results. It is also recommended that each lift be proof rolled with a loaded haul truck where applicable. Ditch relief culverts shall be installed at a grade of 1-8% to minimize outlet velocities to the extent possible. Install outlet protection once ditch relief culverts are installed, as shown on plans. Stabilize the road with geotextile fabric & stone and side slopes as specified with permanent seeding. Excess material shall be stockpiled (if necessary) in areas shown in the plans and immediately stabilized. Topsoil shall be stripped from all stockpile areas prior to construction of stockpiles. After stockpiles are constructed, topsoil is to be reapplied at a depth of 6". Slopes shall be tracked by running tracked machinery up and down the slope, leaving tread marks parallel to the contour. All ditch lines shall be cleaned prior to installation of lined protection.
10. Strip the topsoil from the well pad area. Prior to placing any fill, the exposed subgrade shall be compacted and proof rolled to produce a stable and unyielding site. All stripped topsoil shall be stockpiled in areas shown in the plans, or re-spread at an approximate depth of 2-4 inches on all proposed 2:1 or flatter slopes, and immediately stabilized. Additional BMP measures shall be constructed around topsoil stockpiles, if necessary.
11. Grade the Pad area as shown on the plans. Install pad sumps (with 4" PVC drain pipe and outlet protection) and containment berm liner system. Immediately stabilize the outer areas of the well pad. The well pad area shall be stabilized with geotextile fabric & stone and the side slopes with seed and mulch. Apply seed and mulch to all disturbed areas. This shall include all areas that will not be subject to regular traffic activity (to be stabilized with stone), or any disturbed area that will not be re-disturbed before site reclamation begins.
12. Commence well drilling activity.
13. All BMP's must remain in place and functional until all areas within the limit of disturbance are complete and permanently stabilized. Maintenance must include inspection of all erosion and sediment controls after each runoff event in excess of 0.5" and on a biweekly basis.
14. The construction site should be stabilized as soon as possible after completion. Establishment of final stabilization must be initiated no later than 7 days after reaching final grade. Final stabilization means that all soil-disturbing activities are completed, and that either a permanent vegetative cover with a density of 70% or greater has been established or that the surface had been stabilized by hard cover such as pavement or buildings. It should be noted that the 70% requirement refers to the total area vegetated and not just a percent of the site.
15. All permanent sediment control measures can be removed after the site is permanently stabilized and approval is received from the WVDEP.
16. And areas disturbed by removal of controls shall be repaired, stabilized, and permanently seeded.

**RECEIVED**  
 Office of Oil and Gas  
 DEC 10 2015  
 WV Department of  
 Environmental Protection

**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 and E&S Control Notes on page 2, "Construction Details" and "Stream Crossing 'A' & Gabion Wall Details," on pages 17-23 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 Erosion and Sediment Control Narrative under Construction and E&S Control Notes on page 2 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 and E&S Control Notes" on page 2 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 and E&S Control Notes," "Construction Details", and "Stream Crossing 'A' & Gabion Wall Details," on pages 2, 17-23 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.b.3.** *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 of the Site Design.

RECEIVED  
Office of Oil and Gas  
DEC 10 2015

WV Department of  
Environmental Protection

02/26/2016

**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:**

"Overall Plan Sheet Index & Volumes," "Access Road & Water Containment Pad Plan," and "Access Road, Water Containment Pad & Well Pad Plan," maps are included on pages 8-10 of the Site Design. Specific design and layout and inspection and maintenance notes for a stabilized construction entrance are included in the "Construction and E&S Control Notes" verbiage on page 2.

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

**Antero Response:**

"Overall Plan Sheet Index & Volumes," "Access Road & Water Containment Pad Plan," and "Access Road, Water Containment Pad & Well Pad Plan," maps are included on pages 8-10 of the Site Design locate all proposed erosion and sediment control BMPs.

RECEIVED  
Office of Oil and Gas

DEC 10 2015

WV Department of  
Environmental Protection

02/26/2016



OPERATOR: Antero Resources Corp. WELL NO: Addie Unit 1H

PAD NAME: Addie Pad

REVIEWED BY: Ashlie Steele SIGNATURE: *Ashlie Steele*

### WELL RESTRICTIONS CHECKLIST

#### HORIZONTAL 6A WELL

#### Well Restrictions

- At Least 100 Feet from Pad and LOD (including any E&S Control Feature) to any Perennial Stream, Lake, Pond, Reservoir or Wetland; OR  
 DEP Waiver and Permit Conditions
- At Least 300 Feet from Pad and LOD (including any E&S Control Feature) to any Naturally Producing Trout Stream; OR  
 DEP Waiver and Permit Conditions
- At Least 1000 Feet from Pad and LOD (including any E&S Control Feature) to any Groundwater Intake or Public Water Supply; OR  
 DEP Waiver and Permit Conditions
- At Least 250 Feet from an Existing Water Well or Developed Spring to Well Being Drilled; OR  
 Surface Owner Waiver and Recorded with County Clerk, OR  
 DEP Variance and Permit Conditions
- At Least 625 Feet from an Occupied Dwelling Structure to Center of the Pad; OR  
 Surface Owner Waiver and Recorded with County Clerk, OR  
 DEP Variance and Permit Conditions
- At Least 625 Feet from Agricultural Buildings Larger than 2500 Square Feet to the Center of the Pad; OR  
 Surface Owner Waiver and Recorded with County Clerk, OR  
 DEP Variance and Permit Conditions

Antero owns both dwelling structures located 339' & 368' from the center of the well pad and waives the setback requirements.



**LOCATION COORDINATES:**  
**ACCESS ROAD ENTRANCE**  
 LATITUDE: 39.234574 LONGITUDE: -80.806148 (NAD 83)  
 N 4353863.29 E 516534.45 (UTM ZONE 17 METERS)  
**CENTER OF TANK**  
 LATITUDE: 39.233481 LONGITUDE: -80.805175 (NAD 83)  
 N 4352924.60 E 516790.45 (UTM ZONE 17 METERS)  
**CENTROID OF PAD**  
 LATITUDE: 39.233800 LONGITUDE: -80.805504 (NAD 83)  
 N 4353816.14 E 516782.38 (UTM ZONE 17 METERS)

# ADDIE WELL PAD & WATER CONTAINMENT PAD SITE DESIGN & CONSTRUCTION PLAN, EROSION & SEDIMENT CONTROL PLANS

WEST UNION DISTRICT, DODDRIDGE COUNTY, WEST VIRGINIA  
 CONAWAY RUN-MIDDLE ISLAND CREEK WATERSHED

**APPROVED WVDEP OOG**  
  
 2/24/2016

API# 1706764

**GENERAL DESCRIPTION:**

THE ACCESS ROAD(S), WATER CONTAINMENT PAD AND WELL PAD ARE BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

**FLOODPLAIN NOTES:**

THE PROPOSED SITE IS LOCATED IN FLOOD ZONES "X" & "A" PER FEMA MAP NUMBER #40107C010C. THE SITE ENTRANCE IS LOCATED IN FLOOD ZONE "A" AND THE REST OF THE SITE IS LOCATED IN FLOOD ZONE "X". MINOR EXCAVATION IS REQUIRED FOR THE INSTALLATION OF THE ENTRANCE AND EAS CONTROL. IS THE ONLY DISTURBANCE PROPOSED IN FLOOD ZONE "A". NO FILL IS PROPOSED IN FLOOD ZONE "A".

**MISS UTILITY STATEMENT:**

ANTERO RESOURCES CORPORATION NOTIFY MISS UTILITY OF WEST VIRGINIA FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN. TICKET #1504305428. IN ADDITION, MISS UTILITY WILL BE CONTACTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION FOR THIS PROJECT.

**ENTRANCE PERMIT:**

ANTERO RESOURCES CORPORATION WILL OBTAIN AN ENCROACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

**ENVIRONMENTAL NOTES:**

STREAM AND WETLAND DELINEATIONS WERE PERFORMED IN DECEMBER, 2015 BY GAI CONSULTANTS, INC. TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY JURISDICTION OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE DECEMBER 8, 2015 POTENTIALLY JURISDICTIONAL WATERS MAP WAS PREPARED BY GAI CONSULTANTS, INC. AND SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THIS MAP DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDHEP. IT IS STRONGLY RECOMMENDED THAT THE AFOREMENTIONED AGENCIES BE CONSULTED IN AN EFFORT TO GAIN WRITTEN CONFIRMATION OF THE DELINEATION SHOWN ON THIS EXHIBIT PRIOR TO ENGAGING CONSTRUCTION ON THE PROPERTY DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL AND/OR STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS TO WATERS OF THE U.S., INCLUDING WETLAND FIELDS AND STREAM CROSSINGS.

**GEOTECHNICAL NOTES:**

THE PROPOSED ACCESS ROAD CUT SLOPE (1:1) SHALL BE FIELD VERIFIED BY A CERTIFIED GEOTECHNICAL ENGINEER TO ENSURE THE PROPOSED SLOPES ARE ADEQUATE PRIOR TO CONSTRUCTION. ACCESS ROAD CONSTRUCTION SHALL BE MONITORED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER OR PROJECT DESIGN ENGINEER DURING CONSTRUCTION. A SUBSURFACE INVESTIGATION OF THE PROPOSED SITE WAS PERFORMED BY PENNSYLVANIA SOIL & ROCK, INC. BETWEEN FEBRUARY 09, 2015 & MARCH 3, 2015. THIS REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC. DATED APRIL 10, 2015, REFLECTS THE RESULTS OF THE SUBSURFACE INVESTIGATION. THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS REPORT WERE USED IN THE PREPARATION OF THESE PLANS. PLEASE REFER TO THE SUBSURFACE INVESTIGATION REPORT BY PENNSYLVANIA SOIL & ROCK, INC. FOR ADDITIONAL INFORMATION, AS NEEDED.

**PROJECT CONTACTS:**

**OPERATOR:**  
 ANTERO RESOURCES CORPORATION  
 415 WHITE OAK BLVD.  
 BRIDGEPORT, WV 26330  
 PHONE: (304) 842-4100  
 FAX: (304) 842-4102

**ENVIRONMENTAL ENGINEER**  
 OFFICE: (304) 842-4059 CELL: (304) 478-9770

**ON MEYERS - OPERATIONS SUPERINTENDENT**  
 OFFICE: (303) 357-8799 CELL: (303) 808-2423

**ARON KUNZLER - CONSTRUCTION SUPERVISOR**  
 CELL: (405) 227-8344

**ANTHONY SMITH - FIELD ENGINEER**  
 OFFICE: (304) 842-4200 CELL: (304) 873-6198

**MARK JOHNSON - SURVEYING COORDINATOR**  
 OFFICE: (304) 842-4162 CELL: (304) 719-8449

**RICHARD LYLES - LAND AGENT**  
 CELL: (770) 378-8833

**ENGINEER/SURVEYOR:**  
 NAVITUS ENGINEERING, INC.  
 CYRUS S. KUMP, PE - PROJECT MANAGER/ENGINEER  
 OFFICE: (688) 662-4185 CELL: (540) 886-8747

**ENVIRONMENTAL:**  
 GAI CONSULTANTS, INC.  
 JASON A. COOK - SENIOR ENVIRONMENTAL SPECIALIST  
 OFFICE: (304) 928-9100 CELL: (303) 709-3308

**GEOTECHNICAL:**  
 PENNSYLVANIA SOIL & ROCK, INC.  
 CHRISTOPHER W. SAMOIS - PROJECT ENGINEER  
 OFFICE: (412) 372-4000 CELL: (412) 599-9662

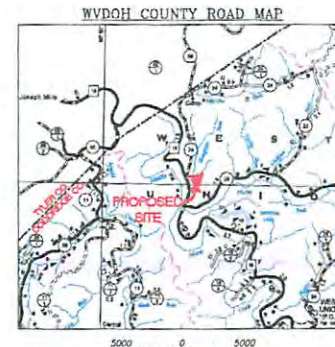
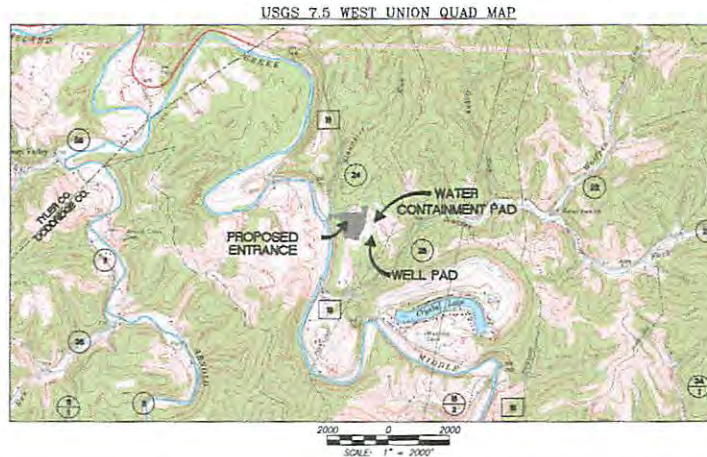
**RESTRICTIONS NOTES:**

1. THERE ARE NO PERENNIAL STREAMS, WETLANDS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE WELL PAD AND LOD.
2. THERE ARE NO NATURALLY PRODUCING TROUT STREAMS WITHIN 300 FEET OF THE WELL PAD AND LOD.
3. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE WELL PAD AND LOD.
4. THERE ARE NO APPARENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 200 FEET OF THE WELL(S) BEING DULLED.
5. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.
6. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.

**REPRODUCTION NOTE**

THESE PLANS WERE CREATED TO BE PLOTTED ON 22"x34" (ANSI D) PAPER. HALF SCALE DRAWINGS ARE ON 11"x17" (ANSI B) PAPER.

THESE PLANS WERE CREATED FOR COLOR PLOTTING AND ANY REDUCTIONS IN GRAY SCALE OR COLOR MAY RESULT IN A LOSS OF INFORMATION AND SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.



**DESIGN CERTIFICATION:**

THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS REG-35-S.

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!!**

WEST VIRGINIA STATE PLANNING COORDINATE SYSTEM  
 NORTH ZONE, MARS 11  
 MAY BE EXAMINED BY DOWNING GRADE GPS & GPS  
 POST-PROCESSING

**SHEET INDEX:**

- 1 - COVER SHEET
- 2 - CONSTRUCTION AND EAS CONTROL NOTES
- 3 - LEGEND
- 4 - MATERIAL QUANTITIES
- 5 - STORM DRAINAGE COMPUTATIONS
- 6 - EXISTING CONDITIONS
- 7 - EXISTING STRUCTURES & FEATURES
- 8 - OVERALL PLAN SHEET INDEX & VOLUMES
- 9 - ACCESS ROAD & WATER CONTAINMENT PAD PLAN
- 10 - ACCESS ROAD, WATER CONTAINMENT PAD & WELL PAD PLAN
- 11 - WELL PAD GRADING PLAN
- 12 - WATER CONTAINMENT PAD GRADING PLAN
- 13 - ACCESS ROAD PROFILES
- 14 - ACCESS ROAD SECTIONS
- 15 - WELL PAD & WATER CONTAINMENT PAD SECTIONS
- 16 - WELL PAD & STOCKPILE SECTIONS
- 17 - STREAM CROSSING "A" & GABION WALL DETAILS
- 18-25 - CONSTRUCTION DETAILS
- 26 - ACCESS ROAD & WATER CONTAINMENT PAD RECLAMATION PLAN
- 27 - ACCESS ROAD, WATER CONTAINMENT PAD & WELL PAD RECLAMATION PLAN
- 28 - FIRM EXHIBIT
- GE500-GE504 - GEOTECHNICAL DETAILS

ADDIE LIMITS OF DISTURBANCE AREA (AC)	
Total Site	4.76
Access Road "A" (1.465)	4.76
Well Pad	6.59
Water Containment Pad	2.35
Excess/Topsoil Material Stockpiles	3.24
<b>Total Affected Area</b>	<b>17.35</b>
Total Wooded Acres Disturbed	3.89
Impacts by Antero Resources Corporation TM 217	
Access Road "A" (1.465)	4.76
Well Pad	5.19
Water Containment Pad	2.35
Excess/Topsoil Material Stockpiles	3.24
<b>Total Affected Area</b>	<b>15.53</b>
Total Wooded Acres Disturbed	3.89
Impacts by Antero Resources Corporation TM 317-1	
Well Pad	1.80
<b>Total Affected Area</b>	<b>1.80</b>
Total Wooded Acres Disturbed	0.00

Proposed Well Name	WV North-AD 27	WV North-AD 83	UTM (METERS)	ROAD 83 Lat. & Long.
Beckwith	N 30224.33	E 150226.50	N 4353811.53 E 516790.65	LAT 39-25-02.214 LONG -80-45-20.202
Michale	N 30254.00	E 150259.26	N 4353811.31 E 516793.99	LAT 39-25-00.504 LONG -80-45-20.178
Warner	N 30253.85	E 150229.02	N 4353811.29 E 516790.74	LAT 39-25-00.819 LONG -80-45-20.058
Warner	N 30225.81	E 150228.78	N 4353811.28 E 516792.79	LAT 39-25-02.819 LONG -80-45-19.824
Addie	N 30253.37	E 150208.54	N 4353811.24 E 516792.83	LAT 39-25-00.817 LONG -80-45-19.791
Addie	N 30253.17	E 150208.50	N 4353811.22 E 516792.58	LAT 39-25-00.817 LONG -80-45-19.668
Coburn	N 30252.58	E 150208.07	N 4353811.20 E 516792.81	LAT 39-25-00.816 LONG -80-48-10.545
Coburn	N 30252.69	E 150207.83	N 4353811.18 E 516791.77	LAT 39-25-00.816 LONG -80-48-10.414
Well Pad Elevation	890.0			

Stream and Impact Cause	ADDIE PERENNIAL STREAM IMPACT (LINEAR FEET)				Total Disturbance (LF)
	Permanent Impacts Culvert (#) (LF)	Temp. Impacts Inlets/Outlets Structures (LF)	Temp. Disturb. Cofferdam/EAS Controls (LF)	Temp. Disturb. L.O.D. (LF)	
Perennial Stream 2 (Access Road "A")	4	0	0	0	4

Stream and Impact Cause	ADDIE INTERMITTENT STREAM IMPACT (LINEAR FEET)				Total Disturbance (LF)
	Permanent Impacts Culvert (#) (LF)	Temp. Impacts Inlets/Outlets Structures (LF)	Temp. Disturb. Cofferdam/EAS Controls (LF)	Temp. Disturb. L.O.D. (LF)	
Intermittent Stream 4 (Access Road "A")	44	49	10	26	129

**NAVITUS ENERGY ENGINEERING**  
 Telephone: (688) 662-4185 | www.navituseng.com

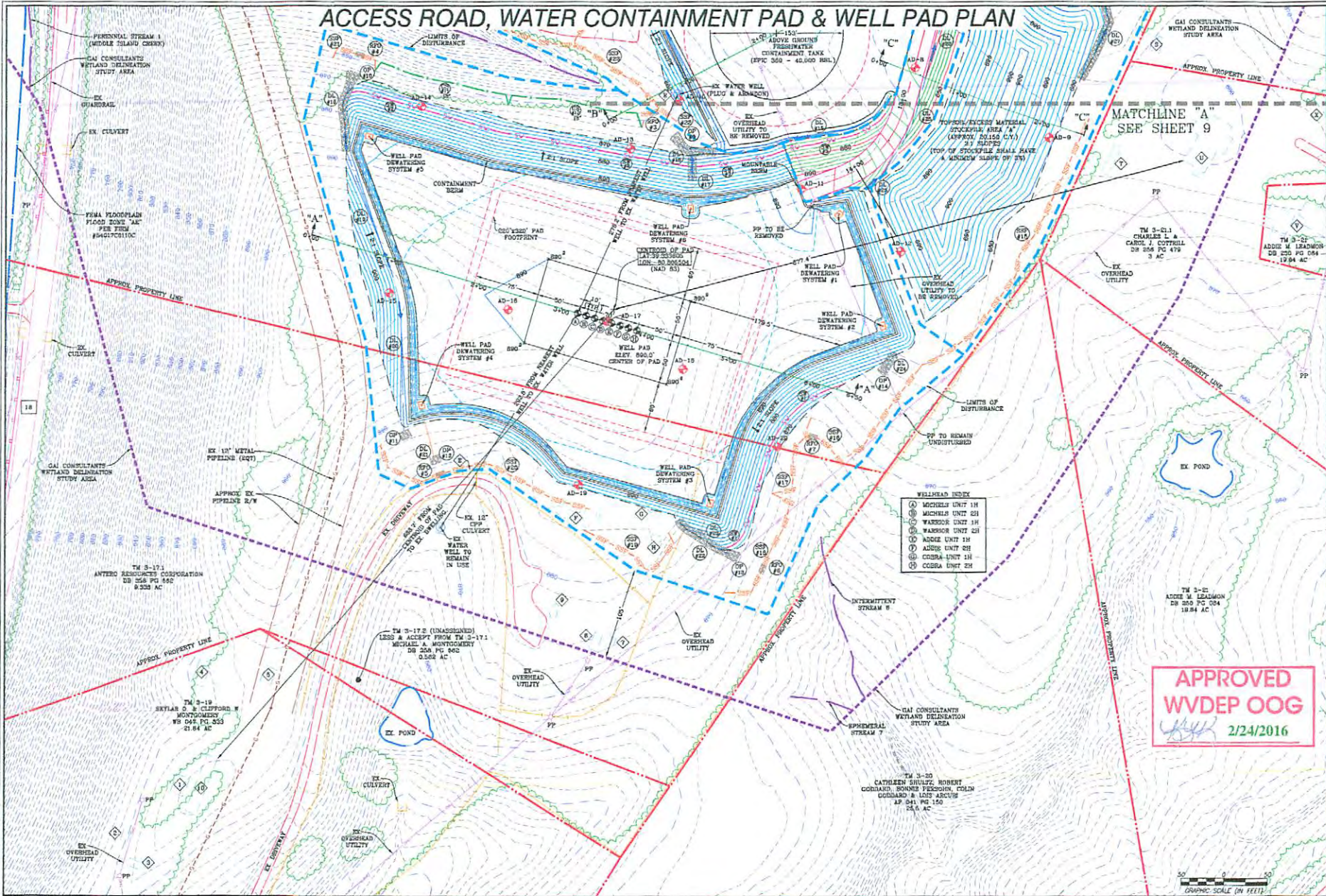
DATE	REVISION	BY	FOR
10/20/2015	ISSUED WATER CONTAINMENT TANK		
12/05/2015	REVISED FOR STREAM & WETLAND DELINEATIONS		
02/09/2016	REVISED PER WVDEP COMMENTS		
02/17/2016	REVISED PLAN TO SHOW EXISTING STREAMING		

**Antero**  
 THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION  
 COVER SHEET  
**ADDIE WELL PAD & WATER CONTAINMENT PAD**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 04/13/2015  
 SCALE: AS SHOWN  
 SHEET 1 OF 28



# ACCESS ROAD, WATER CONTAINMENT PAD & WELL PAD PLAN



**WELLHEAD INDEX**

Ⓐ	MICHELLE UNIT 1H
Ⓑ	MICHELLE UNIT 2H
Ⓒ	WARDOR UNIT 1H
Ⓓ	WARDOR UNIT 2H
Ⓔ	ADDIE UNIT 1H
Ⓚ	ADDIE UNIT 2H
Ⓛ	COBRA UNIT 1H
Ⓜ	COBRA UNIT 2H

**APPROVED WVDEP OOG**  
2/24/2016

**NAVITUS**  
ENERGY ENGINEERING

DATE	REVISION
10/26/2015	REVISED WATER CONTAINMENT TANK
12/06/2015	REVISED PER STREAM & WETLAND MEASUREMENTS
02/09/2016	REVISED PER WETLAND COMMENTS
02/17/2016	REVISED PLAN TO SHOW EXISTING WETLAND



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

ACCESS ROAD, WATER CONTAINMENT PAD & WELL PAD PLAN  
**ADDIE**  
WELL PAD & WATER CONTAINMENT PAD  
WEST UNION DISTRICT  
PODDRIDGE COUNTY, WEST VIRGINIA



DATE: 04/13/2015  
SCALE: 1" = 50'  
SHEET 10 OF 28



# ADDIE WELL PAD & WATER SITE DESIGN & CONSTRUCTION EROSION & SEDIMENT CONTROL

WEST UNION DISTRICT, DODDRIDGE CREEK  
CONAWAY RUN-MIDDLE ISLAND CREEK

USGS 7.5 WEST UNION QUAD

## LOCATION COORDINATES:

ACCESS ROAD ENTRANCE  
LATITUDE: 39.334574 LONGITUDE: -80.808146 (NAD 83)  
N 4353923.29 E 516534.48 (UTM ZONE 17 METERS)

CENTER OF TANK  
LATITUDE: 39.334561 LONGITUDE: -80.805175 (NAD 83)  
N 4353924.80 E 516780.48 (UTM ZONE 17 METERS)

CENTROID OF PAD  
LATITUDE: 39.333805 LONGITUDE: -80.805504 (NAD 83)  
N 4353818.14 E 516782.38 (UTM ZONE 17 METERS)

## GENERAL DESCRIPTION:

THE ACCESS ROAD(S), WATER CONTAINMENT PAD, AND WELL PAD ARE BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

## FLOODPLAIN NOTES:

THE PROPOSED SITE IS LOCATED IN FLOOD ZONES "X" & "A" PER FEMA MAP NUMBER #54017C0110C. THE SITE ENTRANCE IS LOCATED IN FLOOD ZONE "A" AND THE REST OF THE SITE IS LOCATED IN FLOOD ZONE "X". MINOR EXCAVATION IS REQUIRED FOR THE INSTALLATION OF THE ENTRANCE AND E&S CONTROL IS THE ONLY DISTURBANCE PROPOSED IN FLOOD ZONE "A". NO FILL IS PROPOSED IN FLOOD ZONE "A".

## MISS UTILITY STATEMENT:

ANTERO RESOURCES CORPORATION WILL NOTIFY MISS UTILITY OF WEST VIRGINIA FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN; TICKET #1504305428. IN ADDITION, MISS UTILITY WILL BE CONTACTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION FOR THIS PROJECT.

## ENTRANCE PERMIT:

ANTERO RESOURCES CORPORATION WILL OBTAIN AN ENCROACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

## ENVIRONMENTAL NOTES:

STREAM AND WETLAND DELINEATIONS WERE PERFORMED IN DECEMBER, 2015 BY GAI CONSULTANTS, INC. TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY PURVIEW OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE DECEMBER 8, 2015 POTENTIALLY JURISDICTIONAL WATERS MAP WAS PREPARED BY GAI CONSULTANTS, INC. AND SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE MAP DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP. IT IS STRONGLY RECOMMENDED THAT THE AFOREMENTIONED AGENCIES BE CONSULTED IN AN EFFORT TO GAIN WRITTEN CONFIRMATION OF THE DELINEATION SHOWN ON THIS EXHIBIT PRIOR TO ENGAGING CONSTRUCTION ON THE PROPERTY DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL AND/OR STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS TO WATERS OF THE U.S., INCLUDING WETLAND FILLS AND STREAM CROSSINGS.

## GEOTECHNICAL NOTES:

THE PROPOSED ACCESS ROAD CUT SLOPE (1.5:1) SHALL BE FIELD VERIFIED BY A CERTIFIED GEOTECHNICAL ENGINEER TO ENSURE THE PROPOSED SLOPES ARE ADEQUATE PRIOR TO CONSTRUCTION. ACCESS ROAD CONSTRUCTION SHALL BE MONITORED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER OR PROJECT DESIGN ENGINEER DURING CONSTRUCTION. A SUBSURFACE INVESTIGATION OF THE PROPOSED SITE WAS PERFORMED BY PENNSYLVANIA SOIL & ROCK, INC. BETWEEN FEBRUARY 26, 2015 & MARCH 3, 2015. THE REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC. DATED APRIL 10, 2015, REFLECTS THE RESULTS OF THIS REPORT WERE USED IN THE PREPARATION OF THESE PLANS. PLEASE REFER TO THE SUBSURFACE INVESTIGATION REPORT BY PENNSYLVANIA SOIL & ROCK, INC. FOR ADDITIONAL INFORMATION, AS NEEDED.

## PROJECT CONTACTS:

### OPERATOR:

ANTERO RESOURCES CORPORATION  
535 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE: (304) 842-4100  
FAX: (304) 842-4102

ELI WAGONER - ENVIRONMENTAL ENGINEER  
OFFICE: (304) 842-4068 CELL: (304) 476-9770

JOHN KAWCAK - OPERATIONS SUPERINTENDENT  
CELL: (817) 368-1553

AARON KUNZLER - CONSTRUCTION SUPERVISOR  
CELL: (405) 227-8344

ANTHONY SMITH - FIELD ENGINEER  
OFFICE: (304) 842-4208 CELL: (304) 673-6196

MARK JOHNSON - SURVEYING COORDINATOR  
(304) 842-4162 CELL: (304) 719-6449

RICHARD LYLES - LAND AGENT  
(770) 378-6833

### ENGINEER/SURVEYOR:

NAVITUS ENGINEERING, INC.  
CYRUS S. KUMP, PE - PROJECT MANAGER/ENGINEER  
OFFICE: (888) 682-4185 CELL: (540) 686-6747

### ENVIRONMENTAL:

GAI CONSULTANTS, INC.  
JASON A. COOK - SENIOR ENVIRONMENTAL SPECIALIST  
(304) 928-8100 CELL: (303) 709-3308

### GEOTECHNICAL:

PENNSYLVANIA SOIL & ROCK, INC.  
CHRISTOPHER W. SAMIOS - PROJECT ENGINEER  
(412) 372-4000 CELL: (412) 589-0682

## RESTRICTIONS NOTES:

1. THERE ARE NO LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE WELL PAD AND LOD. THERE IS A PERENNIAL STREAM IMPACTED BY THE PROPOSED ACCESS ROAD "A". THAT WILL NEED TO BE PERMITTED BY THE APPROPRIATE AGENCIES. THERE ARE TWO WETLANDS ADJACENT TO THE PROPOSED ACCESS ROAD "A" WHICH WILL REMAIN UNDISTURBED.
2. THERE ARE NO NATURALLY PRODUCING TROUT STREAMS WITHIN 300 FEET OF THE WELL PAD AND LOD.
3. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE WELL PAD AND LOD.
4. THERE ARE NO APPARENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELL(S) BEING DRILLED.
5. THERE ARE TWO OCCUPIED DWELLING STRUCTURES 339 FEET AND 368 FEET FROM THE CENTER OF THE WELL PAD. A DEP WAIVER IS REQUIRED.
6. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.

## REPRODUCTION NOTE

THESE PLANS WERE CREATED TO BE PLOTTED ON 22"x34" (ANSI D) PAPER. HALF SCALE DRAWINGS ARE ON 11"x17" (ANSI B) PAPER.

THESE PLANS WERE CREATED FOR COLOR PLOTTING AND ANY REPRODUCTIONS IN GRAY SCALE OR COLOR MAY RESULT IN A LOSS OF INFORMATION AND SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.



## WEST VIRGINIA COUNTY MAP



(NOT TO SCALE)

## DESIGN CERTIFICATION:

THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS CRS 35-8.

02/26/2016



# CONTAINMENT PAD CONSTRUCTION PLAN, CONTROL PLANS

WVDOH COUNTY, WEST VIRGINIA  
WVDOH WATERSHED

D MAP



WEST VIRGINIA STATE PLANE COORDINATE SYSTEM  
NORTH ZONE NAD83  
ELEVATION BASED ON NAVD83  
ESTABLISHED BY SURVEY GRADE GPS & OPUS  
POST-PROCESSING

*Dr. H. H. H. H. H.*  
7-29-16

### SHEET INDEX:

- 1 - COVER SHEET
- 2 - CONSTRUCTION AND E&S CONTROL NOTES
- 3 - LEGEND
- 4 - MATERIAL QUANTITIES
- 5 - STORM DRAINAGE COMPUTATIONS
- 6 - EXISTING CONDITIONS
- 7 - EXISTING STRUCTURES & FEATURES
- 8 - OVERALL PLAN SHEET INDEX & VOLUMES
- 9 - ACCESS ROAD & WATER CONTAINMENT PAD PLAN
- 10 - ACCESS ROAD, WATER CONTAINMENT PAD & WELL PAD PLAN
- 11 - WELL PAD GRADING PLAN
- 12 - WATER CONTAINMENT PAD GRADING PLAN
- 13 - ACCESS ROAD PROFILES
- 14 - ACCESS ROAD SECTIONS
- 15 - WELL PAD & WATER CONTAINMENT PAD SECTIONS
- 16 - WELL PAD & STOCKPILE SECTIONS
- 17 - STREAM CROSSING "A" & GABION WALL DETAILS
- 18-25 - CONSTRUCTION DETAILS
- 26 - ACCESS ROAD & WATER CONTAINMENT PAD RECLAMATION PLAN
- 27 - ACCESS ROAD, WATER CONTAINMENT PAD & WELL PAD RECLAMATION PLAN
- 28 - FIRM EXHIBIT
- GE500-GE504 - GEOTECHNICAL DETAILS

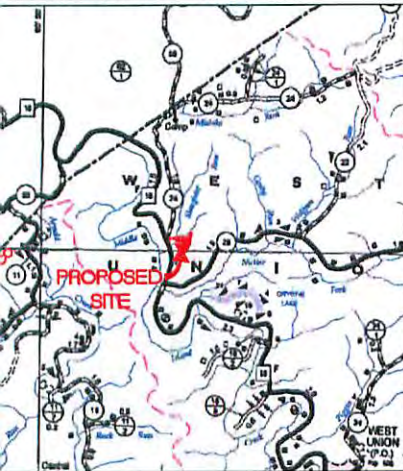


DATE	REVISION
10/29/2015	REVISED WATER CONTAINMENT TANK
12/08/2015	REVISED PER STREAM & WETLAND DELINEATION

ADDIE LIMITS OF DISTURBANCE AREA (AC)	
Total Site	
Access Road "A" (1,468')	4.76
Well Pad	6.99
Water Containment Pad	2.36
Excess/Topsoil Material Stockpiles	3.24
<b>Total Affected Area</b>	<b>17.35</b>
Total Wooded Acres Disturbed	3.89
Impacts to Antero Resources Corporation TM 3-17	
Access Road "A" (1,468')	4.76
Well Pad	5.19
Water Containment Pad	2.36
Excess/Topsoil Material Stockpiles	3.24
<b>Total Affected Area</b>	<b>15.55</b>
Total Wooded Acres Disturbed	3.89
Impacts to Antero Resources Corporation TM 3-17.1	
Well Pad	1.80
<b>Total Affected Area</b>	<b>1.80</b>
Total Wooded Acres Disturbed	0.00



WVDOH COUNTY ROAD MAP



Proposed Well Name	WV North NAD 27	WV North NAD 83	UTM (METERS) Zone 17	NAD 83 Lat & Long
Michels Unit 1H	N 306254.33 E 1630648.02	N 306289.50 E 1599206.83	N 4353811.33 E 516750.65	LAT 39-20-00.8214 LONG -80-48-20.3052
Michels Unit 2H	N 306254.09 E 1630658.02	N 306289.26 E 1599216.83	N 4353811.31 E 516753.69	LAT 39-20-00.8204 LONG -80-48-20.1779
Warrior Unit 1H	N 306253.85 E 1630688.01	N 306289.02 E 1599226.82	N 4353811.29 E 516756.74	LAT 39-20-00.8195 LONG -80-48-20.0506
Warrior Unit 2H	N 306253.61 E 1630678.01	N 306288.78 E 1599236.82	N 4353811.26 E 516759.79	LAT 39-20-00.8186 LONG -80-48-19.9234
Addie Unit 1H	N 306253.37 E 1630688.01	N 306288.54 E 1599246.82	N 4353811.24 E 516762.83	LAT 39-20-00.8177 LONG -80-48-19.7961
Addie Unit 2H	N 306253.13 E 1630698.00	N 306288.30 E 1599256.82	N 4353811.22 E 516765.88	LAT 39-20-00.8167 LONG -80-48-19.6688
Cobra Unit 1H	N 306252.89 E 1630708.00	N 306288.07 E 1599266.81	N 4353811.20 E 516768.93	LAT 39-20-00.8153 LONG -80-48-19.5416
Cobra Unit 2H	N 306252.65 E 1630718.00	N 306287.83 E 1599276.81	N 4353811.18 E 516771.97	LAT 39-20-00.8149 LONG -80-48-19.4143
Well Pad Elevation	890.0			

COVER SHEET  
**ADDIE**  
WELL PAD & WATER CONTAINMENT PAD  
WEST UNION DISTRICT  
WVDOH COUNTY, WEST VIRGINIA  
DODDRIDGE COUNTY, WEST VIRGINIA

Stream and Impact Cause	ADDIE PERENNIAL STREAM IMPACT (LINEAR FEET)				Total Disturbance (LF)
	Culvert /Fill (LF)	Inlets/Outlets Structures (LF)	Cofferdam/ E&S Controls (LF)	Temp. Disturb. Distance to L.O.D. (LF)	
Perennial Stream 2 (Access Road "A")	4	0	0	0	4

Stream and Impact Cause	ADDIE INTERMITTENT STREAM IMPACT (LINEAR FEET)				Total Disturbance (LF)
	Culvert /Fill (LF)	Inlets/Outlets Structures (LF)	Cofferdam/ E&S Controls (LF)	Temp. Disturb. Distance to L.O.D. (LF)	
Intermittent Stream 4 (Access Road "A")	44	49	10	26	129

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!!**



DATE: 04/13/2015  
SCALE: AS SHOWN  
SHEET 1 OF 28

02/26/2016