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

September 29, 2015

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-8510252, 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: NILEY UNIT 3H
Farm Name: MULVAY, EDWIN D.
API Well Number: 47-8510252
Permit Type: Horizontal 6A Well
Date Issued: 09/29/2015

Promoting a healthy environment.

4708510252

API Number: _____

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. Operator shall take additional measures with this permitted activity to avoid communication with offset wells. Such additional measures are described in the attached addendum. This addendum is part of the terms of the well work permit, and includes a description of depth and completed formations of offset wells. Also included is a description of monitoring activities that will take place during fracturing operations of the permitted well work.

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE regarding this proposed activity.

2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.

3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.

4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.

5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations,* 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.

PERMIT CONDITIONS

6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.

7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.

8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

4708510252

Antero Resources

Addendum for Antero pads in Ritchie County, WV

Niley Unit 1H	Mulvay Pad
Niley Unit 2H	Mulvay Pad
Niley Unit 3H	Mulvay Pad

The following outlines the process to be undertaken by Antero Resources prior to and during completion process of wells in Ritchie County.

▪Investigate all wells within 1320' of new wells - for all identified Marcellus vertical wells and any existing well(s) with an interval that is less than 1500 feet from the deepest formation drilled (including, but not specific to the Alexander formation) to the top of Marcellus:

- Contact operator of all wells
- Confirm well status, producing horizon, well completion/stimulation information
- Discuss plans to stimulate the horizontal Marcellus wells and the plans for monitoring potential impact on shallow wells
- Make sure all vertical wells (with an interval that is less than 1500 feet from the deepest formation drilled to the top of Marcellus) have adequate wellhead equipment, Including pressure gauges
- Provide shallow well operator with frac dates and develop plan for monitoring during stimulation
- If well waters out during frac, shut it in until after stimulation, and install adequate well control equipment prior to swabbing in the impacted shallow well

▪Control fracturing parameters during job to limit fracture height growth

- Limit rate and limit pressures for each segment of fracturing stages

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4708510252

WW-6B
(04/15)

API NO. 47- 085 -
OPERATOR WELL NO. Niley Unit 3H
Well Pad Name: Mulvay Pad

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

1) Well Operator: Antero Resources Corporat | 494488557 | 085 - Ritchie | Clay | Pennsboro 7.5'
Operator ID | County | District | Quadrangle

2) Operator's Well Number: Niley Unit 3H Well Pad Name: Mulvay Pad

3) Farm Name/Surface Owner: Edwin D. Mulvay, et al Public Road Access: CR 74/5

4) Elevation, current ground: 1036' Elevation, proposed post-construction: 1029'

5) Well Type (a) Gas X Oil ____ Underground Storage ____
Other ____
(b)If Gas Shallow X Deep ____
Horizontal X

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 6600' TVD, Anticipated Thickness- 75 feet, Associated Pressure- 2800#

8) Proposed Total Vertical Depth: 6600' TVD

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 16,800' MD

11) Proposed Horizontal Leg Length: 8006'

12) Approximate Fresh Water Strata Depths: 24', 124', 422'

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

14) Approximate Saltwater Depths: 1522', 1949'

15) Approximate Coal Seam Depths: 653', 664'

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 X

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

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(04/15)

API NO. 47- 085 -
OPERATOR WELL NO. Niley Unit 3H
Well Pad Name: Mulvay Pad

18) **CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	75'	75'	CTS, 72 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	475'	475' *see #19	CTS, 660 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#	16,800'	16,800'	CTS, 4243 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

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

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(10/14)

API NO. 47- 085 -
OPERATOR WELL NO. Niley Unit 3H
Well Pad Name: Mulvay 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): 13.72 acres

22) Area to be disturbed for well pad only, less access road (acres): 5.05 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

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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.

gmc

9-15-15

4708510252

WW-9
(2/15)

API Number 47 - 085 -
Operator's Well No. Niley Unit 3H

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) North Fork Hughes River Quadrangle Pennsboro 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 ____

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

Company Official (Typed Name) Cole Kilstrom

Company Official Title Environmental & Regulatory Manager

NATALIE KOMP
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID # 20144028170
MY COMMISSION EXPIRES JULY 18, 2018

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Subscribed and sworn before me this 19th day of August, 2015

Natalie Komp Notary Public

My commission expires July 18, 2018

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Form WW-9

Operator's Well No. Niley Unit 3H

Antero Resources Corporation

Proposed Revegetation Treatment: Acres Disturbed 13.72 acres Prevegetation pH 6.0

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

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

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

Well Pad (5.05) + Water Containment Pad (2.91) + Access Road (2.81) + Access Road to W.C. Pad (0.40) + Staging Area (0.55) + Topsoil Spoil Area 1 (1.11) + Material Spoil Area 1 (0.89) = 13.72 Acres

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Tall Fescue	45	Tall Fescue	45
Perennial Rye Grass	20	Perennial Rye Grass	20
*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: David W Cowan

Comments: prosed & mulch all cut area no less than 2 ton per acre maintain all E&S during operation

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Title: oil & gas inspector Date: 9-15-15

Field Reviewed? (✓) Yes ( ) No

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Form WW-9 Additives Attachment

SURFACE INTERVAL

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

INTERMEDIATE INTERVAL

STIFF FOAM RECIPE:

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

PRODUCTION INTERVAL

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

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

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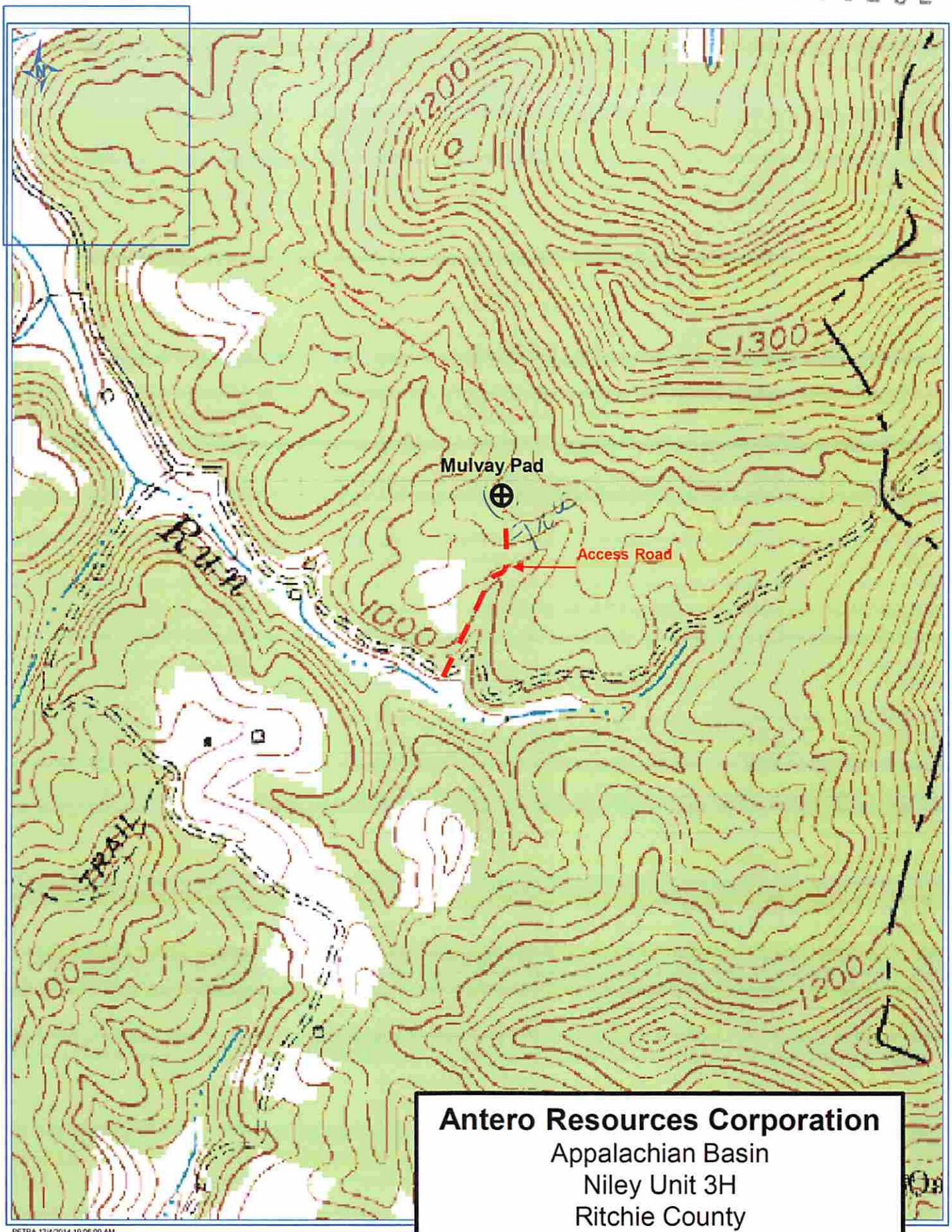

PETRA 12/4/2014 10:06:00 AM

Antero Resources Corporation

Appalachian Basin

Niley Unit 3H

Ritchie County

Quadrangle: Pennsboro

Watershed: North Fork Hughes River

District: Clay

Date: 12-4-2014

911 Address
375 Short Run Road
Pennsboro, WV 26415

Well Site Safety Plan
Antero Resources

Well Name: **Penny Unit 1H, Penny Unit 2H, Penny Unit 3H, Trust Unit 1H, Trust Unit 2H, Niley Unit 1H, Niley Unit 2H, Niley Unit 3H, Stronsnider Unit 1H (API# 47-085-10201), Stronsnider Unit 2H (API# 47-085-10202), Stronsnider Unit 3H (API# 47-085-10203)**

Pad Location: **MULVAY PAD**
Ritchie County/Clay District

GPS Coordinates: Lat 39°19'21.34"/Long -80°53'56.78" (NAD83)

Driving Directions:

From the intersection of WV-74 and US Route 50 in Pennsboro, go North on WV-74 for 1.7 miles. Continue North for 4.94 miles on WV-74 until you reach the intersection with Burton Run Road/WV-74/5 on the right. Go Southeast on Burton Run Road for 1.98 miles until you reach the beginning of Access Road "A."

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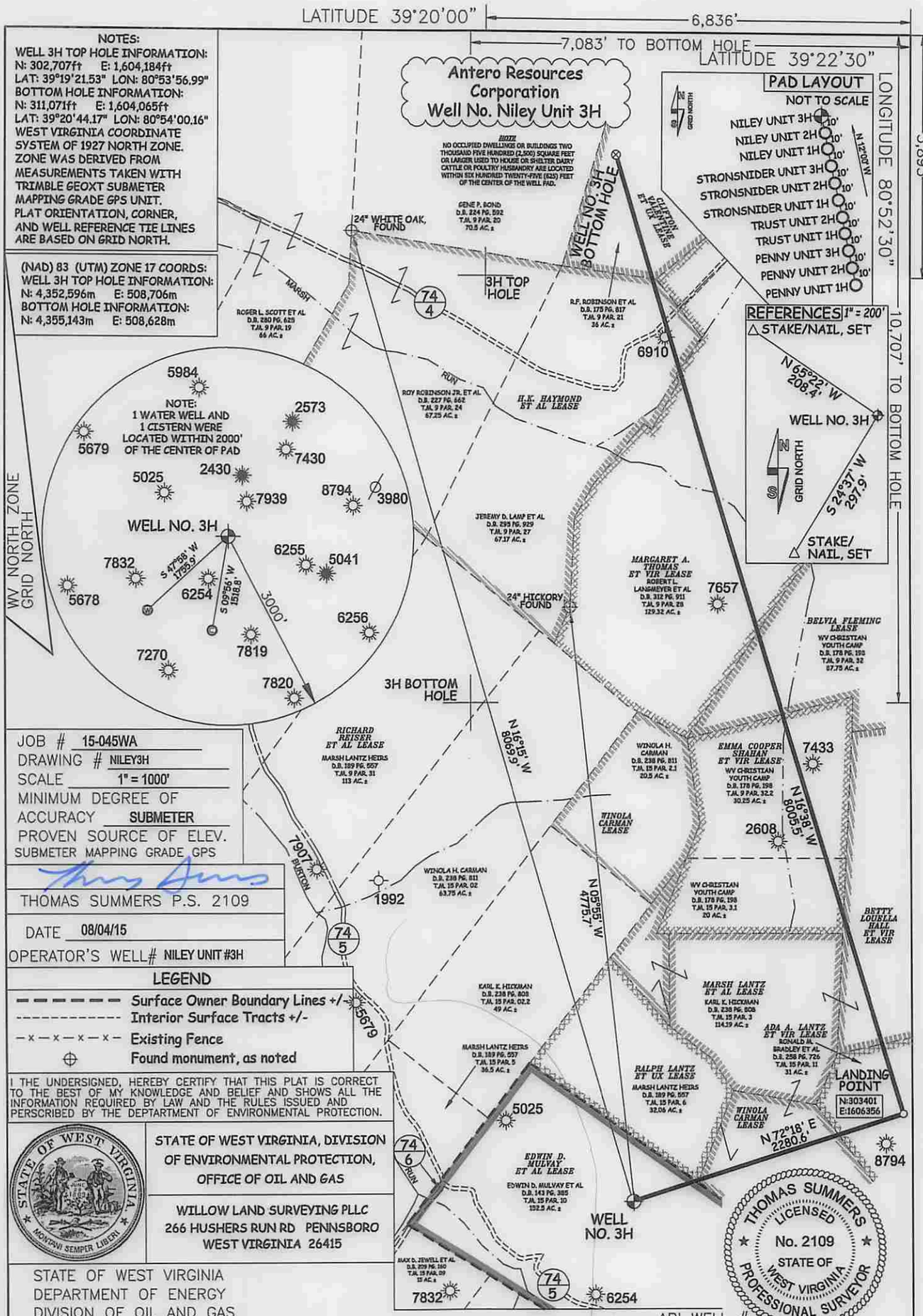
EMERGENCY (24 HOUR) CONTACT 1-800-878-1373

9-15-15

NOTES:
WELL 3H TOP HOLE INFORMATION:
N: 302,707ft E: 1,604,184ft
LAT: 39°19'21.53" LON: 80°53'56.99"
BOTTOM HOLE INFORMATION:
N: 311,071ft E: 1,604,065ft
LAT: 39°20'44.17" LON: 80°54'00.16"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE.
ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT.
PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 3H TOP HOLE INFORMATION:
N: 4,352,596m E: 508,706m
BOTTOM HOLE INFORMATION:
N: 4,355,143m E: 508,628m



JOB # 15-045WA
DRAWING # NILEY3H
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

THOMAS SUMMERS P.S. 2109

DATE 08/04/15
OPERATOR'S WELL# NILEY UNIT #3H

LEGEND
- - - - - - Surface Owner Boundary Lines +/-
- - - - - - - - - - - Interior Surface Tracts +/-
—x—x—x—x— Existing Fence
⊕ Found monument, as noted

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 PERSCRIBED BY THE DEPTARTMENT OF ENVIRONMENTAL PROTECTION.

STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC
266 HUSHERS RUN RD PENNSBORO
WEST VIRGINIA 26415

STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY
DIVISION OF OIL AND GAS

API WELL # 47 – 085 – (STATE COUNTY PERMIT)

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

LOCATION: ELEVATION 1,036' ORIGINAL - 1,029' AS-DRILLED WATERSHED NORTH FORK HUGHES RIVER
QUADRANGLE PENNSBORO 7.5' DISTRICT CLAY COUNTY RITCHIE (COUNTY NAME)
SURFACE OWNER EDWIN D. MULVAY ET AL ACREAGE 152.5 ACRES +/-
OIL & GAS ROYALTY OWNER EDWIN DELMAR MULVAY ET AL; RALPH LANTZ ET UX; WINOLA CARMAN; ADA A. LANTZ ET VIR; BETTY LOUELLA HALL ET VIR; EMMA COOPER SHAHAN ET VIR; BELVIA FLEMING; MARGARET A. THOMAS ET VIR; H.K. HAYMOND ET AL; CLIFTON VALENTINE ET UX LEASE ACREAGE 152 AC±; 32.06 AC±; 23.94 AC±; 32 AC±; 56 AC±; 52 AC±; 87.75 AC±; 135 AC±; 141.5 AC±; 36 AC±
PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY) ___ PLUG & ABANDON ___ CLEAN OUT & REPLUG ___
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,600' TVD 16,800' MD (PERMIT)

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER
ADDRESS 1615 WYNKOOP STREET ADDRESS CT CORPORATION SYSTEM
DENVER, CO 80202 5400 D BIG TYLER ROAD
CHARLESTON, WV 25313

FORM WW-6

WW-6A1

Operator's Well Number Niley Unit 3H

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
Edwin D. Mulvay, et al Lease			
Edwin Delamr Mulvay, et al	Petroleum Services, Inc.	1/8	0129/0536
Petroleum Services, Inc.	J & J Enterprises, Inc.	Confirmatory Assignment	0132/0572
J & J Enterprises, Inc.	Eastern American Energy Corporation	Assignment	0231/0732
Eastern American Energy Corporation	Energy Corporation of America	Confirmatory Deed and Assignment	0250/0393
Energy Corporation of America	Antero Resources Appalachian Corporation	*Partial Assignment	0257/0377
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Ralph Lantz, et ux Lease			
Ralph Lantz, et ux	Dolphin Petroleum, Inc.	1/8	0205/0356
Dolphin Petroleum, Inc.	Appalachian Energy Reserves, Inc.	Assignment	0205/0405
Appalachian Energy Reserves, Inc.	Appalachian Energy Development, Inc.	Assignment	0229/0100
Appalachian Energy Development, Inc.	Triad Energy Corporation	Assignment	0229/0108
Triad Energy Corporation	Triad Hunter, LLC	Assignment	0250/0196
Triad Hunter, LLC	**Antero Resources Corporation**	***Partial Assignment of Oil & Gas Leases**	**0270/0270**
Winola Carman Lease (TM 15-p/o 3)			
Winola Carman	**Antero Resources Corporation**	**1/8+**	**0275/0287**
Ada A. Lantz, et vir Lease			
Ada Lantz, et vir	A.A. Rowe	Flat Rate	0029/0504
A.A. Rowe	Pittsburgh & West Virginia Gas Co.	Assignment	0055/0362
Pittsburgh & West Virginia Gas Co.	Equitable Gas Company	Assignment	0126/0515
Equitable Gas Company	Equitrans, Inc.	Assignment	0201/0253
Equitrans, Inc.	Equitrans, L.P.	Merger	Recited in Doddridge County 0302/0123
Equitrans, L.P.	Equitable Production – Eastern States, Inc.	Assignment	0234/0830
Equitable Production – Eastern States, Inc.	Equitable Production Company	Merger	Exhibit 2
Equitable Production Company	EQT Production Company	Name Change	CRB 0006/0443
EQT Production Company	**Antero Resources Corporation**	***Partial Assignment**	**0277/0836**
Betty Louella Hall, et vir Lease			
Betty Louella Hall, et vir	J & J Enterprises, Inc.	1/8	0180/0340
J & J Enterprises, Inc.	Eastern American Energy Corporation	Assignment	0231/0732
Eastern American Energy Corporation	Energy Corporation of America	Confirmatory Deed and Assignment	0250/0393
Energy Corporation of America	Antero Resources Appalachian Corporation	*Partial Assignment of Oil & Gas Leases	0257/0397
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**

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***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****

4708510252

WW-6A1

Operator's Well Number Niley Unit 3H

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
Marsh Lantz, et al Lease			
Marsh Lantz, et vir	W. Leslie Rogers	1/8	0095/0083
W. Leslie Rogers	William L. Rogers, Jr.	Assignment	0016/0200
William L. Rogers, Jr., et vir	J & J Enterprises, Inc.	Assignment	0177/0472
J & J Enterprises, Inc.	Eastern American Energy Corporation	Assignment	0231/0732
Eastern American Energy Corporation	Energy Corporation of America	Confirmatory Deed and Assignment	0250/0393
Energy Corporation of America	Antero Resources Appalachian Corporation	*Partial Assignment of Oil & Gas Leases	0257/0377
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Emma Cooper Shahan, et vir Lease			
Emma Cooper Shahan, et vir	W. Leslie Rogers	1/8	0097/0141
W. Leslie Rogers	William L. Rogers, Jr.	Assignment	0016/0200
William L. Rogers, Jr.	J & J Enterprises, Inc.	Assignment	0177/0457
J & J Enterprises, Inc.	Eastern American Energy Corporation	Assignment	0231/0732
Eastern American Energy Corporation	Energy Corporation of America	Confirmatory Deed and Assignment	0250/0393
Energy Corporation of America	Antero Resources Appalachian Corporation	*Partial Assignment of Oil & Gas Leases	0257/0377
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Belvia Fleming Lease			
Belvia Fleming	Appalachian Energy Reserves, Inc.	1/8	0210/0077
Appalachian Energy Reserves, Inc.	Appalachian Energy Development, Inc.	Assignment	0229/0100
Appalachian Energy Development, Inc.	Triad Energy Corporation of West Virginia	Assignment	0229/0108
Triad Energy Corporation of West Virginia	Triad Energy Corporation	Certificate of Merger	CRB 0006/0204
Triad Energy Corporation	Triad Hunter, LLC	Bankruptcy Restructure	0250/0196
Triad Hunter, LLC	**Antero Resources Corporation**	**Assignment**	**0270/0270**
Margaret A. Thomas, et vir Lease			
Margaret A. Thomas, et vir	T.D. Armstrong	Flat Rate	0030/0098
T.D. Armstrong	D.J. Sterling	Assignment	0033/0382
D.J. Sterling	The Philadelphia Company of West Virginia	Assignment	0033/0383
The Philadelphia Company of West Virginia	Pittsburgh & West Virginia Gas Co.	Assignment	0055/0362
Pittsburgh & West Virginia Gas Co.	Equitable Gas Company	Assignment	0126/0515
Equitable Gas Company	Carl & Dorothy Perkins, Directors of Perkins Oil & Gas, Inc.	Assignment	0222/0433
Carl & Dorothy Perkins, Directors of Perkins Oil & Gas, Inc.	**Antero Resources Corporation**	**Assignment**	**0264/1045**
H.K. Haymond, et al Lease			
H.K. Haymond, et al	Alton Skinner	1/8	0159/0756
Alton Skinner	Kepco, Inc.	Assignment	0164/0195
Kepco, Inc.	Eastern Pennsylvania Exploration Company	Assignment	0176/0095
Eastern Pennsylvania Exploration Company	Eastern American Exploration Company	Assignment	0218/0187
Eastern American Exploration Company	Seneca-Upshur Petroleum, Inc.	Assignment	0243/0839
Seneca-Upshur Petroleum, Inc.	Seneca-Upshur Petroleum, LLC	Assignment	0251/0863
Seneca-Upshur Petroleum, LLC	Antero Resources Appalachian Corporation	Assignment	0259/0430
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**

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***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.**

WW-6A1
(5/13)

Operator's Well No. Niley Unit 3H

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
Clifton Valentine, et ux Lease				
	Clifton Valentine, et ux	Eastern American Energy Corporation	1/8	0203/0173
	Eastern American Energy Corporation	Energy Corporation of America	Confirmatory Deed & Assignment	0250/0393
	Energy Corporation of America	Antero Resources Appalachian Corporation	*Partial Assignment of Oil & Gas Leases	0257/0377
	Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**

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

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

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

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

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

Well Operator: Antero Resources Corporation
By: Ward McNeilly
Its: VP, Reserves, Planning & Midstream

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WW-60
(7-01)

DATE: September 25, 20 15
OPERATOR'S
WELL NO. Niley Unit 3H

API NO: 47- 085
State County Permit No.

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

A F F I D A V I T

State of Colorado

County of Denver

I, Spencer Booth (the designated owner or operator, or authorized representative thereof), after being duly sworn, do declare that the undersigned is authorized by the owner of the working interest in the well permit application to which this affidavit is attached to state that (he, she, or it) shall tender to the owner of the oil and gas in place not less than one-eighth of the total amount paid to or received by or allowed to the owner of the working interest at the wellhead for the oil or gas so extracted, produced, or marketed before deducting the amount to be paid or set aside for the owner of the oil or gas in place, or all such oil or gas to be extracted, produced, or marketed from the well. West Virginia Code 22-6-8(e).

Signed: _____

Taken, subscribed and sworn to before me this 25th day of September, 20 15.

_____
Notary Public

My Commission expires: 4/15/16

BLYTHE HOWELL
Notary Public
State of Colorado

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Office of Oil and Gas

SEP 28 2015

WV Department of
Environmental Protection

4708510252

FORM WW-6A1
EXHIBIT 1

FILED
JUN 10 2013
IN THE OFFICE OF SECRETARY OF STATE

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

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

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

APPLICATION FOR AMENDED CERTIFICATE OF AUTHORITY

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

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

1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
2. Date Certificate of Authority was issued in West Virginia: 6/25/2008
3. Corporate name has been changed to: Antero Resources Corporation
   (Attach one Certified Copy of Name Change as filed in home State of incorporation.)
4. Name the corporation elects to use in WV: Antero Resources Corporation
   (due to home state name not being available)
5. Other amendments:
   (attach additional pages if necessary)

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

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

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

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

WV012 - 04/16/2013 Wolters Kluwer Online

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Office of Oil and Gas
AUG 28 2015
WV Department of
Environmental Protection

FORM WW-6A1
EXHIBIT 2

4708510252

State of West Virginia

Certificate

I, Joe Manchin III, Secretary of State of the State of West Virginia, hereby certify that

by the provisions of Chapter 31 of the West Virginia Code, Articles of Merger were received and filed

MERGING EQUITABLE PRODUCTION - EASTERN STATES, INC., A QUALIFIED DE ORGANIZATION, WITH AND INTO EQUITABLE PRODUCTION COMPANY, A QUALIFIED ORGANIZATION.

Therefore, I hereby issue this

CERTIFICATE OF MERGER

Given under my hand and the Great Seal of the State of West Virginia on this day of June 28, 2001

RECEIVED
Office of Oil and Gas
AUG 2 8 2001
WV Department of
Environmental Protection

Secretary of State

4708510255

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

August 19, 2015

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

RE: Niley Unit 3H
Quadrangle: Pennsboro 7.5'
Ritchie County/Clay District, West Virginia

Mr. Martin:

Antero Resources Corporation (Antero) is submitting the following application for a new well work permit for the Niley Unit 3H horizontal shallow well. As an authorized representative, I certify that Antero has the right to extract, produce or market the oil or gas for all leases through which the Niley Unit 3H horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

Spencer Booth
Senior Landman

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Office of Oil and Gas

AUG 28 2015

WV Department of
Environmental Protection

WW-6AC
(1/12)

4708510252

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

Date of Notice Certification: 08/19/2015

API No. 47- 085 -
Operator's Well No. Niley Unit 3H
Well Pad Name: Mulvay 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:	West Virginia	UTM NAD 83	Easting:	508,706m
County:	Ritchie		Northing:	4,352,596m
District:	Clay	Public Road Access:		CR 74/5
Quadrangle:	Pennsboro 7.5'	Generally used farm name:		Edwin D. Mulvay, et al
Watershed:	North Fork Hughes River			

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.

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:

*PLEASE CHECK ALL THAT APPLY

	OOG OFFICE USE ONLY
☐ 1. NOTICE OF SEISMIC ACTIVITY or ☒ NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED	☑ RECEIVED/ NOT REQUIRED
☒ 2. NOTICE OF ENTRY FOR PLAT SURVEY or ☐ NO PLAT SURVEY WAS CONDUCTED	☑ RECEIVED
☐ 3. NOTICE OF INTENT TO DRILL or ☒ NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or	☑ RECEIVED/ NOT REQUIRED
☐ WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)	
☒ 4. NOTICE OF PLANNED OPERATION	☑ RECEIVED
☒ 5. PUBLIC NOTICE	☑ RECEIVED
☒ 6. NOTICE OF APPLICATION	☑ RECEIVED

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

Office of Oil and Gas
AUG 28 2015
WV Department of
Environmental Protection

WW-6AC
(1/12)

4708510252

Certification of Notice is hereby given:

THEREFORE, I Ward McNeilly, 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:	Antero Resources Corporation	Address:	1615 Wynkoop Street
By:	Ward McNeilly		Denver, CO 80202
Its:	VP, Reserves, Planning & Midstream	Facsimile:	303-357-7315
Telephone:	303-357-7310	Email:	asteele@anteroresources.com

NOTARY SEAL

NATALIE KOMP
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID # 20144028170
MY COMMISSION EXPIRES JULY 18, 2018

Subscribed and sworn before me this 19th day of August 2015

Natalie Komp Notary Public

My Commission Expires July 18, 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.

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Office of Oil and Gas
AUG 28 2015
WV Department of
Environmental Protection

WW-6A
(9-13)

API NO. 47-085-0 8 5 1 0 2 5 2
OPERATOR WELL NO. Niley Unit 3H
Well Pad Name: Mulvay Pad

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: 8/20/2015 **Date Permit Application Filed:** 8/20/2015

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: Edwin D. & Patricia L. Mulvay
Address: 17579 Middle Island Road
West Union, WV 26456-7221
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: NONE IDENTIFIED WITHIN 1500'
Address:

☐ OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name:
Address:

*Please attach additional forms if necessary

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WV Department of
Environmental Protection

4708510252

WW-6A
(8-13)

API NO. 47- 085 -
OPERATOR WELL NO. Niley Unit 3H
Well Pad Name: Mulvay Pad

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 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

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

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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 57th 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.**

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WW-6A
(8-13)

API NO. 47- 085 -
OPERATOR WELL NO. Niley Unit 3H
Well Pad Name: Mulvay Pad

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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WW-6A
(8-13)

API NO. 47- 085 -
OPERATOR WELL NO. Niley Unit 3H
Well Pad Name: Mulvay Pad

Notice is hereby given by:

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

NATALIE KOMP
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID # 20144028170
MY COMMISSION EXPIRES JULY 18, 2018

Subscribed and sworn before me this 20th day of August 2015

Natalie Komp Notary Public

My Commission Expires July 18, 2018

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WW-6A3
(1/12)

Operator Well No. Niley Unit 3H

Multiple Wells on the Mulvay 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: 9/9/2013 **Date of Planned Entry:** 9/16/2013

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: Edwin D. & Patricia L. Mulvay
Address: HC 69 Box 45
West Union, WV 26456
Name:
Address:
Name:
Address:

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

☒ MINERAL OWNER(s)
Name: PLEASE SEE ATTACHMENT
Address:

*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:	West Virginia	Approx. Latitude & Longitude:	39.322521, -80.898411
County:	Ritchie	Public Road Access:	CR 74/5
District:	Clay	Watershed:	Cabin Run - North Fork Hughes River
Quadrangle:	Pennsboro 7.5'	Generally used farm name:	Edwin & Patricia Mulvay

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 57th 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.

Notice is hereby given by:

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

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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.

Tax Map 15 Parcel 10

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WW-6A3 Notice of Entry For Plat Survey Attachment:

Mineral Owners:

Owner: Emily S. Crawford c/o Emily White
Address: 509 Catlin Road
Cary, NC 27519

Owner: Douglas Keith Crawford
Address: 8738 Bigelon
Plano, TX 75024

Owner: BDL Partners
Address: PO Box 3
Harrisville, WV 26362

Owner: William R. and Doris Arlene Mossor
Address: PO Box 61
Harrisville, WV 26362

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WW-6A5
(1/12)

Operator Well No. Niley Unit 3H

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: 08/20/2015 **Date Permit Application Filed:** 08/20/2015

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

☒ CERTIFIED MAIL RETURN RECEIPT REQUESTED ☐ HAND 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: Edwin D. & Patricia L. Mulvay
Address: 17579 Middle Island Road
West Union, WV 26456-7221

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: West Virginia
County: Ritchie
District: Clay
Quadrangle: Pennsboro 7.5'
Watershed: North Fork Hughes River

UTM NAD 83 Easting: 508,706m
Northing: 4,352,596m
Public Road Access: CR 74/5
Generally used farm name: Edwin D. Mulvay, et al

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 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

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

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

Earl Ray Tomblin
Governor

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

December 12, 2014

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

Subject: DOH Permit for the Mulvay Pad, Ritchie County
Niley Unit 3H Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #03-2014-0530 which has been issued to Antero Resources Corporation for access to the State Road for a well site located off County Route 74/5 in Ritchie County.

This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton

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

Cc: Ashlie Steele
Antero Resources Corporation
CH, OM, D-3
File

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List of Anticipated Additives Used for Fracturing or Stimulating Well

Additives	Chemical Abstract Service Number (CAS #)
Fresh Water	7732-18-5
2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1
Ammonium Persulfate	7727-54-0
Anionic copolymer	proprietary
Anionic polymer	proprietary
BTEX Free Hydrotreated Heavy Naphtha	64742-48-9
Cellulase enzyme	(Proprietary)
Demulsifier Base	(Proprietary)
Ethoxylated alcohol blend	Mixture
Ethoxylated Nonylphenol	68412-54-4
Ethoxylated oleylamine	26635-93-8
Ethylene Glycol	107-21-1
Glycol Ethers	111-76-2
guar gum	9000-30-0
Hydrogen Chloride	7647-01-0
Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8
Isopropyl alcohol	67-63-0
liquid, 2,2-dibromo-3-nitrilopropionamide	10222-01-2
Microparticle	proprietary
Petroleum Distillates (BTEX Below Detect)	64742-47-8
Polyacrylamide	57-55-6
Propargyl Alcohol	107-19-7
Propylene Glycol	57-55-6
Quartz	14808-60-7
Sillica, crystalline quartz	7631-86-9
Sodium Chloride	7647-14-5
Sodium Hydroxide	1310-73-2
Sugar	57-50-1
Surfactant	68439-51-0
Suspending agent (solid)	14808-60-7
Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7

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MULVAY WELL AND WATER CONTAINMENT PAD SITE DESIGN & CONSTRUCTION PLAN, EROSION & SEDIMENT CONTROL PLANS

ANTERO RESOURCES CORPORATION

Electronic Version of These Plans May Be Viewed at: Q:\OIL GAS\SAY FILES\REVIEWS

PLAN REPRODUCTION WARNING

THE PLANS HAVE BEEN CREATED ON ANSI D (22"X34") SHEETS. FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

THE PLANS HAVE BEEN CREATED FOR FULL COLOR PLOTTING. ANY SET OF THE PLANS THAT IS NOT PLOTTED IN FULL COLOR SHALL NOT BE CONSIDERED ADEQUATE FOR CONSTRUCTION PURPOSES.

WARNING INFORMATION MAY BE LOST IN COPYING AND/OR GRAY SCALE PLOTTING.

APPROVED
WVDEP OOG
3/20/2015

NO.	REVISION	BY	DATE
1	DEP COMMENTS	KLF	01-16-15
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-

PROJECT CONTACTS

PROJECT OWNER

ANTERO RESOURCES
1615 WYNKOOP STREET
DENVER, CO 80202

CONTACT: ANTHONY SMITH
FIELD ENGINEER
304.869.3405 OFFICE
304.673.6196 CELL

CONTACT: JOHN KAWCAK
ENGINEER
817.368.1553

CONTACT: ELI WAGONER
ENVIRONMENTAL ENGINEER
304.622.3842, EXT 311 OFFICE

CONTACT: AARON KUNZLER
CONSTRUCTION SUPERVISOR
405.227.8344

LOCATION SURVEYOR

WHITE BROTHERS CONSULTING
CONTACT: LEE SNYDER, PS
447 CALL ROAD SUITE 216
CHARLESTON, WV 25312
304.550.9484

ENGINEER OF RECORD

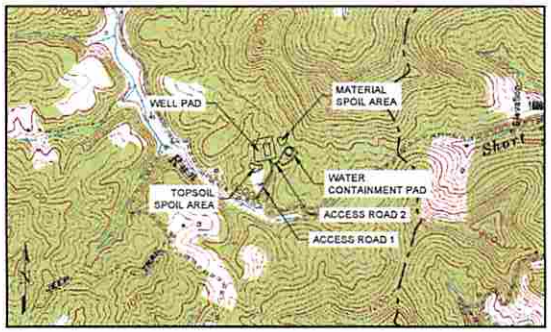
KLEINFELDER EAST, INC.
CONTACT: JEFFERY B. CRISP, PE
WV PE #20354
3500 GATEWAY CENTRE BLVD. SUITE 200
MORRISVILLE, NC 27560
919.755.5011 OFFICE
919.755.1414 FAX

ENVIRONMENTAL/ DELINEATION BOUNDARY

ALLSTAR ECOLOGY, LLC
CONTACT: TERRY BURHANS
1562 MEADOWDALE ROAD
FAIRMONT, WV 26554
304.816.3480 OFFICE
858.243.9900 CELL

TOPO SURVEYOR

BLUE MOUNTAIN AERIAL MAPPING
CONTACT: CRAIG FRY
11023 MASON DIXON HIGHWAY
BURTON, WV 26562
304.662.2626 OFFICE
304.815.4890 CELL



NORTH MERIDIAN REFERENCED TO NAD83 WEST VIRGINIA STATE PLANE NORTH ZONE

AFFECTED TAX PARCELS: SEE SHEET 2

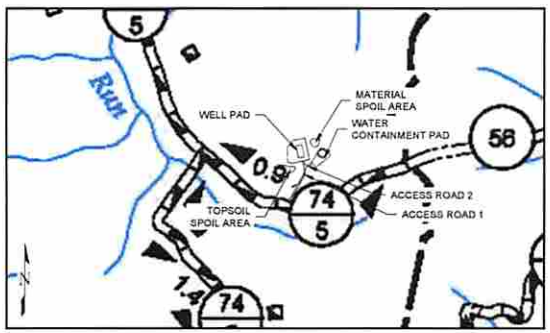
PENNSBORO 7.5 QUAD

500 250 0 500
SCALE: 1 INCH = 500 FEET

WELL HEAD LAYOUT				
WELL NAME	NAD 83 (WV NORTH ZONE)			
	NORTHING	EASTING	LATITUDE	LONGITUDE
PENNY UNIT 1H	302643.7101	1572763.4607	39° 19' 20.8568"	-80° 53' 56.0971"
PENNY UNIT 2H	302653.4919	1572761.3828	39° 19' 20.9530"	-80° 53' 56.1225"
PENNY UNIT 3H	302663.2736	1572759.3049	39° 19' 21.0493"	-80° 53' 56.1538"
TRUST UNIT 1H	302673.0553	1572757.2269	39° 19' 21.1457"	-80° 53' 56.1822"
TRUST UNIT 2H	302682.8371	1572755.1490	39° 19' 21.2420"	-80° 53' 56.2106"
STRONSNIDER UNIT 1H	302692.6188	1572753.0711	39° 19' 21.3384"	-80° 53' 56.2390"
STRONSNIDER UNIT 2H	302702.4005	1572750.9932	39° 19' 21.4347"	-80° 53' 56.2674"
STRONSNIDER UNIT 3H	302712.1823	1572748.9153	39° 19' 21.5311"	-80° 53' 56.2957"
NILEY UNIT 1H	302721.9640	1572746.8373	39° 19' 21.6274"	-80° 53' 56.3241"
NILEY UNIT 2H	302731.7457	1572744.7594	39° 19' 21.7238"	-80° 53' 56.3525"
NILEY UNIT 3H	302741.5274	1572742.6815	39° 19' 21.8201"	-80° 53' 56.3809"

WELL HEAD LAYOUT				
WELL NAME	NAD 27 (WV NORTH ZONE)		UTM ZONE 17 (METERS)	
	NORTHING	EASTING	NORTHING	EASTING
PENNY UNIT 1H	302609.2517	1604204.5489	4352588.1979	508713.1851
PENNY UNIT 2H	302619.0335	1604202.4710	4352591.1672	508712.5023
PENNY UNIT 3H	302628.8153	1604200.3930	4352572.1367	508711.8195
TRUST UNIT 1H	302638.5970	1604198.3151	4352575.1061	508711.1367
TRUST UNIT 2H	302648.3788	1604196.2372	4352578.0755	508710.4540
STRONSNIDER UNIT 1H	302658.1606	1604194.1592	4352581.0450	508709.7712
STRONSNIDER UNIT 2H	302667.9423	1604192.0813	4352584.0144	508709.0884
STRONSNIDER UNIT 3H	302677.7241	1604190.0034	4352586.9839	508708.4056
NILEY UNIT 1H	302687.5058	1604187.9255	4352589.9533	508707.7228
NILEY UNIT 2H	302697.2876	1604185.8475	4352592.9227	508707.0401
NILEY UNIT 3H	302707.0694	1604183.7696	4352595.8922	508706.3573

SITE LOCATIONS				
DESCRIPTION	NAD 83 (WV NORTH)		UTM ZONE 17 (METERS)	
	LATITUDE	LONGITUDE	NORTHING	EASTING
CENTER OF WELL PAD	39° 19' 21.3443"	-80° 53' 56.7760"	4352581.3762	508696.6559
CENTER OF WATER CONTAINMENT PAD	39° 19' 20.4741"	-80° 53' 51.9025"	4352554.5197	508813.6316
ACCESS ROAD ENTRANCE	39° 19' 12.8354"	-80° 53' 58.6686"	4352318.8606	508651.6887



SHEET INDEX	
PAGE NO.	DESCRIPTION
1	COVER PAGE & LOCATION MAP
2	SCHEDULE OF QUANTITIES
3	NOTES
4	EXISTING CONDITIONS
5	OVERALL PLAN
6	SITE PLAN
7	WELL PAD GRADING PLAN
8	WELL PAD CROSS SECTIONS AND PROFILE
9	WATER CONTAINMENT PAD CROSS SECTIONS AND PROFILE
10	ACCESS ROAD 1 CROSS SECTIONS AND PROFILE
11	ACCESS ROAD 2 CROSS SECTIONS AND PROFILE
12 - 17	DETAILS
18	RECLAMATION PLAN

FLOODPLAIN CONDITIONS	
DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN:	NO
PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR:	NO
HEC-RAS STUDY COMPLETED:	N/A
FLOODPLAIN SHOWN ON DRAWINGS:	N/A
FIRM MAP NUMBER(S) FOR SITE:	54085C0125C
ACREAGES OF CONSTRUCTION IN FLOODPLAIN:	N/A

ACCESS ROAD LENGTH (FEET)	
DESCRIPTION	FEET
ACCESS ROAD 1	779
ACCESS ROAD 2	143
TOTAL	922

811 know what's below. Call before you dig.
MISS UTILITY OF WEST VIRGINIA
1-800-245-4848
WEST VIRGINIA STATE LAW REQUIRES THAT YOU CALL TWO BUSINESS DAYS BEFORE YOU DIG IN THE STATE OF WEST VIRGINIA. IT'S THE LAW!

DESIGN CERTIFICATION

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

MM-109 PERMIT

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

API#8510201
API#8510202
API#8510203

WELL LOCATION RESTRICTIONS

WELL PAD IS TO COMPLY WITH WELL LOCATION RESTRICTIONS OF WV CODE 22-6A-12. THE PADS COMPLY WITH THE FOLLOWING RESTRICTIONS:

- 250' FROM AN EXISTING WELL OR DEVELOPED SPRING USED FOR HUMAN OR DOMESTIC ANIMALS
- 625' FROM AN OCCUPIED DWELLING OR BARN GREATER THAN 2500 SF USED FOR POULTRY OR DAIRY MEASURED FROM THE CENTER OF THE PAD
- 100' FROM EDGE OF DISTURBANCE TO WETLANDS, PERENNIAL STREAMS, NATURAL OR ARTIFICIAL LAKE, POND OR RESERVOIR
- 300' FROM EDGE OF DISTURBANCE TO NATURALLY REPRODUCING TROUT STREAMS
- 1000' OF SURFACE OR GROUND WATER INTAKE TO A PUBLIC WATER SUPPLY

JEFFERY B. CRISP REGISTERED 20354 1/16/15 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

SEAL

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PROJ. NO. 20150803
A-40 FILE
CS-01-01.dwg

MULVAY WELL & W.C. PAD COVER PAGE & LOCATION MAP

ANTERO RESOURCES CORPORATION
MULVAY WELL & WATER CONTAINMENT PAD
CLAY DISTRICT
RITCHIE COUNTY
WEST VIRGINIA

DESIGNED BY: CHT
MODIFIED BY: -
CHECKED BY: JBC
DATE: 08-21-2014
SCALE:
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 0.5 1.0 1.5 2.0
CONSTRUCTION

1
1 of 18 sheets

PLOTTED: 16 Jan 2015, 1:09pm, SKreher

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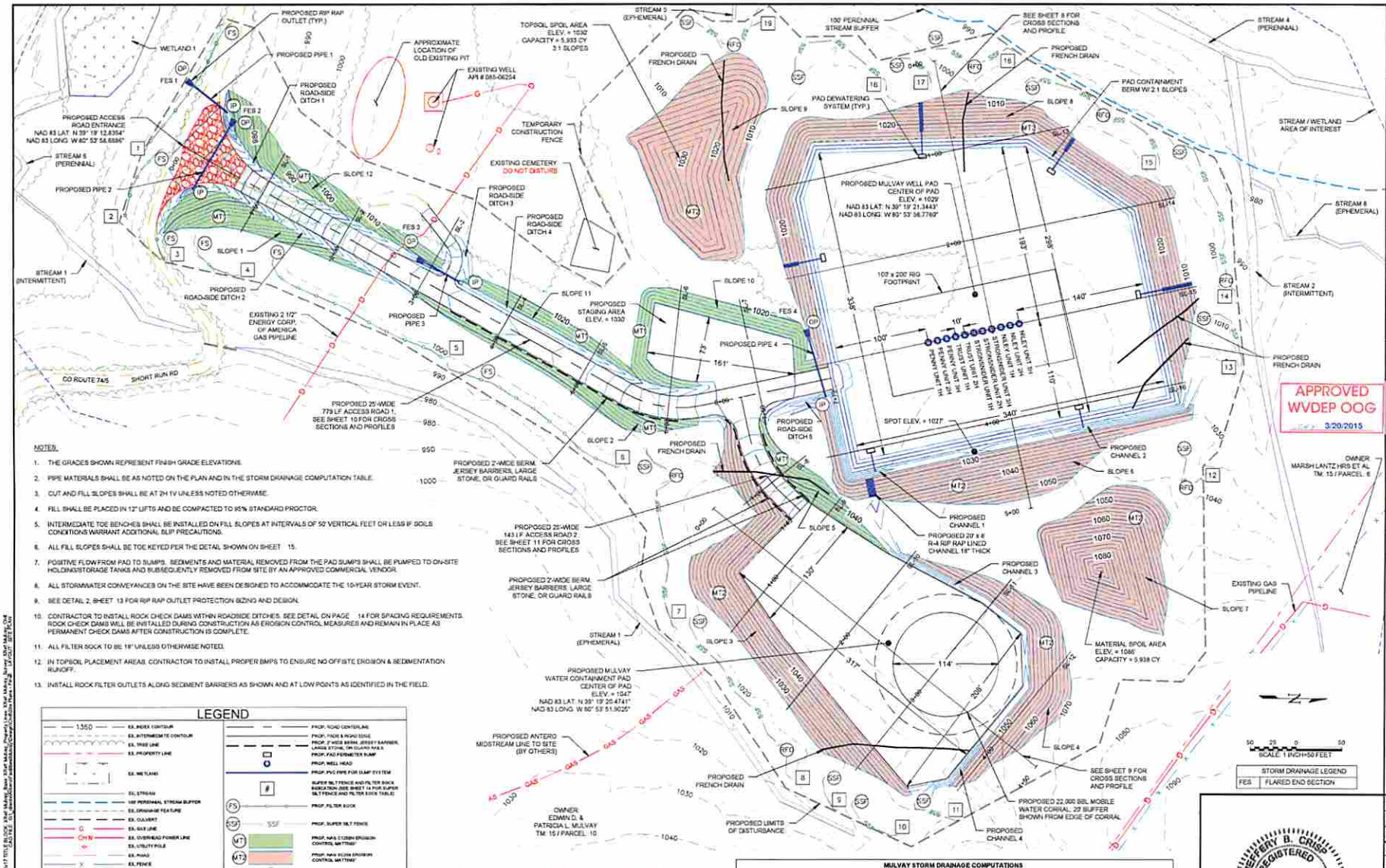

APPROVED WVDEP OOG 3/20/2015

NOTES:

1. THE GRADES SHOWN REPRESENT FINISH GRADE ELEVATIONS.
2. PIPE MATERIALS SHALL BE AS NOTED ON THE PLAN AND IN THE STORM DRAINAGE COMPUTATION TABLE.
3. CUT AND FILL SLOPES SHALL BE AT 2H:1V UNLESS NOTED OTHERWISE.
4. FILL SHALL BE PLACED IN 12" LIFTS AND BE COMPACTED TO 95% STANDARD PROCTOR.
5. INTERMEDIATE TOE BENCHES SHALL BE INSTALLED ON FILL SLOPES AT INTERVALS OF 50' VERTICAL FEET OR LESS IF SOILS CONDITIONS WARRANT ADDITIONAL SLIP PRECAUTIONS.
6. ALL FILL SLOPES SHALL BE TOE KEYED PER THE DETAIL SHOWN ON SHEET 15.
7. POSITIVE FLOW FROM PAD TO SUMPS. SEDIMENTS AND MATERIAL REMOVED FROM THE PAD SUMPS SHALL BE PUMPED TO ON-SITE HOLDING/STORAGE TANKS AND SUBSEQUENTLY REMOVED FROM SITE BY AN APPROVED COMMERCIAL VENDOR.
8. ALL STORMWATER CONVEYANCES ON THE SITE HAVE BEEN DESIGNED TO ACCOMMODATE THE 10-YEAR STORM EVENT.
9. SEE DETAIL 2, SHEET 13 FOR RIP RAP OUTLET PROTECTION SIZING AND DESIGN.
10. CONTRACTOR TO INSTALL ROCK CHECK DAMS WITHIN ROADSIDE DITCHES. SEE DETAIL ON PAGE 14 FOR SPACING REQUIREMENTS. ROCK CHECK DAMS WILL BE INSTALLED DURING CONSTRUCTION AS EROSION CONTROL MEASURES AND REMAIN IN PLACE AS PERMANENT CHECK DAMS AFTER CONSTRUCTION IS COMPLETE.
11. ALL FILTER SOCK TO BE 18" UNLESS OTHERWISE NOTED.
12. IN TOPSOIL PLACEMENT AREAS, CONTRACTOR TO INSTALL PROPER BMPS TO ENSURE NO OFFSITE EROSION & SEDIMENTATION RUNOFF.
13. INSTALL ROCK FILTER OUTLETS ALONG SEDIMENT BARRIERS AS SHOWN AND AT LOW POINTS AS IDENTIFIED IN THE FIELD.

LEGEND

1350 — EX. INDEX CONTOUR	PROP. ROAD CENTERLINE
EX. INTERMEDIATE CONTOUR	PROP. FILL/CUT SLOPE
EX. PROPERTY LINE	PROP. 2' WIDE BERM, JERSEY BARRIER, LARGE STONE, OR GUARD RAILS
EX. WETLAND	PROP. PAD PERIMETER RAMP
EX. STREAM	PROP. WELL HEAD
100' PERENNIAL STREAM BUFFER	PROP. PVC PIPE FOR SUMP SYSTEM
EX. DRAINAGE FEATURE	SUPER SILT FENCE AND FILTER SOCK EXCAVATION (SEE SHEET 14 FOR SUPER SILT FENCE AND FILTER SOCK TABLE)
EX. CULVERT	PROP. FILTER SOCK
G EX. GAS LINE	SSF PROP. SUPER SILT FENCE
OHW EX. OVERHEAD POWER LINE	MT PROP. NAG C125BN EROSION CONTROL MATTING*
EX. UTILITY POLE	MT2 PROP. NAG S125N EROSION CONTROL MATTING*
EX. ROAD	OP PROP. OUTLET PROTECTION
X EX. FENCE	IP PROP. INLET PROTECTION
EX. STRUCTURE	RFO PROP. ROCK FILTER OUTLET
GAS PROPOSED GAS LINE	
STREAM/WETLAND AREA OF INTEREST	
PROP. LIMITS OF DISTURBANCE	
PROP. FRENCH DRAIN	
1360 PROP. INDEX CONTOUR	
PROP. INTERMEDIATE CONTOUR	

*NYLOPLASTIC CHEMO MAT MAY BE USED IN LIEU OF MATTING PER MANUFACTURER'S SPECIFICATIONS

UTILITIES WITHIN PROPOSED GRADING TO BE RELOCATED; SEE UTILITY EXHIBIT

MULVAY STORM DRAINAGE COMPUTATIONS

ACCESS ROAD CROSS-DRAINS		Q TOTAL FLOW (cfs)	SLOPE (ft/ft)	SIZE	LENGTH (ft)	UPPER INVERT (ft)	LOWER INVERT (ft)	PIPE MATERIAL
PIPE	STATION							
PIPE 1	0+00	8.04	0.0444	18"	45.00	965.00	963.00	HDPE*
PIPE 2	0+32	0.94	0.0250	15"	80.00	968.00	966.00	HDPE*
PIPE 3	3+23	2.12	0.0250	15"	40.00	1008.50	1008.50	HDPE*
PIPE 4	7+69	6.52	0.0308	18"	65.00	1024.00	1022.00	HDPE*

*DOUBLE WALL CORRUGATED PIPE

JEFFERY B. CRISP REGISTERED 20364 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

SEAL

NO.	REVISION	BY	DATE
1	DEP COMMENTS	KLF	01-16-15
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-

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PROJ. NO. 20155863
ACAD FILE: SITE PLAN.dwg

MULVAY WELL & W.C. PAD SITE PLAN

ANTERO RESOURCES CORPORATION
MULVAY WELL & WATER CONTAINMENT PAD
CLAY DISTRICT
RITCHIE COUNTY
WEST VIRGINIA

DESIGNED BY: CHT
MODIFIED BY: -
CHECKED BY: JBC
DATE: 08-21-2014
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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 0.5 1.0 1.5 2.0

CONSTRUCTION

6

6 of 16 sheets

PLOTTED 16 Jan 2015, 11:19pm, SPhelan