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

May 26, 2016

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-8510283, 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: ANDERSON UNIT 3H
Farm Name: BACHELOR, MARION R. ET AL
API Well Number: 47-8510283
Permit Type: Horizontal 6A Well
Date Issued: 05/26/2016

API Number: _____

PERMIT CONDITIONS

4708510285

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.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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 4708510283

7. 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.

8. 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.

9. 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.

10. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.

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

March 17, 2016

West Virginia Department of Environmental Protection
Office of Oil and Gas
Attn: Ms. Laura Adkins
601 57th Street
Charleston, WV 25304

47085 02203

Ms. Laura Adkins:

Antero Resources Corporation (Antero) would like to submit the following application for a new well work permit to explore for Marcellus Shale potential. Our **Mountain** project is located in Ritchie County, WV. On the **Bachelor Pad** consists **one new horizontal** shallow well (Anderson Unit 3H) that we are requesting approval to drill.

Attached you will find the following:

- Permit Application package
- CD with copy of permit application

If you have any questions please feel free to contact me at (303) 357-7323.

Thank you in advance for your consideration.

Sincerely,

Ashlie Steele

Ashlie Steele
Permitting Supervisor
Antero Resources Corporation

Enclosures

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Addendum for Antero pads in Ritchie County, WV

4708510263

Anderson Unit 3H Bachelor 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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WW-6AW
(1-12)

API NO. 47- 085 -
OPERATOR WELL NO. Anderson Unit 3H
Well Pad Name: Bachelor Pad

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

VOLUNTARY STATEMENT OF NO OBJECTION

Instructions to Persons Named on Page WW-6A
The well operator named on page WW-6A is applying for a permit from the State of West Virginia to conduct oil or gas well work. Well work permits are valid for twenty-four (24) months. Please contact the listed well operator and the Office of Oil and Gas if you do not own any interest in the listed surface tract.

Comment and Waiver Provisions
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.

4708501233

Pursuant to West Virginia Code § 22-6A-8(b) No permit may be issued less than thirty days after the filing date of the application for any well work except plugging or replugging; and no permit for plugging or replugging may be issued less than five days after the filing date of the application except a permit for plugging or replugging a dry hole: *Provided,* That if the applicant certifies that all persons entitled to notice of the application under the provisions of subsection (b), section ten of this article have been served in person or by certified mail, return receipt requested, with a copy of the well work application, including the erosion and sediment control plan, if required, and the well plat, and further files written statements of no objection by all such persons, the secretary may issue the well work permit at any time.

VOLUNTARY STATEMENT OF NO OBJECTION

I, _____, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State:	West Virginia	UTM NAD 83 Easting:	498,704m
County:	Ritchie	Northing:	4,351,343m
District:	Clay	Public Road Access:	CR 6/2
Quadrangle:	Ellenboro 7.5'	Generally used farm name:	Marion R. Bachelor, et al
Watershed:	North Fork Hughes River		

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials.

*Please check the box that applies

- ☐ SURFACE OWNER
- ☐ SURFACE OWNER (Road and/or Other Disturbance)
- ☐ SURFACE OWNER (Impoundments/Pits)
- ☐ COAL OWNER OR LESSEE
- ☐ COAL OPERATOR
- ☐ WATER PURVEYOR
- ☐ OPERATOR OF ANY NATURAL GAS STORAGE FIELD

FOR EXECUTION BY A NATURAL PERSON

Signature: _____
Print Name: _____
Date: _____

FOR EXECUTION BY A CORPORATION, ETC.

Company: _____
By: _____
Its: _____
Signature: _____
Date: _____

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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.

App Received 3/22

4708510283

WW-6B
(04/15)

API NO. 47- 085 -
OPERATOR WELL NO. Anderson Unit 3H
Well Pad Name: Bachelor 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 | Ellenboro 7.5'
Operator ID | County | District | Quadrangle

2) Operator's Well Number: Anderson Unit 3H Well Pad Name: Bachelor Pad

3) Farm Name/Surface Owner: Marion R. Bachelor, et al Public Road Access: CR 6/2

4) Elevation, current ground: 1226' Elevation, proposed post-construction: 1193'

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

Michael Duff 3/30/16

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

4708510283

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 17,900 MD

11) Proposed Horizontal Leg Length: 10,681'

12) Approximate Fresh Water Strata Depths: 357', 429', 505'

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

14) Approximate Saltwater Depths: 1042', 1207', 1390'

15) Approximate Coal Seam Depths: 386', 1627'

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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WW-6B
(04/15)

API NO. 47- 085 -
OPERATOR WELL NO. Anderson Unit 3H
Well Pad Name: Bachelor 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#	40'	40'	CTS, 38 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	560' *see #19	560' *see #19	CTS, 778 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500'	2500'	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	17,900'	17,900'	CTS, 4515 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

MAC 3/30/16

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	20" ~~30"~~ MAC	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							

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PACKERS

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

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WW-6B
(10/14)

47 085 10283
API NO. 47- 085 -
OPERATOR WELL NO. Anderson Unit 3H
Well Pad Name: Bachelor Pad

MAC 3/30/16

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

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

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

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

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

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 31.03 acres

22) Area to be disturbed for well pad only, less access road (acres): 5.43 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.

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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.

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WW-9
(2/15)

API Number 47 - 085 -
Operator's Well No. Anderson 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 Ellenboro 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

MDG 3/30/16

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)

4708510283

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 B. COMPTON
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20144028178
MY COMMISSION EXPIRES JULY 18, 2018

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MAR 31 2016
WV Department of Environmental Protection

Subscribed and sworn before me this 17th day of March, 20 16

Notary Public

My commission expires July 18, 2018

Form WW-9

Operator's Well No. Anderson Unit 3H

Antero Resources Corporation

Proposed Revegetation Treatment: Acres Disturbed 31.03 acres Prevegetation pH _____

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

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

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

Access Road "A" (10.45 acres) + Access Road "B" (1.19 acres) + Well Pad (5.43 acres) + Water Containment Pad (3.19 acres) + Excess/Topsoil Material Stockpiles (10.77 acres) = 31.03 Acres

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Tall Fescue	40	Crownvetch	10-15
Field Bromegrass	40	Tall Fescue	30

See attached Table IV-3 for additional seed type (Bachelor Pad Design Page 26)

*or type of grass seed requested by surface owner

See attached Table IV-4A for additional seed type (Bachelor Pad Design Page 26)

*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.

4708510283

Plan Approved by: Michael Hoff

Comments: Reseed & mulch any disturbed areas per WVDEP regulations. Maintain or upgrade E-n-S as necessary.

Title: Oil & Gas Inspector Date: 3/30/16

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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47 085 10235

Well Site Safety Plan
Antero Resources

Well Name: **Raines Unit 1H, Raines Unit 2H, Raines Unit 3H, Anderson Unit 1H, Anderson Unit 2H, Anderson Unit 3H**

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

Michael Daff
3/30/16

GPS Coordinates: Lat 39°18'41.70"/Long -81°00'54.34" (NAD83)

Driving Directions:

From the intersection of I-79 and Highway 50: Travel west on US-50 for 41.3 miles. Turn right onto Bunnell Run Road and go 0.5 miles. Turn left onto Lamberton Road/Old US 50 E and go 2.2 miles. Turn right onto Hursher's Run and go 1.2 miles. Turn left onto Hursher's Run Road and go 1.2 miles. Access road will be on your right.

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

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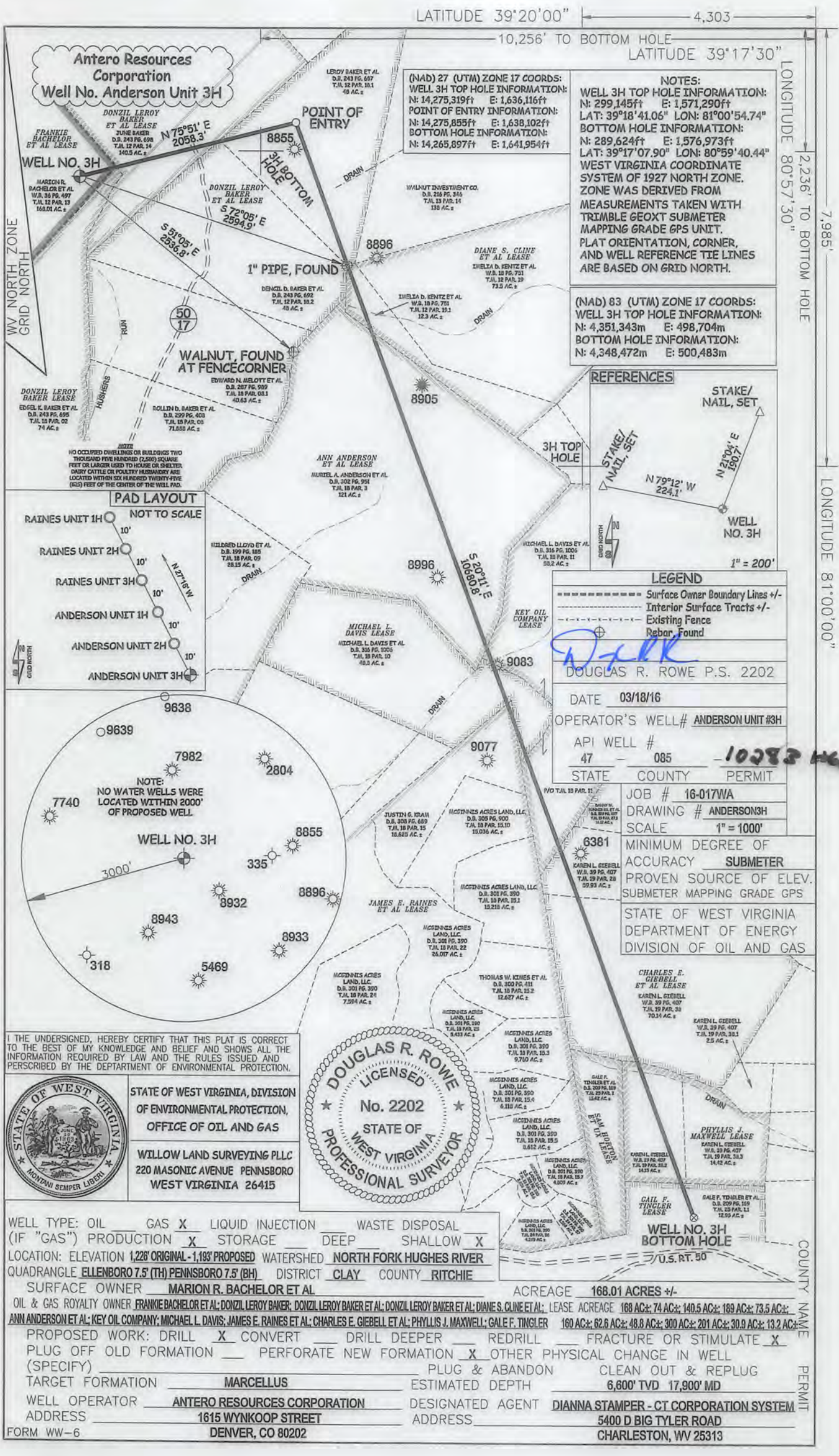
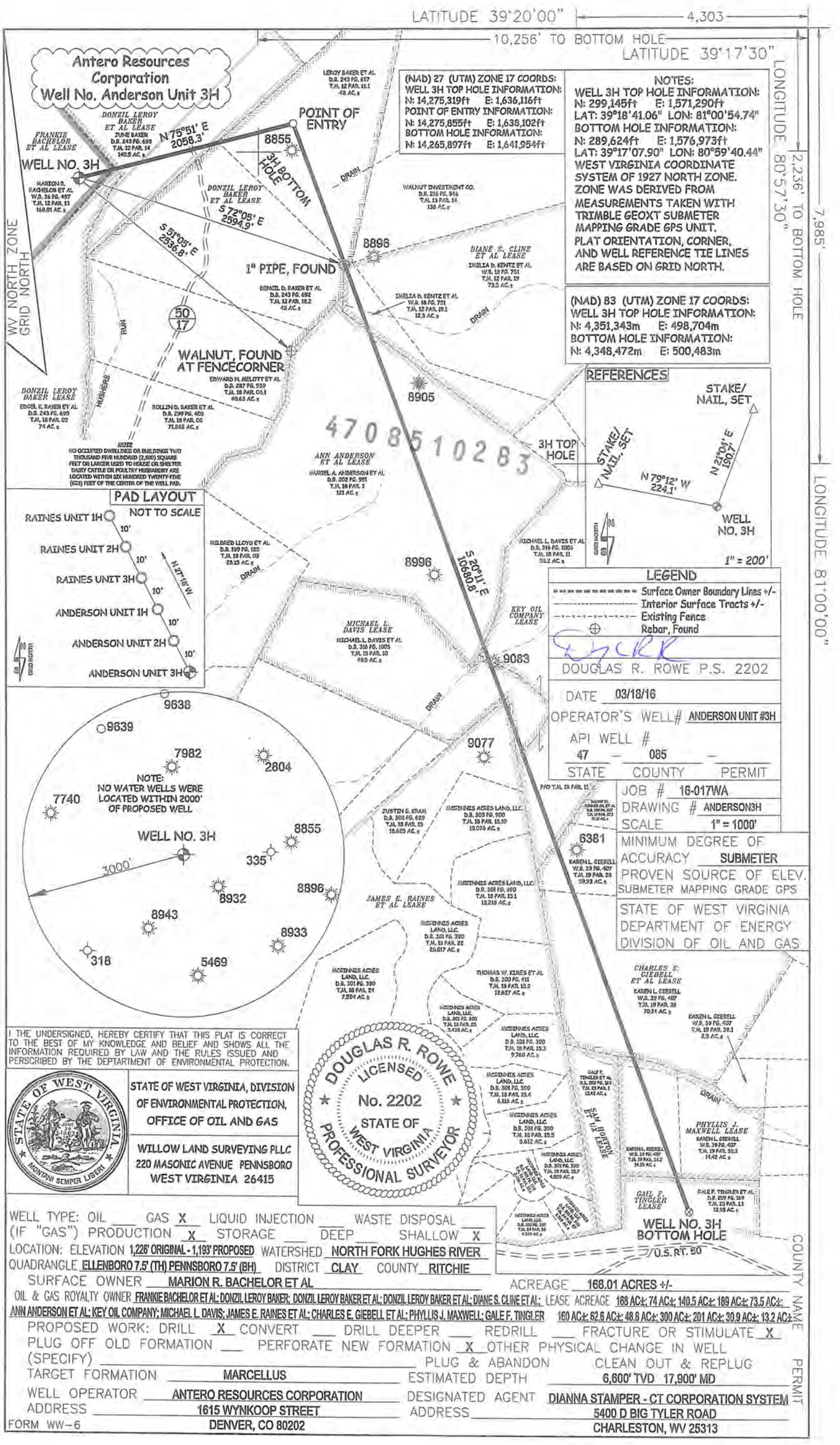


WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,226' ORIGINAL - 1,193' PROPOSED WATERSHED NORTH FORK HUGHES RIVER
QUADRANGLE ELLENBORO 7.5' (TH) PENNSBORO 7.5' (BH) DISTRICT CLAY COUNTY RITCHIE
SURFACE OWNER MARION R. BACHELOR ET AL ACREAGE 168.01 ACRES +/-
OIL & GAS ROYALTY OWNER FRANKIE BACHELOR ET AL; DONZIL LEROY BAKER; DONZIL LEROY BAKER ET AL; DONZIL LEROY BAKER ET AL; DIANE S. CLINE ET AL; ANN ANDERSON ET AL; KEY OIL COMPANY; MICHAEL L. DAVIS; JAMES E. RAINES ET AL; CHARLES E. GIEBELL ET AL; PHYLLIS J. MAXWELL; GALE F. TINGLER LEASE ACREAGE 168 AC±; 74 AC±; 140.5 AC±; 169 AC±; 73.5 AC±; 160 AC±; 62.6 AC±; 48.8 AC±; 300 AC±; 201 AC±; 30.9 AC±; 13.2 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 17,900' 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
FORM WW-6
COUNTY NAME PERMIT


LATITUDE 39°20'00"
4,303
10,256' TO BOTTOM HOLE
LATITUDE 39°17'30"
LONGITUDE 80°57'30"
2,236' TO BOTTOM HOLE
7,985'
LONGITUDE 81°00'00"
Antero Resources Corporation
Well No. Anderson Unit 3H
WELL NO. 3H
POINT OF ENTRY
N 75°51' E
2058.3'
3H BOTTOM HOLE
8855
S 72°05' E
2594.9'
S 51°05' E
2536.8'
8898
8905
8996
9083
9077
9638
9639
7982
2804
7740
8855
335
8932
8896
8943
8933
318
5469
3000'
I" PIPE, FOUND
WALNUT, FOUND AT FENCECORNER
3H TOP HOLE
S 20°11' E
10680.8'
N 27°16 W
WV NORTH ZONE GRID NORTH
DRAIN
RUN
HUSHERS
4708510283
NOTE
NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
NOTE:
NO WATER WELLS WERE LOCATED WITHIN 2000' OF PROPOSED WELL
DONZIL LEROY BAKER ET AL LEASE
JUNE BAKER
D.B. 243 PG. 698
T.M. 12 PAR. 14
140.5 AC. ±
FRANKIE BACHELOR ET AL LEASE
MARION R. BACHELOR ET AL
W.B. 36 PG. 497
T.M. 12 PAR. 13
168.01 AC. ±
DONZIL LEROY BAKER ET AL LEASE
DENCIL D. BAKER ET AL
D.B. 243 PG. 692
T.M. 12 PAR. 18.2
48 AC. ±
LEROY BAKER ET AL
D.B. 243 PG. 697
T.M. 12 PAR. 18.1
48 AC. ±
WALNUT INVESTMENT CO.
D.B. 216 PG. 845
T.M. 13 PAR. 14
138 AC. ±
DIANE S. CLINE ET AL LEASE
IMELDA D. KENTZ ET AL
W.B. 18 PG. 751
T.M. 12 PAR. 19
73.5 AC. ±
IMELDA D. KENTZ ET AL
W.B. 18 PG. 751
T.M. 12 PAR. 19.1
12.3 AC. ±
DONZIL LEROY BAKER ET AL LEASE
EDGEL K. BAKER ET AL
D.B. 243 PG. 695
T.M. 18 PAR. 02
74 AC. ±
ROLLIN D. BAKER ET AL
D.B. 299 PG. 405
T.M. 18 PAR. 05
71.885 AC. ±
EDWARD N. MELOTT ET AL
D.B. 287 PG. 559
T.M. 18 PAR. 05.1
40.63 AC. ±
ANN ANDERSON ET AL LEASE
MURIEL A. ANDERSON ET AL
D.B. 302 PG. 991
T.M. 18 PAR. 3
121 AC. ±
MILDRED LLOYD ET AL
D.B. 199 PG. 185
T.M. 18 PAR. 09
28.15 AC. ±
MICHAEL L. DAVIS ET AL
D.B. 316 PG. 1005
T.M. 18 PAR. 11
59.2 AC. ±
MICHAEL L. DAVIS LEASE
MICHAEL L. DAVIS ET AL
D.B. 316 PG. 1005
T.M. 18 PAR. 10
49.0 AC. ±
KEY OIL COMPANY LEASE
JUSTIN G. KRAH
D.B. 303 PG. 649
T.M. 18 PAR. 19
19.625 AC. ±
MCGINNIS ACRES LAND, LLC.
D.B. 303 PG. 900
T.M. 18 PAR. 15.10
15.036 AC. ±
MCGINNIS ACRES LAND, LLC.
D.B. 301 PG. 390
T.M. 18 PAR. 15.1
13.219 AC. ±
JAMES E. RAINES ET AL LEASE
MCGINNIS ACRES LAND, LLC.
D.B. 301 PG. 390
T.M. 18 PAR. 22
25.617 AC. ±
MCGINNIS ACRES LAND, LLC.
D.B. 301 PG. 390
T.M. 18 PAR. 24
7.594 AC. ±
THOMAS W. KINES ET AL
D.B. 300 PG. 411
T.M. 18 PAR. 15.2
12.627 AC. ±
MCGINNIS ACRES LAND, LLC.
D.B. 301 PG. 390
T.M. 18 PAR. 23
3.433 AC. ±
MCGINNIS ACRES LAND, LLC.
D.B. 301 PG. 390
T.M. 18 PAR. 15.3
9.760 AC. ±
MCGINNIS ACRES LAND, LLC.
D.B. 301 PG. 390
T.M. 18 PAR. 15.4
6.118 AC. ±
MCGINNIS ACRES LAND, LLC.
D.B. 301 PG. 390
T.M. 18 PAR. 15.5
0.612 AC. ±
MCGINNIS ACRES LAND, LLC.
D.B. 301 PG. 390
T.M. 18 PAR. 15.7
4.809 AC. ±
MCGINNIS ACRES LAND, LLC.
D.B. 301 PG. 390
T.M. 18 PAR. 26
4.109 AC. ±
SALE F. TINGLER ET AL
D.B. 209 PG. 169
T.M. 23 PAR. 1
13.42 AC. ±
SUM HORTON LEASE
CHARLES E. GIEBELL ET AL LEASE
KAREN L. GIEBELL
W.B. 39 PG. 407
T.M. 19 PAR. 38
70.14 AC. ±
KAREN L. GIEBELL
W.B. 39 PG. 407
T.M. 19 PAR. 38.1
2.5 AC. ±
PHYLLIS J. MAXWELL LEASE
KAREN L. GIEBELL
W.B. 39 PG. 407
T.M. 19 PAR. 38.2
14.42 AC. ±
KAREN L. GIEBELL
W.B. 39 PG. 407
T.M. 19 PAR. 34.2
14.15 AC. ±
GAIL F. TINGLER LEASE
SALE F. TINGLER ET AL
D.B. 209 PG. 169
T.M. 23 PAR. 11
12.93 AC. ±
WELL NO. 3H BOTTOM HOLE
U.S. RT. 50
6381
KAREN L. GIEBELL
W.B. 39 PG. 407
T.M. 19 PAR. 28
59.93 AC. ±
P/O T.M. 19 PAR. 11
(NAD) 27 (UTM) ZONE 17 COORDS:
WELL 3H TOP HOLE INFORMATION:
N: 14,275,319ft E: 1,636,116ft
POINT OF ENTRY INFORMATION:
N: 14,275,855ft E: 1,638,102ft
BOTTOM HOLE INFORMATION:
N: 14,265,897ft E: 1,641,954ft
NOTES:
WELL 3H TOP HOLE INFORMATION:
N: 299,145ft E: 1,571,290ft
LAT: 39°18'41.06" LON: 81°00'54.74"
BOTTOM HOLE INFORMATION:
N: 289,624ft E: 1,576,973ft
LAT: 39°17'07.90" LON: 80°59'40.44"
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: 4,351,343m E: 498,704m
BOTTOM HOLE INFORMATION:
N: 4,348,472m E: 500,483m
REFERENCES
STAKE/ NAIL, SET
STAKE/ NAIL, SET
N 21°04' E
190.7'
N 79°12' W
224.1'
WELL NO. 3H
1" = 200'
PAD LAYOUT
NOT TO SCALE
RAINES UNIT 1H
RAINES UNIT 2H
RAINES UNIT 3H
ANDERSON UNIT 1H
ANDERSON UNIT 2H
ANDERSON UNIT 3H
10'
LEGEND
Surface Owner Boundary Lines +/-
Interior Surface Tracts +/-
Existing Fence
Rebar, Found
DOUGLAS R. ROWE P.S. 2202
DATE 03/18/16
OPERATOR'S WELL# ANDERSON UNIT #3H
API WELL #
47 – 085 –
STATE COUNTY PERMIT
JOB # 16-017WA
DRAWING # ANDERSON3H
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY
DIVISION OF OIL AND GAS
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
MONTANI SEMPER LIBERI
DOUGLAS R. ROWE
LICENSED
No. 2202
STATE OF WEST VIRGINIA
PROFESSIONAL SURVEYOR
STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WILLOW LAND SURVEYING PLLC
220 MASONIC AVENUE PENNSBORO
WEST VIRGINIA 26415
WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,226' ORIGINAL - 1,193' PROPOSED WATERSHED NORTH FORK HUGHES RIVER
QUADRANGLE ELLENBORO 7.5' (TH) PENNSBORO 7.5' (BH) DISTRICT CLAY COUNTY RITCHIE
SURFACE OWNER MARION R. BACHELOR ET AL ACREAGE 168.01 ACRES +/-
OIL & GAS ROYALTY OWNER FRANKIE BACHELOR ET AL; DONZIL LEROY BAKER; DONZIL LEROY BAKER ET AL; DONZIL LEROY BAKER ET AL; DIANE S. CLINE ET AL; LEASE ACREAGE 168 AC±; 74 AC±; 140.5 AC±; 189 AC±; 73.5 AC±; ANN ANDERSON ET AL; KEY OIL COMPANY; MICHAEL L. DAVIS; JAMES E. RAINES ET AL; CHARLES E. GIEBELL ET AL; PHYLLIS J. MAXWELL; GALE F. TINGLER 160 AC±; 62.6 AC±; 48.8 AC±; 300 AC±; 201 AC±; 39.9 AC±; 13.2 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 17,900' 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
FORM WW-6
COUNTY NAME PERMIT

WW-6A1

Operator's Well Number Anderson 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
Frankie Bachelor, et al Lease			
Frankie Bachelor, et al	Consolidated Gas Supply Corporation	1/8	0123/0038
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0169/0756
Consolidated Gas Transmission Corporation	CNG Development Company	Assignment	0176/0601
CNG Development Company	CNG Producing Company	Merger	Harrison County 1131/1015
CNG Producing Company	Dominion Exploration & Production, Inc.	Name Change	Exhibit 2
Dominion Exploration & Production, Inc.	CNX Gas Company, LLC	Affidavit of Name Changes and Mergers	0253/0841
CNX Gas Company, LLC	**Antero Resources Corporation**	**Assignment**	**0269/0429**
Donzil Leroy Baker Lease (TM 18-2)			
Donzil Leroy Baker	Antero Resources Appalachian Corporation	1/8+	0261/0467
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Donzil Leroy Baker, et al Lease (TM 12-14)			
Donzil Leroy Baker	Antero Resources Appalachian Corporation	1/8+	0261/0481
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Donzil Leroy Baker, et al Lease (TM 12-18.1)			
Donzil Leroy Baker	Antero Resources Appalachian Corporation	1/8+	0261/0474
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Diane S. Cline, et al Lease			
Diane S. Cline, et al	Key Oil Company	1/8	0223/0093
Key Oil Company	Antero Resources Appalachian Corporation	Assignment	0253/0747
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Ann Anderson, et al Lease			
Ann Anderson, et al	Clarence Mutschelknaus	1/8	0232/0822
Clarence Mutschelknaus	Antero Resources Appalachian Corporation	Assignment	0259/0874
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**

4708510287

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Office of Oil and Gas
MAR 22 2016
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****

WW-6A1

Operator's Well Number Anderson 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)

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(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
Key Oil Company Lease			
Key Oil Company	Antero Resources Appalachian Corporation	1/8+	0262/0682
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Michael L. Davis Lease			
Michael L. Davis	**Antero Resources Corporation**	**1/8+**	**0279/0588**
James E. Raines, et al Lease			
James E. Raines, et al	**Antero Resources Corporation**	**1/8+**	**0287/0001**
Charles E. Giebell, et al Lease			
Charles E. Giebell, et al	Gene Stalnaker	1/8	0154/0537
Gene Stalnaker & Gene Stalnaker, Inc.	Angus Energy, Inc.	Assignment	0212/0137
Angus Energy, Inc.	Stalnaker Energy Corporation	Certificate of Amendment to the Articles of Incorporation	Exhibit 3
Stalnaker Energy Corporation	Antero Resources Appalachian Corporation	Assignment	0258/0431
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Phyllis J. Maxwell Lease			
Phyllis J. Maxwell	**Antero Resources Corporation**	**1/8+**	**0274/0109**

4708510283

***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****

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Office of Oil and Gas
MAR 22 2016
WV Department of
Environmental Protection

WW-6A1
(5/13)

Operator's Well No. Anderson 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)

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(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
Gail F. Tingler Lease				
	Gail F. Tingler, et ux	Antero Resources Appalachian Corporation	1/8+	0260/0753
	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 4708510283

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.

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Office of Oil and Gas
MAR 22 2016
WV Department of
Environmental Protection

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

FORM WW-6A1
EXHIBIT 1

FILED

JUN 10 2013

4708510283

IN THE OFFICE OF SECRETARY OF STATE

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

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

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

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

APPLICATION FOR AMENDED CERTIFICATE OF AUTHORITY

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

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

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

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

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

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

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

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

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

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

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

*Important Legal Notice Regarding Signature: For 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.

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Office of Oil and Gas
MAR 22 2016
WV Department of
Environmental Protection

FORM WW-6A1
EXHIBIT 2

State of West Virginia

4708510283

Certificate

I, Ken Hechler, Secretary of State of the State of West Virginia, hereby certify that

riginals of an application by

CNG PRODUCING COMPANY

for an amended certificate of authority to transact business in West Virginia are filed in my office, as required by the provisions of Chapter 31, Article 1, Sections 57 and 59 of the West Virginia Code and conform to law. Therefore, I issue this

AMENDED CERTIFICATE OF AUTHORITY

to transact business in West Virginia under the name of

DOMINION EXPLORATION & PRODUCTION, INC.

and I attach to this certificate a duplicate original of the application.

Given under my hand and the Great Seal of the State of West Virginia on

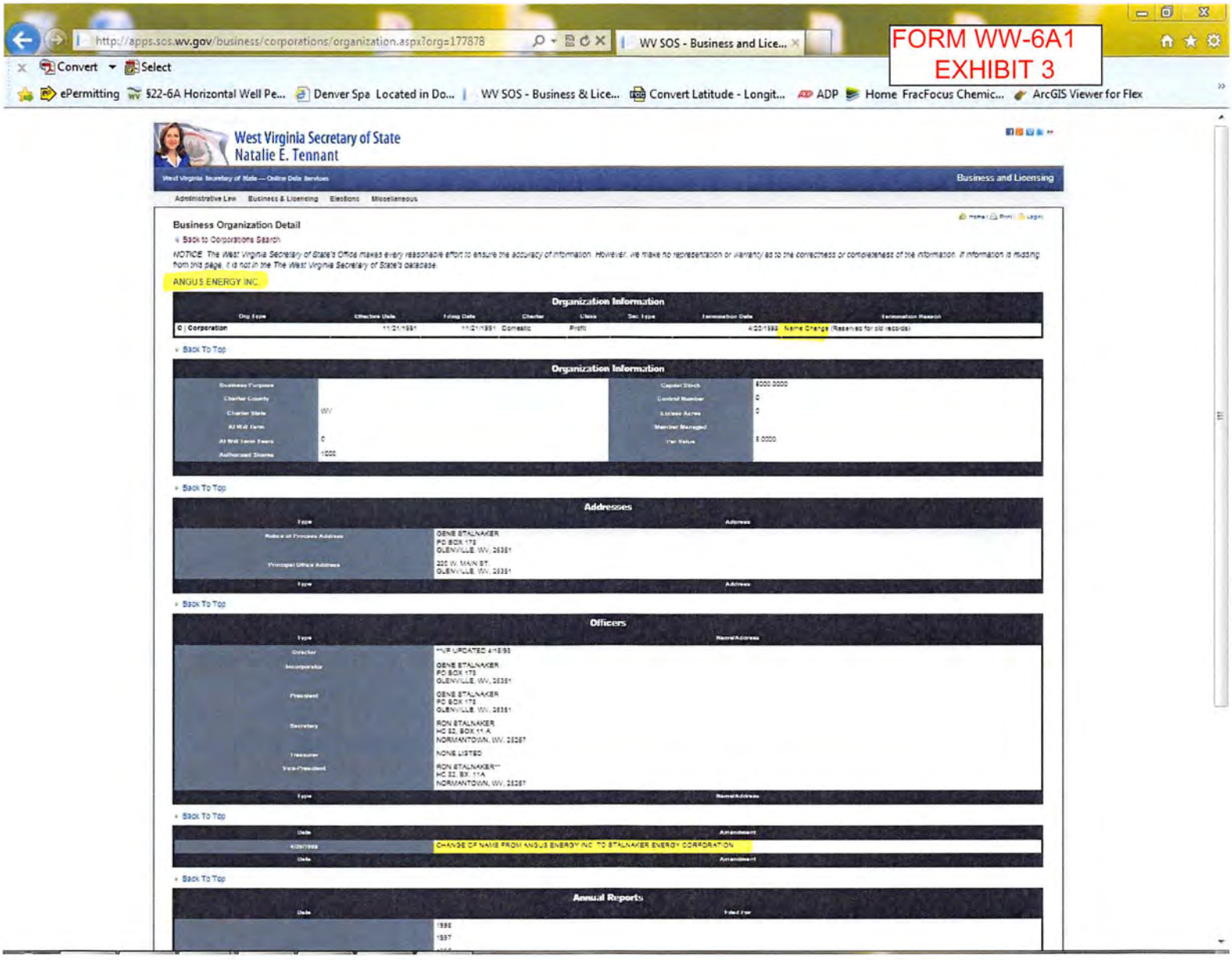
May 10, 2000

RECEIVED
Office of Oil and Gas
MAR 30 2016
WV Department of
Environmental Protection

Secretary of State

4708510283

FORM WW-6A1
EXHIBIT 3



http://apps.sos.wv.gov/business/corporations/organization.aspx?org=177878

WV SOS - Business and Lice...

Convert Select

ePermitting §22-6A Horizontal Well Pe... Denver Spa Located in Do... WV SOS - Business & Lice... Convert Latitude - Longit... ADP Home FracFocus Chemic... ArcGIS Viewer for Flex

West Virginia Secretary of State
Natalie E. Tennant

West Virginia Secretary of State — Online Data Services

Business and Licensing

Administrative Law Business & Licensing Elections Miscellaneous

Business Organization Detail

Back to Corporations Search

NOTICE: The West Virginia Secretary of State's Office makes every reasonable effort to ensure the accuracy of information. However, we make no representation or warranty as to the correctness or completeness of the information. If information is missing from this page, it is not in the The West Virginia Secretary of State's database.

ANGUS ENERGY INC.

Organization Information

Org Type	Effective Date	Filing Date	Charter	Class	Sec Type	Termination Date	Termination Reason
C | Corporation	11/21/1991	11/21/1991	Domestic	Profit		4/29/1993	Name Change (Reserves for old records)

Back To Top

Organization Information

Business Purpose		Capital Stock	$000.0000
Charter County		Control Number	0
Charter State	WV	Excess Acres	0
At Will Term		Member Managed	
At Will Term Years	0	Par Value	$.0000
Authorized Shares	1000		

Back To Top

Addresses

Type	Address
Notice of Process Address	GENE STALNAKER PO BOX 173 GLENVILLE, WV, 26351
Principal Office Address	222 W. MAIN ST. GLENVILLE, WV, 26351

Type	Address

Back To Top

Officers

Type	Name/Address
Director	**** UPDATED 4/16/93
Incorporator	GENE STALNAKER PO BOX 173 GLENVILLE, WV, 26351
President	GENE STALNAKER PO BOX 173 GLENVILLE, WV, 26351
Secretary	RON STALNAKER HC 32, BOX 11 A NORMANTOWN, WV, 25267
Treasurer	NONE LISTED
Vice-President	RON STALNAKER**** HC 32, BX. 11A NORMANTOWN, WV, 25267

Type	Name/Address

Back To Top

Date	Amendment
4/29/1993	CHANGE OF NAME FROM ANGUS ENERGY INC. TO STALNAKER ENERGY CORPORATION

Date	Amendment

Back To Top

Annual Reports

Date	Year For
	1996
	1997

RECEIVED
Office of Oil and Gas

MAR 22 2016

WV Department of
Environmental Protection

RXing

Antero Resources

4708510283

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

March 16, 2016

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

RE: Anderson Unit 3H
Quadrangle: Ellenboro 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 Anderson 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 Anderson Unit 3H horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

Tom Kuhn
Landman

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Office of Oil and Gas
MAR 22 2016
WV Department of
Environmental Protection

WW-6AC
(1/12)

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

Date of Notice Certification: 03/17/2016

4708510283

API No. 47- 085 -
Operator's Well No. Anderson Unit 3H
Well Pad Name: Bachelor 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:	498,704m
County:	Ritchie	Northing:	4,351,343m
District:	Clay	Public Road Access:	CR 6/2
Quadrangle:	Ellenboro 7.5'	Generally used farm name:	Marion R. Bachelor, 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 ☐ WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)	☐ RECEIVED/ NOT REQUIRED
☒ 4. NOTICE OF PLANNED OPERATION	☐ RECEIVED
☒ 5. PUBLIC NOTICE	☐ RECEIVED
☒ 6. NOTICE OF APPLICATION	☐ RECEIVED

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

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4708510287

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:	Senior VP of 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 17th day of March 2016

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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Environmental Protection

WW-6A
(9-13)

API NO. 47- 085 -
OPERATOR WELL NO. Anderson Unit 3H
Well Pad Name: Bachelor 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: 3/18/2016 **Date Permit Application Filed:** 3/18/2016 4708510283

Notice of:

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

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

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

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

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

☑ SURFACE OWNER(s)
Name: PLEASE SEE ATTACHMENT
Address: _____

Name: _____
Address: _____

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

Name: _____
Address: _____

☐ 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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MAR 22 2016
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WW-6A
(8-13)

API NO. 47- 085 -
OPERATOR WELL NO. Anderson Unit 3H
Well Pad Name: Bachelor Pad

4. 0 8 5 1 0 2 8 3

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.

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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

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Environmental Protection

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.**

API NO. 47- 085 -
OPERATOR WELL NO. Anderson Unit 3H
Well Pad Name: Bachelor 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.

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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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Environmental Protection

WW-6A
(8-13)

API NO. 47- 085 -
OPERATOR WELL NO. Anderson Unit 3H
Well Pad Name: Bachelor 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 # 20144028[illegible]
MY COMMISSION EXPIRES JUL[illegible] 2018

Subscribed and sworn before me this 18th day of March 2016.

Natalie Komp Notary Public

My Commission Expires July 18, 2018

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WW-6A Notice of Application Attachment (BACHELOR PAD):
List of Surface Owner(s) with Proposed Disturbance associated with Bachelor Well Pad:

WELL PAD, ROAD and/or OTHER DISTURBANCE – All owners were notified of all well work permit applications.

TM 12 PCL 13

Owner: Marion Ray Bachelor
Address: 2375 192nd Road
Sabetha, KS 66534

4708510283

Owner: Margo Kiehl
Address: 31 Brook Ter
Brockport, NY 14420

Owner: Mary Lee Lilly & Percy Lilly
Address: 110 Mohawk Street
Tiffin, OH 44883

Owner: Joseph Robert Leonian
Address: 343 Cornell Avenue
Morgantown, WV 26505

Owner: John Michael Leonian
Address: 820 Price Street
Morgantown, WV 26505

Owner: Bailey Ann Mills
Address: 611 Churchill Drive
Charleston, WV 25314

Owner: Rita Jarvis
Address: 15 Mountaineer Drive
Williamstown, WV 26187

Owner: Ridgewood Development, LLC
Address: 955 Bull Creek Road
Waverly, WV 26184

Owner: William Paul Harper
Address: 4884 Cooper Road
Athens, OH 45701

Owner: Jo Ellen Day
Address: 14 Ashwood Drive
Vienna, WV 26105

Owner: Nila Ash Salor
(Revocable Trust by Joseph F. Silek, Jr.)
Address: 43 Chester Street
Front Royal, VA 22630

Owner: David Paul Lococo
Address: P.O. Box 542212
Merritt Island, FL 32954

Owner: Mary Lynn Lococo
Address: 151 Leisure Blvd.
Pompano Beach, FL 33064

Owner: Donald Vincent Lococo
Address: 27 Hi Barlow Road
Newtown, CT 06470

Owner: Rose Marie VanHeuveln
Address: 760 NE 114th Street
Biscayne Park, FL 33161

Owner: Theresa Lee Robertson
Address: 3258 Lincoln Way
Hollywood, FL 33026

Owner: Martha Sue Muzio
Address: 6201 Wilmington Way
Flowery Branch, GA 30542

Owner: Michelle Lococo Bushmire
Address: 4473 Swilcan Bridge Lane North
Jacksonville, FL 32224

Owner: Elizabeth Florence Lococo
Address: 1083 Lake Washington Blvd. N, Apt D415
Renton, WA 98056

TM 18 PCL 2

Owner: Edgel K. & Betty Baker
Address: 357 Little Beason Road
Pennsboro, WV 26415

Owner: John Anthony Baker (Heir of Betty Baker)
Address: 304 East Raymond Ave.
Pennsboro, WV 26415

Owner: Timothy Olan Baker (Heir of Betty Baker)
Address: 1607 Niagra Street
Parkersburg, WV 26101

Owner: Kimberly LeDawn McCloy
(Heir of Betty Baker)
Address: 440 Hale Street
Harrisville, WV 26362

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WW-6A3
(1/12)

Operator Well No. Anderson Unit 3H

Multiple Wells on the Bachelor 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: 2/17/2016 **Date of Planned Entry:** *2/27/2016

*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.

4708510283

Notice is hereby provided to:

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

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:	Approx. 39.311582, -81.015094 (Pad Center Coordinates)
County:	Ritchie	Public Road Access:	CR 6/2
District:	Clay	Watershed:	North Fork Hughes River
Quadrangle:	Ellenboro	Generally used farm name:	Bachelor, Marion Ray

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 12 Parcel 13
Tax Map 18 Parcel 2

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

Surface Owners:
Tax Parcel ID: 3-12-13

Owner: Marion Ray Bachelor
Address: 2375 192nd Road
Sabetha, KS 66534

Owner: Margo Kiehl
Address: 31 Brook Ter
Brockport, NY 14420

Owner: Mary Lee Lilly
Address: 110 Mohawk Street
Tiffin, OH 44883

Owner: Joseph Robert Leonian
Address: 343 Cornell Avenue
Morgantown, WV 26505

Owner: John Michael Leonian
Address: 820 Price Street
Morgantown, WV 26505

Owner: Bailey Ann Mills
Address: 611 Churchill Drive
Charleston, WV 25314

Owner: Rita Jarvis
Address: 15 Mountaineer Drive
Williamstown, WV 26187

Owner: Ridgewood Development, LLC
Address: 955 Bull Creek Road
Waverly, WV 26184

Owner: William Paul Harper
Address: 4884 Cooper Road
Athens, OH 45701

Owner: Jo Ellen Harper Day
Address: 14 Ashwood Drive
Vienna, WV 26105

Owner: Nila Ash Salor
(Revocable Trust by Joseph F. Silek, Jr.)
Address: 43 Chester Street
Front Royal, VA 22630

Owner: David Paul Lococo
Address: P.O. Box 542212
Merritt Island, FL 32954

Owner: Mary Lynn Lococo
Address: 151 Leisure Blvd.
Pompano Beach, FL 33064

Owner: Donald Vincent Lococo
Address: 27 Hi Barlow Road
Newtown, CT 06470

Owner: Rose Marie VanHeuveln
Address: 760 NE 114th Street
Biscayne Park, FL 33161

Owner: Theresa Lee Robertson
Address: 3258 Lincoln Way
Hollywood, FL 33026

Owner: Martha Sue Muzio
Address: 6201 Wilmington Way
Flowery Branch, GA 30542

Owner: Michelle Lococo Bushmire
Address: 4473 Swilcan Bridge Lane North
Jacksonville, FL 32224

Owner: Elizabeth Florence Lococo
Address: 1083 Lake Washington Blvd. N, Apt D415
Renton, WA 98056

4708510 2

Surface Owners:
Tax Parcel ID: 3-18-2

Owner: Betty Baker
Address: 357 Little Beason Road
Pennsboro, WV 26415

Mineral Owners:
Tax Parcel ID: 3-12-13

Owner: Marion Ray Bachelor
Address: 2375 192nd Road
Sabetha, KS 66534

Owner: Margo Kiehl
Address: 31 Brook Ter
Brockport, NY 14420

Owner: William Paul Harper
Address: 14 Ashwood Drive
Vienna, WV 26105

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

Owner: Jo Ellen Harper Day
Address: 14 Ashwood Drive
Vienna, WV 26105

Owner: David Paul Lococo
Address: P.O. Box 541072
Merritt Island, FL 32954

Owner: Mary Lynn Lococo
Address: P.O. Box 541072
Merritt Island, FL 32954

Owner: Donald Vincent Lococo
Address: P.O. Box 541072
Merritt Island, FL 32954

Owner: Rose Marie VanHueveln
Address: 760 NE 114th Street
Biscayne Park, FL 33161

Owner: Theresa Lee Robertson
Address: 3258 Lincoln Way
Hollywood, FL 33026

Owner: Martha Sue Lococo
Address: P.O. Box 541072
Merritt Island, FL 32954

Owner: Michelle L. Bushmire
Address: 14129 N. 107th St.
Scottsdale, AZ 85255

Owner: Elizabeth F. Lococo
Address: PO Box 541072
Merritt Island, FL 32954

Owner: Rita Jarvis
Address: 15 Mountaineer Dr.
Williamstown, WV 28187

Owner: Nila Ash Sayor
Address: 68 Sweetbrier Ct.
Front Royal, VA 22630

Owner: Armen Leonian
Address: Box 7 Star Rt.
Woodside, CA 94064

Owner: Mary Lee Lilly
Address: 110 Mohawk St.
Tiffin, OH 44883

Owner: Bailey Ann Mills
Address: 611 Churchill Dr.
Charleston, WV 25314

Mineral Owners:

Tax Parcel ID: 3-18-2

Owner: Carolyn E. G. Farr
Address: PO Box 1126
Bridgeport, WV 26330

Owner: Jean Lawhead Blagg
Address: 8400 Vamo Road – Unit 663
Sarasota, FL 34231

Owner: June L. Baker
Address: HC 83 Box 49
Ellenboro, WV 26346

Owner: Rollin D. Baker and Mina R. Baker
Address: 1338 Hushers Run Rd.
Pennsboro, WV 26415

Owner: Virgel Bunner
Address: RR 2 Box 71
Pennsboro, WV 26415

Owner: Samuel Anthony Baker
Address: Star Route Box 48
Harrisville, WV 26362

Owner: Mark D. Baker
Address: Star Route Box 48
Harrisville, WV 26362

4708510280

Owner: Donzil Leroy Baker
Address: Star Route Box 48
Harrisville, WV 26362

Owner: Linda Collins Baker
Address: 159 Mahone Rd.
Harrisville, WV 26362

Owner: Ricky J. Baker, David L. Baker, Roy S. Baker, and Okey S. Baker
Address: 312 Davis Rd.
Harrisville, WV 26362

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Owner: Sharon S. Baker
Address: 1274 Hushers Run Rd.
Pennsboro, WV 26415

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

Owner: Betty L. Baker
Address: 357 Little Beason Rd
Pennsboro, WV 26415

Owner: Roger Lee Baker
Address: 7617 Gillespie Run Rd.
Harrisville, WV 26362

Owner: Elisa L. Barnhart
Address: 659 Farleys Run Rd.
Pennsboro, WV 26415

Owner: Erosa L. Carr
Address: 659 Farleys Run Rd.
Pennsboro, WV 26415

Owner: Eva L. Collins
Address: 659 Farleys Run Rd.
Pennsboro, WV 26415

Owner: Evonne L. Furbey
Address: 659 Farleys Run Rd.
Pennsboro, WV 26415

Owner: Justin R. Smith
Address: 659 Farleys Run Rd.
Pennsboro, WV 26415

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WW-6A5
(1/12)

Operator Well No. Anderson 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: 03/18/2016 **Date Permit Application Filed:** 03/18/2016

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

4708510283

☒ 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: PLEASE SEE ATTACHMENT
Address:

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	UTM NAD 83 Easting:	498,704m
County:	Ritchie	Northing:	4,351,343m
District:	Clay	Public Road Access:	CR 6/2
Quadrangle:	Ellensboro 7.5'	Generally used farm name:	Marion R. Bachelor, et al
Watershed:	North Fork Hughes River		

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	Address:	1615 Wynkoop Street
Telephone:	(303) 357-7310		Denver, CO 80202
Email:	asteele@anteroresources.com	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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WW-6A5 Notice of Planned Operations Attachment (BACHELOR PAD):

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

TM 12 PCL 13

Owner: Marion Ray Bachelor
Address: 2375 192nd Road
Sabetha, KS 66534

Owner: Margo Kiehl
Address: 31 Brook Ter
Brockport, NY 14420

Owner: Mary Lee Lilly & Percy Lilly
Address: 110 Mohawk Street
Tiffin, OH 44883

Owner: Joseph Robert Leonian
Address: 343 Cornell Avenue
Morgantown, WV 26505

Owner: John Michael Leonian
Address: 820 Price Street
Morgantown, WV 26505

Owner: Bailey Ann Mills
Address: 611 Churchill Drive
Charleston, WV 25314

Owner: Rita Jarvis
Address: 15 Mountaineer Drive
Williamstown, WV 26187

Owner: Ridgewood Development, LLC
Address: 955 Bull Creek Road
Waverly, WV 26184

Owner: William Paul Harper
Address: 4884 Cooper Road
Athens, OH 45701

Owner: Jo Ellen Day
Address: 14 Ashwood Drive
Vienna, WV 26105

Owner: Nila Ash Salor
(Revocable Trust by Joseph F. Silek, Jr.)
Address: 43 Chester Street
Front Royal, VA 22630

Owner: David Paul Lococo
Address: P.O. Box 542212
Merritt Island, FL 32954

Owner: Mary Lynn Lococo
Address: 151 Leisure Blvd.
Pompano Beach, FL 33064

Owner: Donald Vincent Lococo
Address: 27 Hi Barlow Road
Newtown, CT 06470

Owner: Rose Marie VanHeuveln
Address: 760 NE 114th Street
Biscayne Park, FL 33161

Owner: Theresa Lee Robertson
Address: 3258 Lincoln Way
Hollywood, FL 33026

Owner: Martha Sue Muzio
Address: 6201 Wilmington Way
Flowery Branch, GA 30542

Owner: Michelle Lococo Bushmire
Address: 4473 Swilcan Bridge Lane North
Jacksonville, FL 32224

Owner: Elizabeth Florence Lococo
Address: 1083 Lake Washington Blvd. N, Apt D415
Renton, WA 98056

TM 18 PCL 2

Owner: Edgel K. & Betty Baker
Address: 357 Little Beason Road
Pennsboro, WV 26415

Owner: John Anthony Baker (Heir of Betty Baker)
Address: 304 East Raymond Ave.
Pennsboro, WV 26415

Owner: Timothy Olan Baker (Heir of Betty Baker)
Address: 1607 Niagra Street
Parkersburg, WV 26101

Owner: Kimberly LeDawn McCloy
(Heir of Betty Baker)
Address: 440 Hale Street
Harrisville, WV 26362

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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

March 11, 2016

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 Bachelor Pad, Ritchie County
Anderson Unit 3H Well site

4708510283

Dear Mr. Martin,

This well site will be accessed from a DOH permit #03-2016-0090 which has been issued to Antero Resources Corporation for access to the State Road for a well site located off of Ritchie County Route 6/2 SLS.

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

Very Truly Yours,

Gary K. Clayton

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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Antero Resources Corporation Site Construction Plan for

Bachelor 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 Bachelor 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 "Bachelor 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.

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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

Please refer to "Overall Plan Sheet Index & Volumes," "Access Road & Water Containment Pad Plan," "Access Road Plan & Water Containment Pad Plan," and "Access Road & Well Pad Plan," "Well Pad Grading Plan," "Water Containment Pad Grading Plan," "Access Road Profiles," "Access Road Sections," "Well Pad & Water Containment Pad Sections," and "Stockpile Sections" on pages 7-18 of the Site Design.

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

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", "Access Road Plan & Water Containment Pad Plan," and "Access Road & Well Pad Plan," "Well Pad Grading Plan," "Water Containment Pad Grading Plan," "Access Road Profiles," "Access Road Sections," "Well Pad & Water Containment Pad Sections," and "Stockpile Sections" on pages 7-18 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", "Access Road Plan & Water Containment Pad Plan," and "Access Road & Well Pad Plan," "Well Pad Grading Plan," "Water Containment Pad Grading Plan," "Access Road Profiles," "Access Road Sections," "Well Pad & Water Containment Pad Sections," and "Stockpile Sections" on pages 7-18 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.

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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 "Overall Plan Sheet Index & Volumes," "Access Road & Water Containment Pad Plan", "Access Road Plan & Water Containment Pad Plan," and "Access Road & Well Pad Plan," "Well Pad Grading Plan," "Water Containment Pad Grading Plan," "Access Road Profiles," "Access Road Sections," "Well Pad & Water Containment Pad Sections," and "Stockpile Sections" on page 7-18 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.*

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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.

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;*

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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;*

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

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

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

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

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;*

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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*

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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.

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Antero Resources Corporation Erosion and Sediment Control Plan for Bachelor 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 Bachelor Petroleum 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.

4708510283

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 Bachelor 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, utilities, 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. Construct 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, Well Pad, and Water Containment 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, boulders, 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 in 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.

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WV Department of
Environmental Protection

7. If applicable, install all wetland or stream crossings as shown on the plans.
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 2"-4". 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 and water containment pad. 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 well pad and water containment pad areas 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 and water containment pad. The well pad and water containment pad areas shall be stabilized with geotextile fabric & stone and the side slopes with seed and mulch. Install all straw wattles as shown on plans. 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. Any areas disturbed by removal of controls shall be repaired, stabilized, and permanently seeded.

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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 and "Construction Details" on pages 19-26 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 Permanent Seeding Narrative under Vegetation notes on page 26 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," and "Construction Details" on pages 2 and 19-26 in the Site Design for specifications including instructions for installation, inspection, and maintenance for erosion and sediment control BMPs employed at this site.

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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.

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", "Access Road Plan & Water Containment Pad Plan," and "Access Road & Well Pad Plan," maps are included on pages 7-10 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", "Access Road Plan & Water Containment Pad Plan," and "Access Road & Well Pad Plan," maps are included on pages 7-10 of the Site Design locate all proposed erosion and sediment control BMPs.

Office of Oil and Gas
MAR 22 2016
WV Department of
Environmental Protection

BACHELOR WELL PAD & WATER CONTAINMENT PAD

SITE DESIGN & CONSTRUCTION PLAN, EROSION & SEDIMENT CONTROL PLANS

CLAY DISTRICT, RITCHIE COUNTY, WEST VIRGINIA
BONDS CREEK WATERSHED

LOCATION COORDINATES:
ACCESS ROAD ENTRANCE
LATITUDE: 39.313139 LONGITUDE: -81.023456 (NAD 83)
N 4351526.19 E 497977.90 (UTM ZONE 17 METERS)

CENTER OF TANK "A"
LATITUDE: 39.314146 LONGITUDE: -81.025823 (NAD 83)
N 4351638.83 E 498204.94 (UTM ZONE 17 METERS)

CENTER OF TANK "B"
LATITUDE: 39.314215 LONGITUDE: -81.020319 (NAD 83)
N 4351646.46 E 498248.37 (UTM ZONE 17 METERS)

CENTROID OF PAD
LATITUDE: 39.311582 LONGITUDE: -81.015064 (NAD 83)
N 4351354.21 E 498698.69 (UTM ZONE 17 METERS)

APPROVED
WVDEP OOG
5/17/2016

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 WITHIN FEMA FLOOD ZONE "X" PER FEMA FLOOD MAP #54085C0100C

MISS UTILITY STATEMENT:
ANTERO RESOURCES CORPORATION WILL NOTIFY MISS UTILITY OF WEST VIRGINIA FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN, TICKET #1604013632. 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 MW-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 OCTOBER 2014 AND JANUARY 2016 BY KC HARVEY ENVIRONMENTAL, LLC 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 JANUARY 08, 2016 STREAM AND WETLAND DELINEATION INDEX MAP WAS PREPARED BY KC HARVEY ENVIRONMENTAL, LLC 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:
A SUBSURFACE INVESTIGATION OF THE PROPOSED SITE WAS PERFORMED BY PENNSYLVANIA SOIL & ROCK, INC. BETWEEN FEBRUARY 25, 2016 & MARCH 2, 2016. THE REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC., DATED MARCH 10, 2016, 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:

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ENGINEER/SURVEYOR:
NAVITUS ENGINEERING, INC.
CYRUS S. KUMP, PE – PROJECT MANAGER/ENGINEER
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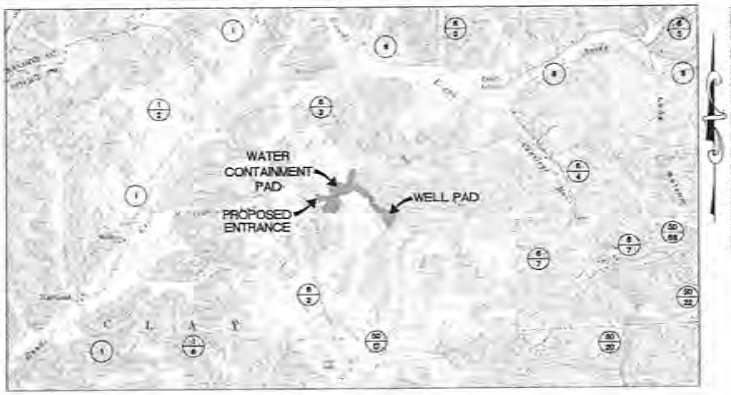
GEOTECHNICAL:
PENNSYLVANIA SOIL & ROCK, INC.
CHRISTOPHER W. SAMIOS – PROJECT ENGINEER
OFFICE: (412) 372-4000 CELL: (412) 589-0662

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 250 FEET OF THE WELL(S) BEING DRILLED.
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 825 FEET OF THE CENTER OF THE WELL PAD.

USGS 7.5 ELLENBORO & PENNSBORO QUAD MAPS

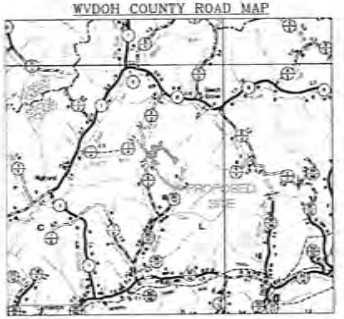


WEST VIRGINIA STATE PLANE COORDINATE SYSTEM
NORTH ZONE, NAD83
ELEVATIONS BASED ON NAVD88
ESTABLISHED BY SURVEY GRADE GPS & OPUS POST-PROCESSING

WEST VIRGINIA COUNTY MAP

(NOT TO SCALE)

WVDOH COUNTY ROAD MAP



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 – OVERALL PLAN SHEET INDEX & VOLUMES
8–9 – ACCESS ROAD & WATER CONTAINMENT PAD PLAN
10 – ACCESS ROAD & WELL PAD PLAN
11 – WELL PAD GRADING PLAN
12 – WATER CONTAINMENT PAD GRADING PLAN
13 – ACCESS ROAD PROFILES
14–15 – ACCESS ROAD SECTIONS
16 – ACCESS ROAD PROFILES & SECTIONS
17 – WELL PAD & WATER CONTAINMENT PAD SECTIONS
18 – STOCKPILE SECTIONS
19–26 – CONSTRUCTION DETAILS
27–28 – ACCESS ROAD & WATER CONTAINMENT PAD RECLAMATION PLAN
29 – ACCESS ROAD & WELL PAD RECLAMATION PLAN
GE500–GE506 – GEOTECHNICAL DETAILS

BACHELOR LIMITS OF DISTURBANCE AREA (AC)	
Total Site	
Access Road "A" (2,595')	10.45
Access Road "B" (706')	1.19
Well Pad	5.43
Water Containment Pad	3.19
Excess/Topsoil Material Stockpiles	10.77
Total Affected Area	**31.03**
Total Wooded Acres Disturbed	29.30
Impacts to Marion R. Bachelor, Et Al TM 12-13	
Access Road "A" (2,595')	10.45
Access Road "B" (706')	1.19
Well Pad	5.09
Water Containment Pad	3.19
Excess/Topsoil Material Stockpiles	10.77
Total Affected Area	**30.69**
Total Wooded Acres Disturbed	28.96
Impacts to Edgel K. & Betty Baker TM 18-62	
Well Pad	0.34
Total Affected Area	**0.34**
Total Wooded Acres Disturbed	0.34

Proposed Well Name	WV North NAD 27	WV North NAD 83	UTM (METERS) Zone 17	NAD 83 Lat. & Long.
Raines	N 256166.85	N 256222.46	N 4351036.70	LAT 39-18-41.7259
Unit 1H	E 1571067.35	E 1539805.42	E 498636.31	LONG -81-00-54.4307
Raines	N 256180.97	N 256214.58	N 4351354.01	LAT 39-18-41.8868
Unit 2H	E 1571277.54	E 1539831.21	E 498697.76	LONG -81-00-54.3753
Raines	N 256172.05	N 256205.70	N 4351351.33	LAT 39-18-41.8278
Unit 3H	E 1571276.54	E 1539835.83	E 498699.20	LONG -81-00-54.3730
Anderson	N 256193.20	N 256196.82	N 4351348.65	LAT 39-18-41.5148
Unit 1H	E 1571281.13	E 1539840.99	E 498700.64	LONG -81-00-54.2587
Anderson	N 256154.32	N 256187.94	N 4351345.96	LAT 39-18-41.4078
Unit 2H	E 1571283.72	E 1539844.78	E 498702.09	LONG -81-00-54.1904
Anderson	N 256145.44	N 256179.06	N 4351343.28	LAT 39-18-41.3408
Unit 3H	E 1571290.31	E 1539849.38	E 498703.53	LONG -81-00-54.1360
Well Pad Elevation	**1,193.0**			

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 CSR 35-8.

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!!

BACHELOR EPHEMERAL STREAM IMPACT (LINEAR FEET)					
Stream and Impact Cause	Permanent Impacts: Culvert / Fill (LF)	Permanent Impacts: Inlets/Outlets Structures (LF)	Temp. Impacts: Cofferdam/ E&S Controls (LF)	Temp. Disturb. Distance to L.O.D. (LF)	Total Disturbance (LF)
Stream 3 (Water Containment Pad)	0	0	0	14	14
Stream 9 (Access Road "A")	0	0	25	23	48
Stream 9 (Access Road "A")	0	0	0	14	14
Stream 11 (Access Road "A")	0	0	0	54	54
Stream 14 (Stockpile "B")	0	0	0	5	5
Stream 18 (Access Road "A")	8	19	22	16	65

NAVITUS ENERGY ENGINEERING
Telephone: (888) 862-4185 | www.NavitusEng.com

REVISION	DATE
REVISED PER DEP COMMENTS	04/29/2016

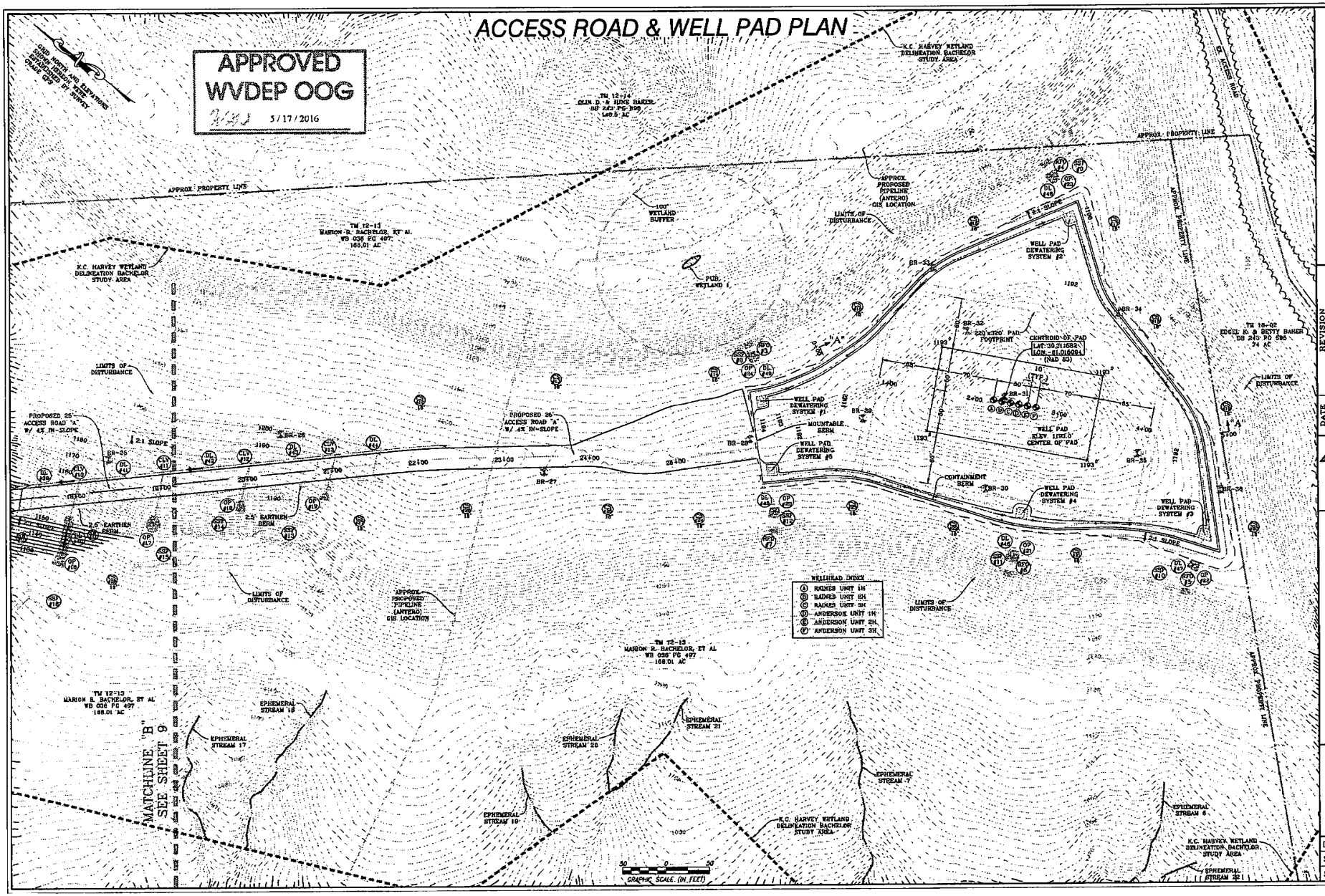
Antero

THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

COVER SHEET
BACHELOR
WELL PAD & WATER CONTAINMENT PAD
CLAY DISTRICT
RITCHIE COUNTY, WEST VIRGINIA

DATE: 03/11/2016
SCALE: AS SHOWN
SHEET 1 OF 29

ACCESS ROAD & WELL PAD PLAN



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ENERGY ENGINEERING
Telephone: (888) 662-4165 | www.NavitusEng.com

DATE	REVISION
04/29/2016	REVISED PER DEP COMMENTS

Antero

THIS DOCUMENT WAS PREPARED FOR: ANTERO RESOURCES CORPORATION

ACCESS ROAD & WELL PAD PLAN

BACHELOR

WELL PAD & WATER CONTAINMENT PAD
CLAY DISTRICT
RITCHIE COUNTY, WEST VIRGINIA

CHRIS B. KIMP REGISTERED PROFESSIONAL ENGINEER STATE OF WEST VIRGINIA
04/29/2016

DATE: 03/11/2016
SCALE: 1" = 50'
SHEET 10 OF 29

BACHELOR WELL PAD & WAT

SITE DESIGN & CONST

EROSION & SEDIMENT C

CLAY DISTRICT, RITCHIE COUNT
BONDS CREEK WATE

LOCATION COORDINATES:

ACCESS ROAD ENTRANCE
LATITUDE: 39.313130 LONGITUDE: -81.023456 (NAD 83)
N 4351526.19 E 497977.90 (UTM ZONE 17 METERS)

CENTER OF TANK "A"
LATITUDE: 39.314146 LONGITUDE: -81.020823 (NAD 83)
N 4351638.83 E 498204.94 (UTM ZONE 17 METERS)

CENTER OF TANK "B"
LATITUDE: 39.314215 LONGITUDE: -81.020319 (NAD 83)
N 4351646.46 E 498248.37 (UTM ZONE 17 METERS)

CENTROID OF PAD
LATITUDE: 39.311582 LONGITUDE: -81.015094 (NAD 83)
N 4351354.21 E 498698.69 (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 WITHIN FEMA FLOOD ZONE "X" PER FEMA FLOOD MAP #54085C0100C.

MISS UTILITY STATEMENT:

ANTERO RESOURCES CORPORATION WILL NOTIFY MISS UTILITY OF WEST VIRGINIA FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN; TICKET #1604013832. IN ADDITION, MISS UTILITY WILL BE CONTACTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION FOR THIS PROJECT.

ENTRANCE PERMIT:

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PROJECT CONTACTS:

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CHRISTOPHER W. SAMIOS - PROJECT ENGINEER
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RESTRICTIONS NOTES:

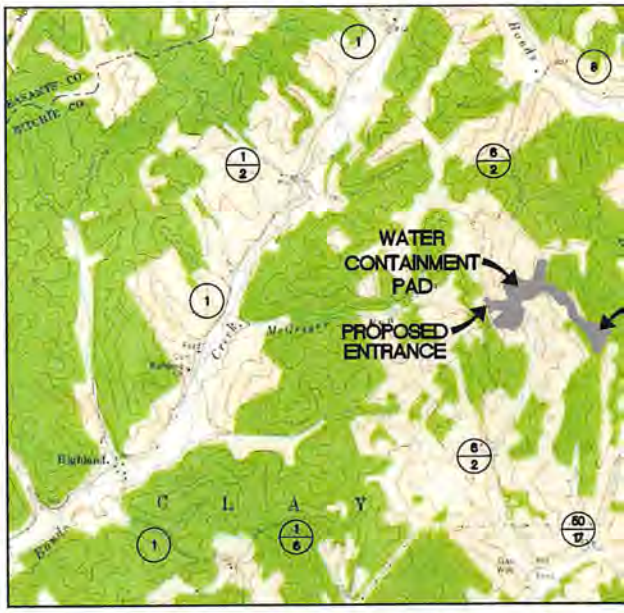
1. THERE ARE NO PERENNIAL STREAMS, WETLANDS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE WELL PAD AND LOD.
2. THERE ARE NO NATURALLY PRODUCING TROUT STREAMS WITHIN 300 FEET OF THE WELL PAD AND LOD.
3. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE WELL PAD AND LOD.
4. THERE ARE NO APPARENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELL(S) BEING DRILLED.
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 REPRODUCTIONS IN GRAY SCALE OR COLOR MAY RESULT IN A LOSS OF INFORMATION AND SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.

USGS 7.5 ELLENBORO & PENNS



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.

ER CONTAINMENT PAD
RUCTION PLAN,
CONTROL PLANS

Y, WEST VIRGINIA
SHED

ORO QUAD MAPS

WEST VIRGINIA STATE PLANE COORDINATE SYSTEM
NORTH ZONE, NAD83
ELEVATION BASED ON NAVD88
ESTABLISHED BY SURVEY GRADE GPS & OPUS
POST-PROCESSING

SHEET INDEX:

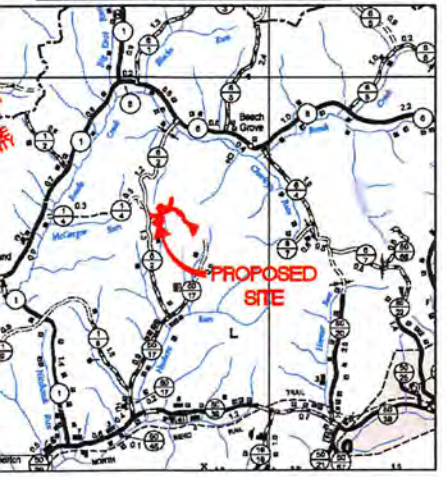
1 – COVER SHEET
2 – CONSTRUCTION AND E&S CONTROL NOTES
3 – LEGEND
4 – MATERIAL QUANTITIES
5 – STORM DRAINAGE COMPUTATIONS
6 – EXISTING CONDITIONS
7 – OVERALL PLAN SHEET INDEX & VOLUMES
8–9 – ACCESS ROAD & WATER CONTAINMENT PAD PLAN
10 – ACCESS ROAD & WELL PAD PLAN
11 – WELL PAD GRADING PLAN
12 – WATER CONTAINMENT PAD GRADING PLAN
13 – ACCESS ROAD PROFILES
14–15 – ACCESS ROAD SECTIONS
16 – ACCESS ROAD PROFILES & SECTIONS
17 – WELL PAD & WATER CONTAINMENT PAD SECTIONS
18 – STOCKPILE SECTIONS
19–26 – CONSTRUCTION DETAILS
27–28 – ACCESS ROAD & WATER CONTAINMENT PAD RECLAMATION PLAN
29 – ACCESS ROAD & WELL PAD RECLAMATION PLAN
GE500–GE506 – GEOTECHNICAL DETAILS

4708510288

Michael Hoff 3/30/16

BACHELOR LIMITS OF DISTURBANCE AREA (AC)	
Total Site	
Access Road "A" (2,595')	10.45
Access Road "B" (706')	1.19
Well Pad	5.43
Water Containment Pad	3.19
Excess/Topsoil Material Stockpiles	10.77
Total Affected Area	**31.03**
Total Wooded Acres Disturbed	29.30
Impacts to Marion R. Bachelor, Et Al TM 12-13	
Access Road "A" (2,595')	10.45
Access Road "B" (706')	1.19
Well Pad	5.09
Water Containment Pad	3.19
Excess/Topsoil Material Stockpiles	10.77
Total Affected Area	**30.69**
Total Wooded Acres Disturbed	28.96
Impacts to Edgel K. & Betty Baker TM 18-02	
Well Pad	0.34
Total Affected Area	**0.34**
Total Wooded Acres Disturbed	0.34

WVDOH COUNTY ROAD MAP



Proposed Well Name	WV North NAD 27	WV North NAD 83	UTM (METERS) Zone 17	NAD 83 Lat & Long
Raines Unit 1H	N 299189.85 E 1571267.35	N 299223.46 E 1539826.42	N 4351356.70 E 498696.31	LAT 39-18-41.7759 LONG -81-00-54.4397
Raines Unit 2H	N 299180.97 E 1571271.94	N 299214.58 E 1539831.01	N 4351354.01 E 498697.76	LAT 39-18-41.6888 LONG -81-00-54.3793
Raines Unit 3H	N 299172.09 E 1571276.54	N 299205.70 E 1539835.60	N 4351351.33 E 498699.20	LAT 39-18-41.6018 LONG -81-00-54.3190
Anderson Unit 1H	N 299163.20 E 1571281.13	N 299196.82 E 1539840.19	N 4351348.65 E 498700.64	LAT 39-18-41.5148 LONG -81-00-54.2587
Anderson Unit 2H	N 299154.32 E 1571285.72	N 299187.93 E 1539844.78	N 4351345.96 E 498702.09	LAT 39-18-41.4278 LONG -81-00-54.1984
Anderson Unit 3H	N 299145.44 E 1571290.31	N 299179.05 E 1539849.38	N 4351343.28 E 498703.53	LAT 39-18-41.3408 LONG -81-00-54.1380
Well Pad Elevation	1,193.0			

BACHELOR EPHEMERAL STREAM IMPACT (LINEAR FEET)					
Stream and Impact Cause	Permanent Impacts		Temp. Impacts	Temp. Disturb.	Total Disturbance (LF)
	Culvert / Fill (LF)	Inlets/Outlets Structures (LF)	Cofferdam/ E&S Controls (LF)	Distance to L.O.D. (LF)	
Stream 3 (Water Containment Pad)	0	0	0	14	14
Stream 8 (Access Road "A")	0	0	25	23	48
Stream 9 (Access Road "A")	0	0	0	14	14
Stream 11 (Access Road "A")	0	0	0	54	54
Stream 14 (Stockpile "B")	0	0	0	8	8
Stream 16 (Access Road "A")	8	19	22	16	65

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!!

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WV Department of
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DATE	REVISION

Antero Resources

THIS DOCUMENT WAS PREPARED FOR: ANTERO RESOURCES CORPORATION

COVER SHEET

BACHELOR
WELL PAD & WATER CONTAINMENT PAD
CLAY DISTRICT
RITCHIE COUNTY, WEST VIRGINIA

CYRUS B. KUHN
REGISTERED
19578
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
3/31/2016

DATE: 03/11/2016
SCALE: AS SHOWN
SHEET 1 OF 29