



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Friday, June 5, 2020
WELL WORK PERMIT
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET
DENVER, CO 80202

Re: Permit approval for VULCAN 2H
47-095-02702-00-00

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

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

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

A handwritten signature in blue ink, appearing to read 'James A. Martin', is positioned above the printed name and title.

James A. Martin
Chief

Operator's Well Number: VULCAN 2H
Farm Name: RICHARD D. PYLES
U.S. WELL NUMBER: 47-095-02702-00-00
Horizontal 6A New Drill
Date Issued: 6/5/2020

PERMIT CONDITIONS

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

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. 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.
10. 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.

API Number: _____

PERMIT CONDITIONS

11. 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.

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

1) Well Operator: Antero Resources Corporation 494507062 095 - Tyler Ellsworth Porter Falls 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Vulcan Unit 2H Well Pad Name: Pyles Pad

3) Farm Name/Surface Owner: Richard D. Pyles Public Road Access: US Route 34

4) Elevation, current ground: 1113' Elevation, proposed post-construction: ~1081'

5) Well Type (a) Gas Oil Underground Storage

Other _____

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 7100' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2850#

8) Proposed Total Vertical Depth: 7100' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 9800' MD ✓

11) Proposed Horizontal Leg Length: 1924' ✓

12) Approximate Fresh Water Strata Depths: 61' ✓

13) Method to Determine Fresh Water Depths: 47-095-01958 ✓

14) Approximate Saltwater Depths: 2200' ✓

15) Approximate Coal Seam Depths: None Identified

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

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

(a) If Yes, provide Mine Info: Name: _____

Depth: _____

Seam: _____

Owner: _____

John Cragin Blevins

Digitally signed by John Cragin Blevins
Date: 2020.04.29 08:46:30 -04'00'

JCB
4/29/2020

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WW-6B
(04/15)

API NO. 47- 095 -
OPERATOR WELL NO. Vulcan Unit 2H
Well Pad Name: Pyles 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#	80	80 ✓	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	300	300 ✓	CTS, 417 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500 ✓	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	9800	9800 ✓	2288 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

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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"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	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"	0.415"	12,630	2500	Less-HPOZ & TBI - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

PACKERS

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

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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.

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4/29/2020

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): 23.71 acres

22) Area to be disturbed for well pad only, less access road (acres): 10.00 acres

23) Describe centralizer placement for each casing string:

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

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

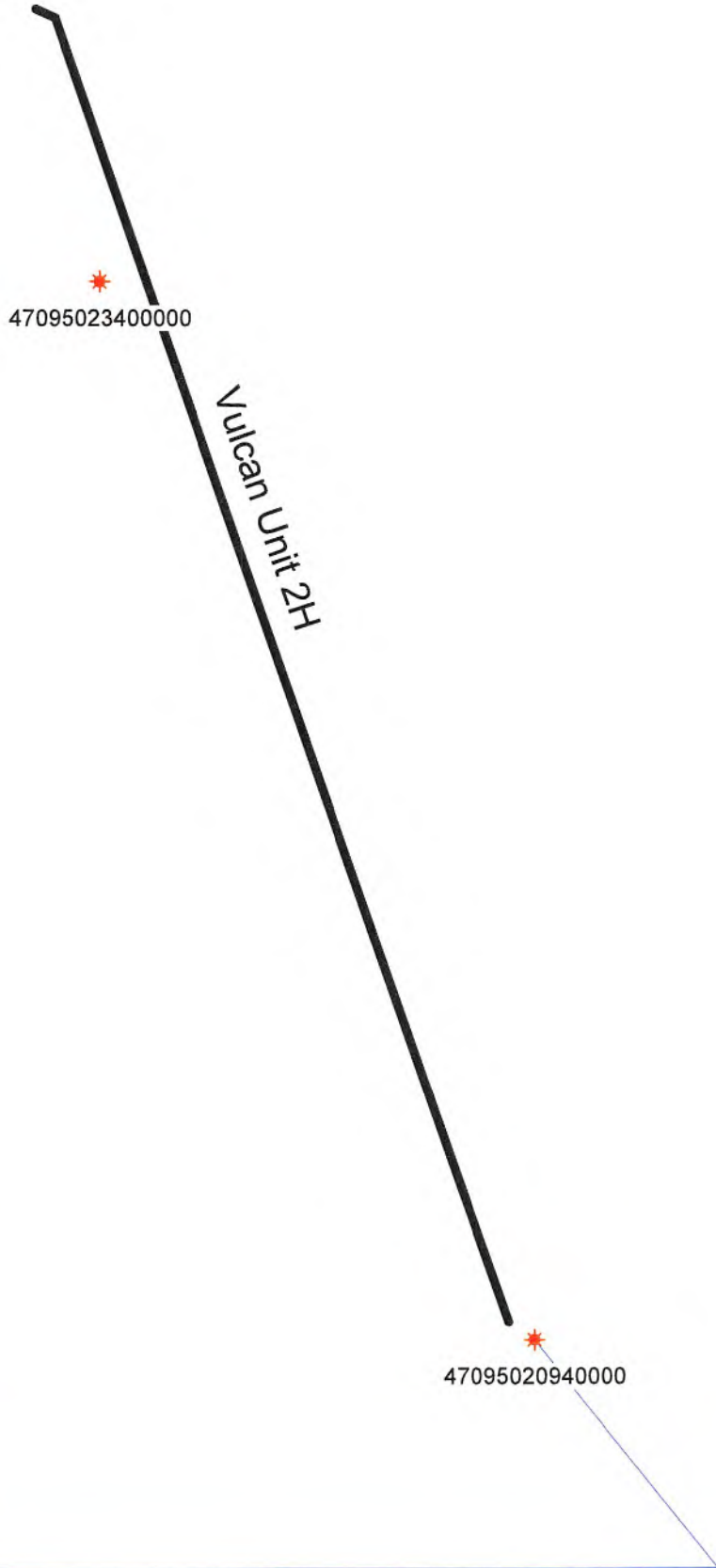
Conductor: no additives, Class A cement.
Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake
Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat
Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51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

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25) Proposed borehole conditioning procedures:

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

*Note: Attach additional sheets as needed.



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Antero Resources Corporation	
Vulcan Unit 2H - AOR	
	
WELL SYMBOLS  Gas Well	
April 14, 2020	

UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
47095023400000	HICKORY PIGNUT	1 V-1	ALLIANCE PETR CORP	ALLIANCE PETR CORP	6,000	5051 - 5480	Benson, Alexander	Big Injun, Berea
47095020940000	LISBY DONALD J & JUDITH A	T1-03-7	JAY-BEE OIL & GAS	JAY-BEE OIL & GAS	13,754	6774 - 13742	Marcellus	

4709502702

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WW-9
(4/16)

API Number 47 - 095
Operator's Well No. Vulcan Unit 2H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Antero Resources Corporation OP Code 494507062

Watershed (HUC 10) Outlet Middle Island Creek Quadrangle Porter Falls 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 stacked and hauled off site.)

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

Proposed Disposal Method For Treated Pit Wastes:

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

JCB
4/29/2020

Will closed loop system be used? If so, describe: Yes, fluids stored in tanks, cuttings removed offsite and taken to landfill.

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

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

Additives to be used in drilling medium? Please See Attachment

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

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

-Landfill or offsite name/permit number? Meadowfill Landfill (Permit #SWF-1032-98), Northwestern Landfill (Permit # SWF-1025/WV0108410)

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 *Gretchen Kohler*
Company Official (Typed Name) Gretchen Kohler
Company Official Title Senior Environmental & Regulatory Manager

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WV Department of
Environmental Protection

Subscribed and sworn before me this 21st day of April, 20 20

Megan Griffith Notary Public
My commission expires 3.13.2022

MEGAN GRIFFITH
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20184011686
MY COMMISSION EXPIRES MARCH 13, 2022

WW-9
(4/16)

API Number 47 - 095
Operator's Well No. Vulcan Unit 2H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

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- Other (Explain Northwestern Landfill Permit #SWF-1025)

JCS
4/29/2020

Will closed loop system be used? If so, describe: Yes, fluids stored in tanks, cuttings removed offsite and taken to landfill.

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

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

Additives to be used in drilling medium? Please See Attachment

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

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

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

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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 *Gretchen Kohler*
Company Official (Typed Name) Gretchen Kohler
Company Official Title Senior Environmental & Regulatory Manager

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Environmental Protection

Subscribed and sworn before me this 21st day of April, 20 20

Megan Griffith Notary Public
My commission expires 3.13.2022

MEGAN GRIFFITH
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20184011686
MY COMMISSION EXPIRES MARCH 13, 2022

Antero Resources Corporation

Proposed Revegetation Treatment: Acres Disturbed 23.71 Prevegetation pH _____

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

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

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

Access Road "A" (4.60 acres) + Well Pad (10.00 acres) + Excess/Topsoil Material Stockpile (9.11 acres) = 23.71 Acres

Seed Mixtures

Temporary

Permanent

Seed Type	lbs/acre
Annual Ryegrass	40
Field Bromegrass	40

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

See attached Table IV-3 for additional seed type (Pyles Pad Design)

See attached Table IV-4A for additional seed type (Pyles Pad Design)

*or type of grass seed requested by surface owner

*or type of grass seed requested by surface owner

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: J Cragin Blevins

Comments: _____

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Title: Oil & Gas Inspector Date: 4/29/2020

Field Reviewed? (X) Yes () No

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

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911 Address
509 Nash Run Road
Middleboure, WV 26149

Well Site Safety Plan

Antero Resources

Well Name: Pyles Unit 5H, Friend Unit 1H-2H, Prosper Unit 1H-2H, Seagrave Unit 1H-2H & Vulcan Unit 1H-2H

Pad Location: PYLES PAD

Tyler County/West Union District

JCB
4/29/2020

GPS Coordinates:

Entrance - Lat 39°50'09.36"/Long -80°83'99.27" (NAD83)

Pad Center - Lat 39°50'38.15"/Long -80°83'71.12" (NAD83)

Driving Directions:

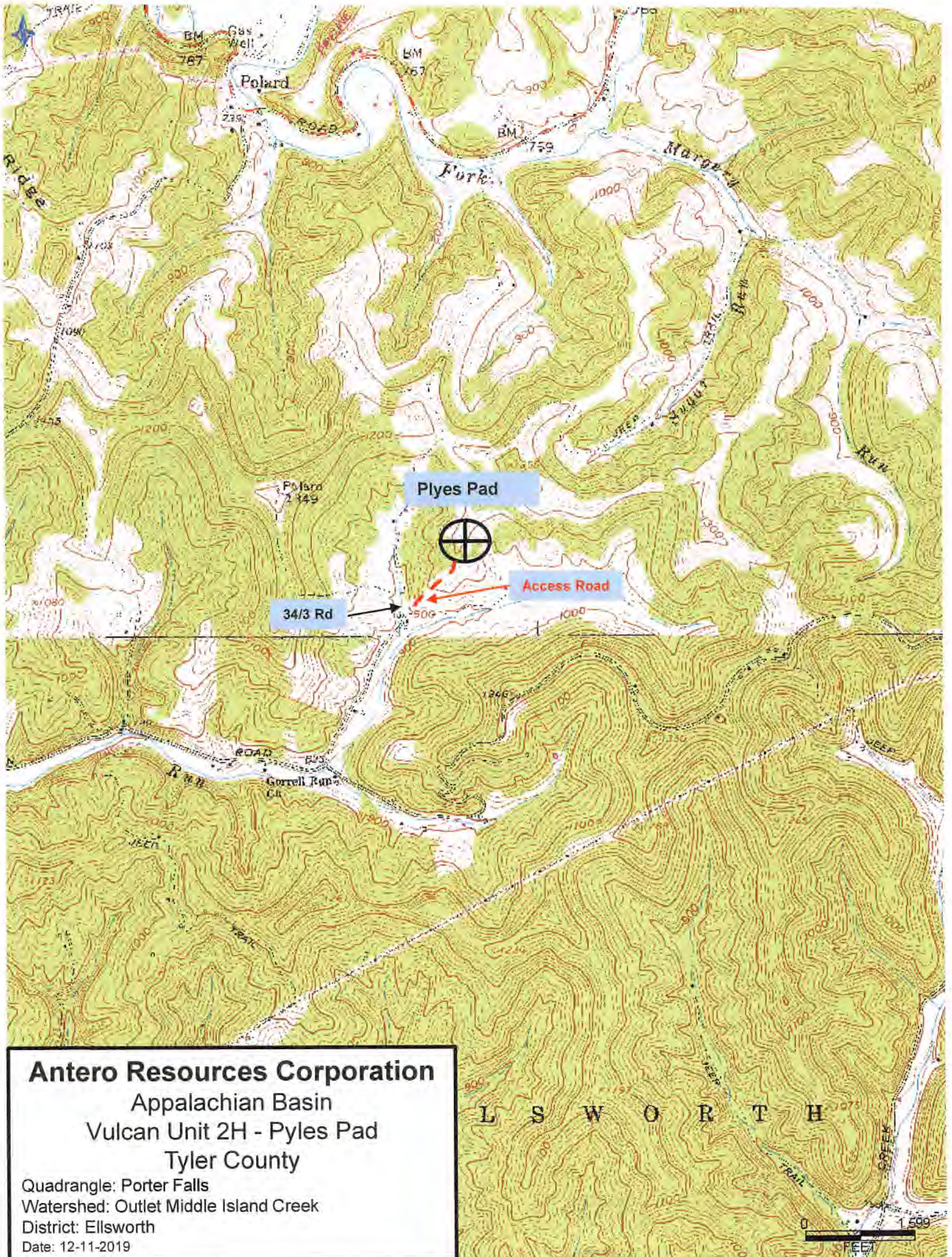
From Middleboure: Head northwest on Main Street toward Court Street/Dodd Street for 0.2 miles - turn right onto Park Avenue for 397 feet - turn left onto Gorrell Run Road for 0.4 miles - turn left onto Gorrell Run Road for 0.2 miles - continue onto Gorrell Run Road for 2.8 miles - continue straight onto Co Road 34/3 for 0.8 miles - lease road will be on your left.

Alternate Route:

From Sisterville: Head southeast on Diamond Street toward Wells Street for 308 feet - follow WV-18 to Park Avenue in Middleboure for 11.9 miles - take Gorrell Run Road to Co Road 34/3 for 4.2 miles - lease road will be on your left.

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

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Antero Resources Corporation
Appalachian Basin
Vulcan Unit 2H - Pyles Pad
Tyler County

Quadrangle: Porter Falls
Watershed: Outlet Middle Island Creek
District: Ellsworth
Date: 12-11-2019

W E S T V I R G I N I A



1,119' to Top Hole

259' to Bottom Hole

BTM Hole
7.5' Spot

Antero Resources Well No. Vulcan 2H

Antero Resources Corporation



	Bearing	Dist.
L1	S 35°34' E	1,236.3'
L2	S 76°43' W	2,061.8'
L3	N 74°29' W	1,528.7'
L4	N 46°34' E	1,187.8'
L5	S 50°46' E	299.3'

Legend

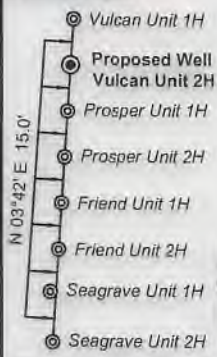
- Proposed gas well
- Found corner, as noted
- Existing Well, as noted
- Digitized Well
- Existing Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)

TOP HOLE LATITUDE 39 - 32 - 30
BTM HOLE LATITUDE 39 - 30 - 00

Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Vulcan Unit 2H Top Hole coordinates are
N: 368,468.95' Latitude: 39°30'14.23"
E: 1,622,667.17' Longitude: 80°50'14.27"
Bottom Hole coordinates are
N: 366,451.39' Latitude: 39°29'54.41"
E: 1,623,496.71' Longitude: 80°50'03.31"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,372,724.604m N: 4,372,114.167m
E: 514,002.953m E: 514,265.921m
Plat orientation and corner and well references are based upon the grid north meridian.
Well location references are based upon the magnetic meridian.

Notes:
Well No. Vulcan Unit 2H
UTM Zone 17, NAD 1927
Top Hole Coordinates
N: 14,345,466.05'
E: 1,686,310.58'
Point of Entry Coordinates
N: 14,345,280.70'
E: 1,686,545.43'
Bottom Hole Coordinates
N: 14,343,463.30'
E: 1,687,173.39'

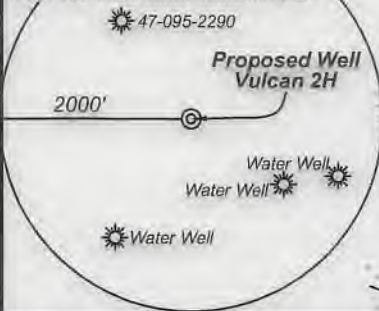
Wellhead Layout



Well Location References



Note: 3 water wells were found within 2000' of proposed well. No occupied dwellings or buildings 2,500 square feet or larger used to house or shelter dairy cattle or poultry husbandry are located within 625' of the center of the well pad.



ID	T/M/Par	Owner	DB/PG	Acres
1	16-42	Richard D. Pyles	379/20	168.5
2	16-42.2	Bonnie J. Hair	569/105	2.44
3	16-42.1	Richard D. Pyles	336/815	4.56
4	16-42.3	Richard D. Pyles	379/20	3.00
5	16-44	Robert A. Pyles, et al	335/482	87.82
6	15-32	William S. & Opal Marie Nash	335/188	78.58
7	15-38	Rodney A. & Candis L. Nash	351/701	85.48
8	16-23.1	Bruce Winkelmann	334/195	3.30
9	16-44.1	Carl Straight	543/598	3.70
10	16-23	Joseph L. Sitko	314/462	29.70
11	16-24	James K. Eastham II	379/34	64.00
12	16-21	Henry Louis Croasmun	531/56	61.73
13	16-22	Joseph L. Sitko, Jr., et ux	296/13	64.00
14	15-30.1	Roger D. Blizard, et al	343/427	101.38
15	15-10	Darrell J. Sorrell	335/155	34.13
16	16-1	Darrell J. Sorrell	335/155	35.25

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

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



FILE NO: 190-54-E-19
DRAWING NO: Vulcan Unit 2H Well Plat
SCALE: 1" = 1000'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

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

DATE: April 14 2020
OPERATOR'S WELL NO. Vulcan 2H
API WELL NO. H47
47 - 095 - 02702
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
Proposed 1,081'
LOCATION: ELEVATION: Existing 1,113' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Porter Falls
DISTRICT: Ellsworth COUNTY: Tyler
SURFACE OWNER: Richard D. Pyles ACREAGE: 168.5
ROYALTY OWNER: Richard D. Pyles, et ux; Helen E. Boggs; Joseph L. Sitko, et ux LEASE NO: ACREAGE: 81.482; 177; 45
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY)
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 7,100' TVD / 9,800' MD

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

259' to Bottom Hole

BTM Hole
7.5' Spot

**Antero Resources
Well No. Vulcan 2H**

Antero Resources Corporation



	Bearing	Dist.
L1	S 35°34' E	1,236.3'
L2	S 76°43' W	2,061.8'
L3	N 74°29' W	1,528.7'
L4	N 46°34' E	1,187.8'
L5	S 50°46' E	299.3'

Legend

- Proposed gas well
- Found corner, as noted
- Existing Well, as noted
- Digitized Well
- Existing Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)

**TOP HOLE LATITUDE 39 - 32 - 30
BTM HOLE LATITUDE 39 - 30 - 00**

Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Vulcan Unit 2H Top Hole coordinates are
N: 368,468.95' Longitude: 39°30'14.23"
E: 1,622,667.17' Longitude: 80°50'14.27"
Bottom Hole coordinates are
N: 366,451.39' Longitude: 39°29'54.41"
E: 1,623,496.71' Longitude: 80°50'03.31"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,372,724.604m N: 4,372,114.167m
E: 514,002.953m E: 514,265.921m
Plat orientation and corner and well references are based upon the grid north meridian.
Well location references are based upon the magnetic meridian.

Notes:
Well No. Vulcan Unit 2H
UTM Zone 17, NAD 1927
Top Hole Coordinates
N: 14,345,466.05'
E: 1,686,310.58'
Point of Entry Coordinates
N: 14,345,280.70'
E: 1,686,545.43'
Bottom Hole Coordinates
N: 14,343,463.30'
E: 1,687,173.39'

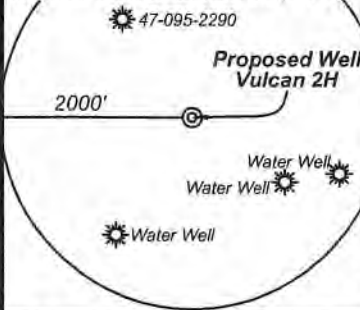
Wellhead Layout



Well Location References



Note: 3 water wells were found within 2000' of proposed well. No occupied dwellings or buildings 2,500 square feet or larger used to house or shelter dairy cattle or poultry husbandry are located within 625' of the center of the well pad.



ID	TM/Par	Owner	DB/PG	Acres
1	16-42	Richard D. Pyles	379/20	168.5
2	16-42.2	Bonnie J. Hair	569/105	2.44
3	16-42.1	Richard D. Pyles	336/815	4.56
4	16-42.3	Richard D. Pyles	379/20	3.00
5	16-44	Robert A. Pyles, et al	335/482	87.82
6	15-32	William S. & Opal Marie Nash	335/188	78.58
7	15-38	Rodney A. & Candis L. Nash	351/701	85.48
8	16-23.1	Bruce Winkelmann	334/195	3.30
9	16-44.1	Carl Straight	543/ 598	3.70
10	16-23	Joseph L. Sitko	314/462	29.70
11	16-24	James K. Eastham II	379/34	64.00
12	16-21	Henry Louis Croasmun	531/56	61.73
13	16-22	Joseph L. Sitko, Jr., et ux	296/13	64.00
14	15-30.1	Roger D. Blizard, et al	343/427	101.38
15	15-10	Darrell J. Sorrell	335/155	34.13
16	16-1	Darrell J. Sorrell	335/155	35.25

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

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



FILE NO: 190-54-E-19
DRAWING NO: Vulcan Unit 2H Well Plat
SCALE: 1" = 1000'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

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

DATE: April 14 2020
OPERATOR'S WELL NO. Vulcan 2H
API WELL NO. H&A
47 - 095 - 02702
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
Proposed 1,081'
LOCATION: ELEVATION: Existing 1,113' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Porter Falls
DISTRICT: Ellsworth COUNTY: Tyler
SURFACE OWNER: Richard D. Pyles ACREAGE: 168.5
ROYALTY OWNER: Richard D. Pyles, et ux; Helen E. Boggs; Joseph L. Sitko, et ux LEASE NO: ACREAGE: 81.482; 177; 45
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY)
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 7,100' TVD
9,800' MD

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

WW-6A1

Operator's Well Number Vulcan Unit 2H

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
<u>Richard D. Pyles Lease (TM 16 PCL 42)</u>			
Richard D. Pyles	Antero Resources Corporation	1/8+	0562/0590
<u>Joseph L. Sitko Jr. et ux Lease</u>			
Joseph L. Sitko Jr. et ux	TNG LLC	1/8	0375/0384
TNG LLC	Statoil USA Onshore Properties	Assignment	0423/0152
Statoil USA Onshore Properties	EQT Production Company	Assignment	0539/0239
EQT Production Company	Antero Resources Corporation	Assignment	0022/0144
<u>Richard D. Pyles Lease (TM 16 PCL 42.1)</u>			
Richard D. Pyles	Antero Resources Corporation	1/8+	0562/0590

*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
(5/13)

Operator's Well No. Vulcan Unit 2H

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

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

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

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Helen E. Boggs Lease				
	Helen E. Boggs Energy Production Inc.	Energy Production Inc. Antero Resources Corporation	1/8+ Assignment	0429/0656 0465/0312

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

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

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

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

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

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Office of Oil and Gas

APR 29 2020

WV Department of
Environmental Protection

Well Operator: Antero Resources Corporation
By: Tim Rady
Its: VP of Land



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

April 21, 2020

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

RE: Vulcan Unit 2H
Quadrangle: Porter Falls 7.5'
Tyler County/Ellsworth District, West Virginia

Mr. Martin:

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

Sincerely,

A handwritten signature in blue ink, appearing to read "TK", is written over the word "Sincerely," and extends to the left and right.

Thomas Kuhn
Senior Landman

RECEIVED
Office of Oil and Gas

APR 29 2020

WV Department of
Environmental Protection

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

Date of Notice Certification: 4.20.20

API No. 47- 095 - _____
Operator's Well No. Vulcan Unit 2H
Well Pad Name: Pyles Pad

Notice has been given:

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

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>514002.953m</u>
County:	<u>Tyler</u>		Northing:	<u>4372724.604m</u>
District:	<u>Ellsworth</u>	Public Road Access:	<u>US Route 34</u>	
Quadrangle:	<u>Porter Falls 7.5'</u>	Generally used farm name:	<u>Richard D. Pyles</u>	
Watershed:	<u>Outlet Middle Island Creek</u>			

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

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 <input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED <input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED <input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH) <input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION <input checked="" type="checkbox"/> 5. PUBLIC NOTICE <input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		OOG OFFICE USE ONLY <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED
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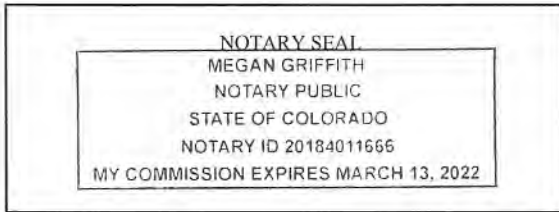
Required Attachments:

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

Certification of Notice is hereby given:

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

Well Operator:	<u>Antero Resources Corporation</u>	Address:	<u>1615 Wynkoop Street</u>
By:	<u>Diana Hoff</u> <i>Diana Hoff</i>		<u>Denver, CO 80202</u>
Its:	<u>VP of Production</u>	Facsimile:	<u>303-357-7315</u>
Telephone:	<u>303-357-7223</u>	Email:	<u>mgriffith@anteroresources.com</u>



Subscribed and sworn before me this 2nd day of April 2020.

Megan Griffith Notary Public

My Commission Expires 3.13.2022

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.

RECEIVED
Office of Oil and Gas
APR 29 2020
WV Department of
Environmental Protection

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

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

Date of Notice: 4.21.20 **Date Permit Application Filed:** 4.21.20

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: Richard D. Pyles
Address: 803 Nash Run Road
Middlebourne, WV 26149

Name: Joseph L. Sitko Jr.
Address: 315 Airport Drive
Sellerville, PA 18960

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: Richard D. Pyles
Address: 803 Nash Run Road
Middlebourne, WV 26149

Name: Joseph L. Sitko Jr.
Address: 315 Airport Drive
Sellerville, PA 18960

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

RECEIVED
Office of Oil and Gas
APR 29 2020
WV Department of
Environmental Protection

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.

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Office of Oil and Gas
29 2020
WV Department of
Environmental Protection

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

WW-6A
(8-13)

API NO. 47- 095 -
OPERATOR WELL NO. Vulcan Unit 2H
Well Pad Name: Pyles Pad

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

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Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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WW-6A
(8-13)

API NO. 47- 095 -
OPERATOR WELL NO. Vulcan Unit 2H
Well Pad Name: Pyles Pad

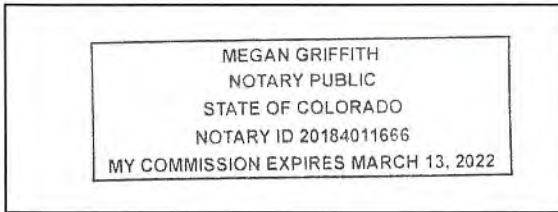
Notice is hereby given by:

Well Operator: Antero Resources Corporation *Diana Hoff*
Telephone: (303) 357-7223
Email: mgriffith@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 deprivacyofficer@wv.gov.



Subscribed and sworn before me this 21st day of April 2020.
Megan Notary Public
My Commission Expires 3-13-2022

WW-6A Notice of Application to Surface Owner Attachment:

Surface Owner:

Tax Parcel ID: 2-16-42 & 2-16-22

Owner: Richard D. Pyles
Address: 803 Nash Run Road
Middlebourne, WV 26149

Owner: Joseph L. Silko Jr.
Address: 315 Airport Drive
Sellerville, PA 18960

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**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: 12/6/2019 **Date of Planned Entry:** *12/13/2019

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

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

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

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

Notice is hereby provided to:

SURFACE OWNER(S)
 Name: Richard D. Pyles
 Address: 803 Nash Run Road
Middlebourne, WV 26149
 Name: Joseph L. Silko Jr.
 Address: 315 Airport Drive
Sellersville, PA 18960
 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: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>Approx. 39.503815, -80.837112 (Pad Center Coordinates)</u>
County: <u>Tyler</u>	Public Road Access: <u>US Route 34</u>
District: <u>Ellsworth</u>	Watershed: <u>Outlet Middle Island Creek</u>
Quadrangle: <u>Porter Falls 7.5'</u>	Generally used farm name: <u>Richard D. Pyles</u>

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 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
 Telephone: (303) 357-7223
 Email: mgriffith@anteroresources.com

Address: 1615 Wynkoop Street
Denver, CO 80202
 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.

WW-6A3 Notice of Entry For Plat Survey Attachment:**Mineral Owner:**Tax Parcel ID: 2-16-42

Owner: Richard D. Pyles
Address: 803 Nash Run Road
Middlebourne, WV 26149

Mineral Owner:Tax Parcel ID: 2-16-44

Owner: Stone Hill Minerals, LLC
Address: PO Box 470426
Fort Worth, TX 76147

Mineral Owner:Tax Parcel ID: 2-16-22

Owner: Joseph L. Sitko Jr.
Address: 315 Airport Drive
Sellerville, PA 18960

Surface Owner:Tax Parcel ID: 2-16-42

Owner: Richard D. Pyles
Address: 803 Nash Run Road
Middlebourne, WV 26149

Surface Owner:Tax Parcel ID: 2-16-22

Owner: Joseph L. Sitko Jr.
Address: 315 Airport Drive
Sellerville, PA 18960

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WW-6A5
(1/12)

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: 4.21.20 **Date Permit Application Filed:** 4.21.20

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

CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

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

Notice is hereby provided to the SURFACE OWNER(s)

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

Name: Richard D. Pyles
Address: 803 Nash Run Road
Middlebourne, WV 26149

Name: Joseph L. Sitko Jr.
Address: 315 Airport Drive
Sellersville, PA 18960

Notice is hereby given:

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

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>514002.953m</u>
County:	<u>Tyler</u>		Northing:	<u>4372724.604m</u>
District:	<u>Ellsworth</u>	Public Road Access:	<u>US Route 34</u>	
Quadrangle:	<u>Porter Falls 7.5'</u>	Generally used farm name:	<u>Richard D. Pyles</u>	
Watershed:	<u>Outlet Middle Island Creek</u>			

This Notice Shall Include:

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

Well Operator: Antero Resources Corporation
Telephone: (303) 357-7223
Email: mgriffith@anteroresources.com

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

Oil and Gas Privacy Notice:

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

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

Byrd E. White, III
Secretary of Transportation/
Commissioner of Highways

April 17, 2020

Jimmy Wriston, P. E.
Deputy Secretary/
Deputy Commissioner

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 Pyles Pad, Tyler County
Vulcan Unit 2H Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2014-0553 which has been issued to Antero Resources Corporation for access to the State Road for a well site located off Tyler County Route 34/3 SLS.

This operator is in compliance with §22-6A-20 of the WV Code. 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 October 1, 2018.

Very Truly Yours,

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

Cc: Megan Griffith
Antero Resources Corporation
CH, OM, D-6
File

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List of Anticipated Additives Used for Fracturing or Stimulating Well

1709502702

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
Silica, crystalline quartz	7631-86-9
Sodium Chloride	7647-14-5
Sodium Hydroxide	1310-73-2
Sugar	57-50-1
Surfactant	68439-51-0
Suspending agent (solid)	14808-60-7
Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7
Solvent Naphtha, petroleum, heavy aliph	64742-96-7
Soybean Oil, Me ester	67784-80-9
Copolymer of Maleic and Acrylic Acid	52255-49-9
DETA phosphonate	15827-60-8
Hexamethylene Triamine Penta	34690-00-1
Phosphino Carboxylic acid polymer	71050-62-9
Hexamethylene Diamine Tetra	23605-75-5
2-Propenoic acid, polymer with 2 propanamide	9003-06-9
Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5
Diethylene Glycol	111-46-6
Methenamine	100-97-0
Polyethylene polyamine	68603-67-8
Coco amine	61791-14-8
2-Propyn-1-olcompound with methyloxirane	38172-91-7

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LOCATION COORDINATES:
 ACCESS ROAD "A" ENTRANCE
 LATITUDE: 39.502855 LONGITUDE: -80.858027 (NAD 83)
 LATITUDE: 39.502857 LONGITUDE: -80.848069 (NAD 27)
 N 4872950.53 E 514702.73 (UTM ZONE 19 METERS)
 CENTER OF PAD
 LATITUDE: 39.502855 LONGITUDE: -80.837027 (NAD 83)
 LATITUDE: 39.502857 LONGITUDE: -80.837029 (NAD 27)
 N 4872950.50 E 514005.47 (UTM ZONE 17 METERS)

**APPROVED
 MODIFICATION
 WVDEP 00G**

WBS 4/11/2020

PYLES WELL PAD SITE DESIGN & CONSTRUCTION PLAN, EROSION & SEDIMENT CONTROL PLANS

ELLSWORTH DISTRICT, TYLER COUNTY, WV
 GORRELL RUN-MIDDLE ISLAND CREEK WATERSHED

GENERAL DESCRIPTION:
 THIS ACCESS ROAD AND WELL PAD ARE BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS

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

ENTRANCE PERMIT:
 ANTERO RESOURCES CORPORATION WILL OBTAIN AN ENCROACHMENT PERMIT (FORM MM-149) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

FLOODPLAIN NOTES:
 THE PROPOSED SITE IS LOCATED WITHIN FEMA FLOOD ZONE "X" PER FEMA FLOOD MAP #46085C0675C.

GEOTECHNICAL NOTES:
 A SUBSURFACE INVESTIGATION OF THE PROPOSED SITE WAS PERFORMED BY PENNSYLVANIA SOIL & ROCK, INC. ON DECEMBER 9-11, 2019. THE REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC. DATED JANUARY 14, 2020 (REVISED JANUARY 31, 2020) 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.

ENVIRONMENTAL NOTES:
 STREAM AND WETLAND DELINEATIONS WERE PERFORMED IN SEPTEMBER 2019 BY ALLSTAR ECOLOGY, LLC TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY JURISDICTION OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE SEPTEMBER 8, 2019 FIGURE 2 POTENTIALLY JURISDICTIONAL WATERS MAP WAS PREPARED BY ALLSTAR ECOLOGY, LLC AND SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THIS MAP DOES NOT IN ANY WAY REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP. IT IS STRONGLY RECOMMENDED THAT THE AFORESAID AGENCIES BE CONSULTED IN AN EFFORT TO OBTAIN WRITTEN CONTRIBUTION OF THE DELINEATION SHOWN ON THIS EXHIBIT PRIOR TO ENGAGING CONSTRUCTION ON THE PROPERTY DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL AND/OR STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS TO WATERS OF THE U.S., INCLUDING WETLAND FIELDS AND STREAM CROSSINGS.

PROJECT CONTACTS:

OPERATOR:
 ANTERO RESOURCES CORPORATION
 535 WHITE OAKS BLVD.
 SEEDSVILLE, WV 26223
 PHONE: (304) 842-4100
 FAX: (304) 842-4102

ELI WAGNER - ENVIRONMENTAL ENGINEER
 OFFICE: (304) 842-4088 CELL: (304) 476-9770

JON MAEYERS - DIRECTOR COMPLETION OPERATIONS
 OFFICE: (304) 307-6708 CELL: (303) 830-2423

JARON KUNZLER - CONSTRUCTION SUPERVISOR
 CELL: (606) 287-8044

ROBERT B. WORKS - FIELD ENGINEER
 OFFICE: (304) 842-4100 CELL: (304) 627-7405

CHARLES B. COMPTON, III - SURVEYING COORDINATOR
 CELL: (304) 719-3440

JIM WILSON - LAND AGENT
 OFFICE: (304) 862-9419 CELL: (304) 671-2708

ENGINEER/SURVEYOR:
 NAVITIS ENGINEERING, INC.
 CYRUS S. KEMP, PE - PROJECT MANAGER/ENGINEER
 OFFICE: (858) 682-3185 CELL: (540) 988-6747

ENVIRONMENTAL:
 ALLSTAR ECOLOGY, LLC
 RYAN L. WARD - ENVIRONMENTAL SCIENTIST
 OFFICE: (866) 213-2686 CELL: (304) 652-7477

GEOTECHNICAL:
 PENNSYLVANIA SOIL & ROCK, INC.
 CHRISTOPHER W. SAMOJS - PROJECT ENGINEER
 OFFICE: (412) 370-4000 CELL: (412) 530-0882

RESTRICTIONS NOTES:

1. THERE ARE NO PERSONAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE WELL PAD AND LOD. THERE ARE WETLAND IMPACTS THAT WILL NEED TO BE PERMITTED BY THE APPROPRIATE AGENCIES.
2. THERE ARE NO NATURALLY PRODUCING TROUT STREAMS WITHIN 500 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 500 FEET OF THE WELL PAD AND LOD.
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 2,000 SQUARE FEET WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.

USGS 7.5 MIDDLEBOURNE, PADEN CITY, PORTERS FALL & SHIRLEY QUAD MAPS



WEST VIRGINIA STATE PLANT COORDINATE SYSTEM
 SOUTH ZONE, MAPS 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100
 ESTABLISHED BY SURVEY CRAFT GPS & OPTICS
 POST-PROCESSING

SHEET INDEX:

- 1 - COVER SHEET
- 2 - CONSTRUCTION AND EAS CONTROL NOTES
- 3 - LEGEND
- 4 - MATERIAL QUANTITIES
- 5 - FORM COMPUTATIONS & EAS COMPUTATIONS
- 6 - EXISTING CONDITIONS
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- 19-26 - CONSTRUCTION DETAILS
- 27-33 - ACCESS ROAD & WELL PAD RECLAMATION PLAN
- 3500-3520 - GEOTECHNICAL REPORT

PYLES LIMITS OF DISTURBANCE AREA (AC)			
Total Site	Permitted	Modification	Total
Access Road "A"	4.76	3.00	4.76
Well Pad	9.38	-0.73	8.65
Excess/Topsoil Material Stockpiles	8.78	0.15	8.93
Total Affected Area	22.92	-0.58	22.34
Total Wooded Acres Disturbed	3.33	0.00	3.33
Impacts to Rodaway A. & Candie L. Nash TM 16-35			
Access Road "A"	0.06	0.00	0.06
Total Affected Area	0.06	0.00	0.06
Total Wooded Acres Disturbed	0.00	0.00	0.00
Impacts to Richard O Pyles TM 16-42			
Well Pad	3.57	0.00	3.57
Excess/Topsoil Material Stockpiles	0.01	0.00	0.01
Total Affected Area	3.58	0.00	3.58
Total Wooded Acres Disturbed	0.19	0.00	0.19
Impacts to Joseph L. & Karen Sikes TM 16-22			
Access Road "A"	0.01	0.00	0.01
Well Pad	1.19	0.00	1.19
Excess/Topsoil Material Stockpiles	4.70	0.15	4.85
Total Affected Area	5.90	0.15	6.05
Total Wooded Acres Disturbed	0.98	0.00	0.98
Impacts to Richard O, Vickie P. & Robert A Pyles TM 16-44			
Access Road "A"	4.69	0.00	4.69
Well Pad	4.62	-2.73	3.96
Excess/Topsoil Material Stockpiles	4.07	0.20	4.27
Total Affected Area	13.38	-0.73	12.65
Total Wooded Acres Disturbed	2.19	0.00	2.19

Stream and Impact Cause	PERMANENT IMPACTS (LINEAR FEET)			Total Impact (LF)
	Culvert / F/R (LF)	Inlets/Outlets Structures (LF)	Cofferdams/E&S Controls (LF)	
ASE_Stream 14 (Access Road "A")	10	0	0	10

Stream and Impact Cause	PYLES INTERMITTENT STREAM IMPACT (LINEAR FEET)			Total Impact (LF)
	Culvert / F/R (LF)	Inlets/Outlets Structures (LF)	Cofferdams/E&S Controls (LF)	
ASE_Stream 18 (Access Road "A") (Stockpile "B")	0	20	17	37

Wetland and Impact Cause	PYLES WETLAND IMPACT (SQUARE FEET)		
	F/R (SF)	Total Impact (SF)	Total Impact (AC)
ASE_Wetland 01 (Well Pad)	238	238	0.01
ASE_Wetland 02 (Well Pad)	331	331	0.01
ASE_Wetland 03 (Well Pad)	3,463	3,463	0.08
ASE_Wetland 04 (Stockpile "B") (Access Road "A")	1,014	1,014	0.02
ASE_Wetland 05 (Access Road "A")	1,920	1,920	0.04

Well Name	WV North	NAD 27 Lat & Long	UTM (METERS)	NAD 83 Lat & Long
Pyles Well SH	N 50445.04 E 622679.18	NAD 27 Lat: 40° 56' 30.143774 LONG: 80 52-14-1500	19-037279.89 E 614005.78	NAD 83 Lat: 40° 56' 30.143803 LONG: 80-52-13.9362
Proposed Well Pad Elevation:	1,081.0			

REPRODUCTION NOTE
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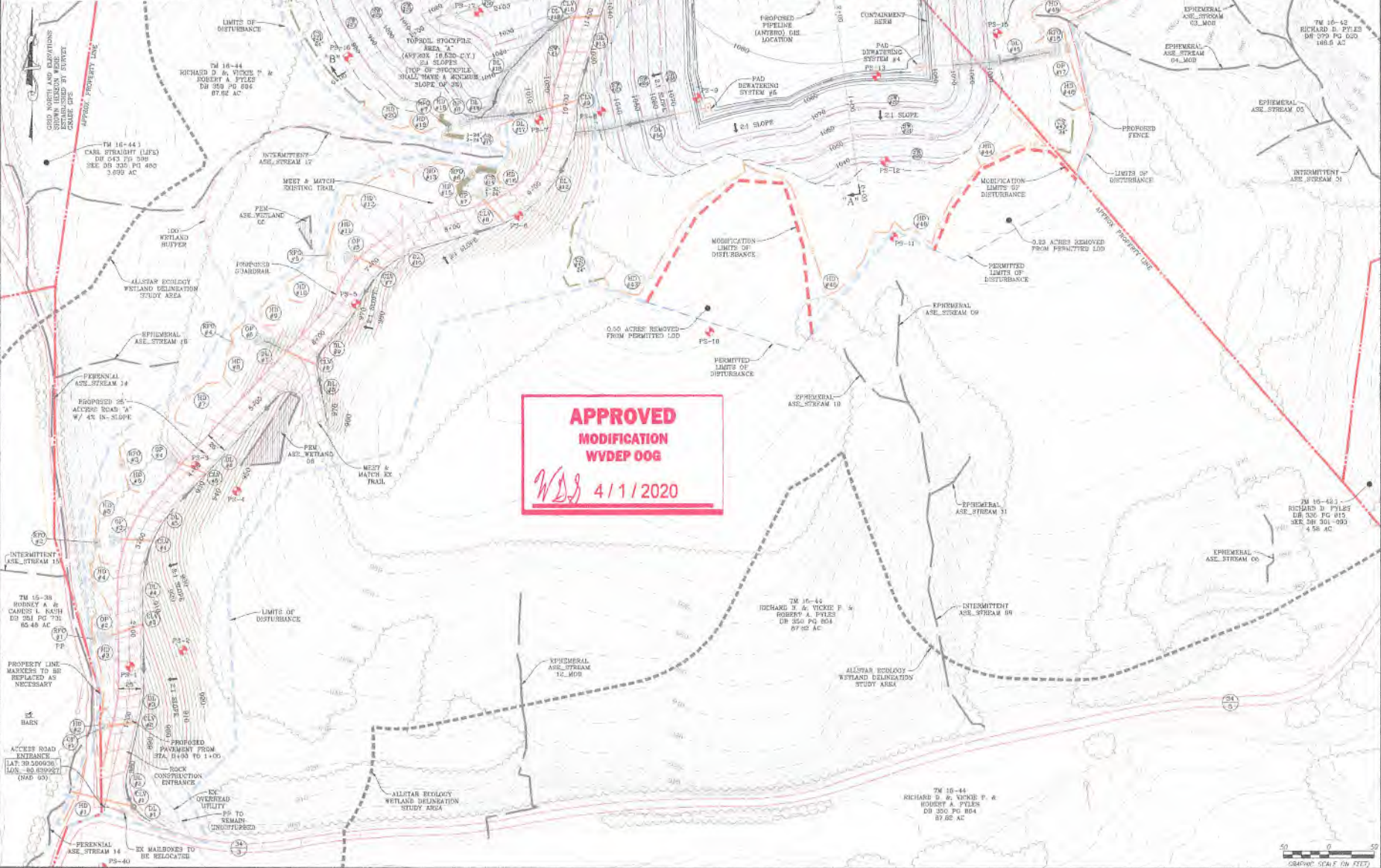
DATE	REVISION	REVISION
02/12/2020	REVISED WELL PAD	REVISED WELL PAD
01/16/2020	REVISED PERMITS/REGULATORY	REVISED PERMITS/REGULATORY
01/02/2020	REVISED FOR JOB ADAPTATION	REVISED FOR JOB ADAPTATION

Antero
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COVER SHEET
PYLES
 WELL PAD
 ELLSWORTH DISTRICT
 TYLER COUNTY, WEST VIRGINIA

DATE: 11/01/2019
 SCALE: AS SHOWN
 SHEET 1 OF 28

ACCESS ROAD & WELL PAD PLAN



**APPROVED
MODIFICATION
WVDEP OOG**

WDS 4/11/2020

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DATE	REVISION
12/16/2019	REVISED WELL PAD
01/15/2020	REVISED PER DISTURBANCE REPORT
03/02/2020	REVISED PER OOG MODIFICATION



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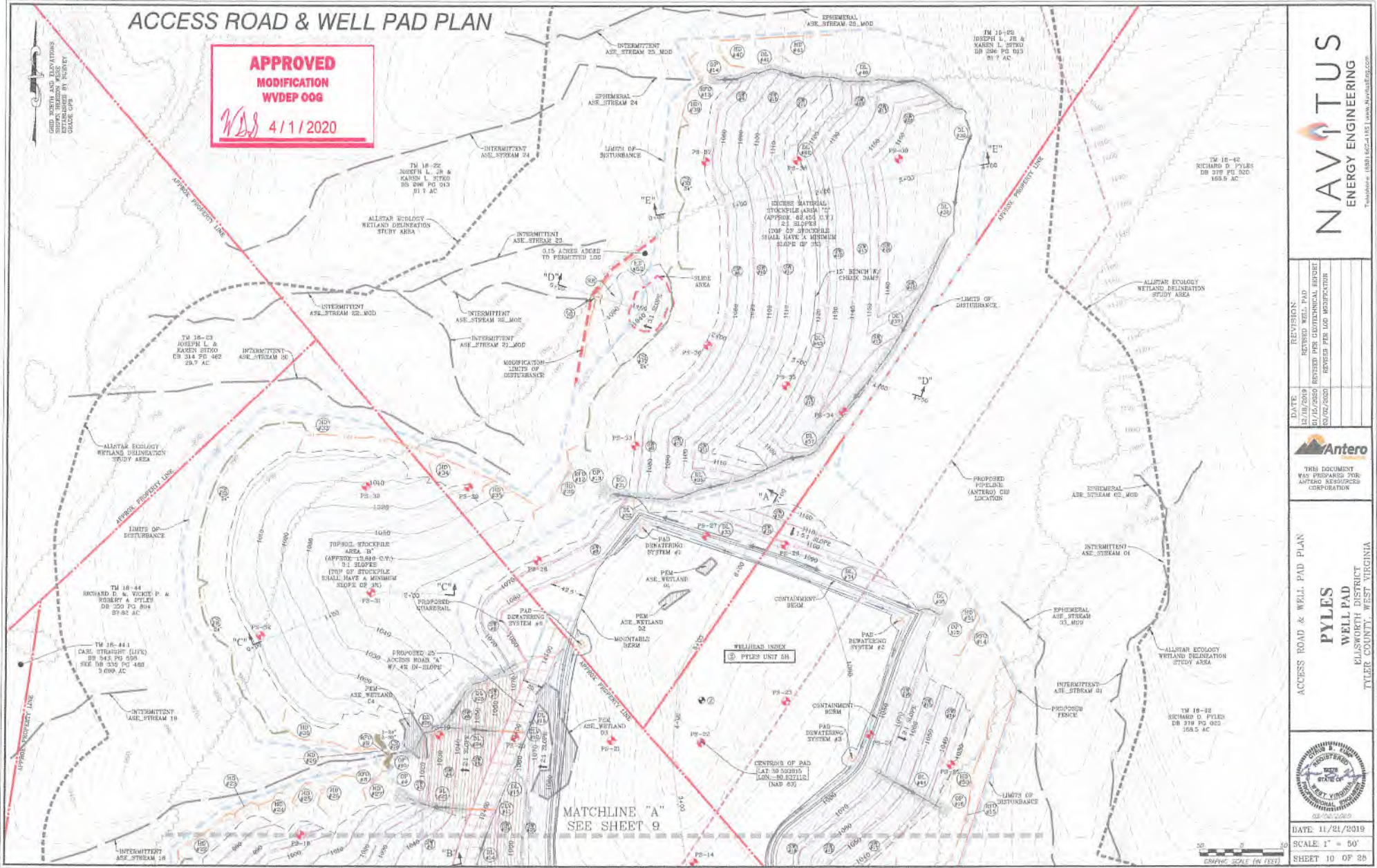
ACCESS ROAD & WELL PAD PLAN
PYLES
WELL PAD
ELLSWORTH DISTRICT
TYLER COUNTY, WEST VIRGINIA



DATE 11/21/2019
SCALE 1" = 50'
SHEET 9 OF 20

ACCESS ROAD & WELL PAD PLAN

**APPROVED
MODIFICATION
WVDEP OOG**
WDS 4/1/2020



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DATE	REVISION
02/08/2019	REVISED WELL PAD
01/16/2020	REVISED PER GEOLOGICAL REPORT
03/02/2020	REVISED PER LOD MODIFICATION



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PYLES
WELL PAD

ELLSWORTH DISTRICT
TYLER COUNTY, WEST VIRGINIA



DATE: 11/21/2019

SCALE: 1" = 50'

SHEET 10 OF 28



PYLES WELL PAD SITE DESIGN & CONSTRUCTION PLAN, EROSION & SEDIMENT CONTROL PLANS

ELLSWORTH DISTRICT, TYLER COUNTY, WV
GORRELL RUN-MIDDLE ISLAND CREEK WATERSHED

USGS 7.5 MIDDLEBOURNE, PADEN CITY, PORTERS FALL, & SHIRLEY QUAD MAPS



LOCATION COORDINATES:

ACCESS ROAD "A" ENTRANCE
LATITUDE: 38.508293 LONGITUDE: -80.839277 (NAD 83)
LATITUDE: 38.508957 LONGITUDE: -80.840999 (NAD 23)
N 4972390.58 E 5137992.73 (UTM ZONE 17N METERS)
CENTROID OF PAD
LATITUDE: 38.503815 LONGITUDE: -80.837118 (NAD 83)
LATITUDE: 38.503736 LONGITUDE: -80.837285 (NAD 23)
N 4972790.58 E 514404.18 (UTM ZONE 17N METERS)

GENERAL DESCRIPTION:

THE ACCESS ROADS AND WELL PAD ARE BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS

MISS UTILITY STATEMENT:

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

ENTRANCE PERMIT:

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

FLOODPLAIN NOTES:

THE PROPOSED SITE IS LOCATED WITHIN FEMA FLOOD ZONE "X" PER FEMA FLOOD MAP #49050C0075C.

GEO TECHNICAL NOTES:

NO SOIL STUDIES OR SUBSURFACE INVESTIGATIONS WERE PERFORMED OR ANALYZED FOR THE DESIGN OF THIS SITE.

ENVIRONMENTAL NOTES:

STREAM AND WETLAND DELINEATIONS WERE PERFORMED IN SEPTEMBER 2010 BY ALLSTAR ECOLOGY, LLC TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY JURISDICTION OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE SEPTEMBER 8, 2010 FIGURE 3 POTENTIALLY JURISDICTIONAL WATERS MAP WAS PREPARED BY ALLSTAR ECOLOGY, LLC AND SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THIS MAP DOES NOT IN ANY WAY REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP. IT IS STRONGLY RECOMMENDED THAT THE APPROPRIATE AGENCIES BE CONSULTED IN AN EFFORT TO OBTAIN WRITTEN CONFIRMATION OF THE DELINEATION SHOWN ON THIS EXHIBIT PRIOR TO ENACTING CONSTRUCTION OF THE PROPERTY DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL AND/OR STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS TO WATERS OF THE U.S., INCLUDING WETLAND FIELDS AND STREAM CROSSINGS.

PROJECT CONTACTS:

OPERATOR:

ANTERO RESOURCES CORPORATION
555 WHITE OAKS BLVD.
BROOKFIELD, WY 82403
PHONE: (304) 642-4190
FAX: (304) 642-4102

JEI WAGNER - ENVIRONMENTAL ENGINEER

OFFICE: (304) 842-4088 CELL: (304) 476-9770

JON MEYERS - OPERATIONS SUPERINTENDENT

OFFICE: (304) 357-8799 CELL: (304) 808-2423

AARON KUNZLER - CONSTRUCTION SUPERVISOR

CELL: (408) 287-8344

ROBERT B WURK - FIELD ENGINEER

OFFICE: (304) 842-4103 CELL: (304) 627-7405

CHARLES E COMPTON, III - SURVEYING COORDINATOR

CELL: (304) 719-6449

DAVID FATSY - LAND AGENT

CELL: (304) 476-6990

ENGINEER/SURVEYOR:

NAVITUS ENGINEERING, INC

CYRUS S KIMM, PE - PROJECT MANAGER/ENGINEER

OFFICE: (888) 603-1185 CELL: (540) 696-0747

ENVIRONMENTAL:

ALLSTAR ECOLOGY, LLC

RYAN L. WARD - ENVIRONMENTAL SCIENTIST

OFFICE: (866) 912-2282 CELL: (304) 682-7477

GEO TECHNICAL:

PENNSYLVANIA SOIL & ROCK, INC

CHRISTOPHER W. SAMOS - PROJECT ENGINEER

OFFICE: (412) 372-5080 CELL: (412) 369-0962

RESTRICTIONS NOTES:

1. THERE ARE NO PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE WELL PAD AND LOD. THERE ARE WETLAND IMPACTS THAT WILL NEED TO BE PERMITTED BY THE APPROPRIATE AGENCIES.
2. THERE ARE NO NATURALLY PRODUCING FROST 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 PAD BEING DRILLED.
5. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 825 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.

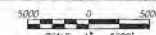
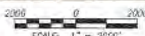
REPRODUCTION NOTE

THESE PLANS WERE CREATED TO BE PRINTED ON 24"X36" (LAND) OR 36"X24" (PORT) HALF SCALE DRAWINGS AND ON 11"X17" (ARCH D) PAPER.

THESE PLANS WERE CREATED FOR (ON-SITE) PLOTTING AND ANY REPRODUCTIONS IN OTHER SCALE OR COLOR MAY RESULT IN A LOSS OF INFORMATION AND SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.



WEST VIRGINIA STATE PLANE COORDINATE SYSTEM
NORTH ZONE, MADDY DATUM
ESTABLISHED BY SHIRLEY GRADE CP&S OFFICE
POST-PROCESSING



DESIGN CERTIFICATION:

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- 1 - COVER SHEET
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- 4 - MATERIAL QUANTITIES
- 5 - STORM COMPUTATIONS & RAS COMPUTATIONS
- 6 - EXISTING CONDITIONS
- 7 - EXISTING STRUCTURES & FEATURES
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- 13 - ACCESS ROAD SECTIONS
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- 15-18 - WELL PAD SECTIONS
- 19-26 - CONSTRUCTION DETAILS
- 27-29 - ACCESS ROAD & WELL PAD RECLAMATION PLAN

PYLES LIMITS OF DISTURBANCE AREA (AC)	
Total Site	
Access Road "A"	4.62
Well Pad	1.00
Excess/Topsoil Material Stockpiles	5.11
Total Affected Area	10.73
Impacts to Rodney A. & Candice L. Nash TM 15-35	
Access Road "A"	0.06
Total Affected Area	0.06
Total Wooded Acres Disturbed	0.05
Impacts to Richard D Pyles TM 16-42	
Well Pad	3.68
Excess/Topsoil Material Stockpiles	0.35
Total Affected Area	4.03
Total Wooded Acres Disturbed	5.19
Impacts to Joseph L. & Karen Soko TM 16-22	
Access Road "A"	0.01
Well Pad	1.19
Excess/Topsoil Material Stockpiles	4.69
Total Affected Area	5.89
Total Wooded Acres Disturbed	0.85
Impacts to Richard D. Vickie P. & Robert A Pyles TM 16-44	
Access Road "A"	4.53
Well Pad	4.69
Excess/Topsoil Material Stockpiles	4.07
Total Affected Area	13.29
Total Wooded Acres Disturbed	2.05

PYLES PERENNIAL STREAM IMPACT (LINEAR FEET)				
Stream and Impact Cause	Permanent Impacts		Temp. Impacts	
	Culvert /# (LF)	Inlets/Outlets Structures (LF)	Cofferdam/E&S Controls (LF)	Total Impact (LF)
ASE_Stream 14 (Access Road "A")	10	0	0	10

PYLES INTERMITTENT STREAM IMPACT (LINEAR FEET)				
Stream and Impact Cause	Permanent Impacts		Temp. Impacts	
	Culvert /# (LF)	Inlets/Outlets Structures (LF)	Cofferdam/E&S Controls (LF)	Total Impact (LF)
ASE_Stream 18 (Access Road "A"/Stockpile "B")	0	20	17	37

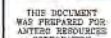
PYLES WETLAND IMPACT (SQUARE FEET)			
Wetland and Impact Cause	Filt (SF)	Total Impact	
		(SF)	(AC)
ASE_Wetland 01 (Well Pad)	238	238	0.01
ASE_Wetland 02 (Well Pad)	331	331	0.01
ASE_Wetland 03 (Well Pad)	3,483	3,483	0.08
ASE_Wetland 04 (Stockpile "B"/Access Road "A")	1,014	1,014	0.02
ASE_Wetland 05 (Access Road "A")	1,920	1,920	0.04

Well Name	WV North A&L 1972	NAD 83 Lat & Long	UTM (METERS) UTM ZONE 17	NAD 83 Lat & Long
Pyles Well #1	N 38823.34 E 462916.18	N 4179.89 E 624514.18	N 4179.89 E 614056.76	N 4179.89 E 624514.18
Proposed Well Pad Elevation	108.0			



REVISION

DATE



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COVER SHEET

PYLES WELL PAD
ELLSWORTH DISTRICT
TYLER COUNTY, WEST VIRGINIA



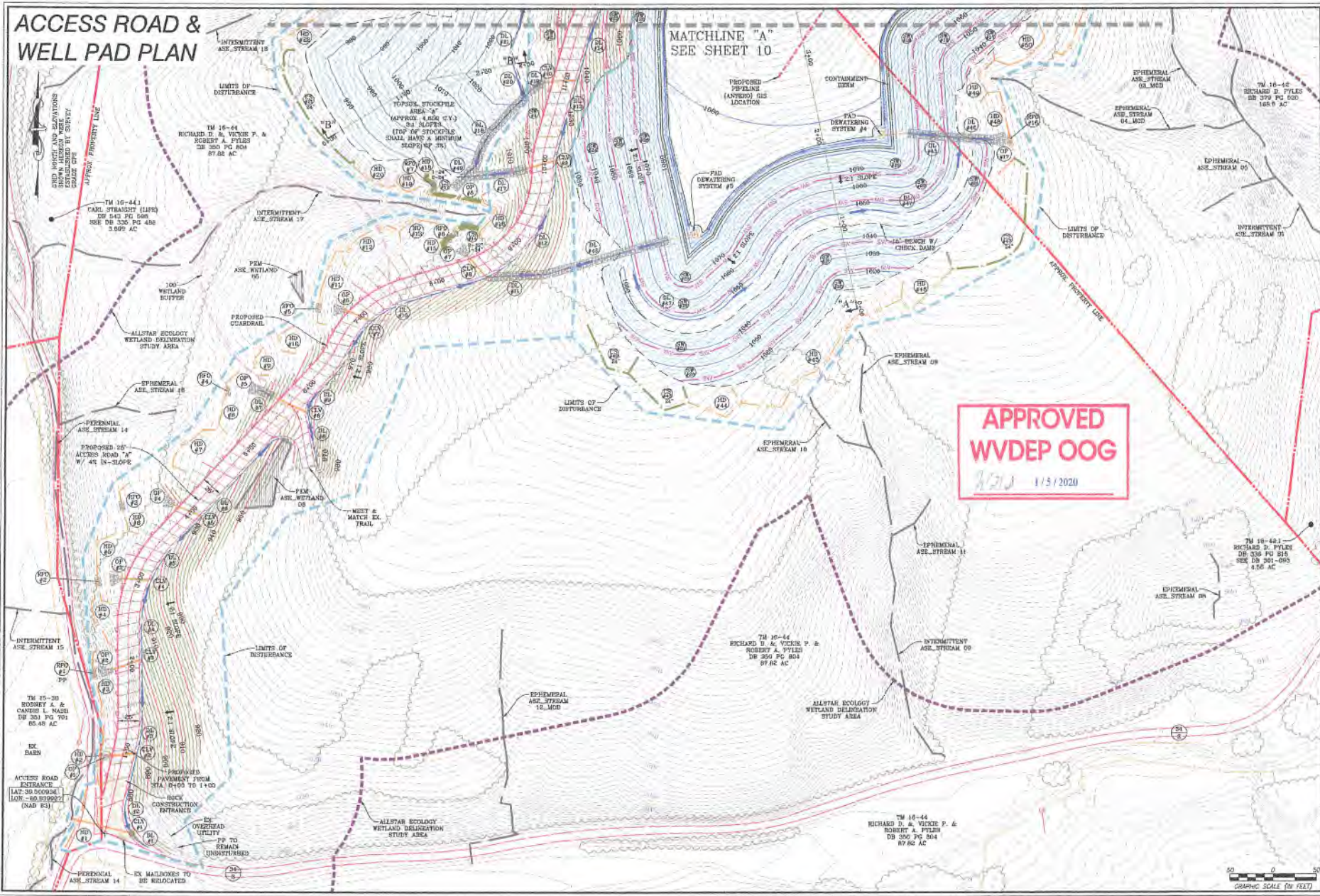
DATE: 11/07/2019

SCALE: AS SHOWN

SHEET 1 OF 28

ACCESS ROAD & WELL PAD PLAN

MATCHLINE "A"
SEE SHEET 10



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1/15/2020

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ACCESS ROAD & WELL PAD PLAN

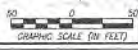
PYLES

WELL PAD

ELLSWORTH DISTRICT
TYLER COUNTY, WEST VIRGINIA

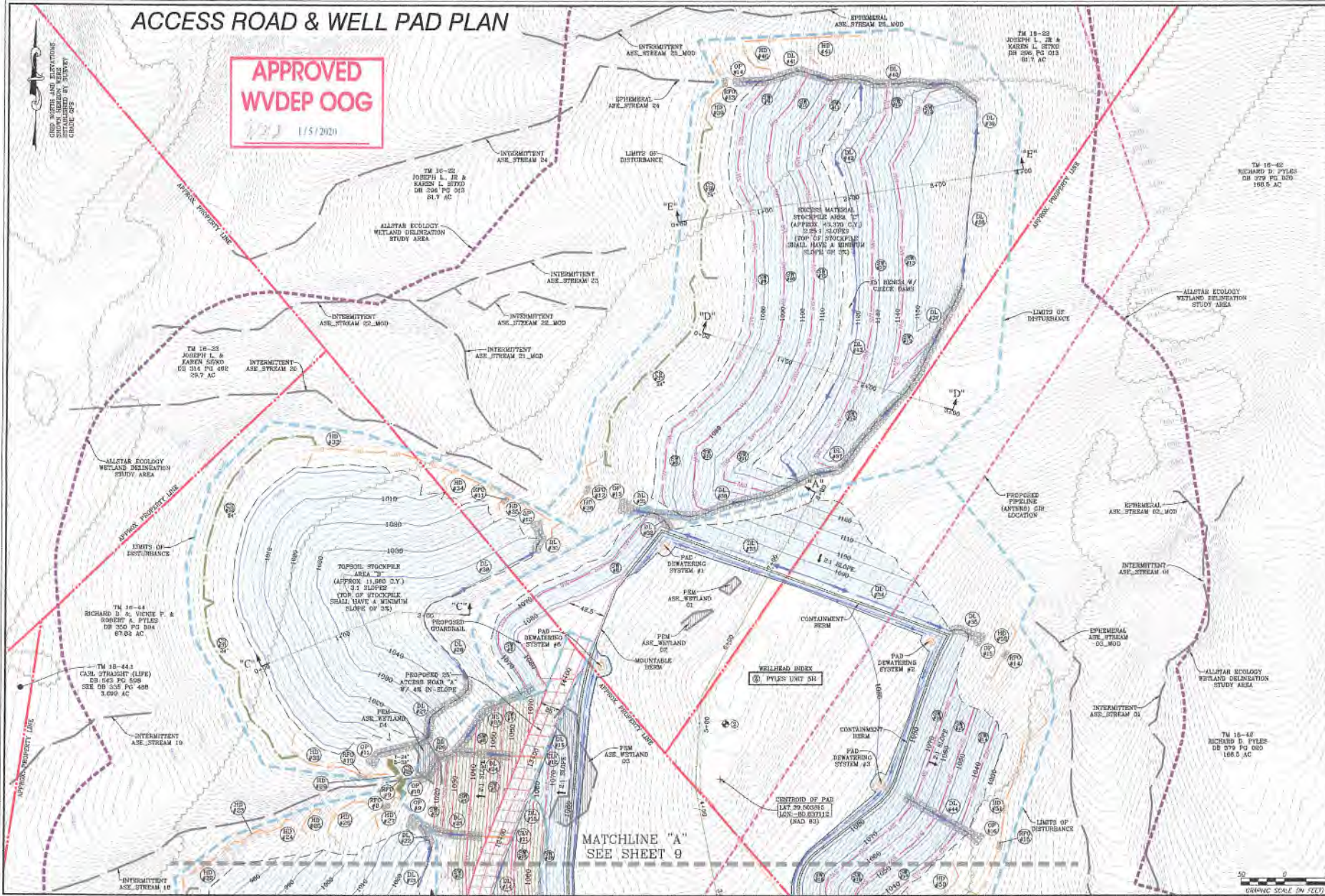


DATE: 11/07/2019
SCALE: 1" = 50'
SHEET 9 OF 28



ACCESS ROAD & WELL PAD PLAN

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 1/23 1/5/2020



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ACCESS ROAD & WELL PAD PLAN
PYLES
 WELL PAD
 ELSWORTH DISTRICT
 TYLER COUNTY, WEST VIRGINIA



DATE: 11/07/2019
 SCALE: 1" = 50'
 SHEET 10 OF 28

