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west virginia department of environmental protection

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

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

PERMIT MODIFICATION APPROVAL  
Horizontal 6A / Horizontal 6A Well - 1

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for PICKNEY UNIT 2H  
47-017-06678-00-00

**Revised Mylar Plat for new surface and bottom hole locations.  
Revised WW-6A1, WW-6B, WW-9, WW6A, WW-6A5 and Pad Design Modifications**

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief



Operator's Well Number: PICKNEY UNIT 2H  
Farm Name: LYNCH, WILLIAM RANDALL & CRAIG, DIXI  
U.S. WELL NUMBER: 47-017-06678-00-00  
Horizontal 6A / Horizontal 6A Well - 1  
Date Issued: 3/2/2017

Promoting a healthy environment.

03/03/2017



August 22, 2016

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

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
Attn: Ms. Melanie Hankins  
601 57<sup>th</sup> Street  
Charleston, WV 25304

Ms. Melanie Hankins:

Antero Resources Corporation (Antero) would like to submit the following permit modification for one well on the Middle Pad. We are requesting to slightly change the surface hole location of Pickney Unit 2H (API #47-017-06678).

Attached you will find the following documents for each well modification:

- REVISED Mylar Plat, which shows the new surface and bottom hole locations
- REVISED Form WW-6A1, which shows the updated leases
- REVISED Form WW-6B, which shows the revised area to be disturbed (total & pad)
- REVISED Water Management Plan, which shows updated SHL
- REVISED Form WW-9, which shows the updated disturbed acres
- REVISED Form WW-6A and 6A5, which shows the surface owners notified through Certified Mail Receipts
- REVISED Middle Pad Design Modification
  - \*Please note that the inspector and surface owner have reviewed the modified drawings to increase the limit of disturbance. Signature copies of both were submitted by Mallory Stanton on 8/12/2016.

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

Thank you in advance for your consideration.

Sincerely,

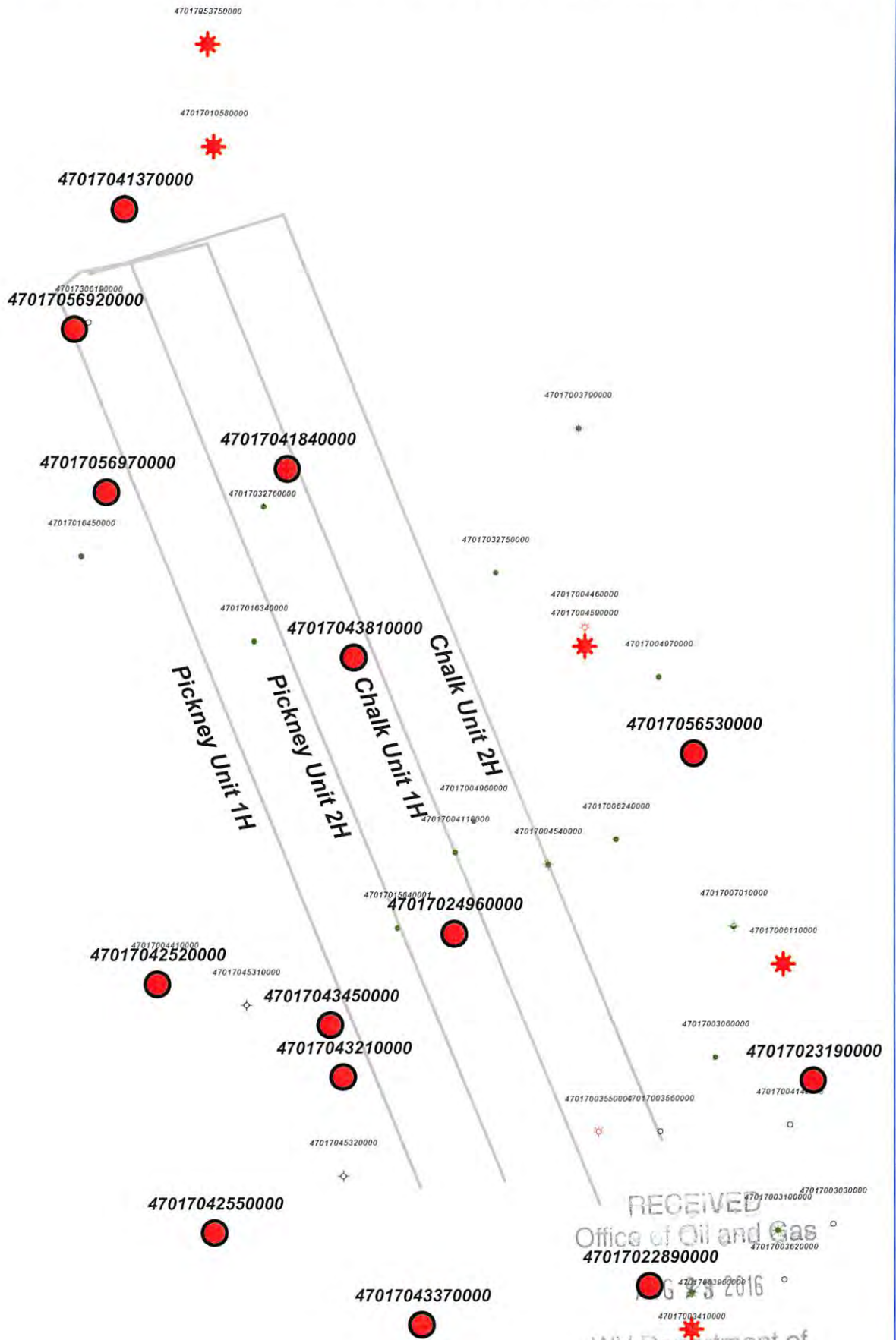
Kara Quackenbush  
Permitting Agent  
Antero Resources Corporation

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Enclosures

03/03/2017

# PICKNEY UNIT 2H (MIDDLE PAD) - DATA COLLECTED ON OFFSET WELLS PER 35-8-5.11



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47017022890000  
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0 1.192  
05/03/2017



**PICKNEY UNIT 2H (MIDDLE PAD) - DATA COLLECTED ON OFFSET WELLS PER 35-8-5.11**

UWI/API	WELLNAME	WELLNO	OPER	HISTOPER	TD	ELEV_GR	TD (SSTVD)	Perfs (shallowest, deepest)
47017022890000	CLAUD S SMITH	1	RUBIN RESOURCES	KEY OIL INCORPORATED	5995	1111	-4884	Warren (3467-3603), Alexander (5352-5374)
47017043370000	EDWARDS CARL E ETAL	1365	XTO ENERGY INC	TRIO PETROLEUM INC	5770	1091	-4679	Speechley (3412-3899), Riley (4950-5357)
47017042520000	MURRAY GLENVA ET AL	1	MURVIN&MEIER OIL CO	MURVIN OIL COMPANY	5656	1188	-4468	Warren (3540-3564), Benson (5140-5141)
47017042550000	MAXWELL FRANKLIN PARTNERSHIP ET AL	1	MURVIN&MEIER OIL CO	MURVIN OIL COMPANY	5644	1121	-4523	Speechley (3503-3524), Alexander (5388-5421)
47017043450000	MAXWELL FRANKLIN PARTNERSHIP ET AL	2	MURVIN&MEIER OIL CO	MURVIN&MEIER OIL CO	5580	1122	-4458	Warren (3475-3615), Alexander (5352-5409)
47017043810000	FORD JACK ET AL	3	MURVIN&MEIER OIL CO	MURVIN OIL COMPANY	5523	1102	-4421	Warren (3404-3971), Alexander (5298-5361)
47017056970000	FORD M	2	MURVIN&MEIER OIL CO	MURVIN&MEIER OIL CO	5517	1068	-4449	Warren-Bradford (3333-4547), Riley-Alexander (4880-5266)
47017043210000	MORRIS C BURKE & SMITH S A HEIRS	1	KEY OIL COMPANY	KEY OIL INCORPORATED	5513	1125	-4388	Balltown (4008-4354), Alexander (5289-5386)
47017041840000	FORD JACK ETAL	1	MURVIN&MEIER OIL CO	MURVIN OIL COMPANY	5343	952	-4391	Riley (4466-4488), Alexander (5156-5221)
47017024960000	COLEMAN-WRIGHT	S-282	MARSHALL OIL & GAS	SCOTT ENTERPRISES	5340	808	-4532	Weir (2046-2068), Alexander (5021-5073)
47017041370000	LYNCH WILLIAM RANDALL ETAL	1	MURVIN&MEIER OIL CO	MURVIN OIL COMPANY	5242	862	-4380	Riley (4694-4698), Alexander (5049-5078)
47017023190000	BETTY JANE LANGFITT	1	RUBIN RESOURCES	KEY OIL INCORPORATED	5241	864	-4377	Alexander (5080-5146)
47017056920000	LYNCH	2	MURVIN&MEIER OIL CO	MURVIN&MEIER OIL CO	5232	816	-4416	Warren-Bradford (3088-4312), Riley-Alexander (4637-5034)
47017056530000	STEWART BEULAH	1	KEY OIL COMPANY	KEY OIL COMPANY	5178	798	-4380	Warren (3105-3533), Alexander (5015-5079)

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

1) Well Operator: Antero Resources Corporation 494507062 017- Doddridge West Union West Union 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Pickney Unit 2H Well Pad Name: Middle Pad

3) Farm Name/Surface Owner: William Randall Lynch & Dixie Janet Craig Public Road Access: WV 18

4) Elevation, current ground: ~848 Elevation, proposed post-construction: 843'

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

Other \_\_\_\_\_

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

Horizontal X

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus Shale: 6600' TVD, Anticipated Thickness- 60 feet, Associated Pressure- 3100#

8) Proposed Total Vertical Depth: 6600' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 16200' MD

11) Proposed Horizontal Leg Length: 8420'

12) Approximate Fresh Water Strata Depths: 97', 223', 388'

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

14) Approximate Saltwater Depths: 1161'

15) Approximate Coal Seam Depths: 174', 478'

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

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

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

Depth: \_\_\_\_\_

Seam: \_\_\_\_\_

Owner: \_\_\_\_\_

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*Daniel A. Flack*

18)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<b>Size (in)</b>	<b>New or Used</b>	<b>Grade</b>	<b>Weight per ft. (lb/ft)</b>	<b>FOOTAGE: For Drilling (ft)</b>	<b>INTERVALS: Left in Well (ft)</b>	<b>CEMENT: Fill-up (Cu. Ft.)/CTS</b>
Conductor	20"	New	H-40	94#	40'	40'	CTS, 38 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	450'	450' *See #19	CTS, 625 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500'	2500'	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	16200'	16200'	CTS, 4047 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

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

**PACKERS**

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

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

Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale.

\*Antero will be air drilling the fresh water string which makes it difficult to determine when freshwater is encountered, therefore we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.

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

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

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

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 18.05 acres

22) Area to be disturbed for well pad only, less access road (acres): 5.53 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

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

Conductor: no additives, Class A cement.

Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake

Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

\*Note: Attach additional sheets as needed.

*Daniel A. Flack*



WW-9  
(2/15)

API Number 47 - 017 - 06678

Operator's Well No. Pickney Unit 2H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Antero Resources Corporation OP Code 494507062

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

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

Will a pit be used? Yes  No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Please See Attachment

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

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

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

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

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

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

Company Official Signature *Cole Kilstrom*

Company Official (Typed Name) Cole Kilstrom

Company Official Title Environmental & Regulatory Manager



Subscribed and sworn before me this 22 day of August, 20 16

*Kara Quackenbush* Notary Public

My commission expires July 21, 2018



Operator's Well No. Pickney Unit 2H

**Antero Resources Corporation**

Proposed Revegetation Treatment: Acres Disturbed 18.05 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" (3.29) + Access Road "B" (0.98) + Access Road "C" (0.42) + Well Pad (5.53) + Water Containment Pad (3.30) + Excess/Topsoil Material Stockpiles (4.53) = 18.05 Acres

**Seed Mixtures**

**Temporary**

**Permanent**

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

Seed Type	lbs/acre
<b>Crownvetch</b>	<b>10-15</b>

See attached Table IV-3 for additional seed type (Middle Pad Design Page 14)

See attached Table IV-4 for additional seed type (Middle Pad Design Page 14)

\*or type of grass seed requested by surface owner

\*or type of grass seed requested by surface owner

**Attach:**

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Daniel A. Flack

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

Title: Oil and Gas Inspector

Date: 3/1/2017

Field Reviewed? ( ) Yes ( ) No

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

### **SURFACE INTERVAL**

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

### **INTERMEDIATE INTERVAL**

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

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

### **PRODUCTION INTERVAL**

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

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





**Antero Resources Corporation**  
Appalachian Basin  
Pickney Unit 2H  
Doddridge County

Quadrangle: West Union  
Watershed: Headwaters Middle Island Creek  
District: West Union  
Date: 5-15-2014



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

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

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

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<b><u>William Randall Lynch &amp; Dixie Craig Lease</u></b>			
William R. Lynch & Dixie Craig	Murvin Oil Company	1/8	0172/0544
Murvin Oil Company	Murvin & Meier	Assignment	0179/0193
Murvin & Meier	Antero Resources Appalachian Corporation	Assignment	0267/0467
<b>Antero Resources Appalachian Corporation</b>	<b>Antero Resources Corporation</b>	<b>Name Change</b>	<b>Exhibit 1</b>
<b><u>Joseph Freeman, et ux Lease</u></b>			
Joseph Freeman, et ux	G.H. Trainer & J.E. Trainer	1/8	0027/0233
G.H. Trainer & J. E. Trainer	W.W. Hepburn	Assignment	0034/0244
W.W. Hepburn	Eastern Petroleum Company	Assignment	0034/0256
Eastern Petroleum Company	Clifton Oil & Gas Company	Assignment	0041/0431
Clifton Oil & Gas Company	Quaker State Refining Corporation	Assignment	0056/0165
Quaker State Refining Corporation	QSE&P Inc.	Assignment	0159/0474
QSE&P Inc.	The Quaker State 1989-1 Drilling Fund LP	Assignment	0160/0200
The Quaker State 1989- Drilling Fund LP	Belden & Blake Corporation	Assignment	0175/0466
Belden & Blake Corporation	Peake Energy, Inc.	Assignment	0181/0114
Peake Energy, Inc.	North Coast Energy Eastern, Inc.	Name Change	DB 0249/0343
North Coast Energy Eastern, Inc.	EXCO- North Coast Energy Eastern, Inc.	Name Change	DB 0277/0068
EXCO- North Coast Energy Eastern, Inc.	EXCO Resources WV, Inc.	Name Change	Exhibit 2
EXCO Resources WV, Inc.	EXCO Resources WV, LLC	Name Change	Exhibit 3
EXCO Resources WV, LLC	EXCO Production Company WV, LLC	Merger	0285/0084
EXCO Production Company WV, LLC	Antero Resources Appalachian Corporation	Assignment	DB 0285/0084
<b>Antero Resources Appalachian Corporation</b>	<b>Antero Resources Corporation</b>	<b>Name Change</b>	<b>0324/0311</b>
<b><u>William Mark Smith Lease</u></b>			
William Mark Smith	Antero Resources Corporation	1/8+	0375/0519
<b><u>Laura A. Ford &amp; S.L. Ford Lease</u></b>			
S.L. Ford, et ux	J.L. Neuman	1/8	0021/0172
J.L. Neuman	The Philadelphia Company	Assignment	0106/0474
The Philadelphia Company	Pittsburgh and West Virginia Gas Company	Assignment	DB 0045/0102
Pittsburgh and West Virginia Gas Company	Equitable Gas Company	Assignment	0121/0475
Equitable Gas Company	Equitrans, Inc.	Assignment	0154/0475
Equitrans, Inc.	Equitrans, L.P.	Merger	Recited in 0302/0123
Equitrans, L.P.	Equitable Production – Eastern States, Inc.	Assignment	0192/0019
Equitable Production – Eastern States, Inc.	Equitable Production Company	Merger	Exhibit 4
Equitable Production Company	EQT Production Company	Name Change	DB 0281/0346
<b>EQT Production Company</b>	<b>Antero Resources Corporation</b>	<b>Assignment</b>	<b>0325/0539</b>

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MAY 23 2016  
Recited in  
Department of Environmental Protection

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

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

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- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<b><u>Ida F. Ford Lease</u></b>			
Ida Ford	Clara Ford, Ford Development Company	1/8	0063/0459
Clara Ford, Ford Development Company	Antero Resources Appalachian Corporation	Assignment	0277/0482
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Martha Ann Ford McConnell, Memorandum of Oil &amp; Gas Lease</u></b>			
Martha Ann Ford McConnell	Antero Resources Corporation	1/8+	0333/0280
<b><u>Alice H. Maxwell Lease</u></b>			
Alice H. Maxwell	Carl D. Perkins & William Paul McCutchan	1/8	0063/0111
Carl D. Perkins & William Paul McCutchan, et al	Justin Henderson	Assignment	0104/0689
Justin L. Henderson	P.D. Farr II	Assignment	0109/0385
P.D. Farr II	Antero Resources Appalachian Corporation	Assignment	0271/0546
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Middle Island Creek Lease</u></b>			
WV Division of Natural Resources	Antero Resources Corporation	1/8+	0416/0455
<b><u>Russell Coleman, et al Lease</u></b>			
Russel G. Coleman, et al	D.D. Roberts & C.A. Yeater	1/8	0062/0349
D.D. Roberts & C.A. Yeater	D.D. Roberts, his heirs	Assignment	0067/0127
D.D. Roberts	Scott Enterprises, Inc.	Assignment	0113/0603
James F. Scott, President of Scott Enterprises, Inc.	George R. (Randall) Gibson	Assignment	0113/0603
Randall Gibson	All personal and real property to heirs, Timothy Ames Gibson, Suzanne Marie Gibson Sloan and Gina Carolyn Gibson	Will	WB 0045/0614
Gina C. Gibson, heir of George R. Gibson, a.k.a. Randall Gibson	Antero Resources Corporation	Assignment	0333/0212

\*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.

RECEIVED

Office of Oil and Gas

AUG 23 2016

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

03/03/2017



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

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

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

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Clarence Mutschelknaus Lease</u>	Clarence Mutschelknaus Antero Resources Appalachian Corporation	Antero Resources Appalachian Corp. Antero Resources Corporation	1/8+ Name Change	0321/0607 Exhibit 1


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

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

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

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

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

Well Operator: Antero Resources Corporation RECEIVED  
 By: Kevin Kilstrom  Office of Oil and Gas  
 Its: Senior VP of Production AUG 23 2015

FORM WW-6A1  
EXHIBIT 1

FILED

JUN 10 2013

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



IN THE OFFICE OF  
SECRETARY OF STATE

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

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

APPLICATION FOR  
AMENDED CERTIFICATE  
OF AUTHORITY

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

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

- Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
- Date Certificate of Authority was issued in West Virginia: 6/26/2008
- Corporate name has been changed to: Antero Resources Corporation  
(Attach one Certified Copy of Name Change as filed in home State of Incorporation.)
- Name the corporation elects to use in WV: Antero Resources Corporation  
(due to home state name not being available)
- Other amendments: \_\_\_\_\_  
(attach additional pages if necessary)

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

Alvyn A. Schopp

(304) 367-7310

Contact Name

Phone Number

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

Print Name of Signer: Alvyn A. Schopp

Title/Capacity: Authorized Person

Signature: *Alvyn A. Schopp*

Date: June 10, 2013

*\*Important Legal Notice Regarding Signature:* Per West Virginia Code §31D-1-122, Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.





## Certificate

*I, Natalie E. Tennant, Secretary of State of the  
State of West Virginia, hereby certify that*

an Amended Certificate of Authority of

**EXCO - NORTH COAST ENERGY EASTERN, INC.**

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

Therefore I issue this

### **CERTIFICATE OF AMENDMENT TO THE CERTIFICATE OF AUTHORITY**

changing the name of the corporation to

**EXCO RESOURCES (WV), INC.**



*Given under my hand and the  
Great Seal of the State of  
West Virginia on this day of  
December 2, 2009*

AUG 23 2016

*Natalie E. Tennant*  
Secretary of State

# State of West Virginia

The seal of the State of West Virginia, featuring a central figure holding a rifle and a plow, surrounded by the text "STATE OF WEST VIRGINIA" and "MONTANI SEMPER LIBERI".

## Certificate

*I, Natalie E. Tennant, Secretary of State of the  
State of West Virginia, hereby certify that*

**EXCO RESOURCES (PA), INC.**  
*(A Delaware Corporation)*

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

*Therefore, I issue this*

### CERTIFICATE OF CONVERSION

*Converting the corporation to:*

**EXCO RESOURCES (PA), LLC**  
*(A Delaware Limited Liability Company)*



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

July 1, 2010

*Natalie E. Tennant*

*Secretary of State*

03/03/2017



# Delaware

PAGE 1

*The First State*

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF CONVERSION OF "EXCO RESOURCES (PA), INC.", FILED IN THIS OFFICE ON THE TWENTY-SEVENTH DAY OF MAY, A.D. 2010, AT 1:32 O'CLOCK P.M.

AND I DO HEREBY FURTHER CERTIFY THAT THE EFFECTIVE DATE OF THE AFORESAID CERTIFICATE OF CONVERSION IS THE TWENTY-EIGHTH DAY OF MAY, A.D. 2010, AT 1:01 O'CLOCK P.M.

A FILED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS.

AND I DO HEREBY FURTHER CERTIFY THAT THE CORPORATION HAS FILED ALL DOCUMENTS AND PAID ALL FEES REQUIRED, AND THEREUPON THE CORPORATION SHALL CEASE TO EXIST AS A CORPORATION OF THE STATE OF DELAWARE.

**FILED**  
JUL 01 2010  
IN THE OFFICE OF  
SECRETARY OF STATE

2170990 0265C

100591725

You may verify this certificate online  
at [corp.delaware.gov/authver.shtml](http://corp.delaware.gov/authver.shtml)



*msb*  
Jeffrey W. Bullock, Secretary of State  
AUTHENTICATION: 8023179

DATE: 05-27-10

RECEIVED  
Office of Oil and Gas  
AUG 23 2016  
WV Department of  
Environmental Protection

03/03/2017

# State of West Virginia



## Certificate

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

by the provisions of Chapter 31 of the West Virginia Code, Articles of Merger were received and filed  
MERGING **EQUITABLE PRODUCTION - EASTERN STATES, INC.**, A QUALIFIED DE ORGANIZATION, WITH AND INTO  
**EQUITABLE PRODUCTION COMPANY**, A QUALIFIED ORGANIZATION.

Therefore, I hereby issue this

### **CERTIFICATE OF MERGER**



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

RECEIVED  
Office of Oil and Gas  
Aug 23 2001

*Secretary of State*  
WV Department of  
Environmental Protection

03/03/2017



799' to Bottom Hole

4,273' to Top Hole

LATITUDE 39 - 20 - 00

LONGITUDE 80 - 47 - 30

3,894' to Top Hole

11,662' to Bottom Hole

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



**Legend**

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

Bearing	Dist.
L1 N 80°04' E	407.6'
L2 S 34°20' W	627.9'
L3 S 08°20' E	809.7'
L4 N 10°01' E	492.7'
L5 N 26°11' E	830.9'



Note: It appears 23 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.

**Notes:**  
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
Well No. Pickney Unit 2H Top Hole coordinates are N: 302,249.29' Latitude: 39°19'20.90" E: 1,630,374.97' Longitude: 80°48'23.66"  
Bottom Hole coordinates are N: 294,480.91' Latitude: 39°18'04.63" E: 1,633,849.72' Longitude: 80°47'38.02"  
UTM Zone 17, NAD 1983  
Top Hole Coordinates Bottom Hole Coordinates  
N: 4,352,589.798m N: 4,350,240.838m  
E: 516,687.818m E: 517,785.882m  
Plate 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. Pickney Unit 2H UTM Zone 17, NAD 1927  
Top Hole Coordinates Bottom Hole Coordinates  
N: 14,279,407.04' N: 14,271,700.42'  
E: 1,695,119.28' E: 1,698,721.87'  
Point of Entry Coordinates  
N: 14,279,483.96'  
E: 1,695,519.39'

TM/Par	Bk / Pg	Acres	Owner(s)	
1	6/2	214 / 279	32.19	William Randall Lynch & Dixie Janet Craig
2	6/2.5	253 / 222	8.66	
3	6/2.8	305 / 419	2.68	Dominion Field Services, Inc.
4	6/2.6	266 / 36	3.52	
5	6/2.4	163 / 44	14.98	Equitrans, Inc.
6	6/2.3	197/659	1.82	Carol & Alfreda Painter

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

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

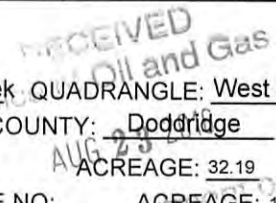
FILE NO: 238-30-WU-14  
DRAWING NO: 238-14 Pickney 2H Plat  
SCALE: 1" = 1200'  
MINIMUM DEGREE OF ACCURACY: Submeter  
PROVEN SOURCE OF ELEVATION: CORS, Marietta, OH

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

DATE: August 19 20 16  
Operator's Well No. Pickney Unit 2H  
API WELL NO  
47 - 017 - 06678  
STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
(IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
LOCATION: ELEVATION: Existing Grade - 848' Proposed Grade - 843' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union  
DISTRICT: West Union COUNTY: Doddridge  
SURFACE OWNER: William Randall Lynch & Dixie Janet Craig Russell Coleman, et al; WV Division of Natural Resources  
ROYALTY OWNER: Clarence Mutschelknaus; Laura A. Ford & S. L. Ford; Ida F. Ford; Alice H. Maxwell Martha Ann Ford McConnell, Memorandum of Oil & Gas  
PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) MOD-SHL  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 6,600' TVD 16,200' 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



03/03/2017



799' to Bottom Hole

4,273' to Top Hole

LATITUDE 39 - 20 - 00

LONGITUDE 80 - 47 - 30

3,894' to Top Hole

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



**Legend**

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- Interior surface tracts (approx.)

	Bearing	Dist.
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L3	S 08°20' E	809.7'
L4	N 10°01' E	492.7'
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Wellhead Layout  
Detail Not to Scale



**Notes:**  
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Well No. Pickney Unit 2H Top Hole coordinates are  
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6	6/2.3	197/659	1.82	Carol & Alfreda Painter

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

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

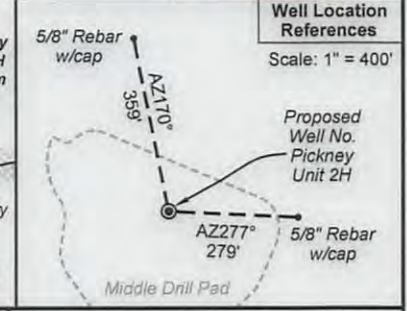
FILE NO: 238-30-WU-14  
DRAWING NO: 238-14 Pickney 2H Plat  
SCALE: 1" = 1200'  
MINIMUM DEGREE OF ACCURACY: Submeter  
PROVEN SOURCE OF ELEVATION: CORS, Marietta, OH

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

DATE: August 19 20 16  
Operator's Well No. Pickney Unit 2H  
API WELL NO  
47 - 017 - 06678  
STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
(IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
LOCATION: ELEVATION: Existing Grade - 848' Proposed Grade - 843' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union  
DISTRICT: West Union COUNTY: Doddridge  
SURFACE OWNER: William Randall Lynch & Dixie Janet Craig Russell Coleman, et al; WV Division of Natural Resources Martha Ann Ford McConnell, Memorandum of Oil & Gas William Mark Smith; William Randall Lynch & Dixie Craig  
ROYALTY OWNER: Clarence Mutschelknaus; Laura A. Ford & S. L. Ford; Ida F. Ford; Alice H. Maxwell LEASE NO: ACREAGE: 180; 124; 420; 32.15  
PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) MOD-SHL 6,600' TVD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 16,200' 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



03/03/2017



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

Date of Notice Certification: 08/22/2016

API No. 47- 017 - 06678  
Operator's Well No. Pickney Unit 2H  
Well Pad Name: Middle 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>516687.818m</u>
County:	<u>Doddridge</u>		Northing:	<u>4352589.798m</u>
District:	<u>West Union</u>	Public Road Access:	<u>WV 18</u>	
Quadrangle:	<u>West Union 7.5'</u>	Generally used farm name:	<u>William Randall Lynch &amp; Dixie Janet Craig</u>	
Watershed:	<u>Headwaters Middle Island Creek</u>			

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

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 40px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p><b>OOG OFFICE USE ONLY</b></p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
---	---

**Required Attachments:**

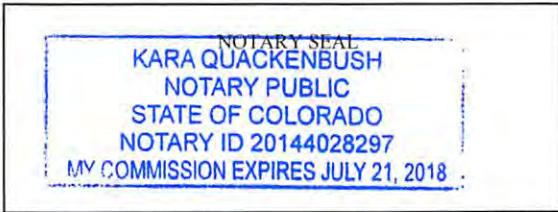
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication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

AUG 23 2016  
WV Department of  
Environmental Protection  
03/03/2017

**Certification of Notice is hereby given:**

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

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



Subscribed and sworn before me this 22 day of August 2016.  
*[Signature]* Notary Public  
 My Commission Expires July 21, 2018

**Oil and Gas Privacy Notice:**

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

RECEIVED  
 Office of Oil and Gas  
 AUG 23 2016  
 WV Department of  
 Environmental Protection  
 03/03/2017



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

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

**Date of Notice:** 8/22/2016 **Date Permit Application Filed:** 8/22/2016

**Notice of:**

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

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

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

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

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

SURFACE OWNER(s)

Name: William Randall Lynch & Dixie Janet Craig  
 Address: HC 69 Box 35  
West Union, WV 26456

Name: William Randall Lynch & Dixie Janet Craig  
 Address: 5534 WV Route 18 N (2nd Address)  
West Union, WV 26456

SURFACE OWNER(s) (Road and/or Other Disturbance)

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

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

SURFACE OWNER(s) (Impoundments or Pits)

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

COAL OWNER OR LESSEE

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

COAL OPERATOR

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

WATER PURVEYOR(s)/OWNER(s) OF WATER WELL, SPRING OR OTHER WATER SUPPLY SOURCE

Name: PLEASE SEE ATTACHMENT  
 Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

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

\*Please attach additional forms if necessary

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 Office of Oil and Gas  
 WV Department of Environmental Protection  
 03/03/2017

**Notice is hereby given:**

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

**This Notice Shall Include:**

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

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

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

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

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

**Well Location Restrictions**

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



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

**Water Well Testing:**

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

**Water Testing Laboratories:**

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

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

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

**Written Comment:**

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

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

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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.**

WV Department of  
Environmental Protection  
03/03/2017

**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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03/03/2017



WW-6A  
(8-13)

**API# 47-017-06678 SHL PERMIT MODIFICATION**

API NO. 47- 017 - 06678

OPERATOR WELL NO. Pickney Unit 2H

Well Pad Name: Middle Pad

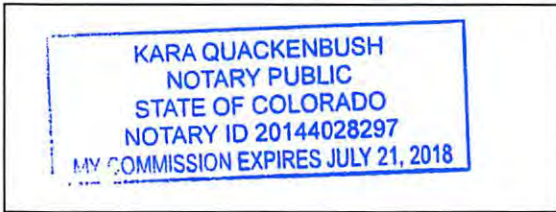
**Notice is hereby given by:**

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

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

**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](mailto:deprivacyofficer@wv.gov).



Subscribed and sworn before me this 22 day of August 2016.

Kara Quackenbush Notary Public

My Commission Expires July 21, 2018

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Environmental Protection  
03/03/2017

## WW-6A Notice of Application Attachment:

### Water Source Owners:

TM 6-2 (870')

TM 6-2.5 (760', 809')

TM 6-2.8 (1389')

TM 6-1 (1397')

**Owner:** William Randall Lynch & Dixie Janet Craig

**Address:** HC 69, Box 35  
West Union, WV 26456

**Owner:** William Randall Lynch & Dixie Janet Craig (2<sup>nd</sup> Address)

**Address:** 5534 WV Rt 18 N  
West Union, WV 26456

TM 6-2.6 (541')

**Owner:** Dominion Field Services, Inc.

**Address:** P.O. Box 2450  
Clarksburg, WV 26302

TM 6-2.3 (842')

**Owner:** Equitrans, Inc.

**Address:** 100 Allegheny Center Mall  
Pittsburgh, PA 15212

TM 6-2.3 (772')

**Owner:** Carol & Alfrieda Painter

**Address:** P. O. Box 175  
Shirley, WV 26434

TM 6-2.7 (679')

**Owner:** Randy K. Smith

**Address:** HC 69 Box 41F  
West Union, WV 26456

**Note: On attached water well map, 14 other water source owners are identified but they are located greater than 1500' from the subject well pad location.**

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600' 0' 600' 1200'

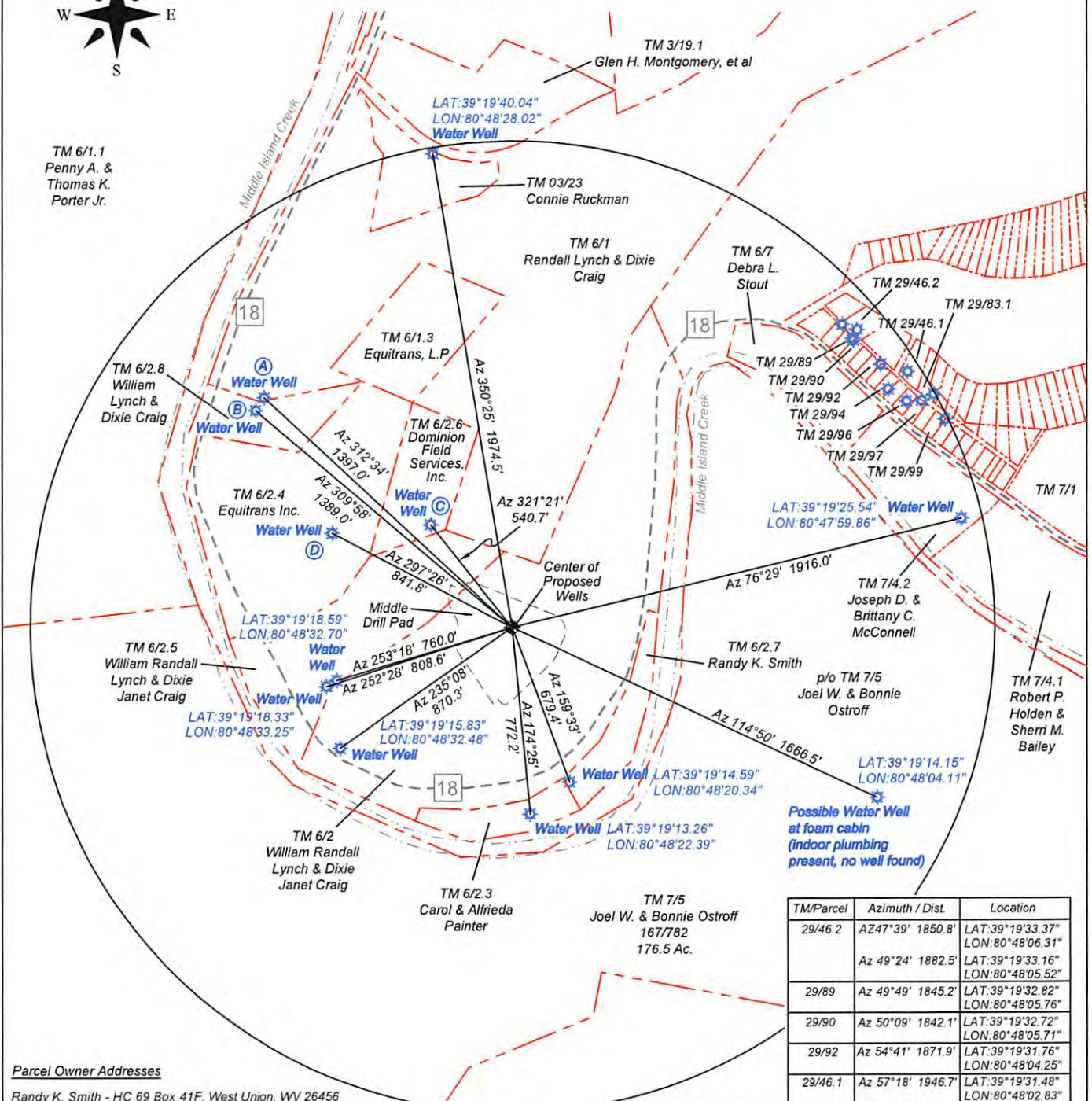


Scale 1" = 600'

# Middle Drill Pad Water Well & Spring Map



TM 6/1.1  
Penny A. &  
Thomas K.  
Porter Jr.



TM 6/2.5  
William Randall  
Lynch & Dixie  
Janet Craig

Possible Water Well  
at foam cabin  
(indoor plumbing  
present, no well found)

**Parcel Owner Addresses**

- Randy K. Smith - HC 69 Box 41F, West Union, WV 26456
- Equitrans Inc. - 100 Allegheny Center Mall, Pittsburgh, PA 15212
- Carol & Alfreda (Surv.) Painter - HCR 69 Box 35G, West Union, WV 26456
- Glen H. Montgomery, et al - 119 Gabriels Way, West Union, WV 26456
- Connie Ruckman & Gene Rowe - HC 69 Box 38B, West Union, WV 26456
- Dominion Field Services, Inc. - PO Box 2450, Clarksburg, WV 26302
- Joseph D. & Brittany C. McConnell - HC 69 Box 19, West Union, WV 26456
- William Randall Lynch & Dixie Janet Craig - HC 69 Box 35, West Union, WV 26456
- Joel W. & Bonnie Ostroff - 2912 Joyce Road, Roslyn, PA 19001

- (A) LAT:39°19'30.04"  
LON:80°48'36.75"
- (B) LAT:39°19'29.51"  
LON:80°48'37.19"
- (C) LAT:39°19'24.97"  
LON:80°48'27.86"
- (D) LAT:39°19'24.58"  
LON:80°48'33.06"

TM/Parcel	Azimuth / Dist.	Location
29/46.2	Az 47°39' 1850.8'	LAT:39°19'33.37" LON:80°48'06.31"
	Az 49°24' 1882.5'	LAT:39°19'33.16" LON:80°48'05.52"
29/89	Az 49°49' 1845.2'	LAT:39°19'32.82" LON:80°48'05.76"
29/90	Az 50°09' 1842.1'	LAT:39°19'32.72" LON:80°48'05.71"
29/92	Az 54°41' 1871.9'	LAT:39°19'31.76" LON:80°48'04.25"
29/46.1	Az 57°18' 1946.7'	LAT:39°19'31.48" LON:80°48'02.83"
29/94	Az 57°52' 1839.7'	LAT:39°19'30.75" LON:80°48'03.84"
29/96	Az 60°23' 1879.3'	LAT:39°19'30.26" LON:80°48'02.87"
29/83.1	Az 61°17' 1993.1'	LAT:39°19'30.56" LON:80°48'01.42"
29/97	Az 61°16' 1936.8'	LAT:39°19'30.29" LON:80°48'02.04"
29/99	Az 64°32' 1988.7'	LAT:39°19'29.56" LON:80°48'00.80"



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

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

Date of Notice: 08/22/2016 Date Permit Application Filed: 08/22/2016

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

- CERTIFIED MAIL RETURN RECEIPT REQUESTED
- HAND DELIVERY

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

Notice is hereby provided to the SURFACE OWNER(s)  
(at the address listed in the records of the sheriff at the time of notice):

Name: William Randall Lynch & Dixie Janet Craig	Name: William Randall Lynch & Dixie Janet Craig
Address: HC 69, Box 35 West Union, WV 26456	Address: 5534 WV Route 18 N (2nd Address) West Union, WV 26456

Notice is hereby given:

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

State: West Virginia	UTM NAD 83 Easting: 516687.818m
County: Doddridge	UTM NAD 83 Northing: 4352589.798m
District: West Union	Public Road Access: WV 18
Quadrangle: West Union 7.5'	Generally used farm name: William Randall Lynch & Dixie Janet Craig
Watershed: Headwaters Middle Island Creek	

This Notice Shall Include:

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

Well Operator: Antero Resources Corporation	Address: 1615 Wynkoop Street
Telephone: (303) 357-7310	Denver, CO 80202
Email: <a href="mailto:asteele@anteroresources.com">asteele@anteroresources.com</a>	Facsimile: 303-357-7315

Oil and Gas Privacy Notice:

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

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STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
**VOLUNTARY STATEMENT OF NO OBJECTION**

**Instructions to Persons Named on Page WW-6A**

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

**Comment and Waiver Provisions**

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

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

**VOLUNTARY STATEMENT OF NO OBJECTION**

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

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>546687.818m</u>
County:	<u>Doddridge</u>		Northing:	<u>4352589.798m</u>
District:	<u>West Union</u>	Public Road Access:		<u>WV 18</u>
Quadrangle:	<u>West Union 7.5'</u>	Generally used farm name:		<u>William Randall Lynch &amp; Dixie Janet Craig</u>
Watershed:	<u>Headwaters Middle Island Creek</u>			

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

<p>*Please check the box that applies</p> <p><input type="checkbox"/> SURFACE OWNER</p> <p><input type="checkbox"/> SURFACE OWNER (Road and/or Other Disturbance)</p> <p><input type="checkbox"/> SURFACE OWNER (Impoundments/Pits)</p> <p><input type="checkbox"/> COAL OWNER OR LESSEE</p> <p><input type="checkbox"/> COAL OPERATOR</p> <p><input type="checkbox"/> WATER PURVEYOR</p> <p><input type="checkbox"/> OPERATOR OF ANY NATURAL GAS STORAGE FIELD</p>	<p><b>FOR EXECUTION BY A NATURAL PERSON</b></p> <p>Signature: _____</p> <p>Print Name: _____</p> <p>Date: _____</p>
	<p><b>FOR EXECUTION BY A CORPORATION, ETC.</b></p> <p>Company: _____</p> <p>By: _____</p> <p>Its: _____</p> <p>Signature: _____</p> <p>Date: _____</p>

RECEIVED  
Office of Oil and Gas

**Oil and Gas Privacy Notice:**

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

AUG 23 2016  
WV Department of Environmental Protection



**LOCATION COORDINATES:**  
**ACCESS ROAD ENTRANCE**  
 LATITUDE: 39.322323 LONGITUDE: -80.804581 (NAD 83)  
 N 4352564.38 E 516844.80 (UTM ZONE 17 METERS)  
**CENTER OF TANK**  
 LATITUDE: 39.323853 LONGITUDE: -80.806238 (NAD 83)  
 N 4352709.35 E 516701.87 (UTM ZONE 17 METERS)  
**CENTROID OF WELL PAD**  
 LATITUDE: 39.322409 LONGITUDE: -80.806478 (NAD 83)  
 N 4352573.53 E 516681.13 (UTM ZONE 17 METERS)



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

WEST UNION DISTRICT, DODDRIDGE COUNTY, WEST VIRGINIA  
 MIDDLE ISLAND CREEK WATERSHED  
 USGS 7.5 WEST UNION QUAD MAP

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

**FLOODPLAIN NOTES:**  
 THE PROPOSED SITE IS LOCATED IN FLOODZONE "X" PER FEMA FLOOD MAP #54017CD110C.

**MISS UTILITY STATEMENT:**  
 ANTERO RESOURCES CORPORATION WILL NOTIFY MISS UTILITY OF WEST VIRGINIA FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN. TICKET #1309921798. IN ADDITION, MISS UTILITY WILL BE CONTACTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION FOR THIS PROJECT.

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

**ENVIRONMENTAL NOTES:**  
 WETLAND DELINEATIONS WERE PERFORMED ON APRIL 12, 2012, FEBRUARY 2014 & DECEMBER 2018 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 DECEMBER 5, 2018 WETLAND DELINEATION AND STREAM IDENTIFICATION REPORT WAS PREPARED BY ALLSTAR ECOLOGY, LLC AND SUMMARIZES THE RESULTS OF THE FIELD OBSERVATION. THIS REPORT 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.

Stream and Impact Cause	Permanent Impacts			Temp. Impacts		Total Disturbance (LF)
	Conduit/Fill (LF)	Inlets/Outlets Structures (LF)	Controls (LF)	Temp. Disturb. L.O.D. (LF)	Temp. Disturb. (LF)	
Ditch 1 (Access Road "A")	214	28	0	0	0	252
Ditch 2 (Access Road "A")	13	0	0	0	0	13

**GEOTECHNICAL NOTES:**  
 A SUBSURFACE INVESTIGATION OF THE PROPOSED SITE WAS PERFORMED BY TERMA TESTING, INC. UNDER THE TECHNICAL SUPERVISION OF KIENPFEIDER ON JULY 11, 2013-OCTOBER 10, 2013 AND REVISITED BY PENNSYLVANIA SOIL & ROCK, INC. ON MARCH 29-29, 2016. THE REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC. DATED APRIL 18, 2016, REVISED DECEMBER 8, 2016, REFLECTS THE RESULTS OF THE SUBSURFACE INVESTIGATION. THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS REPORT WAS USED IN THE PREPARATION OF THESE PLANS. HOWEVER, ADDITIONAL INVESTIGATION IS NECESSARY TO CONFIRM THE ESTIMATED TOE KEY DEPTHS. PLEASE REFER TO THE SUBSURFACE INVESTIGATION REPORT BY PENNSYLVANIA SOIL & ROCK, INC. FOR ADDITIONAL INFORMATION, AS NEEDED.

**PROJECT CONTACTS:**  
 CHARLES E. COMPTON, III - SURVEYING COORDINATOR  
 CELL: (304) 718-4649

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

DAVE CAVA - LAND AGENT  
 CELL: (304) 841-5814

**ENGINEER/SURVEYOR:**  
 NAVITUS ENGINEERING, INC.  
 CYRUS S. KUMP, PE - PROJECT MANAGER/ENGINEER  
 OFFICE: (888) 682-4185 CELL: (540) 896-6747

**ENVIRONMENTAL:**  
 ALLSTAR ECOLOGY, LLC  
 RYAN L. WARD - ENVIRONMENTAL SCIENTIST  
 OFFICE: (866) 213-2668 CELL: (304) 692-7477

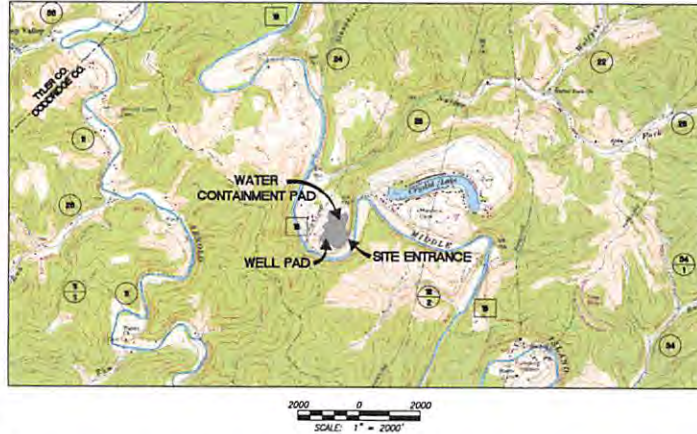
**GEOTECHNICAL:**  
 PENNSYLVANIA SOIL & ROCK, INC.  
 CHRISTOPHER W. SAMOIS - PROJECT ENGINEER  
 OFFICE: (412) 372-6000 CELL: (412) 589-0882

**RESTRICTIONS NOTES:**

- THERE ARE NO LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE WELL PAD AND LOD.
- THERE ARE 2 EXISTING WETLANDS AND A PERENNIAL STREAM WITHIN 100' OF THE ACCESS ROAD "A" LOD THAT WILL REMAIN UNDISTURBED.
- THERE ARE NO NATURALLY PRODUCING TROUT STREAMS WITHIN 300 FEET OF THE WELL PAD AND LOD.
- THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE WELL PAD AND LOD.
- THERE ARE NO APPARENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELLS) BEING DRILLED.
- THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.
- THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.

**REPRODUCTION NOTE**

THESE PLANS WERE CREATED TO BE PLOTTED ON 11"x17" (ANSI B) PAPER. HALF SCALE DRAWINGS ARE ON 11"x17" (ANSI B) PAPER.  
 THESE PLANS WERE CREATED FOR COLOR PLOTTING AND ANY REPRODUCTIONS IN GRAY SCALE OR COLOR MAY RESULT IN A LOSS OF INFORMATION AND SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.



**DESIGN CERTIFICATION:**  
 THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS CHS 35-5.

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

WEST VIRGINIA STATE PLANK COORDINATE SYSTEM  
 NORTH ZONE, NAD83 ON ANYWAVE  
 ESTABLISHED BY SOCIETY OF SURVEYORS  
 POST-PROCESSING

**SHEET INDEX:**

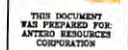
- 1 - COVER SHEET
- 2 - CONSTRUCTION AND E&S CONTROL NOTES
- 3 - LEGEND
- 4 - MATERIAL QUANTITIES
- 5 - STORM DRAINAGE COMPUTATIONS
- 6 - EXISTING CONDITIONS
- 7 - EXISTING STRUCTURES & FEATURES
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- 9 - WELL PAD & WATER CONTAINMENT PAD PLAN
- 10 - WELL PAD GRADING PLAN
- 11 - WATER CONTAINMENT GRADING PLAN
- 12 - ACCESS ROAD PROFILES
- 13 - ACCESS ROAD SECTIONS
- 14 - ACCESS ROAD SECTIONS & STOCKPILE SECTIONS
- 15 - WELL PAD & WATER CONTAINMENT PAD SECTIONS
- 16-23 - CONSTRUCTION DETAILS
- 24 - WELL PAD & WATER CONTAINMENT PAD RECLAMATION PLAN
- 25 - FIRM EXHIBIT
- GE500-GE503 - GEOTECHNICAL DETAILS

Proposed Well Name	WV North NAD 83	WV North NAD 83	UTM (METERS) Zone 17	NAD 83 Lat & Long
Caboose Unit 14	N 30228.74	N 30228.80	N 435258.14	LAT 39-19-21.2068
Caboose Unit 14	E 1630547.23	E 166808.05	E 516829.21	LONG -80-48-23.3838
Caboose Unit 24	N 30228.96	N 30228.98	N 435258.23	LAT 39-19-21.2734
Caboose Unit 24	E 163056.48	E 158915.29	E 516882.15	LONG -80-48-23.2755
Pickney Unit 14	N 30228.11	N 30228.27	N 435258.81	LAT 39-19-21.2370
Pickney Unit 14	E 163038.72	E 158924.53	E 516858.68	LONG -80-48-23.1572
Pickney Unit 24	N 30228.29	N 30228.48	N 435258.83	LAT 39-19-21.2027
Pickney Unit 24	E 1630374.97	E 158933.78	E 516887.82	LONG -80-48-23.2388
Goldsmith Unit 14	N 30228.48	N 30228.64	N 435258.68	LAT 39-19-21.1643
Goldsmith Unit 14	E 163038.24	E 158943.02	E 516890.05	LONG -80-48-22.9205
Goldsmith Unit 24	N 30224.66	N 302276.82	N 435257.87	LAT 39-19-21.1276
Goldsmith Unit 24	E 1630383.45	E 158952.26	E 516883.48	LONG -80-48-22.8222
Jay Unit 14	N 30227.85	N 302273.01	N 435258.48	LAT 39-19-21.0815
Jay Unit 14	E 1630462.70	E 158980.51	E 516896.32	LONG -80-48-22.8839
Jay Unit 24	N 30228.02	N 30228.19	N 435258.34	LAT 39-19-21.2651
Jay Unit 24	E 1630411.84	E 158970.75	E 516898.16	LONG -80-48-22.9556
Chalk Unit 14	N 30228.22	N 30228.38	N 435258.22	LAT 39-19-21.0188
Chalk Unit 14	E 1630421.18	E 158979.99	E 516701.99	LONG -80-48-22.4472
Chalk Unit 24	N 30228.40	N 302281.95	N 435258.11	LAT 39-19-20.9824
Chalk Unit 24	E 1630435.43	E 158959.24	E 516704.83	LONG -80-48-22.3289
Well Pad Elevation	843.0			

Total Site	MIDDLE LIMITS OF DISTURBANCE AREA (AC)		Total
	Permitted	Modification	
Access Road "A" (644')	3.29	1.00	4.29
Access Road "B" (499')	0.68	0.00	0.68
Access Road "C" (232')	0.42	0.00	0.42
Well Pad	5.53	0.00	5.53
Water Containment Pad	3.30	0.00	3.30
Excess/Topsoil Material Stockpiles	4.53	0.00	4.53
<b>Total Affected Area</b>	<b>18.85</b>	<b>1.00</b>	<b>19.05</b>
Total Wooded Acres Disturbed	3.82	0.76	4.38
<b>Impacts to William R Lynch &amp; Dixie J. Cray TM 6-2</b>			
Access Road "A" (644')	3.29	0.00	4.29
Access Road "B" (499')	0.68	0.00	0.68
Well Pad	5.01	0.00	5.01
Water Containment Pad	0.73	0.00	0.73
Excess/Topsoil Material Stockpiles	4.53	0.00	4.53
<b>Total Affected Area</b>	<b>14.54</b>	<b>1.00</b>	<b>15.54</b>
Total Wooded Acres Disturbed	2.31	0.76	3.07
<b>Impacts to William R Lynch &amp; Dixie J. Cray TM 6-2 S</b>			
Access Road "C" (215')	0.40	0.00	0.40
Well Pad	0.52	0.00	0.52
Water Containment Pad	0.14	0.00	0.14
<b>Total Affected Area</b>	<b>1.06</b>	<b>0.00</b>	<b>1.06</b>
Total Wooded Acres Disturbed	0.07	0.00	0.07
<b>Impacts to Randall Lynch &amp; Dixie Cray TM 6-1</b>			
Access Road "C" (14')	0.02	0.00	0.02
Water Containment Pad	2.43	0.00	2.43
<b>Total Affected Area</b>	<b>2.45</b>	<b>0.00</b>	<b>2.45</b>
Total Wooded Acres Disturbed	1.29	0.00	1.29



DATE	REVISION
02/26/2016	REVISED PER DRILLING COMMENTS
02/26/2016	REVISED PER CONSTRUCTION
02/26/2016	REVISED ENTRANCE LOCATION



THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

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



DATE: 12/09/2016  
 SCALE: AS SHOWN  
 SHEET 1 OF 25



# OVERALL PLAN SHEET INDEX & VOLUMES

**NOTES:**

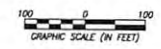
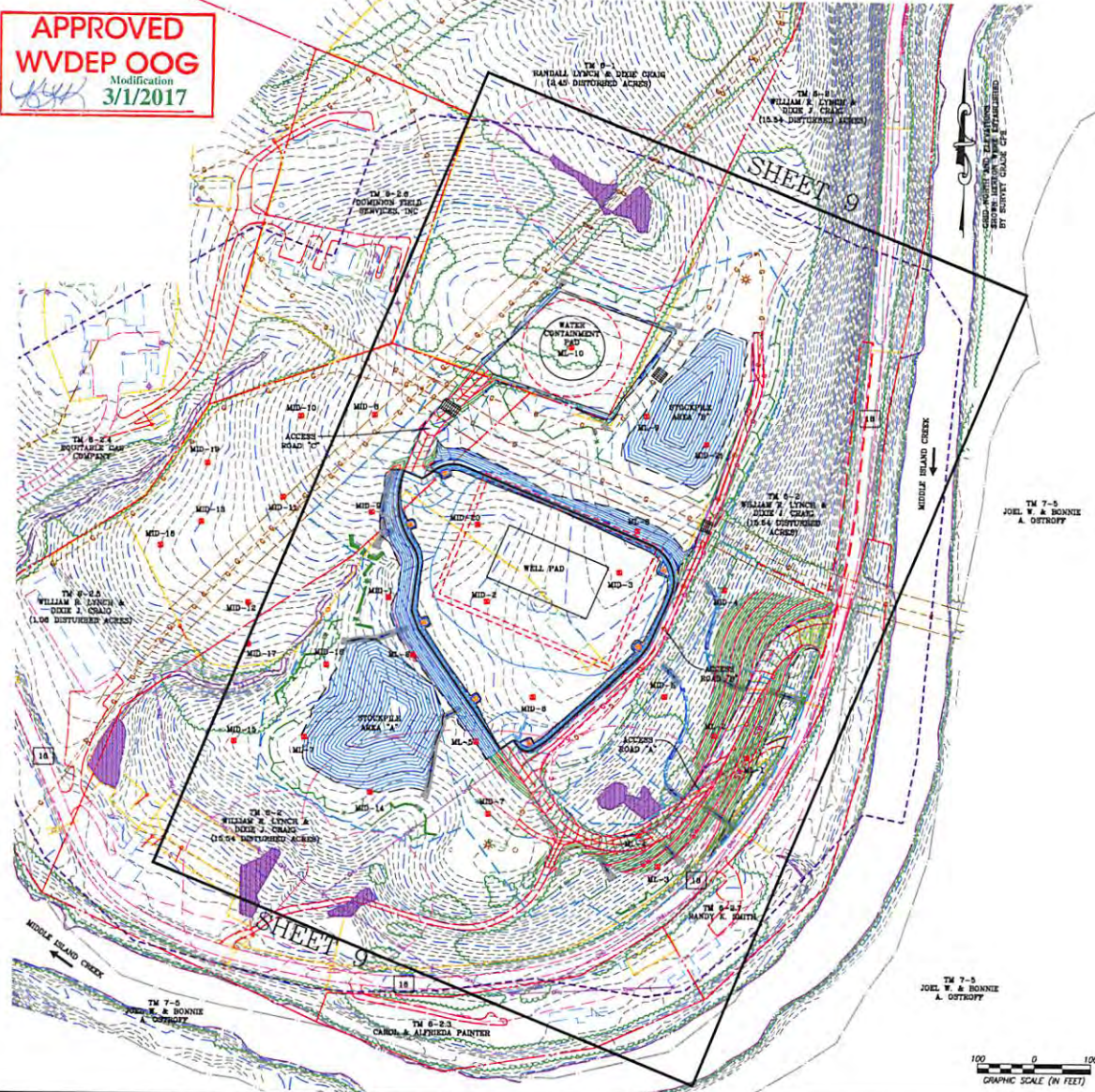
- THE EARTHWORK QUANTITIES PROVIDED ARE AN ESTIMATE FOR CONSIDERATION. THE QUANTITIES SHOWN ARE CALCULATED USING A 1:1 CUT/SWELL & FILL SLOPE FACTOR. THE EXCESS MATERIAL & TOPSOIL STOCKPILES ARE SIZED TO ACCOMMODATE A CUT/SWELL FACTOR OF 1.1:1. THIS ADDITIONAL MATERIAL IS REFLECTED IN THE TOTAL SPOIL SHOWN ON THE MATERIAL QUANTITIES TABLE. IF THE CALCULATED SWELL IS LESS THAN 1.1:1, THE STOCKPILE SIZES CAN BE REDUCED DURING CONSTRUCTION. THE QUANTITIES SHOWN MAY BE GREATER OR LESSER THAN ACTUALLY EXCAVATED. THE ENGINEER IS NOT RESPONSIBLE FOR VARIANCES FROM THE ESTIMATED QUANTITIES AND DOES NOT CERTIFY THEIR ACCURACY.
- THE TOP BENCH DEPTHS AND QUANTITIES PROVIDED IN THE TABLE ARE AN ESTIMATE, CALCULATED FROM THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC. SEE PAGES GE200-GE203 & GEOTECHNICAL INVESTIGATION REPORT PROVIDED BY PENNSYLVANIA SOIL & ROCK, INC. FOR TOP BENCH DETAILS, VOLUMES, AND SPECIFICATIONS.

**APPROVED**  
**WVDEP OOG**  
Modification  
3/1/2017

MIDDLE WELL PAD & WATER CONTAINMENT PAD						
Description	Cut (CY)	Fill (CY)	Spoil (CY)	Borrow (CY)	Max. Slope (%)	Length of Slope (FT)
Access Road "A"	12,205.8	6,337.7	5,968.1	0.0	15.0	290.0
Access Road "B"	286.2	789.9	0.0	503.7	10.0	50.0
Access Road "C"	52.5	328.0	0.0	275.5	11.5	125.0
Well Pad	21,565.6	16,309.0	5,256.8	0.0	n/a	n/a
Water Containment Pad	877.0	1,511.2	0.0	634.2	n/a	n/a
Shipped Topsoil (12")	13,355.5	0.0	13,355.5	0.0	n/a	n/a
Material Stockpiles	0.0	32,180.0	0.0	32,180.0	n/a	n/a
<b>Totals</b>	<b>48,342.6</b>	<b>57,455.8</b>	<b>24,480.2</b>	<b>33,593.4</b>	<b>n/a</b>	<b>n/a</b>
	<b>Total Spoil (CY):</b>	<b>49,113.2</b>				

MATERIAL STOCKPILES		
Name	Excess	Topsoil
3" Topsoil Respread	N/A	1,000
A	5,910	14,990
B	10,280	0
<b>TOTAL</b>	<b>16,190</b>	<b>15,990</b>

MIDDLE TOE BENCH QUANTITIES				
Description	Keyway #1A	Keyway #1B	Total	
Drainage Method	D2	D1		N/A
<b>Toe Bench</b>				
Approximate Depth (LF)	15	6		N/A
Approximate Width (15' min.) (LF)	15	15		N/A
Length (LF)	560	750	1,310	
Perimeter Drain (LF)	560	750	1,310	
AASHTO #57 Gravel (TONS)	85	1,105	1,190	
6 oz Non-woven Geotextile (SF)	3,606	22,137	25,744	
Overexcavation (CY)	12,320	6,125	18,445	
<b>Toe Bench Outlet Drain</b>				
Average Length of Outlet Drain Pipe (LF)	90	55		N/A
Outlet Drain Pipe (LF)	360	440	800	
6 oz Non-woven Geotextile (SF)	2,520	3,080	5,600	
AASHTO #57 Gravel (TONS)	40	49	89	
<b>Bonding Bench</b>				
Approximate Depth (LF)	0	0		N/A
Approximate Width (LF)	10	0		N/A
Number of Benches (EA)	2	0		N/A
Length (LF)	420	0	420	
Perimeter Drain (LF)	840	0	840	
AASHTO #57 Gravel (TONS)	64	0	64	
6 oz Non-woven Geotextile (SF)	5,410	0	5,410	
Overexcavation (CY)	4,340	0	4,340	
<b>Bonding Bench Outlet Drain</b>				
Average Length of Outlet Drain Pipe (LF)	55	0		N/A
Outlet Drain Pipe (LF)	495	0	495	
6 oz Non-woven Geotextile (SF)	3,465	0	3,465	
AASHTO #57 Gravel (TONS)	55	0	55	
<b>Additional Excavation</b>				
Collocated Material Removal (CY)	N/A	N/A		0



**NAVITUS**  
ENERGY ENGINEERING  
Telephone: (888) 682-1165 | www.NavitusEng.com

DATE	REVISION
01/26/2016	REVISED PER DRILLING COMMENTS
01/16/2016	REVISED PER CONSTRUCTION
12/09/2015	REVISED ENTRANCE LOCATION



OVERALL PLAN SHEET INDEX & VOLUMES  
**MIDDLE**  
WELL PAD & WATER CONTAINMENT PAD  
WEST UNION DISTRICT  
DODDRIEDGE COUNTY, WEST VIRGINIA

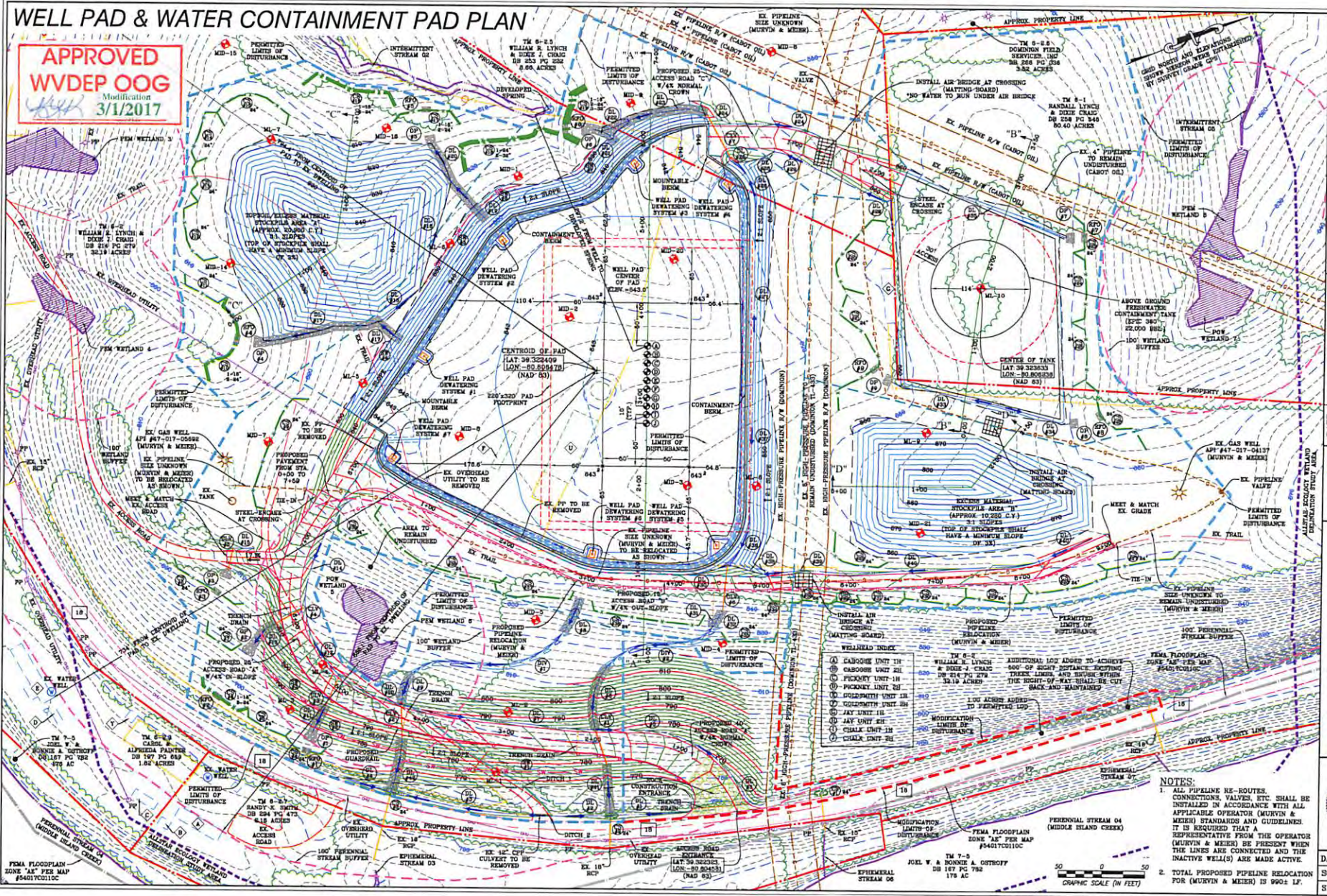


DATE: 12/09/2016  
SCALE: 1" = 100'  
SHEET 8 OF 25



# WELL PAD & WATER CONTAINMENT PAD PLAN

**APPROVED**  
**WVDEP OOG**  
Modification  
3/1/2017



**NAVITUS**  
ENERGY ENGINEERING

DATE	REVISION
01/24/2016	ISSUED FOR BIDDING COMMENTS
04/19/2016	REVISED PER BIDDING COMMENTS
12/09/2016	REVISED ENTRANCE LOCATION



THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

WELL PAD AND WATER CONTAINMENT PAD PLAN  
**MIDDLE**  
WELL PAD & WATER CONTAINMENT PAD  
WEST UNION DISTRICT  
PODDRIDGE COUNTY, WEST VIRGINIA



DATE: 12/09/2016  
SCALE: 1" = 50'  
SHEET 9 OF 25

**NOTES:**  
1. ALL PIPELINE RE-ROUTES, CONNECTIONS, VALVES, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE OPERATOR (MURVIN & MEIER) STANDARDS AND GUIDELINES. IT IS REQUIRED THAT A REPRESENTATIVE FROM THE OPERATOR (MURVIN & MEIER) BE PRESENT WHEN THE LINES ARE CONNECTED AND THE INACTIVE WELL(S) ARE MADE ACTIVE.  
2. TOTAL PROPOSED PIPELINE RELOCATION FOR (MURVIN & MEIER) IS 990± LF.

- ① CARBONE UNIT 1H
- ② CARBONE UNIT 2H
- ③ PICKNEY UNIT 2H
- ④ GOLDSMITH UNIT 3H
- ⑤ GOLDSMITH UNIT 3H
- ⑥ JAY UNIT 1H
- ⑦ JAY UNIT 2H
- ⑧ CHALK UNIT 1H
- ⑨ CHALK UNIT 2H

JOEL W. A. MONROE AUSTROFF  
DB 187 PG 782  
178 AC

