



west virginia department of environmental protection

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

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

Wednesday, January 29, 2020
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for POSSUM UNIT 1H
47-095-02640-00-00

Modified Lateral for a TMD of 26,100'

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.

A blue ink signature of James A. Martin, written in a cursive style, is positioned above the name and title.

James A. Martin
Chief

Operator's Well Number: POSSUM UNIT 1H
Farm Name: BARBARA KAY TURNER
U.S. WELL NUMBER: 47-095-02640-00-00
Horizontal 6A New Drill
Date Modification Issued: January 29, 2020

Promoting a healthy environment.

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

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

2) Operator's Well Number: Possum Unit 1H Well Pad Name: Gamehenge East Pad

3) Farm Name/Surface Owner: Barbara Kay Turner Public Road Access: State Ridge Road

4) Elevation, current ground: 1072' Elevation, proposed post-construction: ~1061'

5) Well Type (a) Gas Oil Underground Storage

Other _____

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 7000' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2850#

8) Proposed Total Vertical Depth: 7000' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 26100' MD

11) Proposed Horizontal Leg Length: 15710'

12) Approximate Fresh Water Strata Depths: 363'

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

14) Approximate Saltwater Depths: 1093'

15) Approximate Coal Seam Depths: 550'

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

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

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

Depth: _____

Seam: _____

Owner: _____

RECEIVED
Office of Oil and Gas

DEC 30 2019

18) CASING AND TUBING PROGRAM

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20"	New	H-40	94#	80	80	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	413 *see # 19	413 *see # 19	CTS, 574 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	26100	26100	6769 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	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			

RECEIVED
Office of Oil and Gas

DEC 30 2019

WV Department of
Environmental Protection

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

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

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

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

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

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

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 7.45 acres

22) Area to be disturbed for well pad only, less access road (acres): 7.45 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

RECEIVED
Office of Oil and Gas
DEC 8 0 2019
WV Department of
Environmental Protection

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.

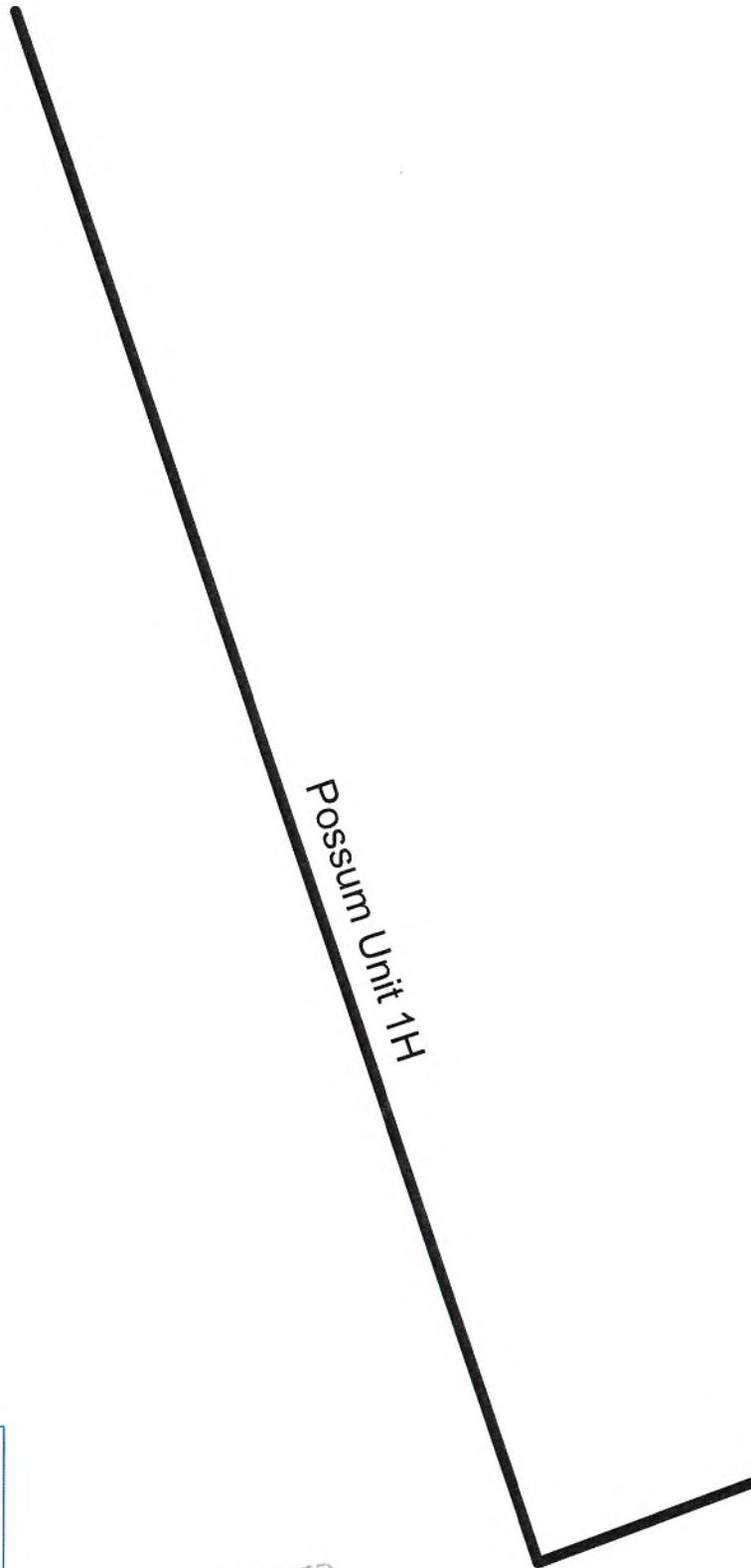
*Note: Attach additional sheets as needed.



POSSUM UNIT 1H (GAMEHENG EAST PAD) - AREA OF REVIEW
35-8-5.11 PAGE 1

PERMIT MODIFICATION API # 47-095-02640

95-02640
MOD



Antero Resources Corporation

Possum Unit 1H - AOR



REMARKS
No Wells of Interest

June 20, 2019

RECEIVED
Office of Oil and Gas
DEC 30 2019
WV Department of
Environmental Protection

WW-6A1
(5/13)

Operator's Well No. Poosum Unit 1H 47-095-02640
men

**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>Martha Hayes et vir Lease</u>	Martha Hayes et vir	Antero Resources Corporation	1/8	0522/0457

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

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

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

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

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

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

RECEIVED
Office of Oil and Gas

DEC 30 2019

WV Department of
Environmental Protection

WW-6A1

Operator's Well Number Possum Unit 1H

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

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

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

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Linda L. Newbrough Lease</u>			
Linda L. Newbrough	Chesapeake Appalachia, LLC	1/8	0373/0234
Chesapeake Appalachia, LLC	Statoil USA Onshore Properties, Inc	Assignment	0376/0733
Statoil USA Onshore Properties, Inc	EQT Production Company	Assignment	0539/0239
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001
<u>Jack Russell Folger, et ux Lease</u>			
Jack Russell Folger, et ux	Antero Resources Corporation	1/8+	0495/0097
<u>Naomi V. Beagle Lease</u>			
Naomi V. Beagle	Antero Resources Corporation	1/8+	0535/0464
<u>Scott Denomme, et ux Lease</u>			
Scott Denomme, et ux	Antero Resources Corporation	1/8+	0535/0187
<u>Sarah A. Midcap Lease (TM 9 PCL 39)</u>			
Sarah A. Midcap	Antero Resources Corporation	1/8+	0472/0580
<u>Sarah A. Midcap Lease (TM 9 PCL 31)</u>			
Sarah A. Midcap	Antero Resources Corporation	1/8+	0472/0582
<u>Waco Oil & Gas Company Inc. Lease</u>			
Waco Oil & Gas Company Inc.	Statoil USA Onshore Properties Inc.	1/8	0514/0638
Statoil USA Onshore Properties Inc.	EQT Production Company	Assignment	0577/0128
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001
<u>David E. Bowyer Lease</u>			
David E. Bowyer	Antero Resources Corporation	1/8+	0569/0503
<u>Sandra L. Baumgardner Lease</u>			
Sandra L. Baumgardner	Antero Resources Corporation	1/8+	0576/0083
<u>Donald Lancaster et ux Lease</u>			
Donald Lancaster et ux	Triad Hunter LLC	1/8	0391/0443
Triad Hunter LLC	Antero Resources Corporation	Assignment	0496/0776
<u>Thomas Goodwin et ux Lease</u>			
Thomas Goodwin et ux	Triad Hunter LLC	1/8	0391/0443
Triad Hunter LLC	Antero Resources Corporation	Assignment	0496/0776

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

CONTINUED ON NEXT PAGE

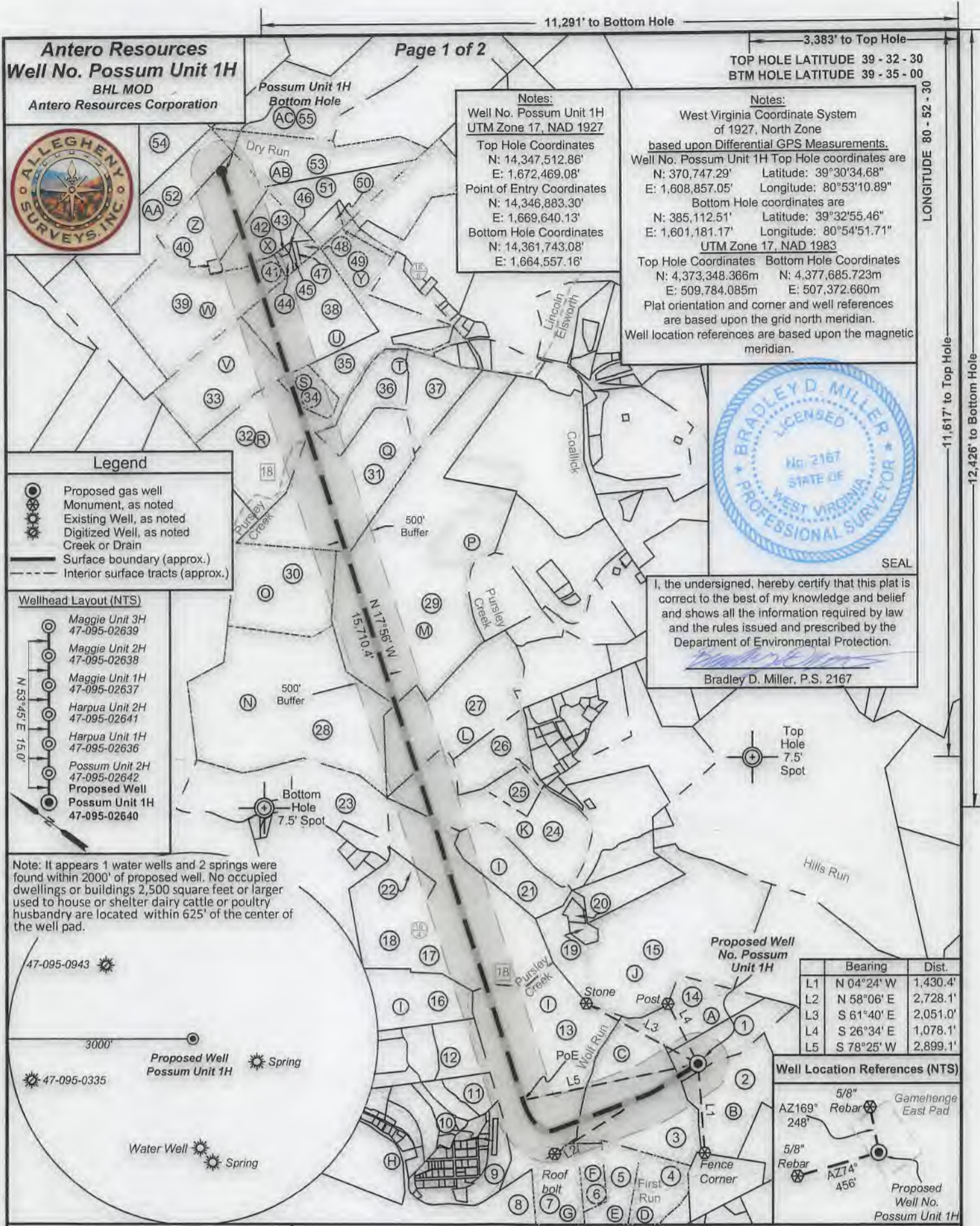
INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
 Chapter 22, Article 6A, Section 5(a)(5)
 IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

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
Melodee Matheny Lease			
Melodee Matheny	Antero Resources Corporation	1/8+	0557/0713
Diane W. Kestle Lease			
Diane W. Kestle	Antero Resources Corporation	1/8+	0504/0232
BRC Appalachian Mineral I LLC Lease			
BRC Appalachian Mineral I LLC	BRC Working Interest Company LLC	1/8	0369/0648
BRC Working Interest Company LLC	Chesapeake Appalachian LLC	Assignment	0269/0784
Chesapeake Appalachian LLC	SWN Production Company	Agreement	0465/0463
SWN Production Company	Antero Exchange Properties LLC	Assignment	0544/0242
Antero Exchange Properties LLC	Antero Resources Corporation	Name Change	Exhibit 1
Jean Cline Lease			
Jean Cline	Antero Resources Corporation	1/8+	0538/0813

RECEIVED
 Office of Oil and Gas
 DEC 30 2019
 WV Department of
 Environmental Protection



Antero Resources
Well No. Possum Unit 1H
 BHL MOD
 Antero Resources Corporation

11,291' to Bottom Hole
 3,383' to Top Hole
 TOP HOLE LATITUDE 39 - 32 - 30
 BTM HOLE LATITUDE 39 - 35 - 00



Notes:
 Well No. Possum Unit 1H
 UTM Zone 17, NAD 1927
 Top Hole Coordinates
 N: 14,347,512.86'
 E: 1,672,469.08'
 Point of Entry Coordinates
 N: 14,346,883.30'
 E: 1,669,640.13'
 Bottom Hole Coordinates
 N: 14,361,743.08'
 E: 1,664,557.16'

Notes:
 West Virginia Coordinate System
 of 1927, North Zone
 based upon Differential GPS Measurements.
 Well No. Possum Unit 1H Top Hole coordinates are
 N: 370,747.29' Latitude: 39°30'34.68"
 E: 1,608,857.05' Longitude: 80°53'10.89"
 Bottom Hole coordinates are
 N: 385,112.51' Latitude: 39°32'55.46"
 E: 1,601,181.17' Longitude: 80°54'51.71"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,373,348.366m N: 4,377,685.723m
 E: 509,784.085m E: 507,372.660m
 Plat orientation and corner and well references
 are based upon the grid north meridian.
 Well location references are based upon the magnetic
 meridian.

LONGITUDE 80 - 52 - 30
 11,617' to Top Hole
 12,426' to Bottom Hole

Legend
 Proposed gas well
 Monument, as noted
 Existing Well, as noted
 Digitized Well, as noted
 Creek or Drain
 Surface boundary (approx.)
 Interior surface tracts (approx.)

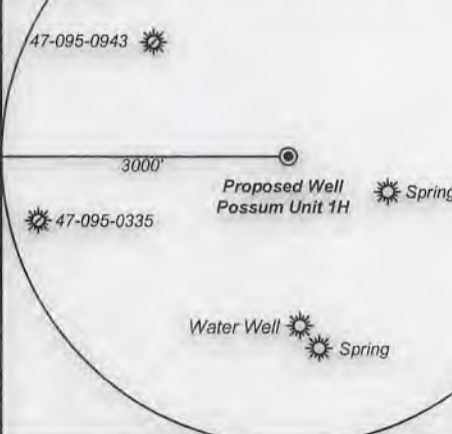
Wellhead Layout (NTS)

- Maggie Unit 3H
47-095-02639
- Maggie Unit 2H
47-095-02638
- Maggie Unit 1H
47-095-02637
- Harpua Unit 2H
47-095-02641
- Harpua Unit 1H
47-095-02636
- Possum Unit 2H
47-095-02642
- Proposed Well
Possum Unit 1H
47-095-02640

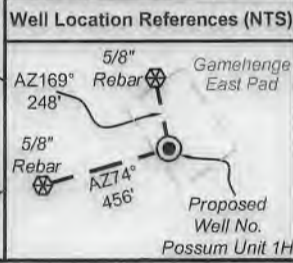


I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.
 Bradley D. Miller, P.S. 2167

Note: It appears 1 water wells and 2 springs 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.



	Bearing	Dist.
L1	N 04°24' W	1,430.4'
L2	N 58°06' E	2,728.1'
L3	S 61°40' E	2,051.0'
L4	S 26°34' E	1,078.1'
L5	S 78°25' W	2,899.1'



FILE NO: 39-54-E-16
 DRAWING NO: Possum 1H Well Plat
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY:
 Submeter
 PROVEN SOURCE OF ELEVATION:
 WVDOT, Harrisville, WV

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

DATE: November 6 20 19
 OPERATOR'S WELL NO. Possum Unit 1H
 API WELL NO. MOD
 47 - 095 - 02640
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 Proposed 1061'
 LOCATION: ELEVATION: Existing 1072' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Paden City 51.96; 10.75;
 DISTRICT: Ellsworth/Lincoln BRC Appalachian Minerals I, LLC; 49.88; 93.63;
 SURFACE OWNER: Barbara Kay Turner Jean Cline; Martha Hayes, et vir; Donald Lancaster Jr., et ux; 64.18; 62.84375;
 Thomas Goodwin, et ux; Melodee Matheny; Diane W. Kestley; 452.99125; 74.169;
 Waco Oil & Gas, Inc.; David E. Bowyer; Sandra L. Baumgardner; ACREAGE: 26.18 91.831; 144.3125;
 ROYALTY OWNER: Linda L. Newbrough; Naomi V. Beagle; Scott Denomme, et ux; Sarah A. Midcap (2) LEASE NO: ACREAGE: 74.496; 109.48
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 7,000' TVD
 26,100' 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

ID	TM/Par	Owner	Bk/Pg	Acres
1	15-18	Barbara Kay Turner	398/670	26.18
2	15-19	David Mendenhall, et al	282/723	45.00
3	14-27	Ridgetop Capital LP	372/299	64.96
4	14-60.2	Douglas & Tricia Long	333/872	24.47
5	14-60	James A. Jr. & Angela K. Long	333/188	23.99
6	14-58	Linda Newbrough	WB 36/617	10.31
7	14-57	Danny Eugene Cochran	344/251	40.30
8	14-56.1	Boyd M. & Patricia L. Parr	358/643	35.33
9	14A-29	Victor A. & Lorraine Weekley	299/300	13.00
10	14A-29.1	Mensore J.C. Distributors	285/213	1.00
11	14-23	Jackie R. Brookover II	321/749	6.88
12	14-20.1	Jackie R. Brookover II	346/29	13.46
13	14-24	Ridgetop Capital LP	372/299	124.76
14	14-26	Barbara Kay Turner	398/670	26.34
15	114-25	Stanley M. & Irene E. Koterba, et al	331/32	126.05
16	14-18	Terry W. & Carolyn Sue Tracy	193/473	37.00
17	14-9	Robert L. Keller	299/379	116.90
18	14-8	Christine Connell, et al	---/---	37.00
19	14-25.2	Andrew B. & Angela M. Negie	489/577	3.00
20	14-25.1	Roy F. Gorrell	447/180	2.00
21	14-10	Sarah A. Midcap	342/568	40.00
22	14-9.1	John W. & Ida L. Murner	338/162	6.00
23	9-36.2	Ron & Charlene Vancamp	296/390	28.79
24	9-39	Tyler County Board of Education	290/88	65.00
25	9-40.1	Tyler County Board of Education	290/88	9.17
26	9-40	Sarah A. Midcap	168/3	16.83
27	9-31	Sarah A. Midcap	168/3	74.00
28	9-30	Heartwood Forestland Fund II LP	326/547	144.31
29	9-15	Heartwood Forestland Fund II LP	326/547	225.64
30	9-20	Heartwood Forestland Fund II LP	326/547	57.61
31	9-14	Leroy Kent Morris, et al	480/311	93.63
32	13-8	D.H. Jr., & Janice K. Lancaster	351/288	52.84
33	13-3	Mark E. Heintzman	221/635	51.96
34	13-4	William Franklin Ferrell	207/417	10.75
35	9-44	Diane W. Clark	WB 39/544	40.68
36	9-1	Linda L. Stemple	369/9	24.24
37	9-2	William & Margaret Garrett	284/41	22.19
38	9-36	Diane W. Clark	WB 39/544	59.00
39	9-28	Constance Heintzman	WB 43/505	104.50
40	9-29	Russell D. & Mary A. Adams	190/300	1.00
41	9-28.1	Ervin L. & Betty M. Bassett	299/158	4.35
42	9-30	Ervin L. & Betty M. Bassett	309/391	19.57
43	9-30.4	Ervin L. & Betty M. Bassett	337/119	0.34
44	9-30.5	Georgeanna & Scott Michael	414/470	1.53
45	9-30.6	Georgeanna & Scott Michael	423/709	0.58
46	9-30.3	Ervin L. & Betty M. Bassett	337/119	0.23
47	9-30.2	Mark B. Hubbard, Jr.	309/388	1.27
48	9-30.1	Mark B. Hubbard, Jr.	423/709	1.38
49	9-35	Mark E. Heintzman	246/532	19.75
50	9-31.2	Ralph & Sylvia Harter	347/178	4.57
51	9-31	Russell L. & Mary E. Myers	347/263	31.45
52	9-27	Robert Livio Bolner	226/593	59.00
53	9-31.1	Russell L. & Mary E. Myers	340/654	38.04
54	9-24	Ethan A. & Marsha L. Riffle	299/26	82.00
55	9-19	Russell L. & Mary E. Myers	337/26	93.17

Lessor	
A	Linda L. Newbrough
B	Jack Russell Folger, et ux
C	Naomi V. Beagle
D	Douglas H. Long, et ux
E	James A. Long, Jr., et ux
F	Linda L. Newbrough
G	Nathaniel Hendricks
H	Scott Denomme, et ux
I	Scott Denomme, et ux
J	Stanley M. & Irene E. Koterba
K	Sarah A. Midcap
L	Sarah A. Midcap
M	David E. Bowyer
N	Waco Oil & Gas Co. Inc.
O	BRC Appalachian Minerals I, LLC
P	Marylin S. Parkinson
Q	Sandra L. Baumgardner
R	Donald Lancaster, Jr., et ux
S	Thomas Goodwin, et ux
T	Kathryn L. Walkins
U	Diane W. Kestle
V	Melodee Matheny
W	BRC Appalachian Minerals I, LLC
X	Jean Cline
Y	Mark E. Heintzman
Z	Martha Hayes, et vir
AA	Richard L. Clark
AB	Michael D. Reynolds
AC	Timothy L. Vancamp



FILE NO: 39-54-E-16
 DRAWING NO: Possum 1H Well Plat
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY:
Submeter
 PROVEN SOURCE OF ELEVATION:
WVDOT, Harrisville, WV

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

DATE: November 6 20 19
 OPERATOR'S WELL NO. Possum Unit 1H
 API WELL NO MOD
47 - 095 - 02640
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 Proposed 1061'

LOCATION: ELEVATION: Existing 1072' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Paden City 51.96; 10.75;
 49.88; 93.63;
 DISTRICT: Elsworth/Lincoln BRC Appalachian Minerals I, LLC; COUNTY: Tyler 64.18; 62.84375;
 Jean Cline; Martha Hayes, et vir; Donald Lancaster Jr., et ux; 452.99125; 74.169;
 SURFACE OWNER: Barbara Kay Turner Thomas Goodwin, et ux; Melodee Matheny; Diane W. Kestle; ACREAGE: 26.18 91.831; 144.3125;
 Waco Oil & Gas, Inc.; David E. Bowyer; Sandra L. Baumgardner; 217.30; 40; 25.5;
 ROYALTY OWNER: Linda L. Newbrough; Naomi V. Beagle; Scott Denomme, et ux; Sarah A. Midcap (2) LEASE NO: _____ ACREAGE: 74.496; 109.48

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD 7,000' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 26,100' 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



December 27, 2019

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. Laura Adkins
601 57th Street
Charleston, WV 25304

Ms. Laura Adkins:

Antero Resources Corporation (Antero) would like to submit the following permit modification for an approved well on the existing Gamehenge East Pad: Possum Unit 1H (API # 47-095-02640).

Attached you will find the following documents:

- REVISED Form WW-6B, which shows the updated POE & Measured Depth
- REVISED Form WW-6A1, which shows the new leases we will be drilling into
- REVISED Mylar Plat, which shows the new Lateral Length & Estimated Measured Depth
- AOR & As-Built Design

If you have any questions please feel free to contact me at (303) 357-7223.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Megan Griffith", is written over the word "Sincerely,".

Megan Griffith
Permitting Agent
Antero Resources Corporation

Enclosures

RECEIVED
Office of Oil and Gas

DEC 30 2019

WV Department of
Environmental Protection



west virginia department of environmental protection

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

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

Wednesday, January 29, 2020
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for SISTERVILLE UNIT 2H
47-095-02619-00-00

Modified Lateral for a TMD of 20,700'

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.

A blue ink signature of James A. Martin, written in a cursive style.

James A. Martin
Chief

Operator's Well Number: SISTERVILLE UNIT 2H
Farm Name: JOHN D. MENDENHALL & JEFFREY A. DAVIS
U.S. WELL NUMBER: 47-095-02619-00-00
Horizontal 6A New Drill
Date Modification Issued: January 29, 2020

Promoting a healthy environment.

WW-6B
(04/15)

API NO. 47-095 - 02619
 OPERATOR WELL NO. Sisterville Unit 2H
 Well Pad Name: State Ridge Pad

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

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

2) Operator's Well Number: Sisterville Unit 2H Well Pad Name: State Ridge Pad

3) Farm Name/Surface Owner: John D. Mendenhall & Jeffrey A. Davis Public Road Access: State Ridge Road

4) Elevation, current ground: 1090' Elevation, proposed post-construction: ~1064'

5) Well Type (a) Gas Oil Underground Storage

Other _____

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 6900' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2850#

8) Proposed Total Vertical Depth: 6900' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 20700' MD

11) Proposed Horizontal Leg Length: 10616'

12) Approximate Fresh Water Strata Depths: 44'

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

14) Approximate Saltwater Depths: 1490'

15) Approximate Coal Seam Depths: 100'

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

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

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

RECEIVED
Office of Oil and Gas

DEC 19 2019

WV Department of
Environmental Protection

WW-6B
(04/15)

API NO. 47-095 - 02619

OPERATOR WELL NO. Sisterville Unit 2H

Well Pad Name: State Ridge Pad

18)

CASING AND TUBING PROGRAM

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20"	New	H-40	94#	95'	95'	CTS, 91 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	300'	300'	CTS, 417Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500'	2500'	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	20700'	20700'	5284 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	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			

RECEIVED
Office of Oil and Gas

DEC 19 2019

WV Department of
Environmental Protection

WW-6B
(10/14)

API NO. 47- 095 - 02619

OPERATOR WELL NO. Sisterville Unit 2H

Well Pad Name: State Ridge Pad

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

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

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): 38.85 acres

22) Area to be disturbed for well pad only, less access road (acres): 7.96 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.

RECEIVED
Office of Oil and Gas

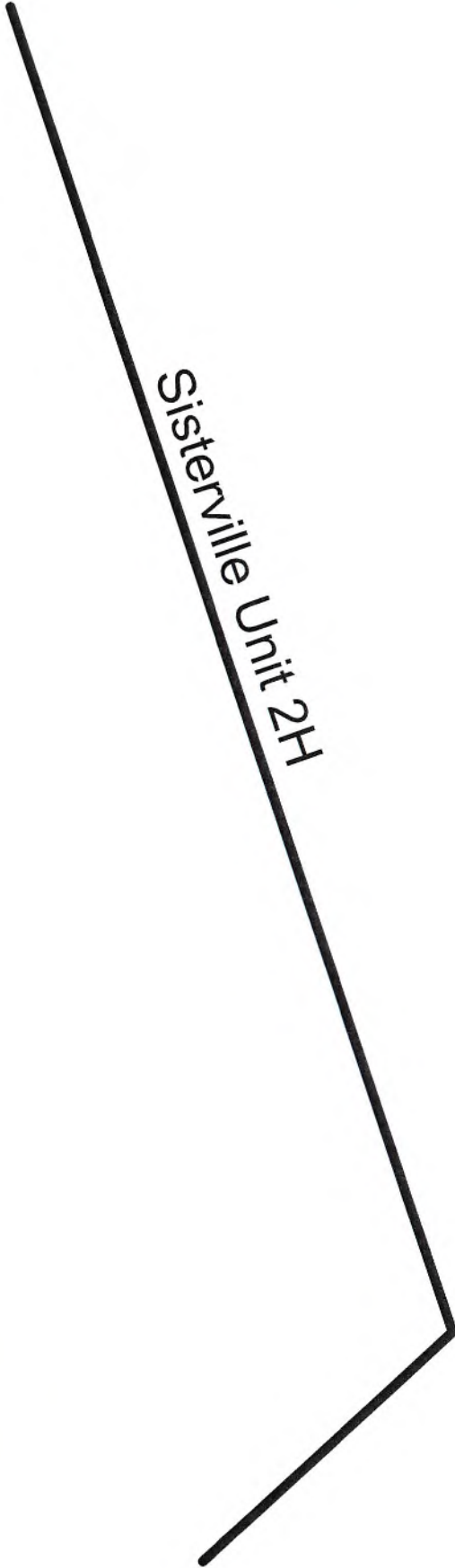
DEC 19 2019

Page 3 of 3

SISTERVILLE UNIT 2H (STATE RIDGE PAD)- AREA OF REVIEW 35-8-5.11

PERMIT MODIFICATION API # 47-095-02619

95-02619
MWD



RECEIVED
Office of Oil and Gas

DEC 19 2019

WV Department of
Environmental Protection



Antero Resources Corporation

Sisterville Unit 2H - AOR



No Wells of Interest REMARKS

December 18, 2018

WW-6A1

Operator's Well Number Sisterville Unit 2H

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

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

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

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Dianne T. Carpenter Lease</u> Dianne T. Carpenter	Antero Resources Corporation	1/8+	0565/0483
<u>Herbert Stephenson Boreman, Jr. Lease</u> Herbert Stephenson Boreman, Jr.	Antero Resources Corporation	1/8+	0554/0637
<u>Michael A. Eddy Lease</u> Michael A. Eddy	Antero Resources Corporation	1/8+	0601/0832
<u>Bob Christen Lease</u> Bob Christen	Antero Resources Corporation	1/8+	0604/0646
<u>Ronald K. Blair & Martin L. Blair Lease</u> Ronald K. Blair & Martin L. Blair	Antero Resources Corporation	1/8+	0559/0664
<u>Patsy J. Oliverio Lease</u> Patsy J. Oliverio	Antero Resources Corporation	1/8+	0494/0488
<u>Michael E. Neff Lease</u> Michael E. Neff	Antero Resources Corporation	1/8+	0450/0613
<u>Paul A. Marks et ux Lease</u> Paul A. Marks et ux	Antero Resources Corporation	1/8+	0557/0267
<u>Patricia Ann Heintzman Lease (TM 10 PCL 2)</u> Patricia Ann Heintzman	Antero Resources Corporation	1/8+	0594/0309
<u>Patricia Ann Heintzman Lease (TM 10 PCL 1)</u> Patricia Ann Heintzman Statoil USA Onshore Properties EQT Production Company	Statoil USA Onshore Properties EQT Production Company Antero Resources Corporation	1/8 Assignment Assignment	0503/0519 0539/0239 0663/0001
<u>John E. Roberts Lease</u> John E. Roberts Stone Energy Corporation	Stone Energy Corporation Antero Resources Corporation	1/8+ Assignment	0402/0266 0447/0115

RECEIVED
 Office of Oil and Gas
 DEC 19 2019
 WV Department of
 Environmental Protection

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

WW-6A1
(5/13)

Operator's Well No. Sisterville Unit 2H

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

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

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

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Michael Scott Mercer Lease</u>	Michael Scott Mercer	Antero Resources Corporation	1/8+	0547/0416

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

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

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

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

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

Well Operator: Antero Resources Corporation
 By: Diana Hoff *Diana J. Hoff*
 Its: VP of Operations

RECEIVED
Office of Oil and Gas

DEC 19 2019

WV Department of
Environmental Protection

11,790' to Top Hole

1,292' to Bottom Hole

Bottom Hole
7.5' Spot

LATITUDE 39 - 32 - 30

TOP HOLE LONGITUDE 80 - 50 - 00
BOTTOM HOLE LONGITUDE 80 - 52 - 30

212' to Bottom Hole

11,946' to Top Hole

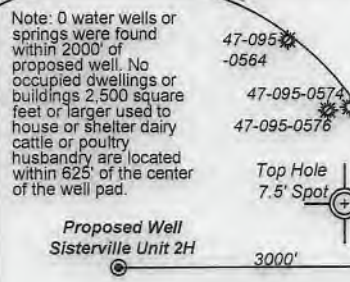
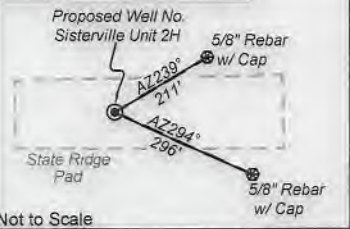
Antero Resources
Well No. Sisterville Unit 2H

Antero Resources Corporation



Notes:
Well No. Sisterville Unit 2H
UTM Zone 17, NAD 1927
Top Hole Coordinates
N: 14,347,063.09'
E: 1,675,818.94'
Point of Entry Coordinates
N: 14,348,907.63'
E: 1,677,808.40'
Bottom Hole Coordinates
N: 14,358,947.31'
E: 1,674,368.55'

Well Location References



I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.
Bradley D. Miller
Bradley D. Miller, P.S. 2167



Table with 2 columns: Bearing, Dist.

Bearing	Dist.
L1 S 56°29' W	3,001.9'
L2 N 78°15' W	3,469.4'
L3 N 59°12' E	2,659.7'
L4 N 65°53' E	3,825.2'
L5 N 48°07' E	2,713.9'

Table with 5 columns: ID, TM/Par, Owner, Bk/Pg, Acres

ID	TM/Par	Owner	Bk/Pg	Acres
1	15/17	David Mendenhall, et al	288/662	85.71
2	15/23	David Mendenhall, et al	326/13	97.25
3	15/15	David Mendenhall, et al	289/4	50.00
4	15/16	Robert M. Feldmeier	330/109	52.37
5	15/37	John D. Mendenhall & Jeffrey A. Davis	444/531	154.17
6	15/3	John W. Eddy Estate	77/319	40.33
7	15/14	John W. & Leah D. Starkey	345/93	50.75
8	15/5	Eari H. Jr. & Bernadette Warriner	306/141	48.50
9	15/4	Board of Education	86/145	0.334
10	15/2	John W. Eddy Estate	71/13	49.00
11	15/1	Martin L. Blair Jr. & Ronald K. Blair Sr	WB18/361	47.00
12	10/62	Haessley Land & Timber, LLC.	334/833	268.91
13	10/65	Daniel R. Deetz & Kevin Richardson	321/713	131.94
14	10/35	Michael E. Neff	299/601	105.56
15	10/34	Oliver T. & Maxine M. Ankrom	265/399	11.00
16	10/33	Oliver T. & Maxine M. Ankrom	265/399	17.00
17	10/32	Ralph D. & Sylvia Harter	311/200	15.00
18	10/31	Ralph D. & Sylvia Harter	286/73	38.80
19	10/34.1	Robert P. & Sharon L. Thomas	542/657	2.21
20	10/26	John E. Roberts	WB30/108	4.00
21	10/27	John E. Roberts	WB30/108	4.00
22	10/24.1	Ralph D. & Sylvia Harter	334/277	18.44
23	10/24.2	Michael Van & Debra Kay Smith	400/612	0.15
24	10/25	Michael Van & Debra Kay Smith	400/612	0.29
25	10/24	Michael Van & Debra Kay Smith	400/612	1.25
26	10/23	Betty & Teresa J. Boggs	214/638	0.29
27	10/24.3	Tammy Sue & James R. Underwood Jr.	317/651	4.16
28	10/35.3	James H. & Mildred G. Bassett	273/538	0.39
29	10/35.4	Mary Jane Woofler	319/73	0.75
30	10/35.5	James H. & Mildred G. Bassett	281/543	0.76
31	10/20	James H. & Mildred G. Bassett	311/637	0.72
32	10/19	James H. & Mildred G. Bassett	264/548	29.52
33	10/21	Patricia Ann Heintzman	WB13/364	3.00
34	10/22	Michael V. & Debra K. Smith	335/619	59.42
35	10/28	John E. Roberts	WB30/142	38.99
36	10/1	Patricia Ann Heintzman	150/15	48.50
37	10/2	Patricia Ann Heintzman	WB13/364	73.26
38	10/64	John E. Roberts	WB30/108	100.00
39	8/40	Alan D. Wyke	WB40/195	42.25
40	9/13	Richard A. Mercer	321/197	16.00
41	6/41	Donald E. Forrester	125/421	20.05



Legend

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

Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Sisterville Unit 2H Top Hole coordinates are
N: 370,241.50' Latitude: 39°30'30.19"
E: 1,612,200.08' Longitude: 80°52'28.15"
Bottom Hole coordinates are
N: 382,152.33' Latitude: 39°32'27.71"
E: 1,610,947.85' Longitude: 80°52'46.46"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,373,211.300m N: 4,376,833.640m
E: 510,805.119m E: 510,383.155m
Plat orientation and corner and well references are based upon the grid north meridian.
Well location references are based upon the magnetic meridian.

FILE NO: 07-54-E-19
DRAWING NO: 07-19 Sisterville 2H Well Plat
SCALE: 1" = 1500'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

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

DATE: August 1 2019
OPERATOR'S WELL NO. Sisterville Unit 2H
API WELL NO mod
47 - 095 - 02619
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
LOCATION: ELEVATION: Proposed 1,064' Existing 1,090' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Paden City/Porter Falls
DISTRICT: Ellsworth COUNTY: Tyler 154.17; 52; 40.33; 49; 47; 131.94; 106.32; 84.0; 100;
SURFACE OWNER: John D. Mendenhall & Jeffrey A. Davis Paul A. Marks, et ux; Patricia Ann Heintzman (2); Bob Christen; Ronald K. & Martin L. Blair; Patsy J. Oliverio; Michael S. Mercer, et ux; John E. Roberts, ACREAGE: 154.17
ROYALTY OWNER: Dianne T. Carpenter; Herbert Stephenson Boreman Jr.; Michael A. Eddy; Michael E. Neff LEASE NO: ACREAGE: 76.25; 48.5; 42.24
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 20,700' MD 6,900' TVD

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

11,790' to Top Hole

1,292' to Bottom Hole

Bottom Hole
7.5' Spot

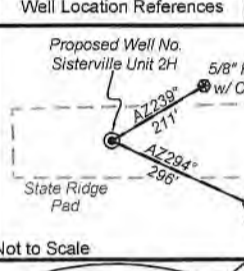
LATITUDE 39 - 32 - 30

TOP HOLE LONGITUDE 80 - 50 - 00
BOTTOM HOLE LONGITUDE 80 - 52 - 30
212' to Bottom Hole

Antero Resources
Well No. Sisterville Unit 2H
Antero Resources Corporation



Notes:
Well No. Sisterville Unit 2H
UTM Zone 17, NAD 1927
Top Hole Coordinates
N: 14,347,063.09'
E: 1,675,818.94'
Point of Entry Coordinates
N: 14,348,907.63'
E: 1,677,808.40'
Bottom Hole Coordinates
N: 14,358,947.31'
E: 1,674,368.55'

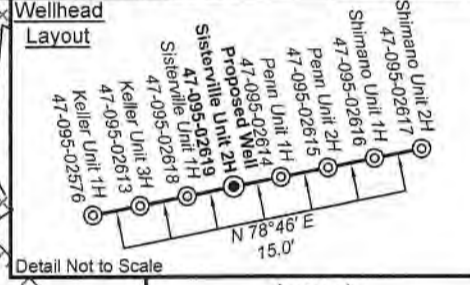


Note: 0 water wells or springs were found within 2000' of proposed well. No occupied dwellings or buildings 2,500 square feet or larger used to house or shelter dairy cattle or poultry husbandry are located within 625' of the center of the well pad.

Proposed Well No. Sisterville Unit 2H
Top Hole 7.5' Spot
3000'

Bearing	Dist.
L1 S 56°29' W	3,001.9'
L2 N 78°15' E	3,469.4'
L3 N 59°12' E	2,659.7'
L4 N 65°53' E	3,825.2'
L5 N 48°07' E	2,713.9'

ID	TM/Par	Owner	Bk/Pg	Acres
1	15/17	David Mendenhall, et al	288/662	65.71
2	15/23	David Mendenhall, et al	326/13	97.25
3	15/15	David Mendenhall, et al	289/4	50.00
4	15/16	Robert M. Feldmeier	330/109	52.37
5	15/37	John D. Mendenhall & Jeffrey A. Davis	444/531	154.17
6	15/3	John W. Eddy Estate	77/319	40.33
7	15/14	John W. & Leah D. Starkey	345/93	50.75
8	15/5	Earl H. Jr. & Bernadette Warriner	306/141	48.50
9	15/4	Board of Education	86/145	0.334
10	15/2	John W. Eddy Estate	71/13	49.00
11	15/1	Martin L. Blair Jr. & Ronald K. Blair Sr.	WB18/361	47.00
12	10/62	Haessley Land & Timber, LLC.	334/833	268.91
13	10/65	Daniel R. Deetz & Kevin Richardson	321/713	131.94
14	10/35	Michael E. Neff	299/601	105.56
15	10/34	Oliver T. & Maxine M. Ankrom	265/399	11.00
16	10/33	Oliver T. & Maxine M. Ankrom	265/399	17.00
17	10/32	Ralph D. & Sylvia Harter	311/200	15.00
18	10/31	Ralph D. & Sylvia Harter	286/73	38.80
19	10/34.1	Robert P. & Sharon L. Thomas	542/657	2.21
20	10/26	John E. Roberts	WB30/108	4.00
21	10/27	John E. Roberts	WB30/108	4.00
22	10/24.1	Ralph D. & Sylvia Harter	334/277	18.44
23	10/24.2	Michael Van & Debra Kay Smith	400/612	0.15
24	10/25	Michael Van & Debra Kay Smith	400/612	0.29
25	10/24	Michael Van & Debra Kay Smith	400/612	1.25
26	10/23	Betty & Teresa J. Boggs	214/638	0.29
27	10/24.3	Tammy Sue & James R. Underwood Jr.	317/651	4.16
28	10/35.3	James H. & Mildred G. Bassett	273/538	0.39
29	10/35.4	Mary Jane Woolfer	319/73	0.75
30	10/35.5	James H. & Mildred G. Bassett	281/543	0.76
31	10/20	James H. & Mildred G. Bassett	311/637	0.72
32	10/19	James H. & Mildred G. Bassett	264/548	29.52
33	10/21	Patricia Ann Heintzman	WB13/384	3.00
34	10/22	Michael V. & Debra K. Smith	335/619	59.42
35	10/28	John E. Roberts	WB30/142	38.99
36	10/1	Patricia Ann Heintzman	150/15	48.50
37	10/2	Patricia Ann Heintzman	WB13/384	73.26
38	10/64	John E. Roberts	WB30/108	100.00
39	6/40	Alan D. Wyke	WB40/195	42.25
40	9/13	Richard A. Mercer	321/197	16.00
41	6/41	Donald E. Forrester	125/421	20.05



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

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



Leases

A	Chris Folger
B	John W. Starkey et ux
C	Richard A. Mercer

Legend

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

Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Sisterville Unit 2H Top Hole coordinates are
N: 370,241.50' Latitude: 39°30'30.19"
E: 1,612,200.08' Longitude: 80°52'28.15"
Bottom Hole coordinates are
N: 382,152.33' Latitude: 39°32'27.71"
E: 1,610,947.85' Longitude: 80°52'46.46"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,373,211.300m N: 4,376,833.640m
E: 510,805.119m E: 510,363.155m
Plat orientation and corner and well references are based upon the grid north meridian.
Well location references are based upon the magnetic meridian.

FILE NO: 07-54-E-19
DRAWING NO: 07-19 Sisterville 2H Well Plat
SCALE: 1" = 1500'
MINIMUM DEGREE OF ACCURACY:
Submeter
PROVEN SOURCE OF ELEVATION:
WVDOT, Harrisville, WV

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

DATE: August 1 2019
OPERATOR'S WELL NO. Sisterville Unit 2H
API WELL NO
47 - 095 - 02619
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
LOCATION: ELEVATION: Existing 1,090' Proposed 1,064' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Paden City/Porter Falls
DISTRICT: Ellsworth COUNTY: Tyler
SURFACE OWNER: John D. Mendenhall & Jeffrey A. Davis Paul A. Marks, et ux; Patricia Ann Heintzman (2); Bob Christen; Ronald K. & Martin L. Blair; Patsy J. Oliverio; Michael S. Mercer, et ux; John E. Roberts; ACREAGE: 154.17
ROYALTY OWNER: Dianna T. Carpenter; Herbert Stephenson Boreman Jr.; Michael A. Eddy; Michael E. Neff LEASE NO: ACREAGE: 76.25; 48.5; 42.24
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 20,700' MD 6,900' TVD

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