



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

Thursday, May 17, 2018
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for HOUSER UNIT 1H
47-095-02480-00-00

modified to extend lateral

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: HOUSER UNIT 1H
Farm Name: KIRK L. HADLEY
U.S. WELL NUMBER: 47-095-02480-00-00
Horizontal 6A New Drill
Date Modification Issued: May 18, 2018

Promoting a healthy environment.

05/18/2018

WW-6B
(04/15)

API NO. 47- 095 - 02480
OPERATOR WELL NO. Houser Unit 1H
Well Pad Name: Hadley 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 Meade Middlebourne 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Houser Unit 1H Well Pad Name: Hadley Pad

3) Farm Name/Surface Owner: Kirk L. Hadley Public Road Access: CR 6/3

4) Elevation, current ground: 912' Elevation, proposed post-construction: 912'

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

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 6600' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2800#

8) Proposed Total Vertical Depth: 6600' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 22000' MD

11) Proposed Horizontal Leg Length: 15040'

12) Approximate Fresh Water Strata Depths: 357'

13) Method to Determine Fresh Water Depths: Kirk Hadley 8H (API# 47-095-02031) on same pad.

14) Approximate Saltwater Depths: 1225', 1691', 2032'

15) Approximate Coal Seam Depths: 527', 627', 681'

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

RECEIVED
Office of Oil and Gas
MAR 8 2018
WV Department of
Environmental Protection

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

WW-6B
(04/15)

API NO. 47- 095 - 02480
 OPERATOR WELL NO. Houser Unit 1H
 Well Pad Name: Hadley 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#	80'	80'	CTS, 218 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	410' *see #19	410' *see #19	CTS, 370 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#	22000'	22000'	5642 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
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

RECEIVED
Office of Oil and Gas

MAR 8 2018

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

WV Department of
Environmental Protection

WW-6B
(10/14)

API NO. 47- 095 - 02480
 OPERATOR WELL NO. Houser Unit 1H
 Well Pad Name: Hadley Pad

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

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

*Antero will be air drilling the fresh water string which makes it difficult to determine when 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): 14.78 acres

22) Area to be disturbed for well pad only, less access road (acres): 3.80 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
 MAR 8 2018

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.

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>Kirk Hadley Lease</u>			
Kirk Hadley	Sancho Oil & Gas Company	1/8	0358/0606
Sancho Oil & Gas Company	Chesapeake Appalachia LLC	Assignment	0370/0154
Chesapeake Appalachia LLC	Statoil USA Onshore Properties, Inc.	Assignment	0378/0764
Statoil USA Onshore Properties, Inc.	Antero Resources Corporation	Assignment	544/0291
<u>Angela K. & James A. Long, Jr. Lease</u>			
James A. Long Jr., et ux Lease	Chesapeake Appalachia, LLC	1/8	0377/0001
Chesapeake Appalachia, LLC	SWN Production Company	Assignment	0465/0463
SWN Production Company	Antero Resources Corporation	Assignment	0544/0242
<u>Alfred Lonzo Eddy Lease</u>			
Alfred Lonzo Eddy	Chesapeake Appalachia, LLC	1/8	0376/0838
Chesapeake Appalachia, LLC	SWN Production Company	Assignment	0465/0463
SWN Production Company	Antero Resources Corporation	Assignment	0544/0242
<u>Roy D. Hadley Lease</u>			
Roy D. Hadley	Chesapeake Appalachia, LLC	1/8	0371/0373
Chesapeake Appalachia, LLC	SWN Production Company	Assignment	0465/0463
SWN Production Company	Antero Resources Corporation	Assignment	0544/0242
<u>Ruth E. Moore, Widow Lease</u>			
Ruth E. Moore, Widow	Chesapeake Appalachia, LLC	1/8	0370/0496
Chesapeake Appalachia, LLC	SWN Production Company	Assignment	0465/0463
SWN Production Company	Antero Resources Corporation	Assignment	0544/0242
<u>Don L. Hissam Lease</u>			
Don L. Hissam	Antero Resources Corporation	1/8+	0561/0647
<u>Carol J. Cox Lease (19-37)</u>			
Carol J. Cox	Antero Resources Corporation	1/8+	0565/0754
<u>Stanley M. LeMasters, et ux Lease "E"</u>			
Stanley M. LeMasters, et ux	Antero Resources Corporation	1/8+	0422/0304
<u>Carol J. Cox Lease (19-42)</u>			
Carol J. Cox	Antero Resources Corporation	1/8+	0559/0691
<u>Chauncey Paul Archer, et ux Lease</u>			
Chauncey Paul Archer, et ux	Antero Resources Appalachian Corporation	1/8+	0420/0465
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

RECEIVED
Office of Oil and Gas
MAR 8 2018
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. Houser 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:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Ruth H. Wells Lease</u>	Ruth H. Wells Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation Antero Resources Corporation	1/8+ Assignment	417/706 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

RECEIVED
Office of Oil and Gas

MAR 8 2018

WV Department of
Environmental Protection

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: Kevin Kilstrom
Its: Senior Vice President - Production

**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



Penney Barker, Manager
Corporations Division
IN THE OFFICE OF THE SECRETARY OF STATE
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvssos.com
E-mail: business@wvssos.com

**APPLICATION FOR
AMENDED CERTIFICATE
OF AUTHORITY**

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

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

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

1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
2. Date Certificate of Authority was issued in West Virginia: 6/25/2008
3. Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home State of Incorporation.)
4. Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)
5. Other amendments:
(attach additional pages if necessary)
6. Name and phone number of contact person. (This is optional, however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)
Alwyn A. Schopp (303) 367-7310
Contact Name Phone Number
7. Signature information (See below **Important Legal Notice Regarding Signature**):
Print Name of Signer: Alwyn A. Schopp Title/Capacity: Authorized Person
Signature: [Handwritten Signature] Date: June 10, 2013

Important Legal Notice Regarding Signature For West Virginia Code §31D-1-129. Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.

RECEIVED
Office of Oil and Gas
MAR 8 2018
WV Department of
Environmental Protection

11,169' to Bottom Hole

4,627' to Top Hole

BOTTOM LATITUDE 39 - 32 - 30
TOP LATITUDE 39 - 30 - 00

LONGITUDE 80 - 55 - 00

13,336' to Top Hole

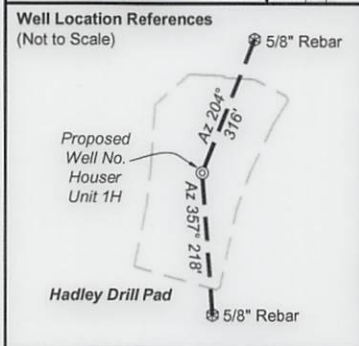
14,761' to Bottom Hole

Antero Resources
Well No. Houser Unit 1H
Antero Resources Corporation

(+) Denotes
Location of Well on
United States
Topographic Maps

Leases:

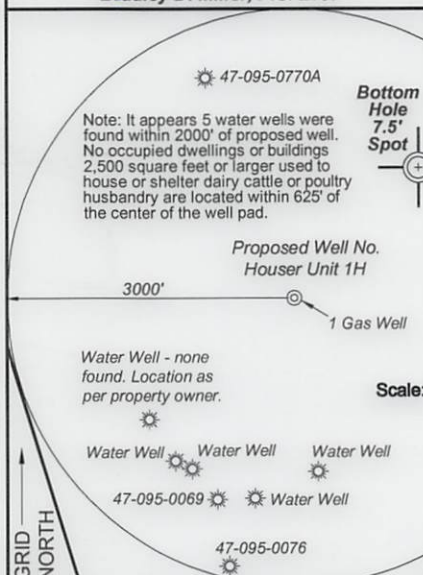
- A. Karl E. Rine, et ux
- B. David T. Cox
- C. Carol J. Cox
- D. Jerry A. & Nancy J. Haught, et al
- E. Stanley M. LeMasters, et ux
- F. Carol J. Cox



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



TM-Par.	Bk/Pg	Acres	Owner(s)
1	19-37.1	307/354	32.858 Michael Haught
2	19-41.1	137/354	1.50 June Kempner
3	19-41.2	293/628	5.00 Karl E. & Judith K. Rine
4	19-41.5	422/759	1.80 Derrick K. & Heather B. Rine
5	p/o 19-41	293/627	4.28 Karl E. & Judith K. Rine
6	19-41.3	274/173	1.28 Stanley M. Lemasters
7	19-41.4	293/625	5.64 Karl E. & Judith K. Rine
8	p/o 19-41	293/627	4.28 Karl E. & Judith K. Rine
9	19-40	334/298	14.10 Carol J. Cox
10	19-39	334/298	4.50 Carol J. Cox
11	19-38	300/609	5.80 David T. Cox
12	p/o 19-37	307/354	32.892 Jerry A. & Nancy J. Haught
13	19-33.2	317/466	3.10 James E. Barnhart
14	19-2	342/582	6.50 John P. & Bonnie B. Bucher
15	19-33.1	468/818	1.42 Amos L. Archer
16	19-43	352/435	32.53 Don L. Hissam
17	13-10	383/761	96.82 Eldon J. & Ruth A. Helman
18	19-42	334/298	142.0 Carol J. Cox
19	13-9	190/9	58.38 Chauncy P. & Ruth Archer
20	19-33.3	253/44	29.8 Chauncy P. & Ruth Archer

Notes:
Well No. Houser Unit 1H
UTM Zone 17, NAD 1927
Top Hole Coordinates
N: 14,330,589.68' E: 1,659,522.35'
Point of Entry Coordinates
N: 14,330,012.39' E: 1,657,889.88'
Bottom Hole Coordinates
N: 14,344,277.27 E: 1,652,993.05'

Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Houser Unit 1H Top Hole coordinates are
N: 354,036.86' Latitude: 39°27'47.48"
E: 1,595,625.08' Longitude: 80°55'56.30"
Bottom Hole coordinates are
N: 367,786.28' Latitude: 39°30'02.36"
E: 1,589,322.20' Longitude: 80°57'19.50"

UTM Zone 17, NAD 1983
Top Hole Coordinates N: 4,368,190.048m E: 505,837.891m
Bottom Hole Coordinates N: 4,372,346.753m E: 503,847.765m

Plat orientation and corner and well references are based upon the grid north meridian. Well location references are based upon the magnetic meridian.

	Bearing	Dist.
L1	S 26°59' E	1,045.3'
L2	S 27°55' W	1,264.4'
L3	S 47°48' W	1,904.6'
L4	N 46°32' E	666.6'
L5	S 71°29' W	1,732.1'

Legend

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



FILE NO: 218-54-E-16
DRAWING NO: Houser 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

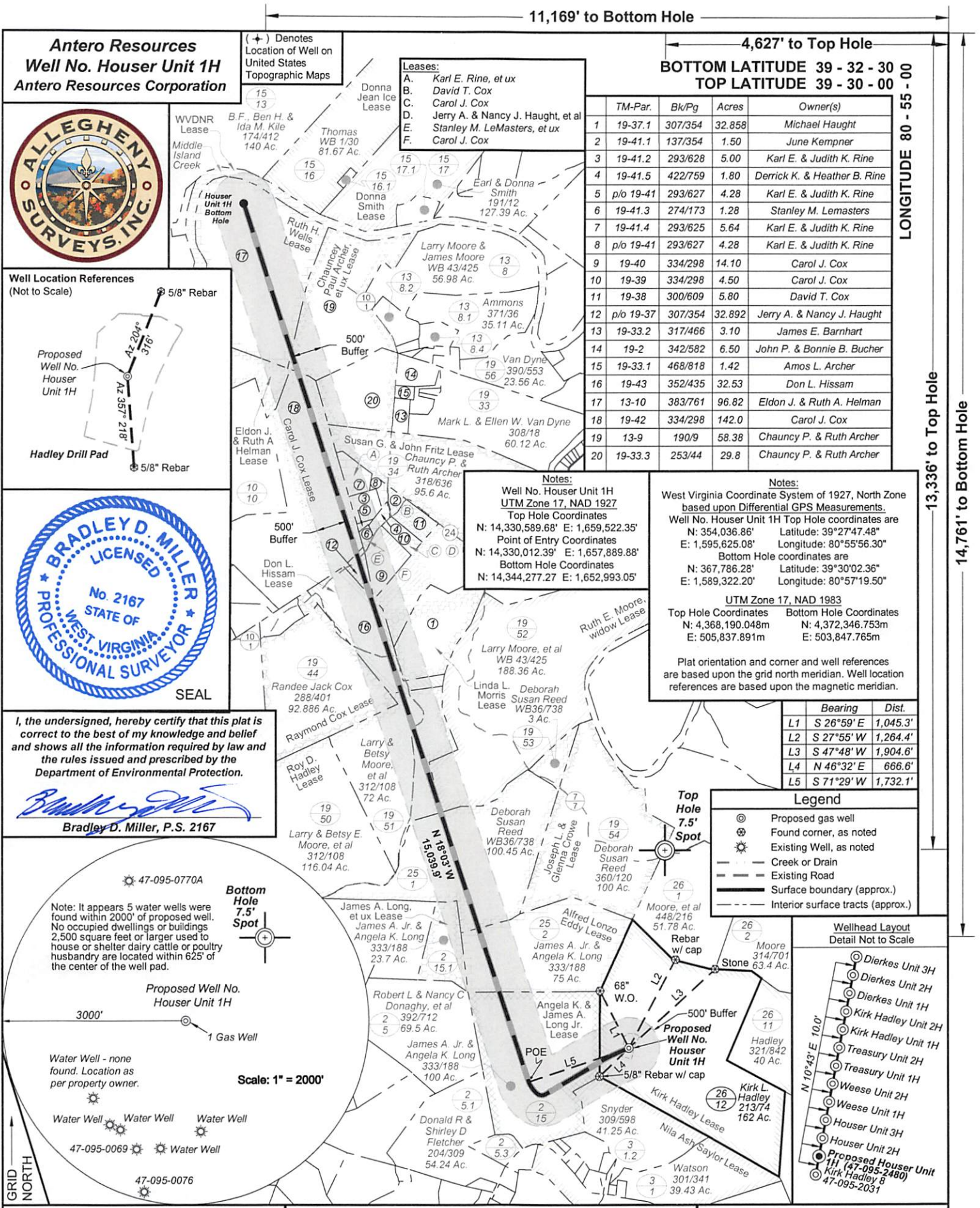
DATE: March 2 2018
OPERATOR'S WELL NO. Houser Unit 1H
API WELL NO. M.O.D.
47 - 095 - 02480
STATE COUNTY PERMIT

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

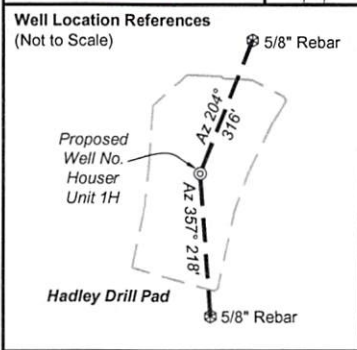
LOCATION: ELEVATION: As-Built 912' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Middlebourne 189.3625;
DISTRICT: Meade & Ellsworth Ruth E. Moore, widow; COUNTY: Tyler 05/18/2018
SURFACE OWNER: Kirk L. Hadley Roy D. Hadley, James A. Jr. & Angela K. Long; ACREAGE: 162 291.5; 202;
ROYALTY OWNER: Kirk Hadley, Alfred Lonzo Eddy, Don L. Hissam; Carol J. Cox (2); LEASE NO: ACREAGE: 142; 21; 75;

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) Modification - BHL 6,600' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 22,000' 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

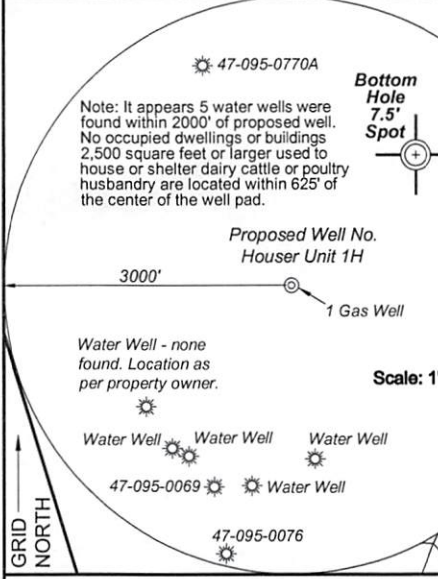


Antero Resources
Well No. Houser Unit 1H
Antero Resources Corporation



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

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



FILE NO: 218-54-E-16
DRAWING NO: Houser 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: March 2 2018
OPERATOR'S WELL NO. Houser Unit 1H
API WELL NO. MOO
47 - 095 - 02480
STATE COUNTY RECEIVED
Office of Oil and Gas

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

LOCATION: ELEVATION: As-Built 912' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Middlebourne
DISTRICT: Meade & Ellsworth Ruth E. Moore, widow; COUNTY: Tyler
SURFACE OWNER: Kirk L. Hadley Roy D. Hadley; James A. Jr. & Angela K. Long; Chauncey Paul Archer, et ux; Ruth H. Wells; ACREAGE: 162
ROYALTY OWNER: Kirk Hadley; Alfred Lonzo Eddy; Don L. Hissam; Carol J. Cox (2); LEASE NO: ACREAGE: 142; 21; 75;

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) Modification - BHL
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 22,000' 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

Leases:

A.	Karl E. Rine, et ux
B.	David T. Cox
C.	Carol J. Cox
D.	Jerry A. & Nancy J. Haught, et al
E.	Stanley M. LeMasters, et ux
F.	Carol J. Cox

TM-Par.	Bk/Pg	Acres	Owner(s)
1	19-37.1	307/354	32.858 Michael Haught
2	19-41.1	137/354	1.50 June Kempner
3	19-41.2	293/628	5.00 Karl E. & Judith K. Rine
4	19-41.5	422/759	1.80 Derrick K. & Heather B. Rine
5	p/o 19-41	293/627	4.28 Karl E. & Judith K. Rine
6	19-41.3	274/173	1.28 Stanley M. Lemasters
7	19-41.4	293/625	5.64 Karl E. & Judith K. Rine
8	p/o 19-41	293/627	4.28 Karl E. & Judith K. Rine
9	19-40	334/298	14.10 Carol J. Cox
10	19-39	334/298	4.50 Carol J. Cox
11	19-38	300/609	5.80 David T. Cox
12	p/o 19-37	307/354	32.892 Jerry A. & Nancy J. Haught
13	19-33.2	317/466	3.10 James E. Barnhart
14	19-2	342/582	6.50 John P. & Bonnie B. Bucher
15	19-33.1	468/818	1.42 Amos L. Archer
16	19-43	352/435	32.53 Don L. Hissam
17	13-10	383/761	96.82 Eldon J. & Ruth A. Helman
18	19-42	334/298	142.0 Carol J. Cox
19	13-9	190/9	58.38 Chauncey P. & Ruth Archer
20	19-33.3	253/44	29.8 Chauncey P. & Ruth Archer

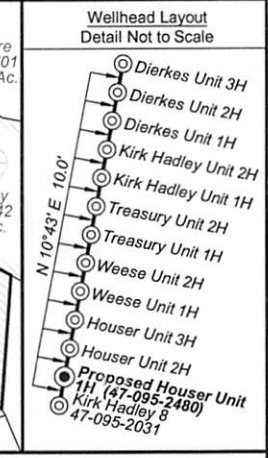
Notes:
Well No. Houser Unit 1H
UTM Zone 17, NAD 1927
Top Hole Coordinates
N: 14,330,589.68' E: 1,659,522.35'
Point of Entry Coordinates
N: 14,330,012.39' E: 1,657,889.88'
Bottom Hole Coordinates
N: 14,344,277.27' E: 1,652,993.05'

Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Houser Unit 1H Top Hole coordinates are
N: 354,036.86' Latitude: 39°27'47.48"
E: 1,595,625.08' Longitude: 80°55'56.30"
Bottom Hole coordinates are
N: 367,786.28' Latitude: 39°30'02.36"
E: 1,589,322.20' Longitude: 80°57'19.50"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,368,190.048m N: 4,372,346.753m
E: 505,837.891m E: 503,847.765m
Plat orientation and corner and well references are based upon the grid north meridian. Well location references are based upon the magnetic meridian.

	Bearing	Dist.
L1	S 26°59' E	1,045.3'
L2	S 27°55' W	1,264.4'
L3	S 47°48' W	1,904.6'
L4	N 46°32' E	666.6'
L5	S 71°29' W	1,732.1'

Legend

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



MAR 8 2018
189,000' of
WV Dept. of
Environmental Protection
05/18/2018