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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

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Tuesday, December 17, 2019  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for TELA UNIT 2H  
47-095-02633-00-00

Modified Lateral for TMD of 18,700'

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.

James A. Martin  
Chief

Operator's Well Number: TELA UNIT 2H  
Farm Name: RIDGETOP CAPITAL LP  
U.S. WELL NUMBER: 47-095-02633-00-00  
Horizontal 6A New Drill  
Date Modification Issued: December 17, 2019

Promoting a healthy environment.

WW-6B  
(04/15)

API NO. 47-095 - ~~02646~~ 02633 MOD  
 OPERATOR WELL NO. Tela Unit 2H  
 Well Pad Name: Gamehenge 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 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Tela Unit 2H Well Pad Name: Gamehenge Pad

3) Farm Name/Surface Owner: Ridgetop Capital, LP Public Road Access: State Ridge Road

4) Elevation, current ground: 1052' Elevation, proposed post-construction: ~1026'

5) Well Type (a) Gas  Oil  Underground Storage

Other \_\_\_\_\_

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

*JLB*  
*11/18/2019*

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- 2800#

8) Proposed Total Vertical Depth: 7000' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 18700' MD

11) Proposed Horizontal Leg Length: 10770'

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: \_\_\_\_\_

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02633 MOD

PERMIT MODIFICATION API # 47-095-02646

WW-6B  
(04/15)

API NO. 47- 095 - 02646  
OPERATOR WELL NO. Tela Unit 2H  
Well Pad Name: Gamehenge Pad

18)

**CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	80	80	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	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#	18700	18700	4735 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

*JOB*  
*11/10/2019*

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	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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WW-6B  
(10/14)

API NO. 47- 095 - 02646  
OPERATOR WELL NO. Tela Unit 2H  
Well Pad Name: Gamehenge 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.

*JEB*  
11/18/2019

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): 60.16 acres

22) Area to be disturbed for well pad only, less access road (acres): 11.76 acres

23) Describe centralizer placement for each casing string:

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

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

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

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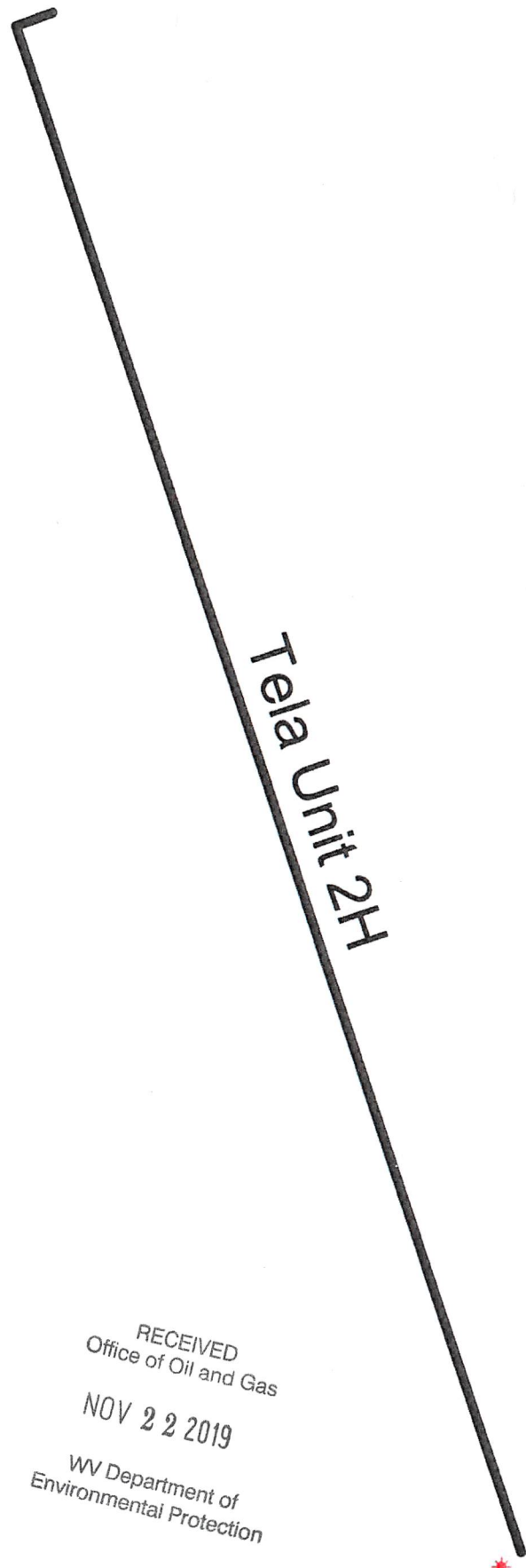
25) Proposed borehole conditioning procedures:

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

\*Note: Attach additional sheets as needed.

47-095-02633  
MOD

PERMIT MODIFICATION API # 47-095-02640 ~~02640~~ 02633 MOD



Tela Unit 2H



Antero Resources Corporation

Tela Unit 2H



WELL SYMBOLS  
Gas Well

December 17, 2018

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WV Department of  
Environmental Protection

JEB  
11/10/2019

47095023270000

UWI (APINum) 47095023270000	Well Name KLONDIKE UNIT	Well Number 1H	Operator ANTERO RESOURCES CORPORATION	Hist Oper	TD 18,870	Perforated Interval (shallowest, deepest) 7171 - 18765	Perforated Formation(s) Marcellus	Producible Formation(s) not perf'd N/A
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WV Department of  
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WW-6A1

Operator's Well Number Tela 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>Naomi V. Beagle Lease</u> Naomi V. Beagle	Antero Resources Corporation	1/8+	0535/0464
<u>Douglas H. Long Lease</u> Douglas H. Long	Antero Resources Corporation	1/8+	0434/0517
<u>Andrew Hrynczyn Lease</u> Andrew Hrynczyn	Antero Resources Corporation	1/8+	0507/0402
<u>Black Rock Enterprises LLC Lease</u> Black Rock Enterprises LLC	Antero Resources Corporation	1/8+	0594/0405
<u>Donald K. Baker Lease (TM 15 PCL 21.1)</u> Donald K. Baker Statoil USA Onshore Properties Inc. EQT Production Company	Statoil USA Onshore Properties Inc. EQT Production Company Antero Resources Corporation	1/8 Assignment Assignment	0443/0806 0539/0239 0663/0001
<u>Donald K. Baker Lease (TM 21 PCL 2)</u> Donald K. Baker Statoil USA Onshore Properties Inc. EQT Production Company	Statoil USA Onshore Properties Inc. EQT Production Company Antero Resources Corporation	1/8 Assignment Assignment	0443/0806 0539/0239 0663/0001
<u>Carl W. Miller II Lease</u> Carl W. Miller II	Antero Resources Corporation	1/8+	0482/0830
<u>Lisa Ann Gilmore et vir Lease</u> Lisa Ann Gilmore et vir Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation Antero Resources Corporation	1/8+ Name Change	0414/0609 Exhibit 1
<u>Cathy J. Eastham Lease</u> Cathy J. Eastham	Antero Resources Corporation	1/8+	0434/0411
<u>David N. Spencer Lease</u> David N. Spencer	Antero Resources Corporation	1/8+	0571/0759

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\*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\*\*

*Job*  
*11/18/2019*

WW-6A1  
(5/13)

Operator's Well No. Tela 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)**

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

Lease Name or  
Gary R. Davis Lease

Gary R. Davis	Statoil USA Onshore Properties Inc.	1/8	0493/0067
Statoil USA Onshore Properties Inc.	EQT Production Company	Assignment	0539/0239
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001

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

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

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

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

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

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WV Department of  
Environmental Protection

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

*JEB*  
11/18/2019



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



Fanny Baker, Manager  
Corporations Division  
Tel: (304)538-8800  
Fax: (304)538-4381  
Website: www.wvnet.com  
E-mail: business@wvnet.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:

- Name under which the corporation was authorized to transact business in WV: Antero Resources Application Corporation
- Date Certificate of Authority was issued in West Virginia: 6/28/2009
- 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)
- 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.)  
Alynn A. Schopp (304) 357-7310  
Contact Name Phone Number
- Signature Information (See below *Important Local Notice Regarding Signatures*):  
Print Name of Signer: Alynn A. Schopp Title/Capacity: Authorized Person  
Signature: *Alynn A. Schopp* Date: June 10, 2013

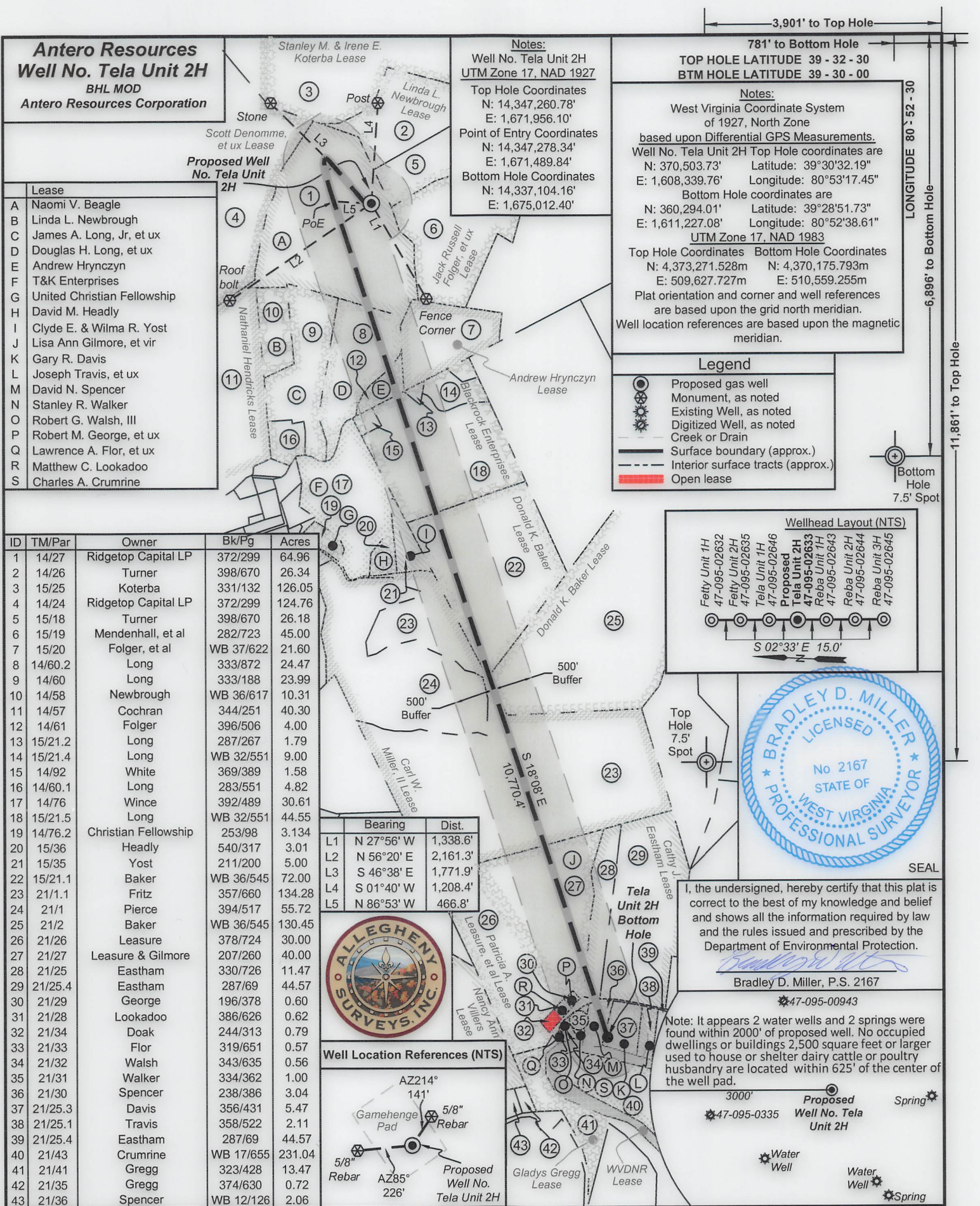
*Important Local Notice Regarding Signatures* For West Virginia Code §11D-1-12b. Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.

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*JEB*  
11/10/2019

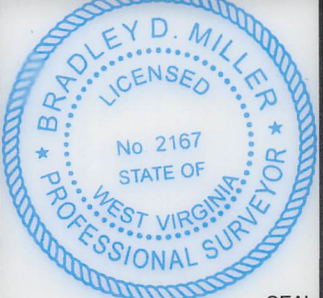
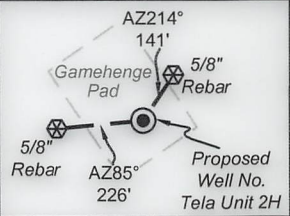


Lease
A Naomi V. Beagle
B Linda L. Newbrough
C James A. Long, Jr, et ux
D Douglas H. Long, et ux
E Andrew Hrynczyn
F T&K Enterprises
G United Christian Fellowship
H David M. Headly
I Clyde E. & Wilma R. Yost
J Lisa Ann Gilmore, et vir
K Gary R. Davis
L Joseph Travis, et ux
M David N. Spencer
N Stanley R. Walker
O Robert G. Walsh, III
P Robert M. George, et ux
Q Lawrence A. Flor, et ux
R Matthew C. Lookadoo
S Charles A. Crumrine

ID	TM/Par	Owner	Bk/Pg	Acres
1	14/27	Ridgetop Capital LP	372/299	64.96
2	14/26	Turner	398/670	26.34
3	15/25	Koterba	331/132	126.05
4	14/24	Ridgetop Capital LP	372/299	124.76
5	15/18	Turner	398/670	26.18
6	15/19	Mendenhall, et al	282/723	45.00
7	15/20	Folger, et al	WB 37/622	21.60
8	14/60.2	Long	333/872	24.47
9	14/60	Long	333/188	23.99
10	14/58	Newbrough	WB 36/617	10.31
11	14/57	Cochran	344/251	40.30
12	14/61	Folger	396/506	4.00
13	15/21.2	Long	287/267	1.79
14	15/21.4	Long	WB 32/551	9.00
15	14/92	White	369/389	1.58
16	14/60.1	Long	283/551	4.82
17	14/76	Wince	392/489	30.61
18	15/21.5	Long	WB 32/551	44.55
19	14/76.2	Christian Fellowship	253/98	3.134
20	15/36	Headly	540/317	3.01
21	15/35	Yost	211/200	5.00
22	15/21.1	Baker	WB 36/545	72.00
23	21/1.1	Fritz	357/660	134.28
24	21/1	Pierce	394/517	55.72
25	21/2	Baker	WB 36/545	130.45
26	21/26	Leasure	378/724	30.00
27	21/27	Leasure & Gilmore	207/260	40.00
28	21/25	Eastham	330/726	11.47
29	21/25.4	Eastham	287/69	44.57
30	21/29	George	196/378	0.60
31	21/28	Lookadoo	386/626	0.62
32	21/34	Doak	244/313	0.79
33	21/33	Flor	319/651	0.57
34	21/32	Walsh	343/635	0.56
35	21/31	Walker	334/362	1.00
36	21/30	Spencer	238/386	3.04
37	21/25.3	Davis	356/431	5.47
38	21/25.1	Travis	358/522	2.11
39	21/25.4	Eastham	287/69	44.57
40	21/43	Crumrine	WB 17/655	231.04
41	21/41	Gregg	323/428	13.47
42	21/35	Gregg	374/630	0.72
43	21/36	Spencer	WB 12/126	2.06

Bearing	Dist.
L1 N 27°56' W	1,338.6'
L2 N 56°20' E	2,161.3'
L3 S 46°38' E	1,771.9'
L4 S 01°40' W	1,208.4'
L5 N 86°53' W	466.8'

**Well Location References (NTS)**



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 2 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.

FILE NO: 31-54-E-16  
 DRAWING NO: Tela 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: October 30 20 19  
 OPERATOR'S WELL NO. Tela Unit 2H  
 API WELL NO  
 47 - 095 - 02633 MOD  
 STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
 Proposed 1026'  
 LOCATION: ELEVATION: Existing 1052' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Btm - Middlebourne  
 DISTRICT: Ellsworth COUNTY: Tyler  
 SURFACE OWNER: Ridgetop Capital LP GARY R. DAVIS; DAVID N. SPENCER; LISA ANN GILMORE, ET VIR; CATHY J. EASTHAM; ANDREW HRYNCZYN; CARL W. MILLER II; BLACKROCK ENTERPRISES; ACREAGE: 64.96  
 ROYALTY OWNER: Naomi V. Beagle; Donald K. Baker (2); Douglas H. Long, et ux, LEASE NO: ACREAGE 64.18; 72; 24.47;  
 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: 18,700' 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