

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

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 1H

47-095-02646-00-00

Modified Lateral to TMD of 19,400'.

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.

Operator's Well Number: TELA UNIT 1H

Farm Name: RIDGETOP CAPITAL LP

U.S. WELL NUMBER: 47-095-02646-00-00

Horizontal 6A New Drill

Date Modification Issued: December 17, 2019

Promoting a healthy environment.

WW-6B (04/15)

API NO. 47- 095	_ 02646	_
OPERATOR W	/ELL NO. Tela Unit 1H	
Well Pad Nar	me: Gamehenge Pad	

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

1) Well Operat	tor: Antero	Resources	Corporat	4945	07062	095 - Tyler	Ellsworth	Paden City 7.5'
					ator ID	County	District	Quadrangle
2) Operator's V	Well Number	r: Tela Unit	1H		_ Well Pad	Name: Game	henge Pac	d
3) Farm Name	/Surface Ow	ner: Ridget	op Capita	I, LP	Public Road	d Access: Stat	e Ridge Ro	oad
4) Elevation, c	urrent groun	d: 1052'	Ele	evation	, proposed p	ost-construction	on: ~1026'	
5) Well Type	(a) Gas	X	_ Oil		Unde	rground Storag	e	
	Other							
	(b)If Gas	Shallow	X		Deep			000
		Horizontal	<u>X</u>		-			4013
6) Existing Pac	l: Yes or No	No						1 11 18 299
Proposed Ta Marcellus Sh	_			•		nd Expected Protected Protected Pressure- 28	. ,	, (
8) Proposed To					,			месин
9) Formation a			Marcellus					
10) Proposed T	otal Measur	ed Depth:	19400' ME)				
11) Proposed H	Iorizontal Le	eg Length:	10680'		·			
12) Approxima	te Fresh Wa	ter Strata De _l	oths:	363'	***************************************			
13) Method to	Determine F	resh Water D	epths: O	ffset we	l records. Dep	ths have been adji	usted accordin	ng to surface elevations.
14) Approxima	te Saltwater	Depths: 10	93'					
15) Approxima	te Coal Sean	n Depths: 5	50'					
16) Approxima	te Depth to I	Possible Voic	l (coal mir	ne, kars	st, other): N	lone Anticipate	ed	
17) Does Propo directly overlyi					es	No	X	
(a) If Yes, pro	vide Mine I	nfo: Name:						
		Depth:	_					
		Seam:						
RECEIVED Office of Oil and	Gas	Owner	:					

NOV 2 2 2019

WW-6B (04/15)

API NO. 47- 095 - 02646 MDD OPERATOR WELL NO. Tela Unit 1H 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#	19400	19400	4927 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

ТҮРЕ	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	7		
Liners							

PACKERS

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

RECEIVED
Office of Oil and Gas

NOV 2 2 2019

API NO. 47-095 - 02646 M D D

OPERATOR WELL NO. Tela Unit 1H
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.

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.

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.

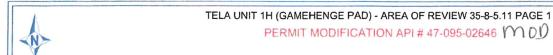
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls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

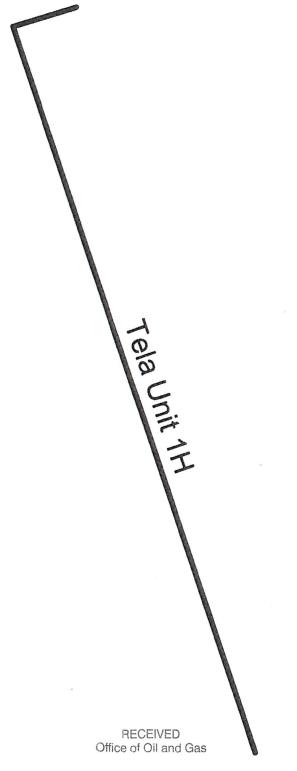
*Note: Attach additional sheets as needed.

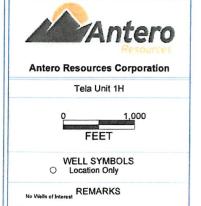
RECEIVED
Office of Oil and Gas

Environmental

Protection







December 17, 2018

NOV 2 2 2019

WV Department of Environmental Protection

Jes 11/10/009 Operator's Well Number

Tela 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
Naomi V. Beagle Lease			
Naomi V. Beagel	Antero Resources Corporation	1/8+	0535/0464
Scott Denomme et ux Lease			
Scott Denomme et ux	Antero Resources Corporation	1/8+	0535/0187
Naomi V. Beagle Lease			
Naomi V. Beagel	Antero Resources Corporation	1/8+	0535/0464
Linda L. Newbrough Lease			
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
James A. Long Jr. et ux Lease			
James A. Long Jr. et ux	Antero Resources Corporation	1/8+	0434/0350
Douglas H. Long et ux Lease			
Douglas H. Long et ux	Antero Resources Corporation	1/8+	0434/0517
T&K Enterprises Lease			
T&K Enterprises	Antero Resources Corporation	1/8+	0653/0510
<u>David M. Headly Lease</u>			
David M. Headly	Antero Resources Corporation	1/8+	0566/0179
Carl W. Miller II Lease			
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	1/8+	0414/0609
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	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.

WW-6A1 (5/13)

Operator's Well No.	Tela 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 Patricia A. Leasure et al Lease

Patricia A. Leasure et al

Antero Resources Appalachian Corporation

1/8+

0414/0609

Antero Resources Appalachian Corporation

Antero Resources Corporation

Name Change

Exhibit 1

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

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

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

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

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

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

WW-6A1 (5/13)

Operator's Well No.	Tela 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 Douglas H. Long et ux Lease

Douglas H. Long et ux

Antero Resources Corporation

1/8+

0434/0517

*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

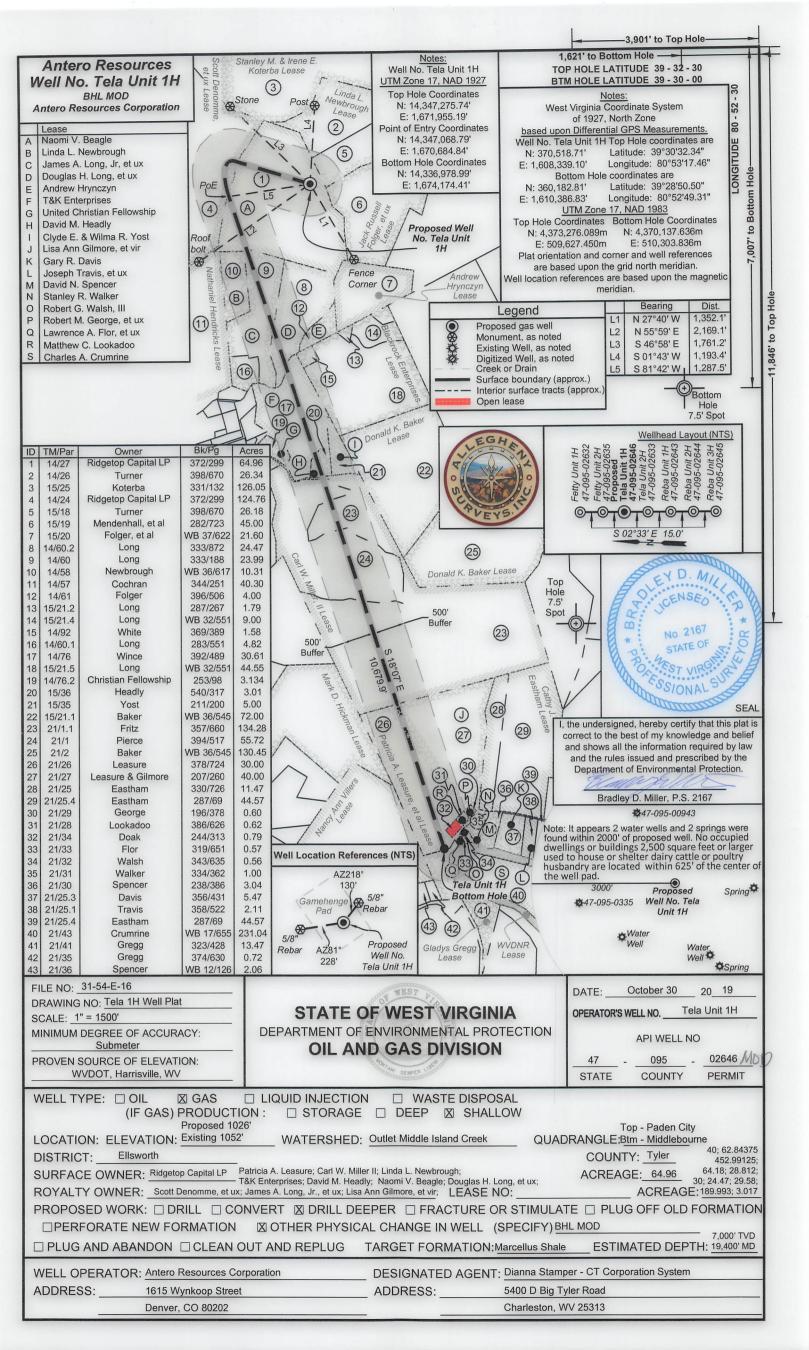
The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity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

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

NOV 1 2 2019

RECEIVED
Office of Oil and Gas

WV Department of Environmental Protection Page 1 of 1



Operator's Well Number

Tela 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
Naomi V. Beagle Lease			
Naomi V. Beagel	Antero Resources Corporation	1/8+	0535/0464
Scott Denomme et ux Lease			
Scott Denomme et ux	Antero Resources Corporation	1/8+	0535/0187
Naomi V. Beagle Lease	, \		
Naomi V. Beagel	Antero Resources Corporation	1/8+	0535/0464
•			•
Linda L. Newbrough Lease	'		
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
	•		
James A. Long Jr. et ux Lease			
James A. Long Jr. et ux	Antero Resources Corporation	1/8+	0434/0350
Douglas H. Long et ux Lease			
Douglas H. Long et ux	Antero Resources Corporation	1/8+	0434/0517
bouglas II. Long et ux	Antero Resources corporation	1/0.	0434/0327
T&K Enterprises Lease			
T&K Enterprises	Antero Resources Corporation	1/8+	0653/0510
David M. Headly Lease			
David M. Headly	Antero Resources Corporation	1/8+	0566/0179
Carl W. Miller II Lease			
Carl W. Miller II	Antero Resources Corporation	1/8+	0482/0830
Carrier II	Time of the sources corporation	2,0.	0402/0000

RECEIVED Office of Oil and Gas

NOV 1 2 2019

MAY Department of

^{....}mental 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.