

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

Harold D. Ward, Cabinet Secretary www.dep.wv.gov

Tuesday, October 4, 2022 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Permit Modification Approval for TRAINER 1H

47-017-06939-00-00

Lateral Extension

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) 926-04

James A. Martin

Chief

Operator's Well Number: TRAINER 1H

Farm Name: BRIAN D LEMLEY & CHRISTIE M LEMASTER ET

U.S. WELL NUMBER: 47-017-06939-00-00

Horizontal 6A New Drill

Date Modification Issued: 10/04/2022

Promoting a healthy environment.

WW-6B (04/15) CK # 4012949

API NO. 47-017 - 06939

OPERATOR WELL NO. Trainer Unit 1H MOD
Well Pad Name: Lemley Pad

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

1) Well Operator: Antero R	esources Corpora	494507062	017-Doddrid Grant	Smithburg 7.5'
,		Operator ID	County Distric	t Quadrangle
2) Operator's Well Number:	Trainer Unit 1H M	OD Well P	ad Name: Lemley Pad	
3) Farm Name/Surface Owne	Phillip N. Hill, e	t al Public R	oad Access: Hollow Run	Rd
4) Elevation, current ground:	1304' AS BUILT E	levation, propose	d post-construction;	
5) Well Type (a) Gas X Other	Oil _	Un	derground Storage	
	Shallow X Horizontal X	Deep	2	50 W 10/4/2022
6) Existing Pad: Yes or No	Yes			10/4/2022
7) Proposed Target Formation Marcellus Shale: 7400' TVE		The second secon		s):
8) Proposed Total Vertical D	epth: 7400' TVD			
9) Formation at Total Vertica	4.4	S		
10) Proposed Total Measured	1 Depth: 24000' N	/ID		
11) Proposed Horizontal Leg	Length: 15054.9			
12) Approximate Fresh Wate	r Strata Depths:	291', 345, 366	' 790'	- 4
13) Method to Determine Fre	esh Water Depths:	47-017-04998, 47-017-0	04719, Depths have been adjusted	according to surface elevations
14) Approximate Saltwater D	Depths: 1460', 1673	3', 1700', 1710'		
15) Approximate Coal Seam	Depths: 980'			
16) Approximate Depth to Po	ossible Void (coal m	nine, karst, other):	None Anticipated	
17) Does Proposed well locat directly overlying or adjacent		Yes	No X	
(a) If Yes, provide Mine Int	fo: Name:			RECEIVED
who as a contact and assessment and	Depth:			Office of Oil and Gas
	Seam:			SEP 2 6 2022
	Owner:		En	WV Department of vironmental Protection

API NO. 47- 017 _ 06939

OPERATOR WELL NO. Trainer Unit 1H MOD

Well Pad Name: Lemley 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	X60	78.67#	100	100	CTS, 96 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	840'	840'	CTS, 583 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	3200'	3200'	CTS, 1303 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110HP	23#	24000'	24000'	5130 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners	11-2						

SPW

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			
Liners							T

PACKERS

	Office of Oil and Gas
N/A	SEP 2 6 2022
N/A	WV Department of Environmental Protection
N/A	

WW-6B (10/14) API NO. 47- 017 - 06939

OPERATOR WELL NO. Trainer Unit 1H MOD

Well Pad Name: Lemley 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): 27.26 acres
- 22) Area to be disturbed for well pad only, less access road (acres): 4.31 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.

Office of Oil & Gas

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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:

WV Department of Environmental Protection

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 2-3% calcium chloride and 1/4 ib of flake Intermediate: Class A cement with 1/4 ib 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.

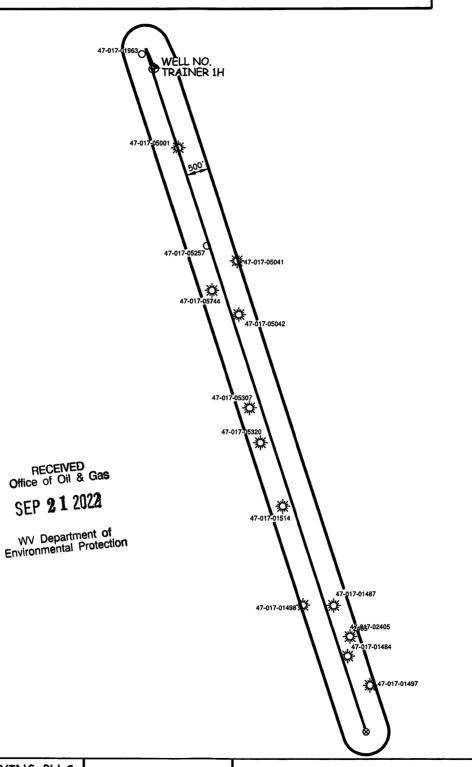
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

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.

LEMLEY PAD ANTERO RESOURCES CORPORATION



WILLOW LAND SURVEYING, PLLC P.O. BOX 17, PENNSBORO, WV 26415 (304) 659-1717

DATE: 09/19/22

DRAWN BY: D.L.P.

JOB #: 22-005WA FILE: TRAINER1HAOR.DWG

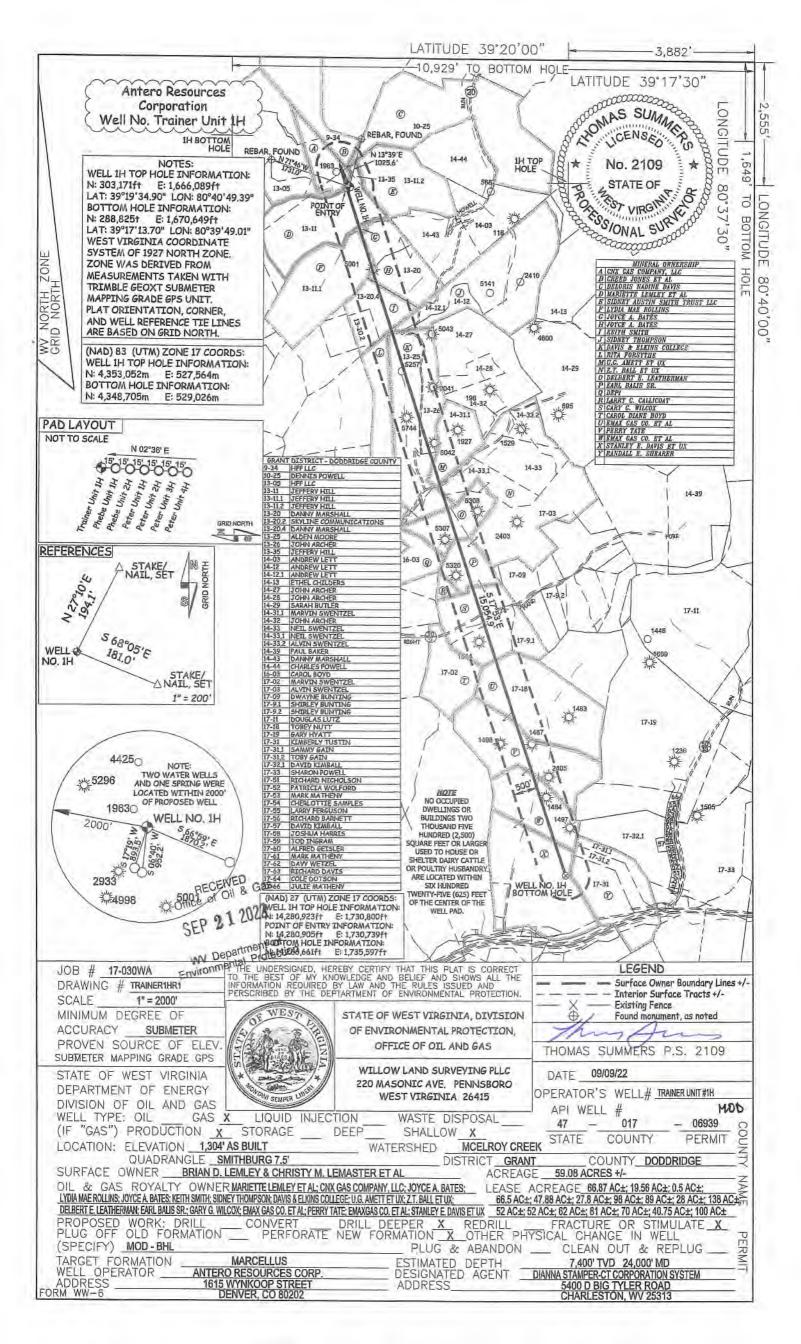
SCALE: 1-INCH = 2000-FEET 0' 4000' 6000'

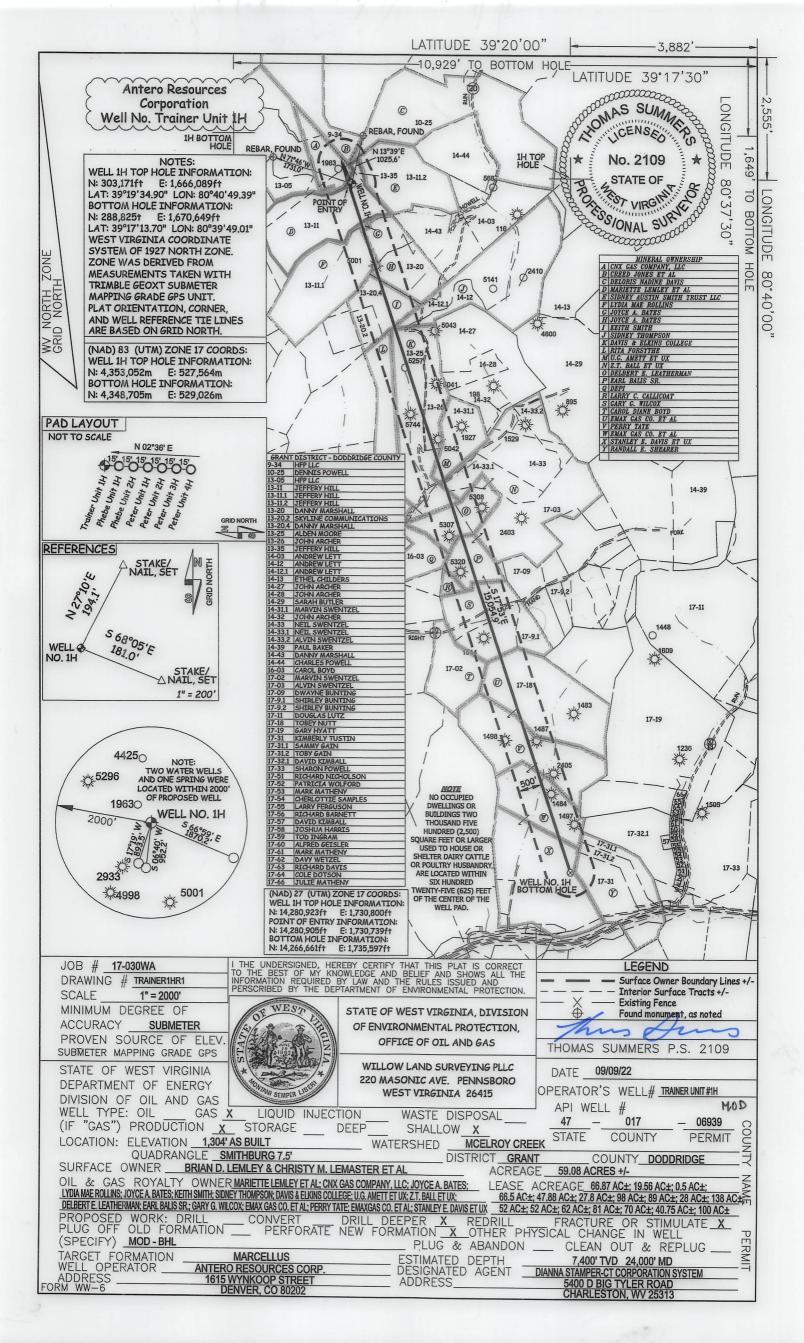
UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
47017019630000	W BOYCE	5124	DOMINION TRANSMISION	HOPE NATURAL GAS	2,294	Carrier of the second of the second	Big Injun, Squaw	Alexander, Berea
47017050010000	ROLLINS R	4	KEY OIL CO	KEYOILCO	3,098	2329 - 2947	Big Injun, Gordon	Alexander, Berea
47017052570000	MOORE ALDEN ET AL	8579	DOMINION EXPL&PROD	DOMINION EXPL&PROD				
47017050410000	ARCHER JOHN	W107-WD8	JAY-BEE OIL & GAS	JAY-BEE OIL & GAS	3,298	1952=3183	Little Lime, Weir, Thirty-foot	Alexander, Berea
47017057440000	MOORE ALDEN ET AL	DEPI 8522 REV	DIVERSIFIED PROD LLC	DOMINION EXPL&PROD	2,858	1624 - 2620	Lo Maxton, Up Maxton, Squaw, Gordon	Alexander, Beréa
47017050420000	WELCH MARY	WD-9	JAY-BEE OIL & GAS	JAY-BEE OIL & GAS	5,642	3466 - 5452	Warren, Riley, Alexander, Elk	Benson, Berea
47017053070000	A G LEATHERMAN	1	ANTERO RESOURCES CORPORATION	HALL DRILLING	3,228	2046 - 2056	Big injun	Benson, Berea
47017053200000	A G LEATHERMAN	3	ANTERO RESOURCES CORPORATION	HALL DRILLING	3,067	2036 - 2730	Big injun, Gordon	Benson, Berea
47017015140000	LEE DAVIS	1	R & R OIL & GAS LLC	SCOTT JAMES F	1,907		Big injun	Benson, Berea
47017014980000	E M ROSS	2	R & R OIL & GAS LLC	SCOTT JAMES F	2,150		Big Injun	Benson, Berea
47017014870000	R.B.ROSS	2	R & R OIL & GAS LLC	SCOTT JAMES F	2,154		Sait Sands, Maxton, Blue Monday, Big Injun	Benson, Berea
47017024050000		1043	ROSS & WHARTON GAS	HOPE NATURAL GAS	2,046		Big Injun	Benson, Berea
47017014840000	E M ROSS	1	R & R OIL & GAS LLC	SCOTT JAMES F	2,176		Big Injun	Benson, Berea
47017014970000	FTATE	2	R & R OIL & GAS LLC	SCOTT JAMES F	2,032		Big Injun	Benson, Berea

1 2022

WV Department of Environmental Protection

Office of Oil & Gas
SEP 2 1 2022





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
D: Mariette Lemley, et al Lease			
Mariette Lemley, et al	S&K Land Company	1/8	0114/0075
S&K Land Company	Mert Development, Inc.	Assignment	0115/0110
Mert Development, Inc.	Continental Reserves 1980-E	Assignment	0123/0022
Continental Reserves 1980-E	Appalachian Energy Development Corporation	Assignment	0150/0251
		Affidavit of Identity	0019/0210
Appalachian Energy Development Corporation	Appalachian Energy Reserves, Inc		0179/0146
Appalachian Energy Reserves, Inc.	Jay Shearer	Assignment	0285/0420
Jay Shearer	Clowser Production Company Antero Resources Appalachian Corporation	Assignment	0285/0420
Clowser Production Company Antero Resources Appalachian Corporation	Antero Resources Appaiachian Corporation Antero Resources Corporation	Assignment Name Change	0046/0523
Antero Resources Appaiachian Corporation	Antero Resources Corporation	Name Change	0040/0323
A: CNX Gas Company LLC Lease CNX Gas Company LLC	Antero Resources Corporation	Assignment	506/507
CNA Gas Company LLC	Antero Resources Corporation	Assignment	300/307
G: Joyce A. Bates Lease	A	410	500/462
Joyce A. Bates	Antero Resources Corporation	1/8+	500/463
F: Lydia Mae Rollins Lease	100 Augustus		.1.0022
Lydia Mar Rollins	Key Oil Company	1/8	196/675
Key Oil Company	Antero Resources Appalachian Corporation	Assignment	256/285
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	48/523
H: Joyce A. Bates Lease			
Joyce A. Bates	Antero Resources Corporation	1/8+	500/463
I: Keith Smith Lease			
Keith Smith	EQT Production Company	1/8	388/258
EQT Production Company	Anti-un Deservice Community	Assignment	467/165
A CONTRACTOR OF THE CONTRACTOR	HPU	Oil & Gas	
J: Sidney Thompson Lease	Office of	Oli & Gide	
Sidney Thompson	Antero Resources Corporation QED 9	1 2022 1/8+	445/542
K: Davis & Elkins College Lease	ULI A		
Davis & Elkin College	Dominion Exploration & Production Inc WV Del	partment of 1/8	204/244
Dominion Exploration & Production Inc	Dominion Appalachian Development 性%ironme	ntal Protection 1/8	230/578
Dominion Appalachian Development LLC	Antero Resources Appalachian Corporation	Assignment	230/113
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	46/523
M: U.G. Amett et ux Lease			
U. G. Arnett et ux	South Penn Oil Company	1/8	17/271
South Penn Oil Company	Hope Natural Gas Company	Assignment	26/133
Hope Natual Gas Company	Consolidated Gas Supply Corporation	Merger	143/345
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	135/583
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Name Change	332/563
CHG Transmission Corporation	Dominion Tansmission Inc	Name Change	332/570
Dominion Transmission Inc	Consol Energy Holdings LLC XVI	Assignment	245/1
Consol Energy Holdings LLC XVI	Consol Gas Company	Merger	292/469
Consol Gas Company	CNX Gas Company LLC		293/252
CNX Gas Company LLC	Antero Resources Corporation	Merger Assignment	400/565
THE THE SAMPANT MAN	Tartoro resources corporation	Assignment	400/303

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page	
N: Z.T. Ball et ux Lease				
Z.T. Ball et ux	Hope Natural Gas Company	1/8	23/21	
Hope Natural Gas Company	Consolidated Gas Supply Corporation	Merger	143/345	
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation		135/583	
Consolidated Gas Transmission Corporation	CNG Development Company	Merger	139/41	
CNG Development Company	CNG Producing Company	Merger	168/588	
CNG Producing Company	Dominion Exploration & Production Company		58/366	
Dominion Exploration & Production Company	Antero Resources Appalachian Corporation	Assignment	230/113	
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	46/523	
Antero Resources Apparachian Corporation	Antero Resources Corporation	name change	40/020	
O: Delbert E. Leatherman Lease				
Delbert E. Leatherman	Clarence W Mutschelknaus	1/8	199/295	
Clarence W Mutschelkaus	Bluestone Energy Partners	Assignment	250/659	
Bluestone Energy Partners	BEP Merger Sub LP	Merger	288/1	
BEP Merger Sub LP	Antero Resources Bluestone LLC	Merger	288/1	
Antero Resources Bluestone LLC	Antero Resources Corporation	Merger	WV SOS	
7			1165 254	
P: Earl Balis Sr. Lease				
Earl Balis Sr.	Clarence W Mutschelknaus	1/8	199/517	
Clarence W Mutschelknaus	Bluestone Energy Partners	Assignment	250/659	
Bluestone Energy Partners	BEP Merger Sub LP	Merger	288/1	
BEP Merger Sub LP	Antero Resources Bluestone LLC	Merger	288/1	
Antero Resources Bluestone LLC	Antero Resources Corporation	CEIVED Gas Merger of Oil & Gas 1 2022	wv sos	
S: Gary G. Wilcox Lease	Office	-007		
Gary G. Wilcox	SEP	21 200	442/457	
U: Emax Gas Co, et al Lease		ant of		
Emax gas Company et al	Emax Oil Company	Department of Department of 1/8 Assignment	374/188	
Emax Oil Company	Antero Resources Corporation	Department of Department of 1/8 Assignment	394/182	
V: Perry Tate Lease				
Perry Tate	Jesse F Randolph & GWF Randolph	1/8	17/207	
Jesse F Randolph & GWF Randolph	South Penn Oil Company	Assignment	18/87	
South Penn Oil Company	Hope Natural Gas Company	Assignment	26/133	
Hope Natural Gas Company	Consolidated Gas Supply Corporation	Merger	143/345	
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	135/583	
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Name Change	332/563	
CNG Transmission Corporation	Dominion Transmission Inc	Name Change	332/570	
Dominion Transmission Inc	Consol Energy Holdings LLC	Assignment	245/1	
Consol Energy Holdings LLC	Consol Gas Company	Merger	292/477	
Consol Gas Company	CNX Gas Company LLC	Merger	293/252	
CNX Gas Company LLC	Antero Resources Corporation	Assignment	400/565	
W: Emax Gas Company et al Lease				
Emax Gas Company et al	Emax Oil Company	1/8	374/184	
Emax Oil Company	Antero Resources Corporation	Assignment	394/182	

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

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

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Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
X Stanley E. Davis et ux Lease				
The state of the s	Stanley E. Davis et ux	James F Scott	1/8	91/533
	James F Scott	William Randolph Scott Trust	Assignment	137/77
	William Randolph Scott Trust	Emax Oil Company	Assignment	191/368
	Emax Oil Company	Antero Resources Corporation	Assignment	342/346

*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	
Ву:	Tim Rady	=
Its:	Senior VP of Operations	



Stansberry, Wade A <wade.a.stansberry@wv.gov>

Modification Horizontal H6A Well Work Permit (47-017-06933, 47-017-06934, 47-017-06935, 47-017-06936, 47-017-06939)

1 message

Stansberry, Wade A <wade.a.stansberry@wv.gov>

Wed, Oct 5, 2022 at 7:34 AM

To: Mallory Stanton <mstanton@anteroresources.com>, Diane Blair <dblair@anteroresources.com>, Dani DeVito <ddevito@shalepro.com>, David Sponaugle <dsponaug@assessor.state.wv.us>, "Ward, Samuel D" <samuel.d.ward@wv.gov>, "Blevins, Cragin" <cragin.blevins@wv.gov>

I have attached a copy of the newly issued well permit number(s). This will serve as your copy.

47-017-06933 - PETER UNIT 1H 47-017-06934 - PETER UNIT 2H 47-017-06935 - PETER UNIT 3H 47-017-06936 - PETER UNIT 4H 47-017-06939 - TRAINER UNIT 1H

If you have any questions, then please contact us here at the Office of Oil and Gas.

Thank you,

Wade A. Stansberry

Environmental Resource Specialist 3

West Virginia Department of Environmental Protection

Office of Oil & Gas

601 57th St. SE

Charleston, WV 25304

(304) 926-0499 ext. 41115

(304) 926-0452 fax

Wade.A.Stansberry@wv.gov

5 attachments

47-017-06934 - mod.pdf 1923K

47-017-06935 - mod.pdf 1936K

47-017-06936 - mod.pdf 1949K

47-017-06939 - mod.pdf 2272K

47-017-06933 - mod.pdf 1986K