

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

Monday, August 12, 2024 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re:

Permit Modification Approval for MAGNOLIA UNIT 1H

47-095-02891-00-00

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) 926-0450.

Operator's Well Number: MAGNOLIA UNIT 1H

Farm Name: NEIL R STEBBINS

U.S. WELL NUMBER: 47-095-02891-00-00

Horizontal 6A New Drill

Date Modification Issued: 08/12/2024

Promoting a healthy environment.

API NO. 47-095	_ 02691		
OPERATOR	WELL NO.	Magnolia Unit 1H MOD	-
Well Pad N	ame: Starke	y Pad	-

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

1) Well Operator: Antero Resources Corp	oral 494507062	095-Tyler	Lincoln	Paden City 7.5'
	Operator ID	County	District	Quadrangle
2) Operator's Well Number: Magnolia Unit 1	H MOD Well Pa	d Name: Starke	ey Pad 🗸	
3) Farm Name/Surface Owner: Neil R. Stebb	pins Public Ro	ad Access: Ham	ilton Drive	e ′
4) Elevation, current ground: 1107'	Elevation, proposed	post-construction	n: 1091'	
5) Well Type (a) Gas X Oil		erground Storag		
Other				
(b)If Gas Shallow X	Deep			
Horizontal X				
6) Existing Pad: Yes or No Yes				
7) Proposed Target Formation(s), Depth(s), An	nticipated Thickness a	and Expected Pre	essure(s):	
Marcellus Shale: 6800' TVD, Anticipated Thic	kness- 55 feet, Associa	ated Pressure- 28	300#	
8) Proposed Total Vertical Depth: 6800' TVD				
9) Formation at Total Vertical Depth: Marce	llus /			
10) Proposed Total Measured Depth: 19100	'MD /			
11) Proposed Horizontal Leg Length: 10310	.5'			
12) Approximate Fresh Water Strata Depths:	464'			
13) Method to Determine Fresh Water Depths:	47-095-00275			
14) Approximate Saltwater Depths: 1522'	/			RECEIVED
15) Approximate Coal Seam Depths: None Id	entified		O	ffice of Oil and Gas
16) Approximate Depth to Possible Void (coal	mine, karst, other):	None Anticipate	d	AUG 7 2024
17) Does Proposed well location contain coal s directly overlying or adjacent to an active mine	eams ? Yes	No _	X Envi	VV Department of ronmental Protection
(a) If Yes, provide Mine Info: Name:				
Ov # 4/33 Qu Depth:				
CV # 4033946 Seam: — \$1 2500 Seam: — Owner:				
\$ 2500 Owner:				

Page 1 of 3

08/16/2024

API NO. 47- 095 _ 02891

OPERATOR WELL NO. Magnolia Unit 1H MOD
Well Pad Name: Starkey Pad

18)

CASING AND TUBING PROGRAM

TYPE	T	Mann					7
	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up
Conductor	20"	New	H-40	94#	100		(Cu. Ft.)/CTS
				0 -111	100	100	CTS, 89 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	514	514	CTS, 536 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500 /	CTS, 1018 Cu. Ft.
Intermediate						2000	0.0, 1010 00.11.
Production	5-1/2"	New	P-110	23#	19100	19100	3885 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#		10100	3003 Cu. Ft
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield
Conductor	20"	24 ⁿ	0.438"	1530	50	Class A/L	(cu. ft./k) ~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A/L	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A/L	~1.18
Intermediate				3320	1000	Old33 A/L	-1.10
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	2000		707 02-1,44 011-1.0
Liners				11,200			

PACKERS

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Office of Oil and Gr

Kind:	N/A	Cince of Oil and Gas
61	14// (AUG 7 2024
Sizes:	N/A	8 9
Depths Set:	N/A	WV Department of Environmental Protection

Page 2 of 3

08/16/2024

WW-6B
(10/14)

API NO. 47- 095 - 02891

OPERATOR WELL NO. Magnolia Unit 1H MOD

Well Pad Name: Starkey Pad

Describe proposed well work,	including the drilling	g and plugging back o	of any nilot hole.
	O THE OWN AND ADDRESS OF	2 min hindeline outly (or any phor nois

Drill, perforate, fracture a new vertical 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): 35.27 acres
- 22) Area to be disturbed for well pad only, less access road (acres): 14.87 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 and Gas

WV Department of

Environmental Protection

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

Conductor: no additives, Class A/L cement.

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

LEGEND

- Proposed gas well
- Existing Well, as noted
- A Digitized Well, as noted



The orientation of this survey is Grid North, and its coordinate base is the West Virginia Coordinate System of 1927, North Zone

Office of Oil and Gas

AUG 0 1 2024

WV Department of Environmental Protection



Fax: (304) 848-5037

PARTY CHIEF: C. Lynch

RESEARCH: J. Miller

SURVEYED: Dec. 2016

FIELD CREW: C.L., K.M.

EGHE LENGTH OF THE PROPERTY OF

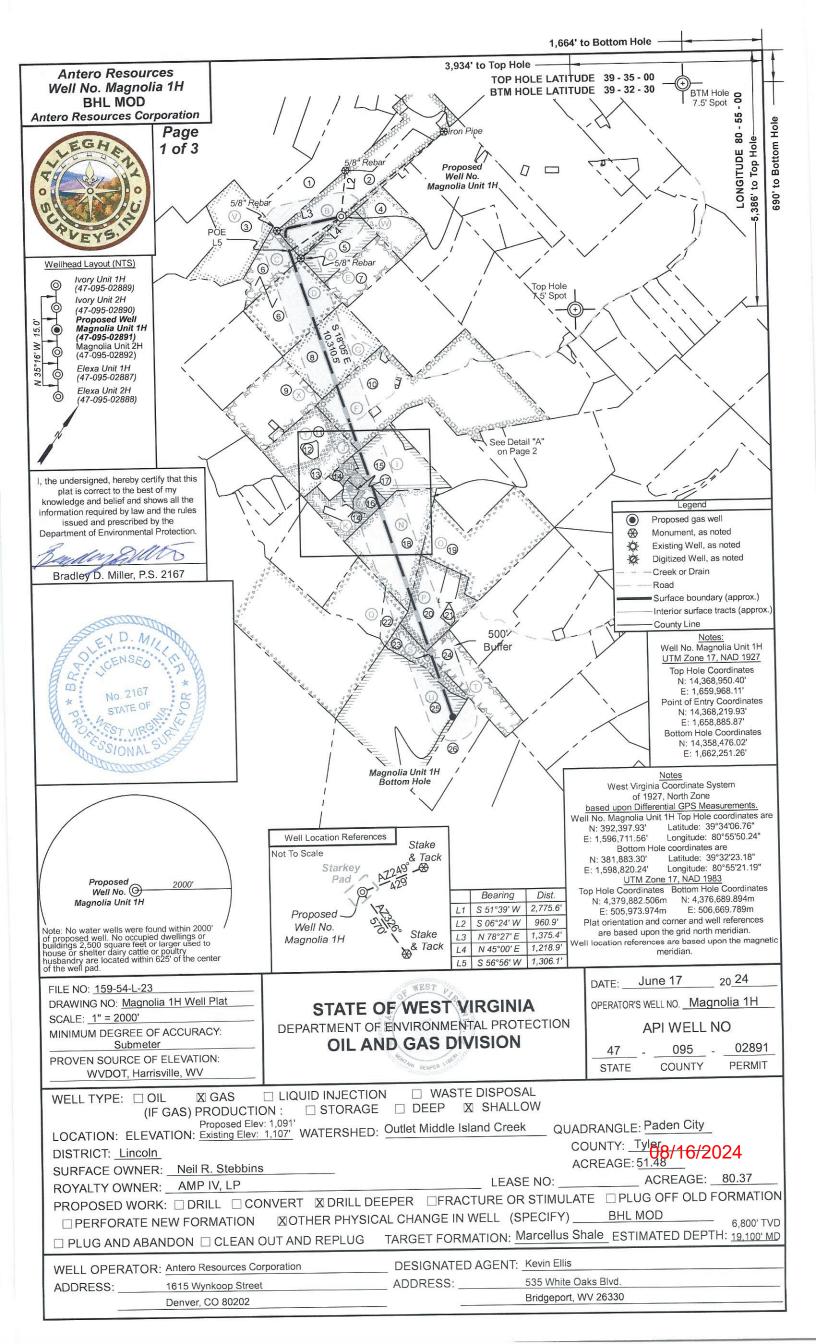
Sheet 1 of 1

500' Buffer

> 172 Thompson Drive Bridgeport, WV 26330

1984	
DRAWN BY:	J. McNemar
PREPARED:	May 29, 2024
PROJECT NO:	159-54-L-23
DRAWING NO:	Magnolia 1H AOR

Scale: 1 inch = 2000 feet 08/16/2024



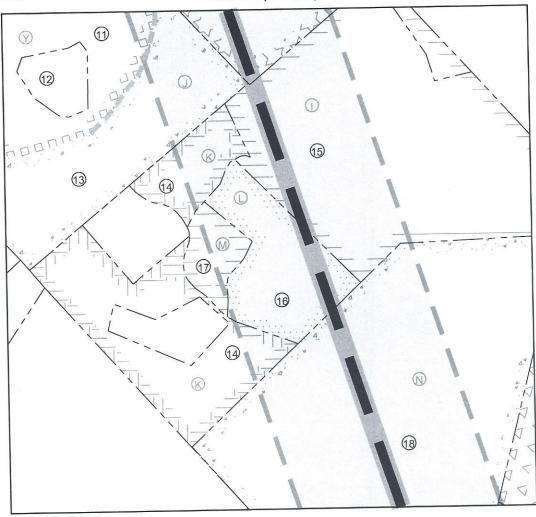
Antero Resources Well No. Magnolia 1H BHL MOD

Antero Resources Corporation



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Detail A (1"=500')



FILE NO: 159-54-L-23

DRAWING NO: Magnolia 1H Well Plat

SCALE: 1" = 2000'

MINIMUM DEGREE OF ACCURACY:
Submeter

PROVEN SOURCE OF ELEVATION:
WVDOT, Harrisville, WV

WELL TYPE: OIL MIGAS DELIQUID INJE

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

WEST ,

DATE: June 17 20 24

OPERATOR'S WELL NO. Magnolia 1H

API WELL NO

 47
 095
 02891

 STATE
 COUNTY
 PERMIT

	Walter Committee of the
WELL TYPE: ☐ OIL X GAS ☐ LIQUID INJECTIO	N 🗆 WASTE DISPOSAL
(IF GAS) PRODUCTION : ☐ STORAGE	□ DEEP 🗵 SHALLOW
Proposed Elev: 1,091'	Outlet Middle Island Creek QUADRANGLE: Paden City
LOCATION: ELEVATION: Existing Elev: 1,107' WATERSHED:	Outlet Middle Island Creek QUADRANGLE. Guest Stry
DISTRICT: Lincoln	COUNTY: Tyler <mark>8/16/2</mark> 024 ACREAGE: 51.48
	ACREAGE: 51.48
SURFACE OWNER: Neil R. Stebbins	
ROYALTY OWNER: AMP IV, LP	LEASE NO: ACREAGE:80.37
PROPOSED WORK: DRILL DCONVERT XIDRILL DE	EPER
PROPOSED WORK. DRILL GOOTVERT ED DIVELO	AL CHANGE IN WELL (SPECIFY) BHL MOD
□ PERFORATE NEW FORMATION ⊠OTHER PHYSIC	AL CHANGE IN WELL (SPECIFF) BITE MOD 6,800' TVD
☐ PLUG AND ABANDON ☐ CLEAN OUT AND REPLUG	TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 19,100' MD
	A STATE OF THE STA
WELL OPERATOR: Antero Resources Corporation	DESIGNATED AGENT: Kevin Ellis
ADDRESS: 1615 Wynkoop Street	ADDRESS: 535 White Oaks Blvd.
Denver, CO 80202	Bridgeport, WV 26330
Deliver, CO 60202	

Antero Resources
Well No. Magnolia 1H
BHL MOD
Antero Resources Corporation



Page 3 of 3

	Leases
Α	Robert F. & Rita K. Scardina
В	AMP IV, LP
С	Robert F. & Rita K. Scardina
D	Robert F. & Rita K. Scardina
Е	Robert F. & Rita K. Scardina
F	Earl Grimes, et ux
G	Date Palm Resources, LLC
1	Bounty Minerals, LLC
J	Delbert D. Rush & Betty R. Rush
K	Delbert D. Rush & Betty R. Rush
L	Larry M. Jochum & Betty L. Jochum, JTWROS
M	Kimberly J. Bassett, DSSP
N	Robert L. Bolner
0	Ethan A. & Marsh L. Riffle, JTWROS
Р	Bounty Minerals, LLC
Q	Arlen Glen Wells, Jr.
S	Frank Krynicki
Т	MMA Mineral Group, LLC
U	Gerald W. Meckley, Jr., et al
٧	Moore Self Storage, North Carolina, LLC
W	Robert F. & Rita K. Scardina
Х	Theresa J. Drain
Y	Bounty Minerals, LLC

ID	TM-Par	Owner	Bk/Pg	Acres
1	5-4	Ralph D. & Sophia Judge	306/681	60.77
2	5-9.4	Neil R. Stebbins	366/436	51.48
3	4-91	Donna Kathy Johnston	184/133	54.06
4	5-12	Robert F. & Rita K. Scardina	320/646	25.00
5	5-11	Robert F. & Rita K. Scardina	320/646	25.00
6	8-14	Robert F. & Rita K. Scardina	320/646	72.79
7	5-10	Robert F. & Rita K. Scardina	320/646	25.00
8	9-1	Dickie L. Morgan	605/478	50.00
9	8-24	Theresa J. Drain	428/607	49.47
10	9-16	D.E. Grimes & Sons Farm, LLC	209/496	118.215
11	8-26	Delbert D. & Betty Ruth Rush	191/125	20.65
12	8-26.1	Donal L. & Joyce J. Rush	230/44	2.345
13	9-12	Betty Ruth Rush	162/25	23.00
14	9-14	Donal Lee & Ronal Wayne Rush	368/825	32.71
15	9-43	Larry M. & Betty L. Jochum; Mark Lee Jochum	573/794	36.552
16	9-15	Larry M. & Betty L. Jochum; Mark Lee Jochum	391/407	7.301
17	9-15.2	Kimberly Jane Williamson, et al	451/715	4.00
18	9-23	Robert L. Bolner	347/235	61.00
19	9-24	Ethan A. & Marsha L. Riffle	299/26	82.00
20	9-25	Vonlie Cooper	289/103	31.48
21	9-25.2	Mary & Dallas Yeater	361/326	1.762
22	9-45.1	GR Meckley Family Trust	OR50/606	
23	9-26	Margaret Krynicki, et al	404/293	15.00
24	13-2	Idona Cooper Estate	109/234	30.00
25	13-1	GR Meckley Family Trust	OR50/28	99.00
26	13-5	GR Meckley Family Trust	OR50/28	31.50

FILE NO: 159-54-L-23 DRAWING NO: Magnolia 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:June 17 20_24 OPERATOR'S WELL NOMagnolia 1H API WELL NO 47 095 02891STATE
(IF GAS) PRODUCTION Proposed Elevel LOCATION: ELEVATION: Existing Elevel DISTRICT: Lincoln SURFACE OWNER: Neil R. Stebbins ROYALTY OWNER: AMP IV, LP PROPOSED WORK: DRILL CO	1,107' WATERSHED: Outlet Wilder Island Orock QUAI	TE ☐ PLUG OFF OLD FORMATION BHL MOD 6800' TVD
WELL OPERATOR: Antero Resources Co ADDRESS: 1615 Wynkoop Street Denver, CO 80202		

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 –

- 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
•	B: AMP IV, LP Lease AMP IV, LP	Antero Resources Corporation	1/8+	231/747
/	C: Robert F. & Rita K. Scardina Lease Robert F. & Rita K. Scardina	Antero Resources Corporation	1/8+	235/654
	D: Robert F. & Rita K. Scardina Lease Robert F. & Rita K. Scardina	Antero Resources Corporation	1/8+	235/654
,	G: Date Palm Resources, LLC Lease Date Palm Resources, LLC	Antero Resources Corporation	1/8+	297/135
/	F: Earl Grimes, et ux Lease Earl Grimes, et ux John Richmond Gas Corporation of WV John Richmond Jack Holden, Driller-Operator Nancy J. Holden Triad Hunter, LLC J: Delbert D. Rush & Betty R. Rush	John Richmond Gas Corporation of WV John Richmond Jack Holden, Driller-Operator Nancy J. Holden Triad Hunter, LLC Antero Resources Corporation	Assignment Arrows August 2024 WV Department of Environmental Protection	210/296 211/149 212/270 212/315 390/758 402/569
	Lease Delbert D. Rush & Betty R. Rush	Antero Resources Corporation	1/8+	665/150
1	I: Bounty Minerals, LLC Lease Bounty Minerals, LLC	Antero Resources Corporation	1/8+	301/445
	L: Larry M. Jochum & Betty L. Jochum, JTWROS Lease Larry M. Jochum & Betty L. Jochum, JTWROS	Antero Resources Corporation	1/8+	290/672
1	N: Robert L. Bolner Lease Robert L. Bolner	Antero Resources Corporation	1/8+	187/91
1	P: Bounty Minerals, LLC Lease Bounty Minerals, LLC	Antero Resources Corporation	1/8+	269/176
1	T: MMA Mineral Group, LLC Lease MMA Mineral Group, LLC	Antero Resources Corporation	1/8+	301/339

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- (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
F T E E	S: Frank Krynicki Lease Frank Krynicki Frank Krynicki Friad Hunter, LLC Blue Ridge Mountain Resources, Inc Eclipse Resources I, LP EWN Production Company	Triad Hunter, LLC Blue Ridge Mountain Resources, Inc Eclipse Resouces I, LP SWN Production Company Antero Resources Corporation	1/8 Assignment Assignment Name Change Assignment	659/788 104/354 104/357 WVSOS 235/291

^{*}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.

*Cotenancy Utilization - Antero is utilizing the Co-tenancy Modernization and Majority Protection Act to proceed with development of certain royalty owners' interests in this tract.

**Pooling/Unitization – Antero has filed a horizontal well unitization application with the West Virginia Oil and Gas Conservation Commission that seeks to pool certain owners in this tract

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Office of Oil and Gas

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WV Department of Environmental Protection

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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- (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 U: Gerald W. Meckley, Jr. et al Lease	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
	Gerald W. Meckley, Jr. et al Triad Hunter, LLC Blue Ridge Mountain Resources, Inc Eclipse Resources I, LP SWN Production Company	Triad Hunter, LLC Blue Ridge Mountain Resources, Inc Eclipse Resources I, LP SWN Production Company Antero Resources Corporation	1/8 Assignment Assignment Name Change Assignment	2/640 104/354 104/357 WVSOS 235/291
			Office of Oil a	ED nd Gas
			AUG 0 1 2024	
			WV Department or Environmental Protection	

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	(m Reds	
Its:	Senior Vice President of Land		

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