

#### west virginia department of environmental protection

Office of Oil and Gas 601 57<sup>th</sup> Street, S.E. Charleston, WV 25304 (304) 926-0450 fax: (304) 926-0452

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

Monday, May 20, 2024 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re:

Permit Modification Approval for McKINNEY UNIT 1H

47-085-10513-00-00

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: McKINNEY UNIT 1H

Farm Name: MICHAEL UNDERWOOD ET AL U.S. WELL NUMBER: 47-085-10513-00-00

Horizontal 6A New Drill

Date Modification Issued: 5/20/2024

Promoting a healthy environment.

API NO. 47- 085	_ 10513		
OPERATOR V	VELL NO.	McKinney Unit 1H MOD	-
Well Pad Na	me: Pinew	ood Pad	

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

				/	
1) Well Operator: Ante	ero Resources Corpora	494507062	085 - Ritchie	Clay	Ellenboro 7.5'
		Operator ID	County	District	Quadrangle
2) Operator's Well Num	nber: McKinney Unit 1H	MOD / Well Pac	Name: Pinew	ood Pad	
3) Farm Name/Surface (	Owner: Michael Underwood	Et Ar Public Roa	d Access: Pine	wood Lan	е
4) Elevation, current gro	ound: 1066' - AS BUILT Ele	evation, proposed	post-construction	on:	
5) Well Type (a) Gas	X Oil	Unde			
Other				+	
(b)If Ga	s Shallow X	Deep			
	Horizonțal X				
6) Existing Pad: Yes or	No Yes				
7) Proposed Target Form Marcellus Shale: 6700	nation(s), Depth(s), Antici	pated Thickness a	nd Expected Pro	essure(s):	
8) Proposed Total Vertice		00 1001, A330016	ted Flessule- 20	000#	
9) Formation at Total Ve	*				
10) Proposed Total Meas		) -			
11) Proposed Horizontal	Leg Length: 17488' *	Open to modifica	tion at a later of	date	
12) Approximate Fresh V	Water Strata Depths:	200', 378', 878'	/		
13) Method to Determine		085088860000, 4708507750000	0 Offset well records. Depth	ns have been adjus	led according to surface elevations.
14) Approximate Saltwa	ter Depths: 1490'				
15) Approximate Coal So	eam Depths: N/A				
16) Approximate Depth	to Possible Void (coal mir	e, karst, other):	lone Anticipate	d	
17) Does Proposed well 1	location contain coal seam	S			
directly overlying or adja	acent to an active mine?	Yes	No	X	
(a) If Yes, provide Min	e Info: Name:			C	RECEIVED Office of Oil and Gas
CV # 4030603	Depth:	-Ministra			MAY 0 6 2024
CK # 4030603	Seam:			1	WV Department of
7. (300	Owner:			Env	ironmental Protection
				/	
	1	nay 1	1	5-2	-2024
	( free	may /1	uc	0	~~~

Page 1 of 3

API NO. 47- 085 - 10513

OPERATOR WELL NO. McKinney Unit 1H MOD Well Pad Name: Pinewood 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	J-55	94#	100'	100'	CTS, 96 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	928'	928'	CTS, 967 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	3000'		CTS, 1221 Cu. Ft.
Intermediate							010, 1221 Ou. 1 t.
Production	5-1/2"	New	P110-ICY	23#	27000'	27000'	CTS, 5876 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#			010,0070 00.11.
Liners							

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"	0.375"	2250	50	Class A/L	~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			11	3320	1000	Class A/L	~1.10
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	14,360	2500	Class G/H	~1.8
Tubing	2-3/8"	4.778"	0.19"	11,200		5.000 0// 1	1.0
Liners				,200			

#### **PACKERS**

Kind:	N/A	RECEIVED
Sizes:	N/A	Office of Oil and Gas
Depths Set:	N/A	WV Department of Environmental Protection

Page 2 of 3

Jung Mart 5-2-2024

OPERATOR WELL NO. McKinney Unit 1H MOD Well Pad Name: Pinewood Pad

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

Drill a new horizontal shallow well into the 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): 19.86 acres

22) Area to be disturbed for well pad only, less access road (acres): 8.21 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/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 G/H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% C-20 + 0.05% C-51 MAY 0 6 2024

RECEIVED Office of Oil and Gas

WV Department of Environmental Protection

25) Proposed borehole conditioning procedures:

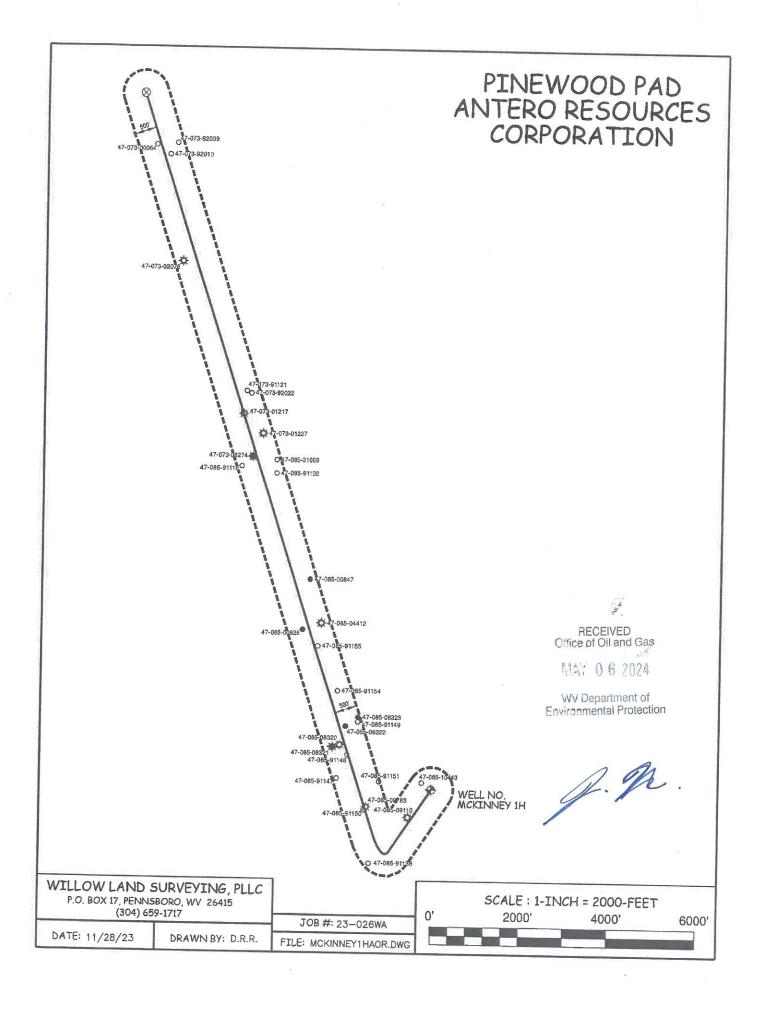
Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

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.

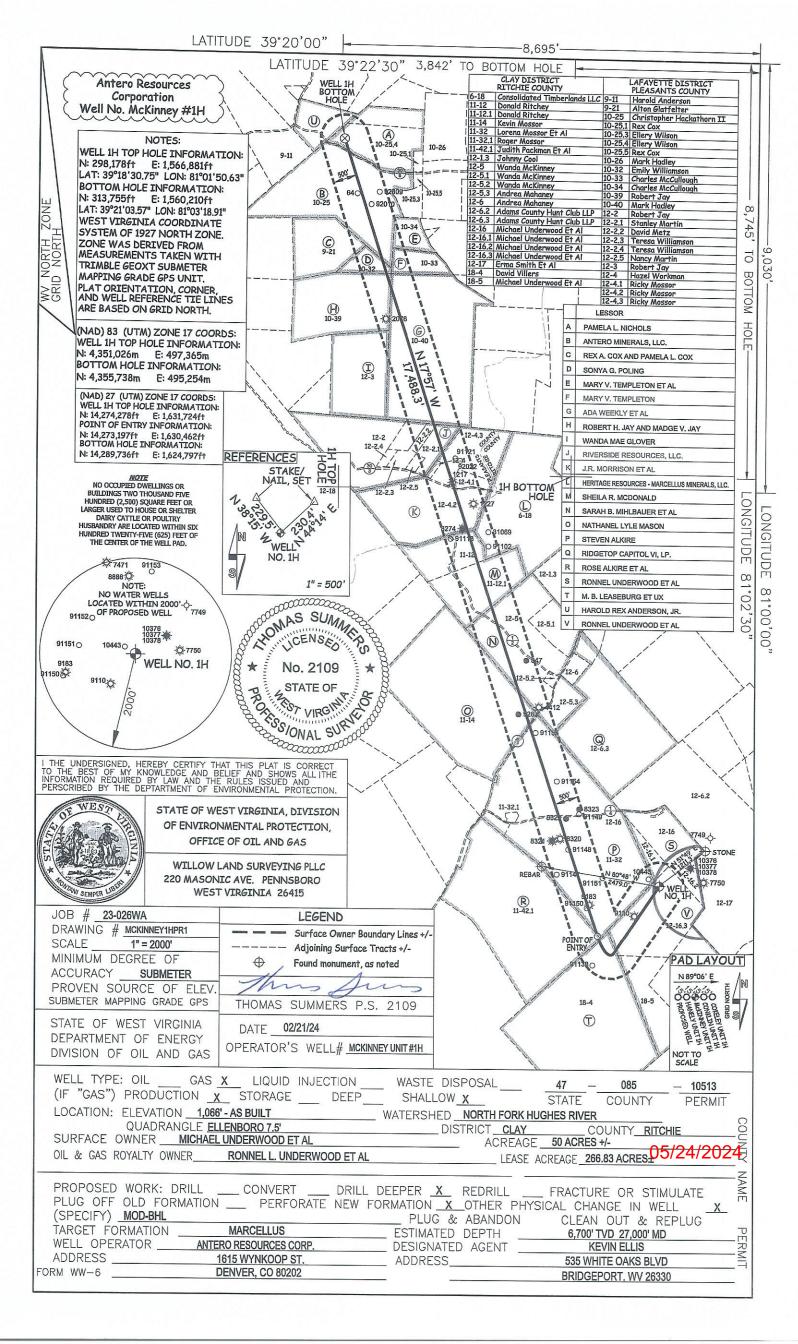
\*Note: Attach additional sheets as needed.

Juny Me 5-2-2024



		TO LINE IN THE PER	Operator	Historical Operator	2	Perforated Interval (snallowest, deepest)	reliulated rollinguoli(s)	n rodacin (e) indicator (e) rior berra
47085104430000   AR PINEWOOD	AR PINEWOOD	5V	ANTERO RESOURCES CORP	ANTERO RESOURCES CORP				
47085911380000								
47085911500000								
47085911470000								
47085911480000								
47085083210000	47085083210000   MOSSOR KENNETH	2	KENNETH EVERETT MOSSOR	MOSSOR KENNETH				
47085083200000	47085083200000 MOSSOR KENNETH	1	KENNETH EVERETT MOSSOR	MOSSOR KENNETH				
47085009280000 J MIHLBAUER	J MIHLBAUER	3	HALL JAMES H	HALL JAMES H	1,806		Keener	Weir, Gordon, Benson, Alexander
47085911180000								
- 47073082740000								
17073020760000	47073020760000 JAY ROBERT & MADGE	1	SCHULTZ RUN GAS	PARDEE GAS	5,169	4931 - 4937		Weir, Gordon, Benson, Alexander
47073000640000	N H WILLIAMSON	1	UNKNOWN	UNKNOWN				
47073920090000								Name of the Party
47073920100000								
47073911210000								
47073920220000								
47073012170000   MORRISON J R	MORRISONJR	1	PIN OAK OPERATING LLC	SHAFFER OIL & GAS	4,855	2790 - 4843	Squaw	Weir, Gordon, Benson, Alexander
47073012270000	MORRISON J R	2	PIN OAK OPERATING LLC	KLONDIKE DEVELOPMENT	5,003	2734 - 4894	Big Injun	Weir, Gordon, Benson, Alexander
47085310690000								
47085911020000								
47085008470000	W C BUTCHER	5	COLT OIL CORP	FALCON SCIENCES INC	1,746		Keener	Weir, Gordon, Benson, Alexander
17085044120000	47085044120000 MCKINNEY DELMAS	1	COLT OIL CORP	KEY OIL INC	2,888	2190 - 2674	Big Injun, Weir, Berea, Thirty Foot, Gordon	Benson, Alexander
47085911550000								
47085911540000								
47085083230000	MOSSOR	4	KENNETH EVERETT MOSS	MOSSOR KENNETH	1,927		Keener	Weir, Gordon, Benson, Alexander
47085911490000								
47085083220000 MOSSOR	MOSSOR	3	KENNETH EVERETT MOSS	MOSSOR KENNETH			Keener	Weir, Gordon, Benson, Alexander
47085911510000								
47085091830000								
77085091100000								





### 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:

Constant I			•
Grantor, lessor, etc.	Grantee, lessee, e	etc. Royalty	Book/Page
V: Ronnel Underwood Et Al Lease			
Ronnel Underwood Et Al	Walter C. Alkire	1/0	
Walter C. Alkire	The Walter C. Alkire, Jr. Family Tru	1/8	0233/0273
The Walter C. Alkire, Jr. Family Trust	Antero Resources Corporation	0	0313/0400
-, -, -, -, -, -, -, -, -, -, -, -, -, -	Antero Resources Corporation	Assignment	0271/0834
8: Ronnel Underwood Et AL Lease			
Ronnel Underwood Et Al	Walter C. Alkire	1/8	0199/0020
Walter C. Alkire	The Walter C. Alkire, Jr. Family Tru	st Agreement	0313/0400
The Walter C. Alkire, Jr. Family Trust	Antero Resources Corporation	Assignment	0271/0834
/ T: M.B. Leaseburg Et Ux Lease			,
M.B. Leaseburg Et Ux	A.C. Mercer	2002	
A.C. Mercer	1/// 1/2015 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1/8	0080/0261
Florizel Woodford	Florizel Woodford	Assignment	0080/0267
Rich Oil & Gas Company	Rich Oil & Gas Company	Assignment	0081/0236
W.H. Mossor	W.H. Mossor	Assignment	0098/0256
J&J Enterprises, Inc.	J&J Enterprises, Inc.	Assignment	0133/0004
Term Energy Corporation	Term Energy Corporation	Assignment	0172/0336
Term Energy Corporation	Antero Resources Corporation	Assignment	0283/0595
R: Rose Alkire Et Al Lease			
Rose Alkire Et Al	Walter C. Alkire	1/8	04.42 (0524
Walter C. Alkire	The Walter C. Alkire, Jr. Family Trus		0143/0521
The Walter C. Alkire, Jr. Family Trust	Antero Resources Corporation	st Agreement Assignment	0313/0400 <b>0289/0050</b>
6.0	,	Assignment	0289/0050
P: Steven Alkire Lease	100 TO		
Steven Alkire	Antero Resources Corporation	1/8+	0340/0291
O: Nathanel Lyle Mason Lease			
Nathanel Lyle Mason	Antero Resources Corporation		Ponding Pooling
	•		Pending Pooling
			Application
N: Sarah B. Mihlbauer Et Al Lease			
Sarah B. Mihlbauer Et Al	Falcon Sciences, Inc.	1/8	0150/0707
Falcon Sciences, Inc.	Colt Oil Corporation	Assignment	0172/0688
Colt Oil Corporation	HERC Oil & Gas, LLC	Assignment	0282/0480
HERC Oil & Gas, LLC	Black Fern Resources, LP	Assignment	0313/0538
Black Fern Resources, LP	Charles McCord, III	Assignment	0331/0266
Charles McCord, III	Colt Oil Corporation	Assignment	0331/0826
Colt Oil Corporation	Five Star Operating, Inc.	Assignment	0334/0990
Five Star Operating, Inc.	Antero Resources Corporation	Assignment	0343/0733
M: Sheila R. McDonald Lease		RECEIVED Office of City	control of the second of the s
Sheila R. McDonald	Autous Dansey C	Office of Oil and Gas	
Shella K. Medoliala	Antero Resources Corporation	ADD 0.0 a	0331/0857
		APR 29 2024	
		M/V Dannel	
	F	WV Department of nvironmental Protection	
		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)

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:

			9		
	Grantor, lessor, etc.	Grantee, lessee,	etc.	Royalty	Book/Page
	K: J.R. Morrison Et Al Lease				
1	J.R. Morrison Et Al	Shafar Can R Oil Ca		100 March	
	Shafer Gas & Oil Company	Shafer Gas & Oil Company Earl Grissom		1/8	0152/0289
	Earl Grissom	Frank A. Browning		Agreement	0170/0017
	Frank A. Browning			Agreement	0171/0119
	W.E.B. Well Trending Services	W.E.B. Well Trending Services		Assignment	0245/0256
	Triad Energy Corporation	Triad Hunter II C		Assignment	0255/0669
	Triad Hunter, LLC	Triad Hunter, LLC	• 8/8/	Assignment	0277/0482
	Blue Ridge Mountain Resources, Inc.	Blue Ridge Mountain Resources,	inc.	Assignment	0344/0319
	Eclipse Resources I, LP	Eclipse Resources I, LP		Assignment	0344/0312
		Antero Resources Corporation		Assignment	Pooled Tract
1	J: Riverside Resources, LLC Lease				
1	Riverside Resources, LLC	Antero Resources Corporation		1/8+	0357/0019
		50 Professional (1995)		_, 0.	0337/0019
-	G: Ada Weekly Et Al Lease				
	Ada Weekly Et Al	R.T. Browse and B.H. Hall		1/8	0037/0326
	R.T. Browse and B.H. Hall	H.J. Varner, J.M. Varner, J.M. Gru	iver, and M.L.	Assignment	0038/0073
	H.J. Varner, J.M. Varner, J.M. Gruver, and M.L.	Zahnizer			
	Zahnizer	H.W. Master		Assignment	0045/0135
	H.W. Master	Harry Gore		Q199	
	Harry Gore	J. Howard McBride Et Ux		Assignment	0048/0386
	J. Howard McBride Et Ux	James Heneghan and E.I. Hanlon		Assignment	0048/0387
	James Heneghan and E.I. Hanlon	Heneghan & Hanlon, Inc.		Assignment	0056/0198
	Heneghan & Hanlon, Inc.	E.I. Hanlon		Assignment	0066/0061
	E.I. Hanlon	Hanlon Oil Company		Assignment	0086/0115
	Hanlon Oil Company	Charles E. Reed		Assignment	0086/0467
	Charles E. Reed	Chief Drilling, Inc.		Assignment	0120/0003
	Chief Drilling, Inc.	Ralph J. Hunter		Assignment	0120/0031
	Ralph J. Hunter	Big Knot Oil Company, Inc.		Assignment	0125/0344
	Big Knot Oil Company, Inc.	Glass Development Company		Assignment	0125/0340
	Glass Development Company	Noble Energy		Assignment	0286/0538
	Noble Energy	CNX Gas Company LLC		Assignment	0300/0156
	CNX Gas Company, LLC	Antero Resources Corporation		Assignment	0311/0670
				Assignment	Pooled Tract
1	H: Robert H. Jay and Madge V. Jay Lease				
	Robert H. Jay and Madge V. Jay	Pardee Gas Company		1/8	0219/0454
	Pardee Gas Company	Pardee Exploration Company		Merge	0228/0648
	Pardee Exploration Company	Pardee Resource Group		Merge	0007/0346
	Pardee Resource Group	Pardee Minerals, LLC		Assignment	0006/0726
	Pardee Minerals, LLC	Irish Resources, Inc.		Assignment	0298/0435
	Irish Resources, Inc.	Antero Resources Corporation		Assignment	0300/0449
1	Di Sanua C. Ballian I.		DECEMEN		0000,0145
1	<u>D: Sonya G. Poling Lease</u> Sonya G. Poling		RECEIVED Office of Oil and Gas		
	Sonya G. Poling	Antero Resources Corporation	on on and Gas	1/8+	0350/0634
/	B: Antero Minerals, LLC Lease		APR 29 2024		
10	Antero Minerals, LLC	Antero Resources Corporation		1/0.	
		Amero Resources Corporation	WV Department of	1/8+	0353/0003
			Environmental Protection	1	
			- 1201101	t.	

#### 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

A: Pamela L. Nichols Lease

Pamela L. Nichols Antero Resources Corporation 1/8+ 0350/0297

\*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.

\*Co-tenancy utilization — Antero is utilizing the Co-tenancy Modernization and Majority Protection Act to proceed with the 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.

#### 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

APR 29 2024

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or Protection 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: Senior Vice President of Land

Page 1 of \_\_\_\_\_



April 26, 2024

West Virginia Department of Environmental Protection Office of Oil and Gas Attn: Mr. Taylor Brewer 601 57th Street Charleston, WV 25304

**Antero Resources** 1615 Wynkoop Street Denver, CO 80202 Office 303.357.7310 Fax 303.357.7315

Mr. Brewer:

Antero Resources Corporation (Antero) would like to submit the following permit modification for approved well on the existing Pinewood Pad: McKinney Unit 1H (47-085-10513) Expedited.

Attached you will find the following:

- AORRevised Form WW-6B
- Revised Form WW-6A1
- Revised Mylar Plat

If you have any questions please feel free to contact me at (303) 357-6959.

Thank you in advance for your consideration.

Sincerely,

Stefan Gaspar Permitting Agent Antero Resources Corporation

Enclosures

Office of Oil and Gas APR 29 2024 WV Department of Environmental Protection