

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

Wednesday, May 1, 2024
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for CONKLIN UNIT 1H

47-085-10510-00-00

Lateral Extension/ Forced Pooling

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: CONKLIN UNIT 1H

Farm Name: MICHAEL UNDERWOOD ET AL

U.S. WELL NUMBER: 47-085-10510-00-00

Horizontal 6A New Drill

Date Modification Issued: 05/01/2024

Promoting a healthy environment.

WW-6B (04/15) API NO. 47- 085 - 10510

OPERATOR WELL NO. Conklin Unit 1H MOD

Well Pad Name: Pinewood Pad

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

1) Well Operator: Antero Reso	urces Corpor	494507062	085 - Ritchie	Clay	Ellenboro 7.5'
, won operation		Operator ID	County	District	Quadrangle
2) Operator's Well Number: Con	klin Unit 1H M	OD / Well Pa	ad Name: Pinewo	ood Pad	
3) Farm Name/Surface Owner: March 1985	1ichael Underwoo	od Et Al Public Ro	ad Access: Pine	wood Lar	ne
4) Elevation, current ground: 1	066' - AS BUILT E	levation, proposed	d post-construction	n:	
5) Well Type (a) Gas X Other	Oil _	Uno	derground Storage	2	
(b)If Gas Shall	low X	Deep	***************************************		
Hori	zontal X				
6) Existing Pad: Yes or No Yes					
 Proposed Target Formation(s). Marcellus Shale: 6700' TVD, Ar 					
8) Proposed Total Vertical Depth	: 6700' TVD	/			
9) Formation at Total Vertical De	0.00 01	IS			
10) Proposed Total Measured De	0.100013	MD /			
11) Proposed Horizontal Leg Ler	ngth: 16788'	*Open to modifi	cation at a later	date /	
12) Approximate Fresh Water St	rata Depths:	200', 378', 878	S' /		
13) Method to Determine Fresh V		47085088860000, 470850775	00000 Offset well records. Dep	ths have been ad	usted according to surface elevation
14) Approximate Saltwater Dept					abotation and the second secon
15) Approximate Coal Seam Dep					
16) Approximate Depth to Possil		nine, karst, other):	None Anticipat	ed	
17) Does Proposed well location directly overlying or adjacent to	contain coal se	ams	No	X	
(a) If Yes, provide Mine Info:	Name:			Office	RECEIVED of Oil and Gas
	Depth:				APR 26 2024
CK # 4030601 # 7500°	Seam:				-s 0
# 75GD &	Owner:			(NV Department of Protection
91 1 200				=11.	

January Hal

API NO. 47- 085 - 10510

OPERATOR WELL NO. Conklin 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'	3000' /	CTS, 1221 Cu. Ft.
Intermediate		-					
Production	5-1/2"	New	P110-ICY	23#	24800'	24800'	CTS, 5321 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#			
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							
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			
Liners							

PACKERS

RECEIVED Office of Oil and Gas

Kind:	N/A	APR 26 2024
Sizes:	N/A	WV Department of Environmental Protection
Depths Set:	N/A	Environmenta

June 123-2024 Page 2 of 3

	TOTAL CONTRACT	20000000			
API	NO.	47-	085	***	10510

OPERATOR WELL NO. Conklin 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 Pressur 9 - 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' a pove 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 a shoe joint and one every 3 joints to top of cement in intermediate casing.

Office of Oil and Gas

Troudention easing, one centralizer a shoe joint and one every 5 joints to top of centent in intermediate easing.

APR 26 2024

24) Describe all cement ad litives associated with each cement type:

Conductor: no additives, Class A/L coment.

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% ACSA-51 + 0.2% ACR-20

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.

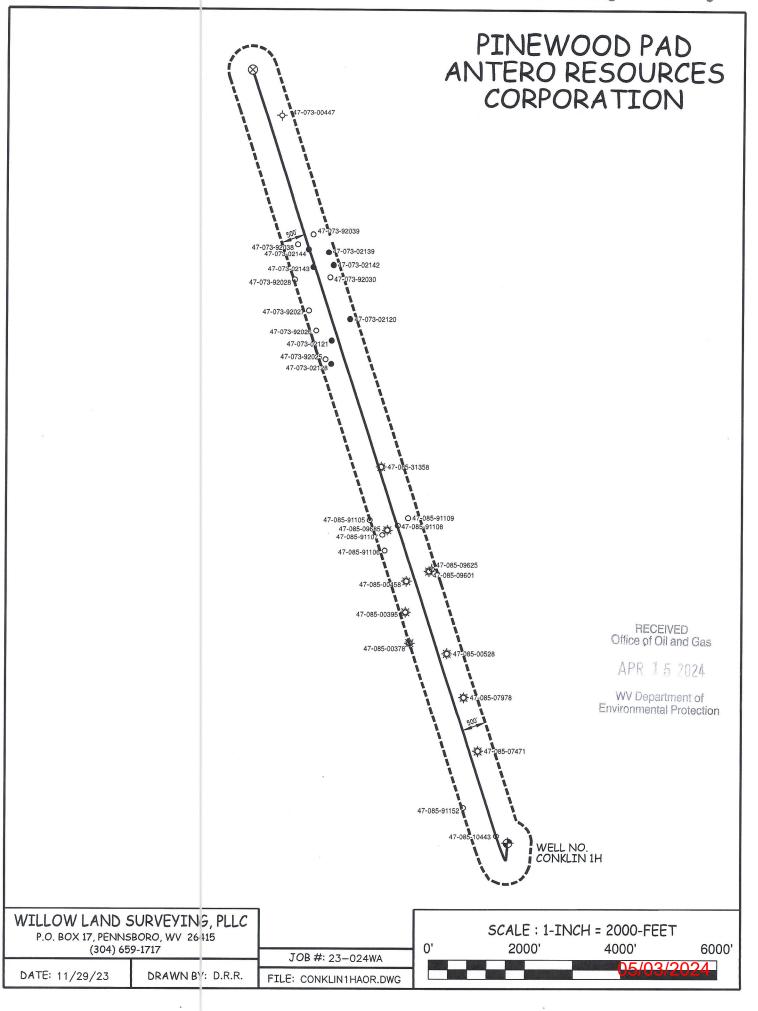
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls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

General Hert

*Note: Attach additional speets as needed.

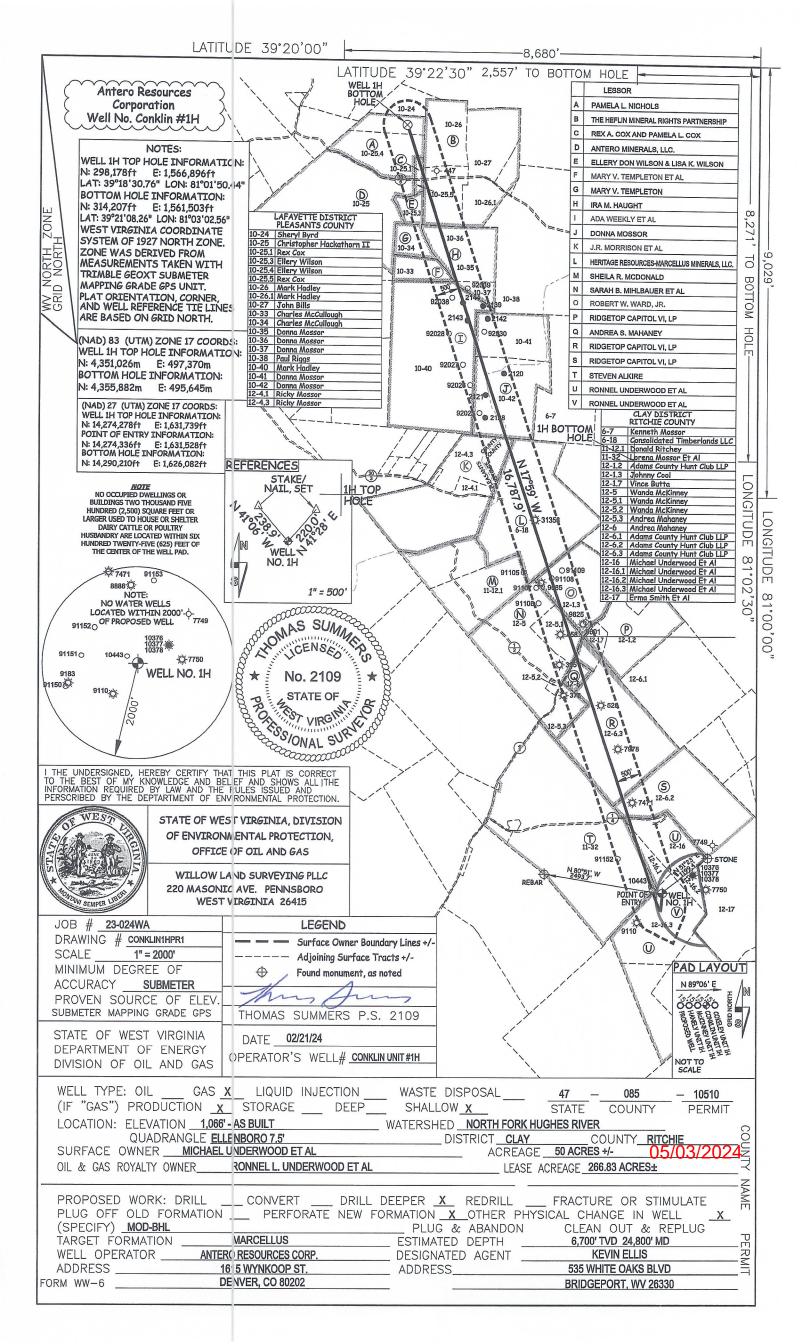
Page 3 of 3

05/03/2024



	And the second s				reliolated litter val (sliallowest, deepest)	renorated rotalation(s)	rioducipie roilidatori(s) not peri d
AR PINEWOOD	5V	ANTERO RESOURCES CORP	ANTERO RESOURCES CORP				
		COLT OIL CORP	UNKNOWN	1,755		Benson	Weir, Gordon, Alexander
		COLT OIL CORP	UNKNOWN	1,876		Big Injun, Weir	Weir, Gordon, Benson, Alexander
-47085004580000 W C BUTCHER	4	TRAXLER JOHN M	TRAXLER JOHN M	1,840		Big Injun	Weir, Gordon, Benson, Alexander
COOLJOHN	2	KEY OIL CO	KEY OIL CO	4,920	4795 - 4798	Benson	Weir, Gordon, Alexander
JAMES LAMP	3	BEECHLICK OIL INC	BIG KNOT OIL CO				
JOHN FREELAND	7	WV WELLS LTD	BIG KNOT OIL CO	2,006		Big Injun, Squaw	Weir, Gordon, Benson, Alexander
47073021430000 R WEEKLEY HRS	3	WV WELLS LTD	BIG KNOT OIL CO	1,857		Big Injun	Weir, Gordon, Benson, Alexander
47073021440000 R WEEKLEY HRS	7	WV WELLS LTD	BIG KNOT OIL CO	1,809		2nd 3rd Salt Sand, Maxton, Big Injun	Weir, Gordon, Benson, Alexander
EDNA MORGAN	1	SCOTTLV	SCOTTLV	1,930		Big Injun	Weir, Gordon, Benson, Alexander
47073021390000 M RYAN	1	WV WELLS LTD	BIG KNOT OIL CO				
47073021420000 R WEEKLEY HRS	1	WV WELLS LTD	BIG KNOT OIL CO	1,806			
47073021200000 JOHN FREELAND	9	WV WELLS LTD	BIG KNOT OIL CO	2,022			
HANLON J M WHALEY 2	2	HANLON OIL & GAS CO	HANLON OIL & GAS CO	1,912		Salt Sands, Keener	Weir, Gordon, Benson, Alexander
47085096250000 COOLJOHN	15	KEY OIL COMPANY	KEY OIL COMPANY	4845		Benson	
47085096010000 COOLJOHN	1	KEY OIL CO	KEY OIL CO	3,300			
47085005280000 W S CORBIN	1	UNKNOWN	TRAXLER JOHN M	1,737		Salt Sands	Weir, Gordon, Benson, Alexander
47085079780000 NICHOLS MICHAEL	5	HARPER CROSBY HOLDINGS LLC	RARE EARTH ENERGY	2,933	2005 - 2874	Big Injun, Weir, Gordon	Benson, Alexander
The state of the s	٠	מון שטומום וסון אמטסמט משממיון	Wooding that I have	F 202	00001 0000		

08510510



Operator's Well Number Conklin Unit 1H MOD

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:

Gran	tor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
V: Ronnel Underwood Ronnel Underwood Et Walter C. Alkire The Walter C. Alkire,	Al	Walter C. Alkire The Walter C. Alkire, Jr. Family Trust Antero Resources Corporation	1/8 Agreement Assignment	0233/0273 0313/0400 0271/0834
U: Ronnel Underwood Ronnel Underwood Et Walter C. Alkire The Walter C. Alkire,	Al	Walter C. Alkire The Walter C. Alkire, Jr. Family Trust Antero Resources Corporation	1/8 Agreement Assignment	0233/0273 0313/0400 0271/0834
T: Steven Alkire Lease Steven Alkire		Antero Resources Corporation	1/8+	0340/0291
U: Ronnel Underwood Ronnel Underwood Et Walter C. Alkire The Walter C. Alkire, J	Al	Walter C. Alkire The Walter C. Alkire, Jr. Family Trust Antero Resources Corporation	1/8 Agreement Assignment	0233/0273 0313/0400 0271/0834
S: Ridgetop Capitol VI Ridgetop Capitol VI, Li		Antero Resources Corporation	1/8+	0336/0893
R: Ridgetop Capitol VI Ridgetop Capitol VI, Li		Antero Resources Corporation	1/8+	0336/0887
Q: Andrea S. Mahaney Andrea S. Mahaney	<u>/ Lease</u>	Antero Resources Corporation	1/8+	0336/0263
R: Ridgetop Capitol VI Ridgetop Capitol VI, Li		Antero Resources Corporation	Office of Oil and Gas	0336/0887
N: Sarah B. Mihlbauer Sarah B. Mihlbauer Et , Falcon Sciences, Inc. Colt Oil Corporation HERC Oil & Gas, LLC Black Fern Resources, I Charles T. McCord, III Colt Oil Corporation Five Star Operating, In	AI LP	Falcon Sciences, Inc. Colt Oil Corporation HERC Oil & Gas, LLC Black Fern Resources, LP Charles T. McCord, III Colt Oil Corporation Five Star Operating, Inc. Antero Resources Corporation	APR 15 2024 1/8 Assignment W Department of Assignment Protection Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment	0150/0707 0172/0688 0282/0480 0313/0538 0331/0266 0331/0826 0334/0990 0343/0733
O: Robert W. Ward, Jr. Robert W. Ward, Jr.	. Lease	Antero Resources Corporation	1/8+	0341/0374
L: Heritage Resources- Lease Heritage Resources-Maritage	Marcellus Minerals, L.C. arcellus Minerals, LLC	Antero Resources Corporation	1/8+	0340/0664

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
K: J.R. Morrison Et Al Lease J.R. Morrison Et Al Shafer Gas & Oil Company Earl Grissom Frank A. Browning W.E.B. Well Trending Services Triad Energy Corporation Triad Hunter, LLC Blue Ridge Mountain Resources, Inc. Eclipse Resources I, LP	Shafer Gas & Oil Company Earl Grissom Frank A. Browning W.E.B. Well Trending Services Triad Energy Corporation Triad Hunter, LLC Blue Ridge Mountain Resources, Inc. Eclipse Resources I, LP Antero Resources Corporation	1/8 Agreement Agreement Assignment Assignment Assignment Assignment Assignment Assignment Assignment	0152/0289 0170/0017 0171/0119 0245/0256 0255/0669 0277/0482 0344/0319 0344/0312 Pooled Tract
<u>J: Donna Mossor Lease</u> Donna Mossor	Antero Resources Corporation	1/8+	0359/0540
I: Ada Weekly Et Al Lease Ada Weekly Et Al R.T. Browse and B.H. Hall H.J. Varner, J.M Varner, J.M. Gruver and M.I. Zahnizer H.W Master Harry Gore J. Howard McBride, et ux James Heneghan and E. I. Hanlon Heneghan & Hanlon Inc E.I. Hanlon Hanlon Oil Company Charles E. Reed Chief Drilling Inc. Ralph J. Hunter Big Knot Oil Company Inc	R.T. Browse and B.H. Hall H.J. Varner, J.M Varner, J.M. Gruver and M.L. Zahnizer H.W Master Harry Gore J. Howard McBride, et ux James Heneghan and E. I. Hanlon Heneghan & Hanlon Inc E.I. Hanlon Hanlon Oil Company Charles E. Reed Chief Drilling Inc. Ralph J. Hunter Big Knot Oil Company Inc Glass Development Company	1/8 Assignment	2024 0125/0344 0125/0340 0286/0538
Glass Development Company Noble Energy CNX Gas Company LLC	Noble Energy CNX Gas Company LLC Antero Resources Corporation	Assignment WV Departn Assignment Environmental I Assignment Assignment	nent of 0300/0156 Protection 0311/0670 Pooled Tract
H: Ira M. Haught Lease Ira M. Haught	Antero Resources Corporation	1/8+	0338/0586
B: The Heflin Mineral Rights Partnership Leuse The Heflin Mineral Rights Partnership	e Antero Resources Corporation	1/8+	0356/0412
C: Rex A. Cox and Pamela L. Cox Lease Rex A. Cox and Pamela L. Cox	Antero Resources Corporation	1/8+	0353/0394

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 Number	Giantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
4:	Pamela L. Nichols Lease				
		Pamela L. Nichols	Antero Resources Corporation	1/8÷	0350/0297
	Partial Assignments to Antero Resourc the oil and gas from the Marcellus and a	es Corporation Include 100% righ any other formations completed w	ts to extract, produce and market ith this well.		
	*Co-tenancy utilization - Antero is utilizing t	he Co-tenancy Modernization and N	lajority Protection Act to proceed with the dew	donment of cortain month	he man and belomests to
1	this tract.	•		copinent of certain royal	y owners uncerests in
	Automobile Anticontinum Automobile de la				
1	n this tract.	onz artal well unitization application	with the West Virginia Oil and Gas Conservation	Commission that seeks t	o pool certain owners
			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 Floodpla n Coordinator

RECEIVED Office of Oil and Gas

APR 15 20:4

WV Department of Environmental Protection

The applicant further acl nowledges 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:

Max Green

Its:

Vice President of Land

Page 3 of 3