

#### 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, July 24, 2023 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Permit Modification Approval for RIPPLE UNIT 1H

47-095-02864-00-00

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.

James A Chief

Operator's Well Number: RIPPLE UNIT 1H

Farm Name: DAVID E BOWYER
U.S. WELL NUMBER: 47-095-02864-00-00
Horizontal 6A New Drill

Date Modification Issued: 07/24/2023

Promoting a healthy environment.

API NO. 47-095	02864
<b>OPERATOR WELL</b>	NO. Ripple Unit 1H MOD
Well Pad Name:	Dry Run Pad

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

1) Well Operator: Antero Reso	urces Corporal	494507062	095 - Tyler	Lincoln	Paden City 7.5'
		Operator ID	County	District	Quadrangle
2) Operator's Well Number: Ripp	ple Unit 1H MOI	Well Pad	Name: Dry R	un Pad	
3) Farm Name/Surface Owner:	David E. Bowyer	Public Road	d Access: Old	Run Road	
4) Elevation, current ground: 1	007' Ele	evation, proposed p	oost-construction	n:	
5) Well Type (a) Gas X	Oil		rground Storag		
Other					
(b)If Gas Shall	low X	Deep			
Horiz	zontal X				
6) Existing Pad: Yes or No Yes	/				
<ol><li>Proposed Target Formation(s),</li></ol>	Depth(s), Antici	pated Thickness ar	nd Expected Pr	essure(s):	
Marcellus Shale: 6700' TVD, An	ticipated Thicknes	ss- 55 feet, Associa	ted Pressure- 2	850#	
8) Proposed Total Vertical Depth	: 6700' TVD	/			
9) Formation at Total Vertical De	pth: Marcellus				
10) Proposed Total Measured Dep	pth: 27100' MI	0,			
11) Proposed Horizontal Leg Len	gth: 17847'				
12) Approximate Fresh Water Str	ata Depths:	375', 520'			
13) Method to Determine Fresh V	Vater Depths: 47	7095002750000 Offset well	records. Depths have I	been adjusted a	ccording to surface elevations.
14) Approximate Saltwater Depth	ns: 1653'/				
15) Approximate Coal Seam Dep	ths: None Antic	ipated			
16) Approximate Depth to Possib	le Void (coal min	ne, karst, other):	lone Anticipat	ed	
17) Does Proposed well location of	contain coal sean	ns			
directly overlying or adjacent to a	n active mine?	Yes	No	X	
(a) If Yes, provide Mine Info:	Name:			(	RECEIVED Office of Oil and Gas
	Depth:				JUL 24 2023
	Seam:				
	Owner:			Env	WV Department of vironmental Protection

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WW-6B (04/15)

API NO. 47-\_095 \_\_02864

OPERATOR WELL NO. Ripple Unit 1H MOD Well Pad Name: Dry Run Pad

18)

# CASING AND TUBING PROGRAM

TYPE		Man					
	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	79#	100'	100'	CTS, 96 Cu. Ft.
Fresh Water	13-3/8"	New	J/K-55	54.5#	570'	570'	CTS, 594 Cu. Ft.
Coal	9-5/8"	New	J-/K55	36#	2500'	2500'	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110CY	20#	27100'	27100'	CTS, 5901 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#			0.0,000100.10
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal	Cement Type	Cement Yield
Conductor	20"	24"		0050	Pressure (psi)		(cu. ft./k)
T 1 777	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						0,000,45	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		2.223 0/11	1.0
Liners				,,,,,,			

# **PACKERS**

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

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WV Department of Environmental Protection Page 2 of 3



OPERATOR WELL NO. Ripple Unit 1H MOD
Well Pad Name: Dry Run 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): 22.85 acres
- 22) Area to be disturbed for well pad only, less access road (acres): 9.70 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% 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.

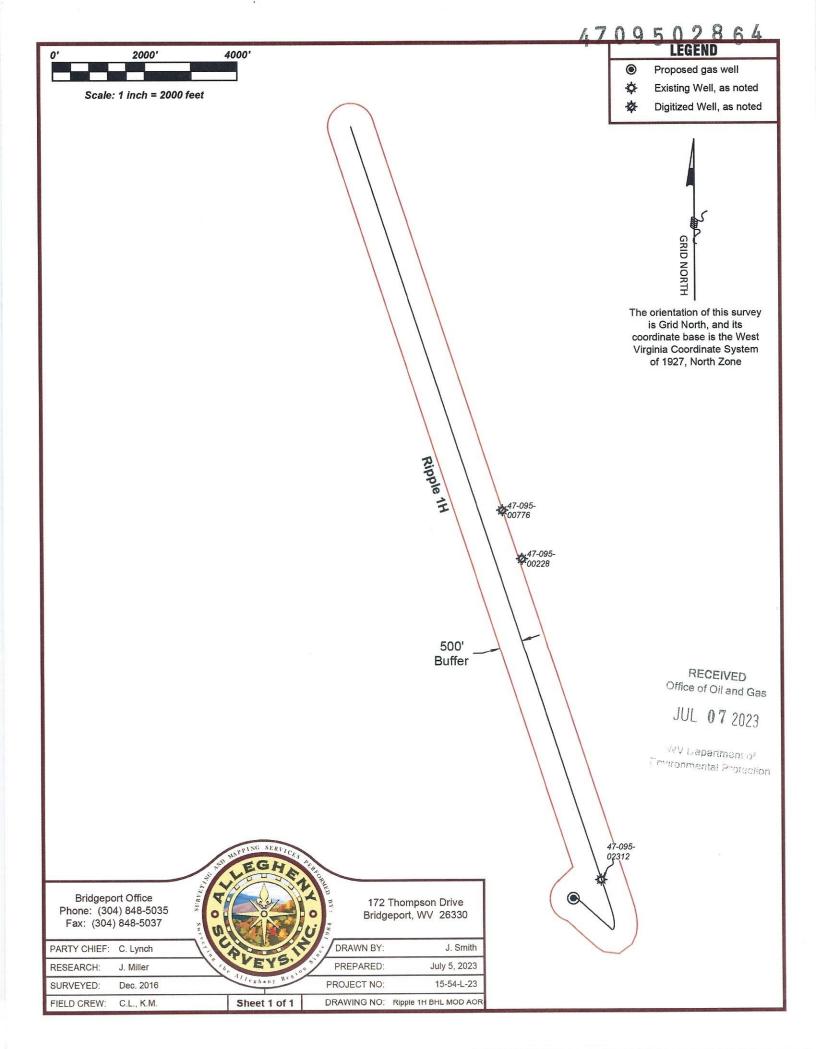
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls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

\*Note: Attach additional sheets as needed.

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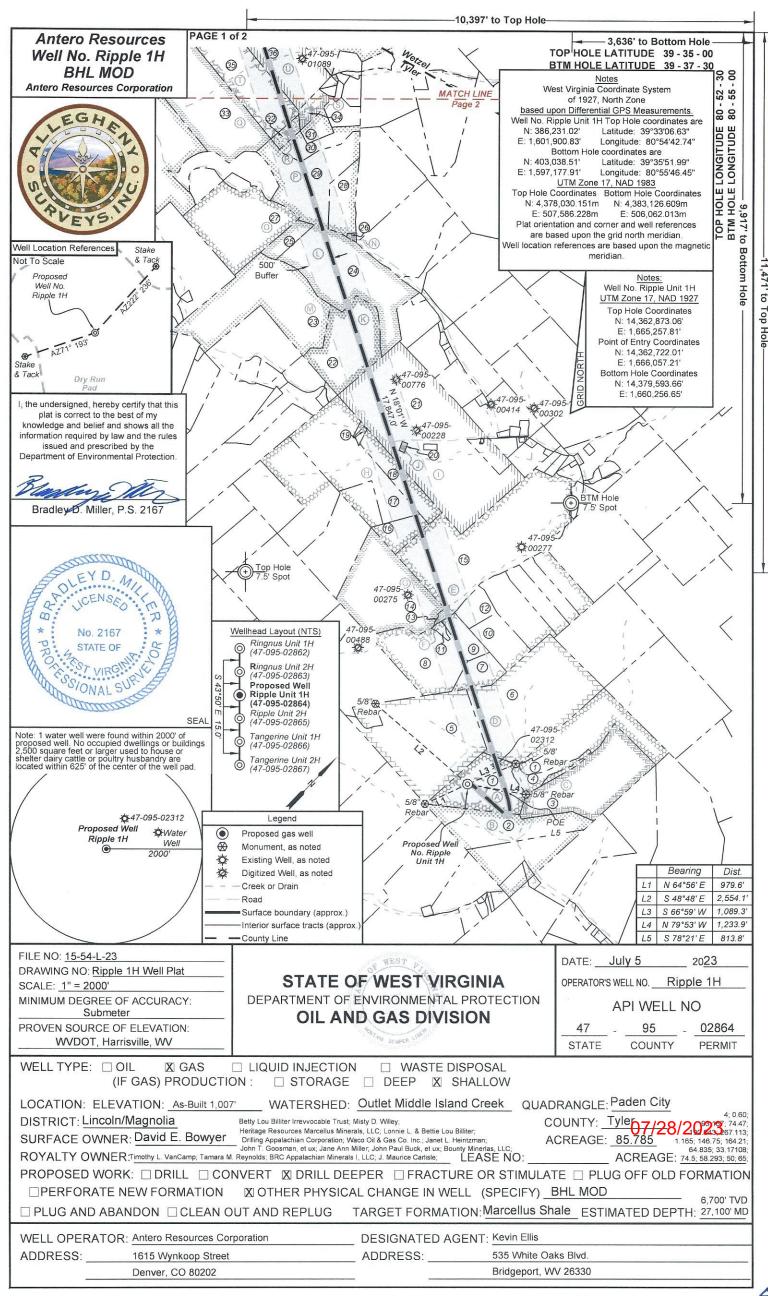




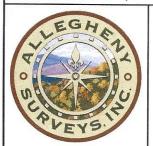
PINum)	Well Name	Well Number	Operator	Historical Operator	Ω	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
3120000	SCRUB OAK	1 \\	BOWYER DAVID	ALLIANCE PETR CORP	5,401	4684 - 5212	Big Injun, Benson, Alexander, Rhinestreet	Weir
2280000	IOHN BUCK	1	SPENCER JESSE E	SPENCER JESSE E	1,897		Big Injun	Weir, Benson, Alexander
17760000 E	3UCK HEIRS	1	BUCK HOWARD	CARTER JONES LUMBER		2819 - 2840	Fifth	Weir, Benson, Alexander

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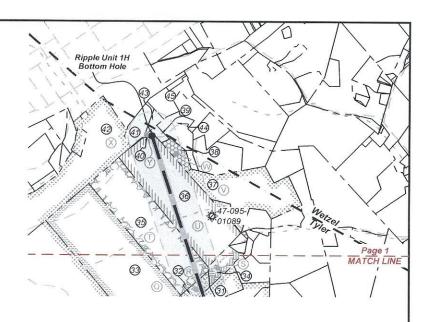
JUL 07 2023



# Antero Resources Well No. Ripple 1H BHL MOD Antero Resources Corporation



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ID	TM-Par	Owner	Bk/Pg	Acres
1	9-19	David E. Bowyer	OR16/22	85.79
2	9-31.1	David E. Bowyer	OR16/22	38.04
3	9-21	Thomas K. Brotherton	23/310	64.00
4	9-20	Jason & Jessica Greathouse & Laken Curtis	OR59/513	7.38
5	9-17	Ethan A. & Marsha L. Riffle	323/649	90.04
6	9-18	Michael V. & Debra K. Smith	331/94	100.00
7	9-6	Larry G. & Joyce Ann Kaprich	375/254	12.11
8	9-6.1	Larry G. & Joyce Ann Kaprich	326/874	40.51
9	9-6.2	Larry G. & Joyce Ann Kaprich	375/254	9.47
10	9-7.3	Larry G. & Joyce Ann Kaprich	375/254	17.23
11	9-6.3	Donna E. Cecil	611/328	1.44
12	9-7	Ralph D. Thacker & Maurice J. Calisle Jr.	OR177/619	10.25
13	9-5.1	Carl L. & Donna M. Yoho	328/400	1.65
14	9-5	Chad & Janet L. Heintzman	330/527	64.35
15	9-7.1	Carl L & Donna M Yoho	320/456	117.00
16	5-17	Kenneth W. & Susan D. Paden	215/390	11.11
17	5-14	Kenneth W. & Susan D. Paden	215/390	55.22
18	5-15	Kenneth W. & Susan D. Paden	215/390	21.32
19	5-15.1	Joshua K. & Tomela Paden	355/821	1.00
20	5-20	Teri Jo Fiber	644/240	
21	5-19	John P. & Susan Buck	337/634	159.21
22	5-8	Franklin & Nancy Broughman	338/292	33.17
23	5-1	Richard Lee & Linda Tuttle	362/43	88.00
24	5-34	Timothy J. & Miranda Haynes	OR151/407	74.50
25	5-35	Ethel & Timothy Brown	AR45/28	8.50
26	5-40	Jason Phillips	OR164/108	0.52
27	5-36	Brandon P. Mason and Katie E. Mason	396/464	56.86
28	5-39	Jason Phillips	OR164/108	16.29
29	5-41	Cheryl W. Cowen, et al	166/56	36.00
30	2-??	Shawn D. & Tara A. Cross	612/75	
31	2-12	Shawn D. & Tara A. Cross	612/75	6.00
32	2-11	Misty D. Willey	555/467	4.00
33	1-8	Gary & Marsha L. Holmes	372/325	95.40
34	2-14	Shirley Billiter	215/573	7.13
35	2-1	Lloyd Wayne & Lottie Cross	188/383	50.00
36	2-2	Betty Lou Billiter Irrevocable Trust	375/476	65.00
37	2-4	Timothy J. & Tiffany D. Michael	575/824	37.50
38	2-3	Ernest & James Billiter	WB8/26	3.62
39	15-5	Betty Lou Billiter Irrevocable Trust	423/179	2.00
40	2-5	Betty Lou Billiter Irrevocable Trust	375/476	0.60
41	15-4	Linda K Patterson et al	AP97/843	7.17
42	15-12	Mike Ross Inc.	459/59	69.45
43	15-4.1	Lacey A Ryan, et al	AP94/179	1.83
44	15-6	Betty Lou Billiter Irrevocable Trust	423/179	9.00
45	15-1	Peter Testerman Jr & Marie Hass	439/425	9.00

	Leases
Α	Timothy L. Vancamp
В	Tamara M. Reynolds
С	Bounty Minerals, LLC
D	BRC Appalachian Minerals I LLC
Е	J. Maurice Carlisle
F	John T. Goosman, et ux
G	Janet L. Heintzman
Н	Jane Ann Miller
1	John Paul Buck, et ux
J	John Paul Buck, et ux
K	Drilling Appalachian Corporation
L	Waco Oil & Gas Co Inc.
М	Richard Tuttle, et ux
Ν	Terry D. Wade, et ux
0	Brandon P. Mason, et ux
Р	Heritage Resources - Marcellus Minerals, LLC
Q	Gary Holmes, et ux
R	Misty D. Willey
S	Shirley J. Billiter
Т	Bounty Minerals, LLC
U	Lonnie L. & Bettie Lou Billiter
٧	Michael Dail Stillwagner
W	OCTO Energy, LLC
Υ	Henry P. Snyder, et al
Υ	Betty Lou Billiter Irrevocable Trust

FILE NO: <u>15-54-L-23</u>
DRAWING NO: Ripple 1H Well Plat
SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY:
Submeter
PROVEN SOURCE OF ELEVATION:

# STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

WEST

OIL AND GAS DIVISION

DATE: July 5 2023 OPERATOR'S WELL NO. \_\_\_ Ripple 1H API WELL NO 47 95 \_ 02864

WVDOT, Harrisville, WV		AN SEMPER LIEF			ATE	COUNTY	PERMIT
WELL TYPE: ☐ OIL ☒ GAS (IF GAS) PRODUCTION	☐ LIQUID INJECTION ON: ☐ STORAGE	market and the second s	DISPOSAL SHALLOW				
LOCATION: ELEVATION: As-Built 1,000 DISTRICT: Lincoln/Magnolia SURFACE OWNER: David E. Bowyer ROYALTY OWNER: Timothy L. VanCamp, Tamara N PROPOSED WORK: DRILL CO PERFORATE NEW FORMATION  PLUG AND ABANDON CLEAN C	Betty Lou Billiter Irrevvocable Trust; M Heritage Resources Marcellus Minera Drilling Appalachian Corporation; Wa John T. Goosman, et ux; Jane Ann Mi Reynolds; BRC Appalachian Minerals! NVERT X DRILL DEE	nisty D. Willey; Ils, LLC; Lonnie L. & Bettie Li co Oil & Gas Co. Inc.; Janet I iller, John Paul Buck, et ux; E iller, J. Maurice Carlisle; EPER  FRACT L CHANGE IN W	ou Billiter; L Heintzman; Bounty Minerlas, LLC; LEASE NO: URE OR STIM	ACREA  MULATE   FY) BHL I	TY: Ty	yler <mark>07/28</mark> 85.785 1 ACREAGE: G OFF OLD	/ 430/d3-367 113; .165; 146.75; 164.21; .64.835; 33.17108; .74.5; 58.293; 50; 65; FORMATION
WELL OPERATOR: Antero Resources Co. ADDRESS: 1615 Wynkoop Street		DESIGNATED A		Ellis nite Oaks Blv	d.		
Denver, CO 80202			Bridgep	ort, WV 263	30		

Operator's Well Number

Ripple 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:

Grantor, lessor, etc.	Grantee, lessee,	etc.	Royalty	Book/Page
A: Timothy L. VanCamp Lease				
Timothy L. VanCamp	Chesapeake Appalachia LLC		1/8	354/704
Chesapeake Appalachia LLC	Statoil USA Onshore Properties In	nc.	Assignment	423/152
Statoil USA Onshore Properties Inc.	<b>EQT Production Company</b>		Assignment	539/239
EQT Production Company	Antero Resources Corporation	,	Assignment	134/172
/ B: Tamara M. Reynolds Lease				
Tamara M. Reynolds	Antero Resources Corporation		1/8+	616/634
A: Timothy L. VanCamp Lease				
Timothy L. VanCamp	Chesapeake Appalachia LLC		1/8	354/704
Chesapeake Appalachia LLC	Statoil USA Onshore Properties In	c. /	Assignment	423/152
Statoil USA Onshore Properties Inc.	<b>EQT Production Company</b>		Assignment	539/239
EQT Production Company	Antero Resources Corporation	A	Assignment	134/172
D: BRC Appalachian Minerals I LLC Lease				
BRC Appalachian Minerals   LLC	BRC Working Interest Company LI	LC	1/8	369/300
BRC Working Interest Company LLC	Chesapeake Appalachia LLC	A	Assignment	369/784
Chesapeake Appalachia LLC	Statoil USA Onshore Properties In	c. /	Assignment	378/764
Statoil USA Onshore Properties Inc.	SWN Exchange Titleholder LLC		Assignment	470/668
SWN Exchange Titleholder LLC	SWN Production Company LLC		Merger	9/404
SWN Production Company LLC	Antero Exchange Properties	Į.	Assignment	544/242
Antero Exchange Properties	Antero Resources Corporation		Merger	525/315
E: J. Maurice Carlisle Lease				
J. Maurice Carlisle	Antero Resources Corporation		1/8+	229/723
F: John T. Goosman, et ux Lease				
John T. Goosman, et ux	Antero Resources Corporation		1/8+	28/7
/ G: Janet L. Heintzman Lease				
Janet L. Henintzman	Antero Resources Corporation		1/8+	235/414
/ E: J. Maurice Carlisle Lease				
J. Maurice Carlisle	Antero Resources Corporation	RECEIVED Office of Öil and Gas	1/8+	229/723
/ H: Jane Ann Miller Lease		Office of Off and Gas		
Jane Ann Miller	Antero Resources Corporation	JUL 13 2023	1/8+	11/400
!: John Paul Buck, et ux Lease		1407 D 1		
John Paul Buck, et ux	Antero Resources Corporation	WV Department of Environmental Protection	1/8+	233/451
/ K: Drilling Appalachian Corporation Lease				
Drilling Appalachian Corporation	Antero Resources Corporation		1/8+	180/475
/ L: Waco Oil & Gas Co Inc. Lease				
Waco Oil & Gas Co Inc.	Antero Resources Corporation		1/8+	198/721

Operator's Well Number

Ripple Unit 1H MOD

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
P: Heritage Resources – Marcellus Minerals, LL <u>Lease</u> Heritage Resources – Marcellus Minerals, LLC	Antero Resources Corporation	1/8+	627/139
✓ R: Misty D. Willey Lease Misty D. Willey	Antero Resources Corporation	1/8	257/10
T: Bounty Minerals, LLC Lease Bounty Minerals, LLC	Antero Resources Corporation	1/8+	178/164
✓ <u>U: Lonnie L. &amp; Bettie Lou Billiter Lease</u> Lonnie L. Billiter  Charles L. Stout  Applied Mechanics Corporation  Triad Hunter LLC	Charles L. Stout Applied Mechanics Corporation Triad Hunter LLC Antero Resources Corporation	1/8 Assignment Assignment <b>Assignment</b>	252/140 385/100 385/566 <b>56/71</b> 8

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JUL 13 2023

<sup>\*</sup>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	Ripple Unit 1H MOD
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# 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
/ Y: Betty Lou Billiter Irrevocable T	rust Lease			
	Betty Lou Billiter	Antero Resources Corporation	1/8+	306A/433

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WV Department of 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

Its: Senior Vice President of Land

Page 3 of 3



July 6th, 2023

West Virginia Department of Environmental Protection Office of Oil and Gas Attn: Mr. Taylor Brewer 601 57<sup>th</sup> 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 modifications for approved well on the existing Dry Run Pad: Ripple Unit 1H (47-095-02864) Expedited.

Attached you will find the following:

- > AOR
- Revised Form WW-6B
- > Revised Form WW-6A1
- > Revised Mylar Plat

If you have any questions please feel free to contact me at (303) 357-7373.

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Thank you in advance for your consideration.

Sincerely,

Permitting Agent

Antero Resources Corporation

Enclosures

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CHT 4021431

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