

#### 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 15, 2024 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re:

Permit Modification Approval for Ramza Unit 1H

47-017-06985-00-00

Extended Lateral Length

#### 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: Ramza Unit 1H

Farm Name: Shawn A Glaspell

U.S. WELL NUMBER: 47-017-06985-00-00

Horizontal 6A New Drill

Date Modification Issued: 7/15/2024

Promoting a healthy environment.

4701706985

OPERATOR WELL NO. Ramza Unit 1H MOD Well Pad Name: Crimson Pad

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

) Well Operator: Antero Reso	ources Corpora	494507062			Center Point 7.5'
-		Operator ID	County	District	Quadrangle
2) Operator's Well Number: Ra	mza Unit 1H MC	DD Well F	ad Name:	Crimson Pad	
3) Farm Name/Surface Owner:	Shawn A. Glasp	ell Public R	oad Access:	Riggins Run	
4) Elevation, current ground:	1249' El	evation, propose	ed post-cons	truction: 1222	1
5) Well Type (a) Gas X	Oil	Ur	nderground S	Storage	
Other					
(b)If Gas Sha	llow X	Deep			_
Hor	rizontal X				
6) Existing Pad: Yes or No Yes	3		_		
<ol> <li>Proposed Target Formation(s Marcellus Shale: 7700' TVD, A</li> </ol>	Annual Company of Contract				
8) Proposed Total Vertical Dept	h: 7700' TVD				
9) Formation at Total Vertical D		3			
10) Proposed Total Measured D	epth: 21500' M	D			
11) Proposed Horizontal Leg Le	ength: 12097.7'				
12) Approximate Fresh Water S	trata Depths:	303', 953'			
13) Method to Determine Fresh	Water Depths:	17-017-00483			
14) Approximate Saltwater Dep	-				
15) Approximate Coal Seam De	epths: None Ider	tified			
16) Approximate Depth to Poss			None An	ticipated	
17) Does Proposed well location directly overlying or adjacent to	n contain coal sea			No X	RECEIVED Office of Oil and Gas
(a) If Yes, provide Mine Info:	Name:				11 1 9 202A
Any are a real box same arrangement	Depth:				JUL 1 2 2024
	Seam:				WV Department of Environmental Protection
					PINTER THE PROPERTY OF THE PRO

7-10-24 PA Page 1 of 3

API NO. 47-017 1706985

OPERATOR WELL NO. Ramza Unit 1H MOD

Well Pad Name: Crimson Pad

18)

# CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	<u>Grade</u>	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	94#	100	100	CTS, 89 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	1003	1003	CTS, 1045 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	21500	21500	4490 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"	0.438"	1530	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"	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							

# **PACKERS**

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Kind:	N/A	JUL 1 2 2024
Sizes:	N/A	WV Department of Environmental Protection
Depths Set:	N/A	

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WW-6B (10/14) 4701706985

OPERATOR WELL NO. Ramza Unit 1H MOD

Well Pad Name: Crimson 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 freshwater string which makes it difficult to determine when freshwater is encountered. Therefore, we have built in a buffer for the casing setting depth which helps to ensure that all freshwater 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): 36.89 acres

22) Area to be disturbed for well pad only, less access road (acres): 14.46 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 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.

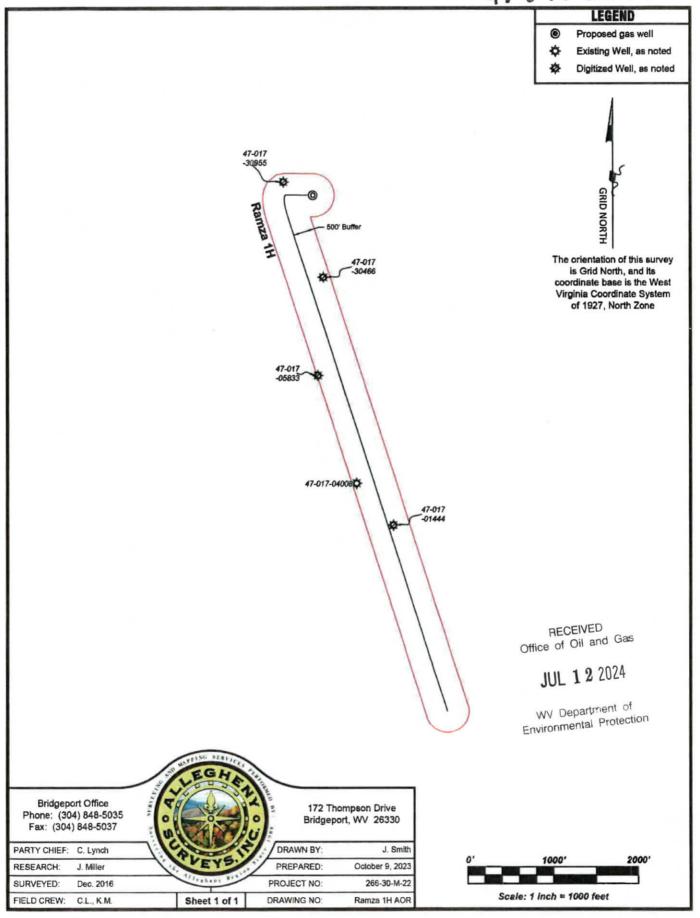
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

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.

<sup>\*</sup>Note: Attach additional sheets as needed.

4701706985



	Marin Marine	Mail Showshee	Onerstor	Historical Operator	2	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf d
APINUM)	well yame	MACHINE MACHINE	Operator		1		The state of the s	Water Samena Alaumaine
Citi Line	COOMOS		CHANTR STATE OH REG	CHAKER STATE OIL REG	2,840		Big Injun, Gordon Stray, Gordon	Well, benson, Alexander
JASSONO IN VOND	EKWOOD		Someth and a Change		1		Section Consults	Wais Bancon Alexander
ARKADA DI NI DOAL	K 1/HRBRT CARROLL	371	CARNEGIE NATURAL GAS	CARNEGIE NATURAL GAS	2,943		Big Injun, Gordon	Well, Delison, Arckarder
			DETOCIETIES DEV. CODE	DETECTION THEY CORP				
SR330000 DOAK D		-	TELEVISION DEV CORP	L'INOTTONI DEL COM	1			Mainte Alexander
ANDROOM CHIMBER	EDGE ! AMRERT ET A	-	DIVERSIFIED PROD LLC	PETROLEUM DEV CORP	5,411	5319 - 5322	Benson	well, Mexander
20000000			CO NOTION OF STREET	MICOOII	2 299	2162 - 2236	Keener, 8lg Injun	Weir, Benson, Alexander

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JUL 12 2024

WV Department of Environmental Protection Operator's Well Number

Ramza 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 –

- 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: Minda Allen Lease Minda Allen W. B. Allen South Penn Oil Company Pennzoil Company Pennzoil Products Company	W. B. Allen South Penn Oil Company Pennzoil Company Pennzoil Products Company Pennzoil Exploration and Production Company	1/8 Assignment Name Change Deed Deed	7/357 7/359 WVSOS 203/621 239/355
Pennzoil Exploration and Production Company Pennz Energy Exploration and	Pennz Energy Exploration and Production LLC Devon Energy Production Company L.P	Deed Merger	240/702 244/399
Production LLC Devon Energy Production Company L.P East Resources Inc East Resources Inc and HG Energy LLC American Energy Marcellus LLC Ascent Resources – Marcellus LLC Tribune Resources, LLC	East Resources Inc East Resources Inc and HG Energy LLC American Energy Marcellus LLC Ascent Resources – Marcellus LLC Tribune Resources, LLC Antero Resources Corporation	Assignment Assignment Assignment Name Change Merger Assignment	247/337 253/31 361/1 36/455 431/260 530/325
D: Robert O. Hopkins Lease Robert O. Hopkins	Antero Resources Corporation	1/8+	527/357
E; Arthur G. Doak, et al Lease Arthur G. Doak, et al Robert L. Travis Ollie Travis Donald Gene Travis Tonda Rae Learner	Robert L. Travis Ollie Travis Donald Gene Travis Tonda Rae Learner Antero Resources Corporation	1/8 Appraisement Will Book Affidavit Assignment	66/73 8/243 10/117 WVSOS 528/320
F: Arthur G. Doak, et ux Lease Arthur G Doak, et ux Clarence W Mutschelknaus CNG Development Company CNG Producing Company Dominion Exploration and Production	Clarence W Mutschelknaus CNG Development Company CNG Producing Company Dominion Exploration and Production Inc. CONSOL Gas Company	1/8 Assignment Merger Name Change Name Change	151/113 151/5713 167/210 DB 286/144
Inc. CONSOL Gas Company CNX Gas Company LLC Antero Resources Appalachian Corporation	CNX Gas Company LLC Antero Resources Appalachian Corporation Antero Resources Corporation	Merger Agreement Name Change	DB 292/469 260/631 46/523
G: Shawn Glaspell Lease Shawn Glaspell	Antero Resources Corporation	1/8+ Office of	CEIVED Oil and Ga <mark>525/225</mark>

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07/19/2024

Operator's Well Number

Ramza Unit 1H MOD

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
I: A. H. Low, et ux Lease A.H. Low, et ux Hope Natural Gas Company Consolidated Gas Supply Corporation  Consolidated Gas Transmission Corporation CNG Transmission Corporation Dominion Transmission, Inc CONSOL Energy Holdings, LLC XVI CONSOL Gas Company CNX Gas Company CNX Gas Company, LLC Noble Energy, Inc. HG Energy II Appalachia, LLC	Hope Natural Gas Company Consolidated Gas Supply Corporation Consolidated Gas Transmission Corporation CNG Transmission Corporation  Dominion Transmission, Inc CONSOL Energy Holdings, LLC XVI CONSOL Gas Company CNX Gas Company CNX Gas Company, LLC Noble Energy, Inc. HG Energy II Appalachia, LLC Antero Resources Corporation	1/8 Merger Assignment Name Change Name Change Assignment Merger Merger Assignment Assignment Assignment Assignment	27/336 143/345 135/583 328/398 332/570 245/1 293/252 293/252 260/39 388/34 508/77
H: Jonnie Huy Rominger Lease Jonnie Huy Rominger	Antero Resources Corporation	1/8+	520/348
J: CNX Gas Company, LLC Lease CNX Gas Company, LLC	Antero Resources Corporation	1/8+	523/705
M: Cliff Wilson & Opal Wilson Lease Cliff Wilson & Opal Wilson Claude C. Cottrille and Collie C. Shrader Collie Cecil Shrader Violet Vircha Shrader  Bette L. Freedman, Dr Janise Louis Dye Mellhany, Cecil Lynn Shrader Wilco Oil and Gas Company	Claude C. Cottrille and Collie C. Shrader Collie Cecil Shrader Violet Vircha Shrader Bette L. Freedman, Dr Janise Louis Dye Mellhany, Cecil Lynn Shrader Wilco Oil and Gas Company  Antero Resources Corporation	Assignment Will Book Miscellaneous Book Civil Order Assignment	91/94 91/101 9/168 14/167 16/180
N: Brian A. Moreno & Diane P.  Blanchette Lease Brian A. Moreno & Diane P.  Blanchette	Antero Resources Corporation	1/8+	518/506
O: Brenda V. Ney Lease Brenda V. Ney	Antero Resources Corporation	1/8+	518/503
P: Clyde M. Ford, III Lease Clyde M. Ford, III	Antero Resources Corporation	1/8+ RECEIVED Office of Oil and Ga	526/693
O: Romona L. Clauson Lease Romona L. Clauson	Antero Resources Corporation	1/8+ JUL 1 2 2024	526/203
		WV Department of Environmental Protection O7/19/20	CHOIT

Operator's Well Number

4701706985 Ramza Unit 1H MOD

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Grantor, lessor, etc.

Grantee, lessee, etc.

Royalty

Book/Page

\*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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JUL 1 2 2024

WV Department of Environmental Protection WW-6A1 (5/13)

Operator's Well No.	Ramza	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
R: Mary A. Murphy Simons Lease	Mary A. Murphy Simons	Antero Resources Corporation	1/8+	518/170



\*Cotenancy Utilization — Antero is utilizing the Co-tenancy Modernization and Majority Protection Act to proceed with development of certain toyalty owners'

| Commission of the seeks to pool

\*\*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

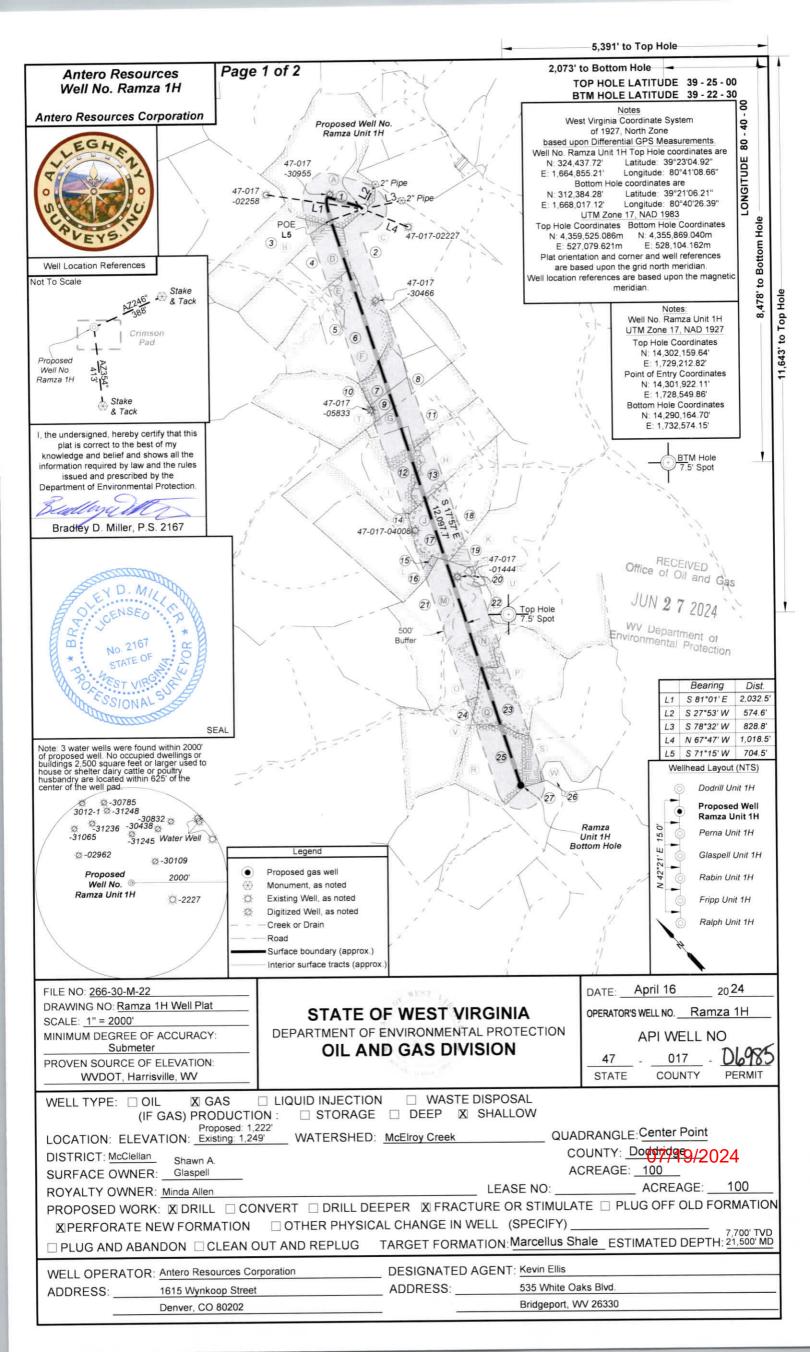
The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Antero Resources Corporation

By: Max Green

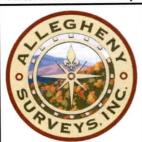
Its: Vice President of Land

Page 1 of 1



Antero Resources Well No. Ramza 1H Page 2 of 2

Antero Resources Corporation



	Leases
Α	Minda Allen
В	Thomas H. Downs
С	Morris Mountaineer Oil & Gas, LLC
D	Robert O. Hopkins
Е	Arthur G. Doak, et al
F	Arthur G. Doak, et ux
G	Shawn Glaspell
Н	Jonnie Huy Rominger
ı	A. H. Low, et ux
J	CNX Gas Company, LLC
K	Acropolis, Inc.
Ĺ	CNX Gas Company, LLC
М	Cliff Wilson & Opal Wilson
N	Brian A. Moreno & Diane P. Blanchette
0	Brenda V. Ney
Р	Clyde M. Ford, III
Q	Romona L. Clauson
R	Mary A. Murphy Simons
S	Ollie M. Ford, et al
Т	Kathleen E. Davis, et al
U	AMP IV, LP
٧	Margaret J. & Martha A. McMillan
W	Roy Hoskinson & Faye Hoskinson

ID	TM-Par	Owner	Bk/Pg	Acres
1	17-3.3	Shawn A. Glaspell	283/601	100.00
2	17-3.2	Shawn A. Glaspell	283/601	135.00
3	17-13	Shawn A. Glaspell	468/444	65.00
4	17-16	Faith L. Fry	238/167	36.84
5	17-18.1	Faith L. & Michael Fry	342/340	19.50
6	17-18	Faith L. Fry	238/167	80.14
7	17-19	Shawn A. Glaspell	372/215	13.82
8	17-20	Shawn A. Glaspell	372/215	12.07
9	17-25	Shawn A. Glaspell	372/215	7.89
10	6-6	Duaine Doak, et al.	WB31/416	50.00
11	17-21	Patrick M. MacMillan	379/615	30.69
12	22-1	Donald V. Sandstrom	266/650	34.63
13	22-2	Timothy C. Pitts	W100/240	45.13
14	6-11.1	Danny R. & Joyce A. Groover	301/149	44.94
15	6-11.2	Danny R. & Joyce A. Droover	301/149	0.64
16	6-11	Danny R. & Joyce A. Groover	301/149	47.30
17	22-3.1	George D. Payton & Donald V. Sandstrom	236/354	24.11
18	22-3	Timothy C. Pitts	W100/240	29.89
19	23-8	Steven R. Chipps & Nathaniel Hoskinson	432/200	40.99
20	22-6	Robert F. & Deborah C. Fetty	304/421	1.30
21	6-16	Brian A. Moreno & Diane P. Blanchette	389/382	104.80
22	22-5	Jerry W. Harman	282/436	27.00
23	6-17	Clyde M. Ford III	234/474	65.6
24	6-23	Werner F. Blei	272/340	52.50
25	7-1	Steven M. & Mary Ellen Perna	286/506	132.54
26	7-5	David A. Hoskinson	168/787	10.23
27	10-1	Josephine Donnahoe	WB31/4	23.14

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JUN 2 7 2024

WV Department of Environmental Protection

FILE NO: 266-30-M-22  DRAWING NO: Ramza 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:April 162024  OPERATOR'S WELL NORamza 1H  API WELL NO 47
WELL TYPE: □ OIL     GAS (IF GAS) PRODUCTION	200	
LOCATION: ELEVATION: Existing: 1,24		QUADRANGLE:Center Point

LOCATION: ELEVATION: Existing: 1,249' WATERSHED: McElroy Creek QUADRANGLE: Center Point

DISTRICT: McClellan Shawn A

SURFACE OWNER: Glaspell ACREAGE: 100

ROYALTY OWNER: Minda Allen LEASE NO: ACREAGE: 100

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION

WEERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY)

PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 21,500' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Kevin Ellis

ADDRESS: \_\_\_\_\_ ADDRESS: \_\_\_\_ S35 White Oaks Blvd.

Denver, CO 80202 Bridgeport, WV 26330