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west virginia department of environmental protection

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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](http://www.dep.wv.gov)

Monday, May 16, 2022  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET  
DENVER, CO 80202

Re: Permit Modification Approval for CAVATICA UNIT 2H  
47-103-03482-00-00

**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. Martin  
Chief

Operator's Well Number: CAVATICA UNIT 2H  
Farm Name: MARGARET LANCASTER  
U.S. WELL NUMBER: 47-103-03482-00-00  
Horizontal 6A New Drill  
Date Modification Issued: 05/16/2022

Promoting a healthy environment.

05/20/2022

ck# 4007319  
\$5000<sup>00</sup>  
4/14/22

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

1) Well Operator: Antero Resources Corporation 494507062 103-Wetzel Green Porter Falls 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Cavatica Unit 2H MOD Well Pad Name: Red Lady Pad

3) Farm Name/Surface Owner: Margaret Lancaster Public Road Access: Wetzel Tyler Ridge Rd

4) Elevation, current ground: 1237' Elevation, proposed post-construction: ~1206'

5) Well Type (a) Gas X Oil \_\_\_\_\_ Underground Storage \_\_\_\_\_  
Other \_\_\_\_\_  
(b) If Gas Shallow X Deep \_\_\_\_\_  
Horizontal X

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus Shale: 7400' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2850#

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APR 22 2022

8) Proposed Total Vertical Depth: 7400' TVD

WV Department of  
Environmental Protection

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 28,500'

11) Proposed Horizontal Leg Length: 19,223.3'

12) Approximate Fresh Water Strata Depths: 33', 283', 831'

13) Method to Determine Fresh Water Depths: 095-02177, 095-02104 Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: 1592'

15) Approximate Coal Seam Depths: 851'

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes \_\_\_\_\_ No X

(a) If Yes, provide Mine Info: Name: \_\_\_\_\_  
Depth: \_\_\_\_\_  
Seam: \_\_\_\_\_  
Owner: \_\_\_\_\_

4710303482

WW-6B  
(04/15)

API NO. 47- 103

OPERATOR WELL NO. Cevalica Unit 2H MOD

Well Pad Name: Red Lady 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	H-40	79#	80'	80'	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J/K-55	54.5#	881'	881'	CTS, 557 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#	28,500'	28,500'	CTS, 6264 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

*Kevin L. Depeloh 5-6-22*

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	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~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**

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

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MAY 09 2022

WV Department of Environmental Protection  
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05/20/2022

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): 51.15 acres

22) Area to be disturbed for well pad only, less access road (acres): 9.42 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 cement.

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

Intermediate: Class A 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

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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.

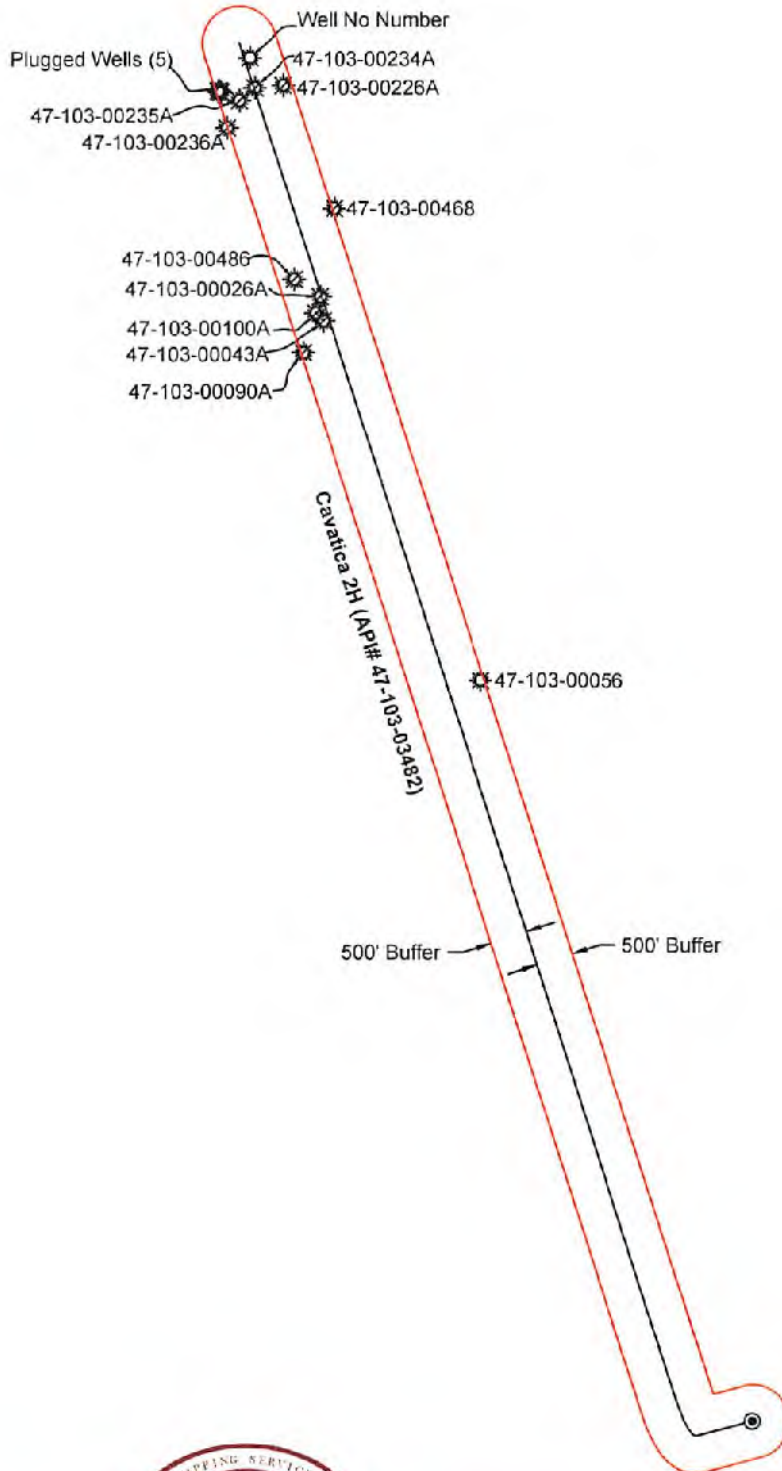
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls 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
- ⊛ 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



Bridgeport Office  
 Phone: (304) 848-5035  
 Fax: (304) 848-5037

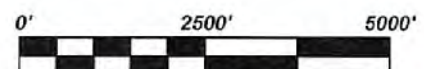
172 Thompson Drive  
 Bridgeport, WV 26330

PARTY CHIEF: C. Lynch	DRAWN BY: J. Smith
RESEARCH: J. Miller	PREPARED: April 8, 2022
SURVEYED: Dec. 2016	PROJECT NO: 116-34-G-18
FIELD CREW: C.L., K.M.	DRAWING NO: Cavatica 2H Well Exhibit

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 Office of Oil and Gas

APR 22 2022

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 Environmental Protection



Scale: 1 inch = 2500 feet 05/20/2022

UWI (API Num)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Formation(s)	Producible Formation(s) not perf'd
47103000560000	DAVE AMOS	1			1,932	Big Injun	Weir, Berea, Benson, Alexander
47103300900000	RICHARD CARROLL	1			2,240	Keener, Big Injun	Weir, Berea, Benson, Alexander
47103300430000	URIAH ICE	1			2,378	Keener, Big Injun	Weir, Berea, Benson, Alexander
47103301000000	JAMES ELSON	1			2,387	Big Injun	Weir, Berea, Benson, Alexander
47103300260000	JAMES & SARAH ELSON	3292	MANUFACT LIGHT & HEAT	MANUFACT LIGHT & HEAT	2,360	Big Injun	Weir, Berea, Benson, Alexander
47103004860000	MIDCAP	1			2,348	Big Injun	Weir, Berea, Benson, Alexander
47103004680000	MIDCAP	1			2,410		
47103302360000	J B WHITEMAN	5	DAUBENSPECK & MASON	DAUBENSPECK & MASON	2,065	Big Injun	Weir, Berea, Benson, Alexander
47103302350000	J B WHITEMAN	4	DAUBENSPECK & MASON	DAUBENSPECK & MASON	2,243	Big Injun	Weir, Berea, Benson, Alexander
47103302260000	J B WHITEMAN	1	DAUBENSPECK & MASON	DAUBENSPECK & MASON	2,220		
47103302340000	J B WHITEMAN	3	DAUBENSPECK & MASON	DAUBENSPECK & MASON	2,346	Keener, Big Injun	Weir, Berea, Benson, Alexander
47103308330000	E M MCCORMICK	1311	HOPE NATURAL GAS	HOPE NATURAL GAS	2,943	Gordon	Weir, Benson, Alexander
	Plugged Well						
	Plugged Well						
	Plugged Well						
	Plugged Well						
	Plugged Well						
	No Well Number						



**Antero Resources**  
**Well No. Cavatica 2H**  
**BHL MOD**  
 Antero Resources Corporation

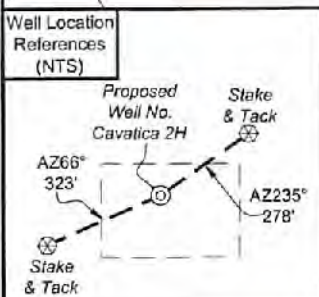
Page 1 of 2

10,557' to Bottom Hole

TOP HOLE LATITUDE 39 - 32 - 30  
 BTM HOLE LATITUDE 39 - 35 - 00

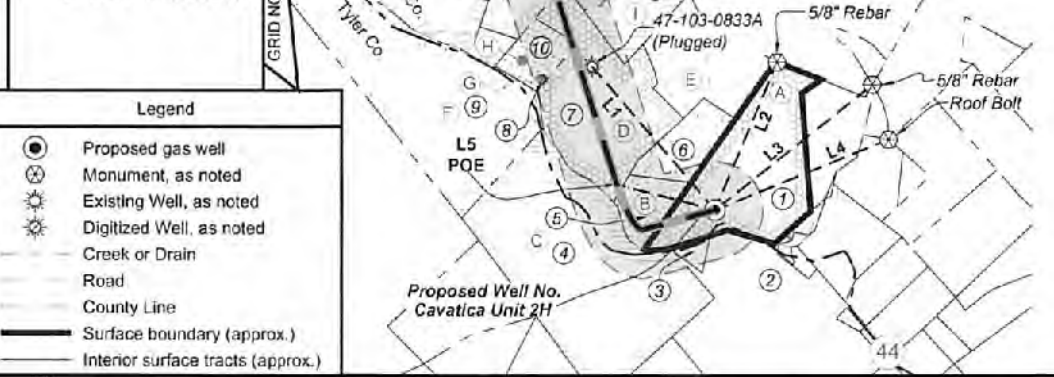
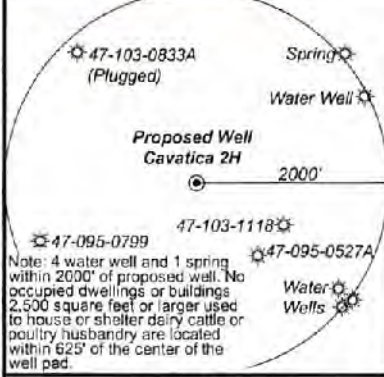
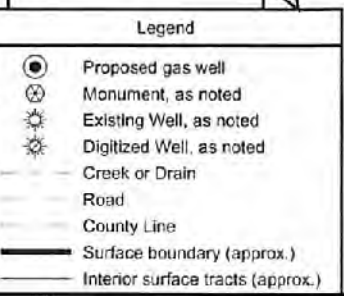
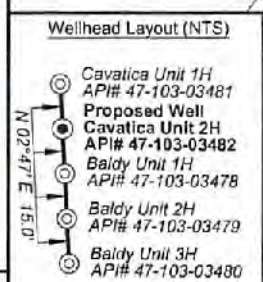


**Notes**  
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
 Well No. Cavatica Unit 2H Top Hole coordinates are:  
 N: 376,209.23' Latitude: 39°31'33.78"  
 E: 1,644,022.38' Longitude: 80°45'43.23"  
 Bottom Hole coordinates are:  
 N: 394,779.07' Latitude: 39°34'36.33"  
 E: 1,637,110.93' Longitude: 80°47'14.83"  
 UTM Zone 17, NAD 1983  
 Top Hole Coordinates: N: 4,375,191.512m E: 520,469.639m  
 Bottom Hole Coordinates: N: 4,380,813.753m E: 518,269.797m  
 Plat orientation and corner and well references are based upon the grid north meridian.  
 Well location references are based upon the magnetic meridian.



I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

*Bradley D. Miller*  
 Bradley D. Miller, P.S. 2167



FILE NO: 116-34-G-18  
 DRAWING NO: Cavatica 2H Well Plat  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: Submeter  
 PROVEN SOURCE OF ELEVATION: CORS, Monroe County, OH

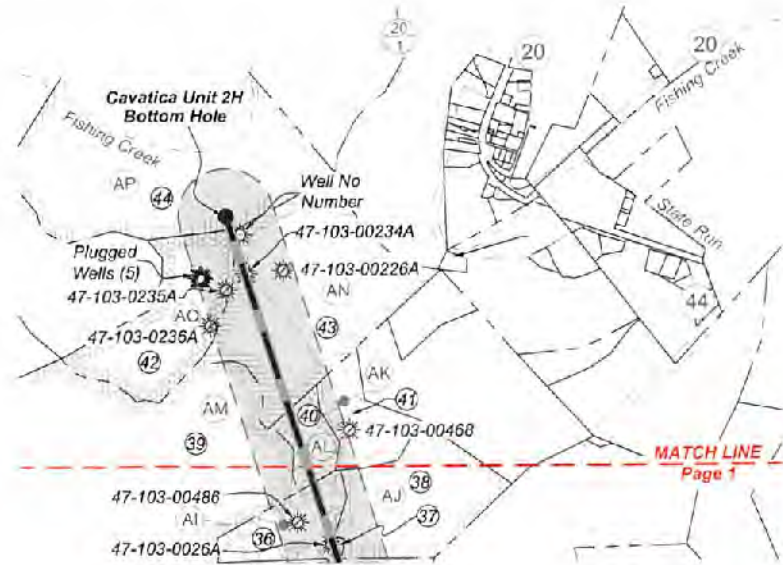
**STATE OF WEST VIRGINIA**  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**OIL AND GAS DIVISION**

DATE: April 8 20 22  
 OPERATOR'S WELL NO. Cavatica Unit 2H  
 API WELL NO. MOD  
 47 - 103 - 03482  
 STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
 LOCATION: ELEVATION: Existing 1,237' Proposed 1,206' WATERSHED: Fishing Creek QUADRANGLE: Porter Falls 34.17; 69; 37; 39; 41.75; 54.5; 53;  
 DISTRICT: Green Margaret SURFACE OWNER: Lancaster COUNTY: Wetzel 05/20/2022  
 ROYALTY OWNER: Shiben Estates Inc. (3); Kenneth Stewart Keystone Trust; Kenneth Stewart Keystone Trust Agreement LEASE NO: ACREAGE: 39.00 84.5; 32.56; 119.75; 46.5; 57; 50; 40; 26.5;  
 PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL\_MOD ESTIMATED DEPTH: 7,400' TVD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 28,500' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
 Denver, CO 80202 Charleston, WV 25313





ID	TM-Par	Owner	Bk/Pg	Acres
1	19-31	Margaret Lancaster	333 / 440	39.00
2	12-27	Crystal A. Muzzy (Tyler Co.)	W69 / 226	60.91
3	-	Garrett Cemetery	85 / 62	1.80
4	12-25	Cecil & Margaret Lancaster	170 / 48	78.17
5	19-52	Joshua Highley	464 / 208	8.01
6	19-30	Richard R. & Mary J. Scyoc	452 / 177	13.00
7	19-21	Joshua Highley	464 / 208	41.75
8	19-21.1	McCormick Cemetery	--- / ---	---
9	12-21	Mary Adaline Lewis, et al	AR53 / 75	67.00
10	19-37	Joshua Highley	464 / 208	7.12
11	19-15	Joshua Highley	464 / 208	17.00
12	19-13	Joshua Highley	464 / 208	5.00
13	19-12	Joshua Highley	464 / 208	17.17
14	19-55	Olive M. Moore	392 / 158	13.99
15	19-54	Susan J. Fair	378 / 97	59.75
16	16-75	Gregg John Weis	317 / 157	7.50
17	16-53	Edward D. & Heather M. Stewart	390 / 10	32.60
18	16-52	RBMA, LLC	431 / 526	43.25
19	16-44	Kenneth E. Stewart Keystone Trust	424 / 821	46.30
20	16-43	RBMA, LLC	431 / 526	76.30
21	16-36	Kenneth E. Stewart Keystone Trust	424 / 821	53.00
22	16-29	Kenneth E. Stewart Keystone Trust	424 / 821	53.50
23	16-19	Eugene D., Jr. & Diane Mason	405 / 291	64.70
24	16-20	Bonita Andrich, et al	W70 / 243	79.03
25	16-8	Wilbur B. Dawson & Loretta P. Uellschey	408 / 192	75.75
26	16-18	Cathy A. & Ernest E. Stewart	355 / 280	28.50
27	16-7	Wilbur B. Dawson & Loretta P. Uellschey	408 / 192	54.50
28	16-1	Richard Coleman Nolan	264 / 313	60.72
29	12-53	Robert E. Midcap	399 / 40	57.00
30	12-52	Linda Lou Jackson	399 / 34	50.00
31	12-45	Roger Dale Midcap	399 / 37	46.00
32	12-48	John W. & Rosalie M. Uellschey	362 / 403	47.87
33	12-47	Linda K. Ice	447 / 793	26.25
34	12-44	Jerome E. Staley II, et al	453 / 271	6.00
35	12-36	Jerome E. Staley II, et al	453 / 271	6.00
36	12-37	Roger D. & Tina S. Midcap	342 / 74	13.30
37	12-46	Roger D. & Tina S. Midcap	348 / 437	1.00
38	12-38	Roger D. & Tina S. Midcap	342 / 74	37.00
39	12-43	Coastal Forest Resources Co.	444 / 105	172.70
40	12-24	Jerome E. Staley	242 / 72	10.00
41	12-25	Jerome E. Staley	242 / 72	15.00
42	12-16	Charmaine A. & Heath C. Starkweather	427 / 930	36.00
43	12-17	Charmaine A. & Heath C. Starkweather	427 / 930	69.00
44	12-1	Bradley W. Uellschey	476 / 310	78.13

Leases	
A	Shiben Estates, Inc.
B	Randy Bradley
C	BRC Appalachian Minerals I, LLC
D	Shiben Estates, Inc.
E	Richard R. & Mary J. Scyoc
F	Antero Minerals, LLC
G	Joshua Highley
H	Joshua Highley
I	Shiben Estates, Inc.
J	Shiben Estates, Inc.
K	Allen Vincent Wilcox
L	Tribune Resources Minerals, LLC
M	Olive M. Moore
N	Susan J. Fair
O	Antero Minerals, LLC
P	Edward D. & Heather M. Stewart
Q	RBMA, LLC
R	Thomas W. Lins
S	Kenneth Stewart Keystone Trust
T	Kenneth Stewart Keystone Trust
U	BRC Appalachian Minerals I, LLC
V	Gladys E. Conroy Trust
W	Chesapeake Appalachia, LLC
X	Ernest & Cathy Stewart 2019 Irrevocable Trust
Y	Shiben Estates, Inc.
Z	Robert E. & Michaelmary Midcap
AA	John Ray Nolan
AB	Linda Lou Jackson & Jess Stephen Jackson
AC	Barbara Anne Amos King
AD	Ridgetop Royalties, LLC
AE	Barbara A. King
AF	Linda Ice Long
AG	Ridgetop Appalachia, LLC
AH	Jerome E. Staley, II, et ux
AI	Roger D. & Tina S. Midcap
AJ	Chesapeake Appalachia, LLC
AK	Dennis B. Moore
AL	Jerome E. Staley
AM	Chesapeake Appalachia, LLC
AN	Charmaine A. Starkweather, et vir
AO	Charmaine A. Starkweather, et vir
AP	Stone Hill Minerals Holdings, LLC

FILE NO: 116-34-G-18  
 DRAWING NO: Cavatica 2H Well Plat  
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 DISTRICT: Green Margaret SURFACE OWNER: Lancaster Barbara Anne Amos King; Chesapeake Appalachia, LLC COUNTY: Wetzel 39; 41.75; 54.5; 53;  
 SURFACE OWNER: Lancaster Linda Lou Jackson & Jess Stephen Jackson; Charmaine A. Starkweather, et vir (2); Stone Hill Minerals Holdings, LLC COUNTY: Wetzel 7.123; 17.1750; 36.70;  
 ROYALTY OWNER: Shiben Estates Inc. (3); Kenneth Stewart Keystone Trust; Kenneth Stewart Keystone Trust Agreement LEASE NO: ACREAGE: 39.00 64.5; 32.56; 119.75;  
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 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL\_MOD LEASE NO: ACREAGE: 13.25; 10; 36; 71.61  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 7,400' TVD  
 ESTIMATED DEPTH: 28,500' MD

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 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
 Denver, CO 80202 Charleston, WV 25313



3,388' to Top Hole

10,557' to Bottom Hole

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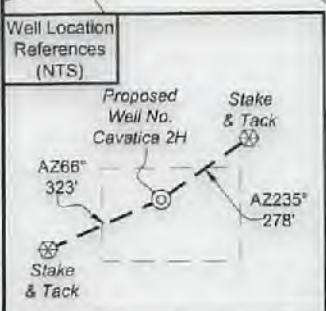
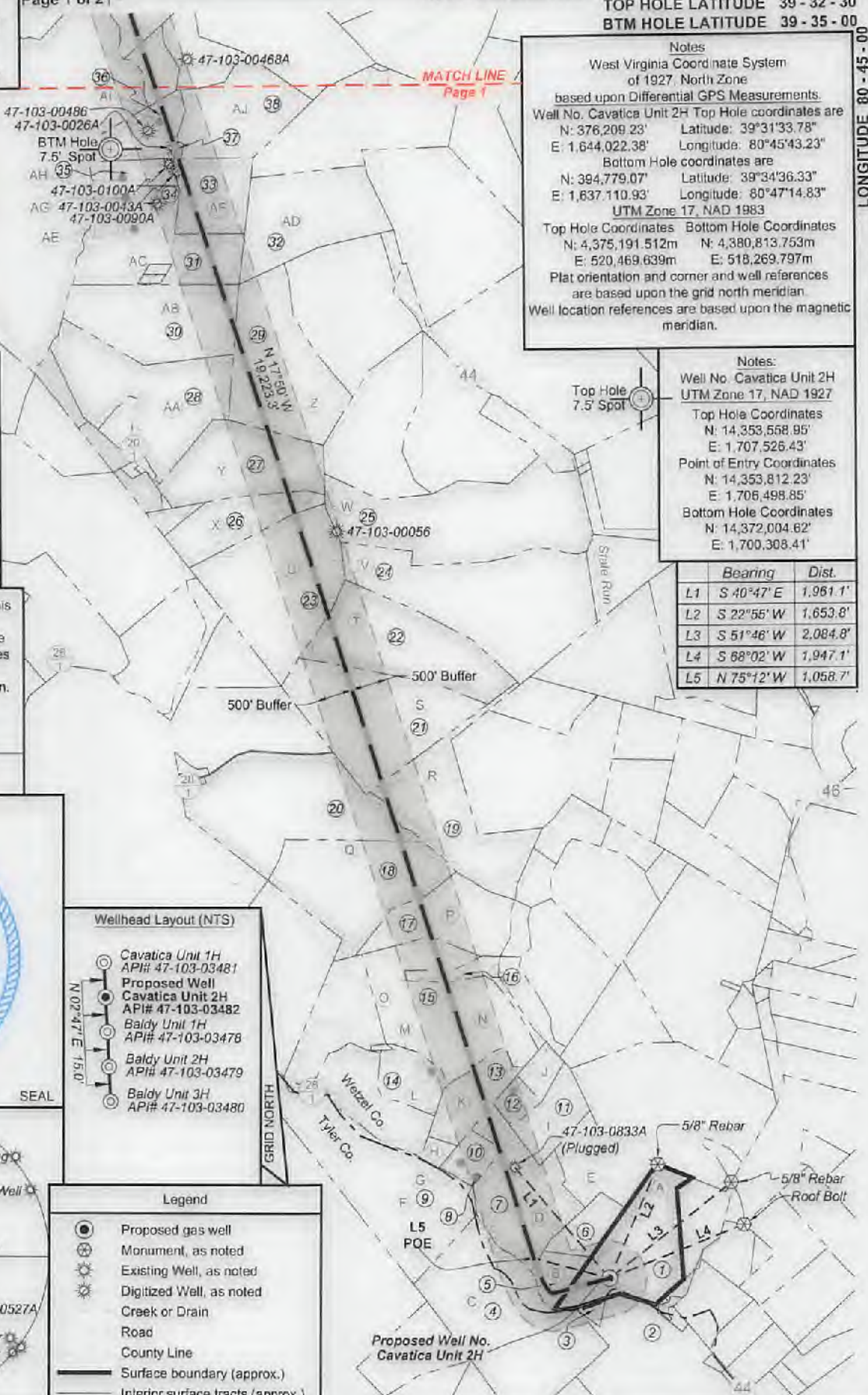
**Antero Resources**  
**Well No. Cavatica 2H**  
**BHL MOD**  
Antero Resources Corporation

**TOP HOLE LATITUDE 39 - 32 - 30**  
**BTM HOLE LATITUDE 39 - 35 - 00**



**Notes**  
West Virginia Coordinate System of 1927, North Zone  
based upon Differential GPS Measurements.  
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E: 520,469.639m E: 518,269.797m  
Plat orientation and corner and well references are based upon the grid north meridian.  
Well location references are based upon the magnetic meridian.

LONGITUDE 80 - 45 - 00  
2,394' to Bottom Hole  
5,689' to Top Hole



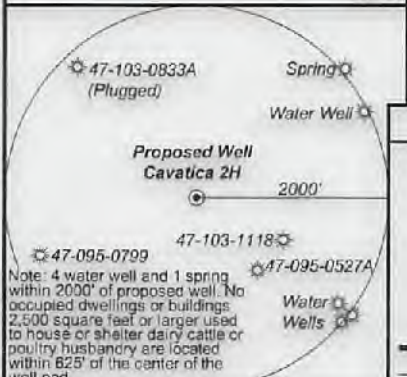
I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

*Bradley D. Miller*

Bradley D. Miller, P.S. 2167

**Notes:**  
Well No. Cavatica Unit 2H UTM Zone 17, NAD 1927  
Top Hole Coordinates  
N: 14,353,558.95'  
E: 1,707,526.43'  
Point of Entry Coordinates  
N: 14,353,812.23'  
E: 1,706,498.85'  
Bottom Hole Coordinates  
N: 14,372,004.62'  
E: 1,700,308.41'

	Bearing	Dist.
L1	S 40°47' E	1,981.1'
L2	S 22°55' W	1,653.8'
L3	S 51°46' W	2,084.8'
L4	S 68°02' W	1,947.1'
L5	N 75°12' W	1,058.7'



**Legend**

- Proposed gas well
- Monument, as noted
- Existing Well, as noted
- Digitized Well, as noted
- Creek or Drain
- Road
- County Line
- Surface boundary (approx.)
- Interior surface tracts (approx.)

FILE NO: 116-34-G-18  
DRAWING NO: Cavatica 2H Well Plat  
SCALE: 1" = 2000'  
MINIMUM DEGREE OF ACCURACY: Submeter  
PROVEN SOURCE OF ELEVATION: CORS, Monroe County, OH

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

DATE: April 8 2022  
OPERATOR'S WELL NO. Cavatica Unit 2H  
API WELL NO MOD  
47 - 103 - 03482  
STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
(IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
Existing 1,237'  
LOCATION: ELEVATION: Proposed 1,206' WATERSHED: Fishing Creek QUADRANGLE: Porter Falls 34,17; 69; 37; 39; 41.75; 54.5; 53;  
DISTRICT: Green Margaret COUNTY: Wetzel 05/20/2022  
SURFACE OWNER: Lancaster Linda Lou Jackson & Jess Stephen Jackson; Charmaine A. Starkweather, et vr (2); Stone Hill Minerals Holdings, LLC; Edward D. & Heather M. Stewart; Thomas W. Lins; Robert E. & Michaelmary Midcap; Roger D. & Tina S. Midcap; Allen Vincent Wilcox; Antero Minerals, LLC; BRC Appalachian Minerals I, LLC; Linda Ice Long; Susan J. Fair; Ernest & Cathy Stearny 2019 Irrevocable Trust; Randy Bradley; Joshua Highley RBMA, LLC; Jemma E. Staley.  
ROYALTY OWNER: Shiben Estates Inc. (3); Kenneth Stewart Keystone Trust; Kenneth Stewart Keystone Trust Agreement LEASE NO: ACREAGE: 13.25; 10; 36; 71.61  
PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL\_MOD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 7,400' TVD; 26,500' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
Denver, CO 80202 Charleston, WV 25313





ID	TM-Par	Owner	Bk/Pg	Acres
1	19-31	Margaret Lancaster	333 / 440	39.00
2	12-27	Crystal A. Muzzy (Tyler Co.)	W69 / 226	60.91
3	-	Garrett Cemetery	85 / 62	1.80
4	12-25	Cecil & Margaret Lancaster	170 / 48	78.17
5	19-52	Joshua Highley	464 / 208	8.01
6	19-30	Richard R. & Mary J. Scyoc	452 / 177	13.00
7	19-21	Joshua Highley	464 / 208	41.75
8	19-21.1	McCormick Cemetery	-- / --	--
9	12-21	Mary Adaline Lewis, et al	AR53 / 75	67.00
10	19-37	Joshua Highley	464 / 208	7.12
11	19-15	Joshua Highley	464 / 208	17.00
12	19-13	Joshua Highley	484 / 208	5.00
13	19-12	Joshua Highley	464 / 208	17.17
14	19-55	Olive M. Moore	392 / 158	13.99
15	19-54	Susan J. Fair	378 / 97	59.75
16	16-75	Gregg John Weis	317 / 157	7.50
17	16-53	Edward D. & Heather M. Stewart	390 / 10	32.60
18	16-52	RBMA, LLC	431 / 528	43.25
19	16-44	Kenneth E. Stewart Keystone Trust	424 / 821	46.30
20	16-43	RBMA, LLC	431 / 528	76.30
21	16-36	Kenneth E. Stewart Keystone Trust	424 / 821	53.00
22	16-29	Kenneth E. Stewart Keystone Trust	424 / 821	53.50
23	16-19	Eugene D., Jr. & Diane Mason	405 / 291	84.70
24	16-20	Bonita Andrich, et al	W70 / 243	79.03
25	16-8	Wilbur B. Dawson & Loretta P. Ueltschey	408 / 192	75.75
26	16-18	Cathy A. & Ernest E. Stewart	355 / 280	28.50
27	16-7	Wilbur B. Dawson & Loretta P. Ueltschey	408 / 192	54.50
28	16-1	Richard Coleman Nolan	264 / 313	60.72
29	12-53	Robert E. Midcap	399 / 40	57.00
30	12-52	Linda Lou Jackson	399 / 34	50.00
31	12-45	Roger Dale Midcap	399 / 37	46.00
32	12-48	John W. & Rosalie M. Ueltschey	362 / 403	47.87
33	12-47	Linda K. Ice	447 / 793	26.25
34	12-44	Jerome E. Staley II, et al	453 / 271	6.00
35	12-36	Jerome E. Staley II, et al	453 / 271	6.00
36	12-37	Roger D. & Tina S. Midcap	342 / 74	13.30
37	12-46	Roger D. & Tina S. Midcap	348 / 437	1.00
38	12-38	Roger D. & Tina S. Midcap	342 / 74	37.00
39	12-43	Coastal Forest Resources Co.	444 / 105	172.70
40	12-24	Jerome E. Staley	242 / 72	10.00
41	12-25	Jerome E. Staley	242 / 72	15.00
42	12-16	Charmaine A. & Heath C. Starkweather	427 / 930	36.00
43	12-17	Charmaine A. & Heath C. Starkweather	427 / 930	69.00
44	12-1	Bradley W. Ueltschey	476 / 310	78.13

Leases	
A	Shiben Estates, Inc.
B	Randy Bradley
C	BRC Appalachian Minerals I, LLC
D	Shiben Estates, Inc.
E	Richard R. & Mary J. Scyoc
F	Antero Minerals, LLC
G	Joshua Highley
H	Joshua Highley
I	Shiben Estates, Inc.
J	Shiben Estates, Inc.
K	Allen Vincent Wilcox
L	Tribune Resources Minerals, LLC
M	Olive M. Moore
N	Susan J. Fair
O	Antero Minerals, LLC
P	Edward D. & Heather M. Stewart
Q	RBMA, LLC
R	Thomas W. Lins
S	Kenneth Stewart Keystone Trust
T	Kenneth Stewart Keystone Trust
U	BRC Appalachian Minerals I, LLC
V	Gladys E. Conley Trust
W	Chesapeake Appalachia, LLC
X	Ernest & Cathy Stewart 2019 Irrevocable Trust
Y	Shiben Estates, Inc.
Z	Robert E. & Michaelmary Midcap
AA	John Ray Nolan
AB	Linda Lou Jackson & Jess Stephen Jackson
AC	Barbara Anne Amos King
AD	Ridgetop Royalties, LLC
AE	Barbara A. King
AF	Linda Ice Long
AG	Ridgetop Appalachia, LLC
AH	Jerome E. Staley, II, et ux
AI	Roger D. & Tina S. Midcap
AJ	Chesapeake Appalachia, LLC
AK	Dennis B. Moore
AL	Jerome E. Staley
AM	Chesapeake Appalachia, LLC
AN	Charmaine A. Starkweather, et vir
AO	Charmaine A. Starkweather, et vir
AP	Stone Hill Minerals Holdings, LLC

FILE NO: 116-34-G-18  
 DRAWING NO: Cavatica 2H Well Plat  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: Submeter  
 PROVEN SOURCE OF ELEVATION: CORS, Monroe County, OH

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

DATE: April 8 20 22  
 OPERATOR'S WELL NO. Cavatica Unit 2H  
 API WELL NO. **MAD**  
 47 - 103 - 03482  
 STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
 LOCATION: ELEVATION: Existing 1,237' Proposed 1,206' WATERSHED: Fishing Creek QUADRANGLE: Porter Falls 34.17, 69; 37; 39; 41.75; 54.5; 53; 59; 62  
 DISTRICT: Green Margaret SURFACE OWNER: Lancaster  
 COUNTY: Wetzel 05/20/2022  
 ROYALTY OWNER: Shiben Estates Inc. (3); Kenneth Stewart Keystone Trust, Kenneth Stewart Keystone Trust Agreement LEASE NO: ACREAGE: 13.25; 10; 36; 71.61  
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WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
 Denver, CO 80202 Charleston, WV 25313



WW-6A1

Operator's Well Number Cavatica Unit 2H 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
<u>A: Shiben Estates LLC Lease</u> Shiben Estates LLC	Antero Resources Corporation	1/8+	255A/0681
<u>B: Randy Bradley Lease</u> Randy Bradley Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation Antero Resources Corporation	1/8+ Name Change	136A/0758 0121/0008
<u>D: Shiben Estates LLC Lease</u> Shiben Estates LLC	Antero Resources Corporation	1/8+	265A/0235
<u>H: Joshua Highley Lease</u> Joshua Highley	Antero Resources Corporation	1/8+	213A/0610
<u>D: Shiben Estates LLC Lease</u> Shiben Estates LLC	Antero Resources Corporation	1/8+	265A/0235
<u>K: Allen Vincent Wilcox Lease</u> Allen Vincent Wilcox a married man dealing in his sole and separate property	Antero Resources Corporation	1/8+	163A/0918
<u>N: Susan J. Fair Lease</u> Susan J. Fair	Antero Resources Corporation	1/8+	282A/0413
<u>O: Antero Minerals, LLC Lease</u> Antero Minerals, LLC	Antero Resources Corporation	1/8+	0250A/0735
<u>N: Susan J. Fair Lease</u> Susan J. Fair	Antero Resources Corporation	1/8+	282A/0413
<u>P: Edward D. &amp; Heather M. Stewart Lease</u> Edward D. Stewart and Heather M. Stewart	Antero Resources Corporation	1/8+	229A/0884
<u>Q: RBMA, LLC Lease</u> RBMA, LLC	Antero Resources Corporation	1/8+	236A/0481
<u>R: Thomas W. Lins Lease</u> Thomas W. Lins	Antero Resources Corporation	1/8+	240A/0639
<u>S: Kenneth Stewart Keystone Trust Lease</u> Kenneth E. Stewart Keystone Trust Agreement dated 3/7/11	Antero Resources Corporation	1/8+	135A/0042
<u>T: Kenneth Stewart Keystone Trust Lease</u> Kenneth E. Stewart Keystone Trust Agreement dated 3/7/11	Antero Resources Corporation	1/8+	236A/0463

\*CONTINUED ON NEXT PAGE

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APR 22 2022

WV Department of  
Environmental Protection

05/20/2022

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<b><u>U: BRC Appalachian Minerals I, LLC Lease</u></b>			
BRC Appalachian Minerals, LLC	BRC Working Interest Company LLC	1/8+	0369/0300
BRC Working Interest Company LLC	Chesapeake Appalachia, LLC	Assignment	0369/0784
Chesapeake Appalachia, LLC	Statoil USA Onshore Properties Inc	Assignment	0378/0764
Statoil USA Onshore Properties Inc	SWN Exchange Titleholder LLC	Assignment	0470/0668
SWN Exchange Titleholder LLC	SWN Production Company LLC	Merger	0009/0404
SWN Production Company LLC	Antero Exchange Properties	Assignment	0544/0242
Antero Exchange Properties	Antero Resources Corporation	Merger	0525/0315
<b><u>X: Ernest &amp; Cathy Stewart 2019 Irrevocable Trust Lease</u></b>			
Ernest & Cathy Stewart 2019 Irrevocable Trust	Antero Resources Corporation	1/8+	238A/0606
<b><u>Y: Shiben Estates, Inc. Lease</u></b>			
Shiben Estates, Inc.	Antero Resources Corporation	1/8+	265A/0279
<b><u>Z: Robert E. &amp; Michaelmary Midcap Lease</u></b>			
Robert E. Midcap and Michaelmary Midcap	Antero Resources Corporation	1/8+	260A/0267
<b><u>AB: Linda Lou Jackson &amp; Jess Stephen Jackson Lease</u></b>			
Linda Lou Jackson and Jess Stephen Jackson	Antero Resources Corporation	1/8+	239A/0412
<b><u>AC: Barbara Anne Amos King Lease</u></b>			
Barbara Anne Amos King	Antero Resources Corporation	1/8+	176A/0520
<b><u>AF: Linda Ice Long Lease</u></b>			
Linda Ice Long	Antero Resources Corporation	1/8+	237A/0676
<b><u>AJ: Chesapeake Appalachia, LLC Lease</u></b>			
Chesapeake Appalachia LLC	SWN Production Company	1/8	057A/0640
SWN Production Company	Antero Exchange Properties	Assignment	177A/0533
Antero Exchange Properties	Antero Resources Corporation	Name Change	0013/0311
<b><u>AI: Roger D &amp; Tina S. Midcap Lease</u></b>			
Roger D. & Tina S. Midcap	Antero Resources Corporation	1/8+	283A/0070
<b><u>AL: Jerome E. Staley Lease</u></b>			
Jerome E. Staley	Antero Resources Corporation	1/8+	284A/0942
<b><u>AN: Charmaine A. Starkweather, et vir Lease</u></b>			
Charmaine A. Starkweather & Heath C. Starkweather	Stone Energy Corporation	1/8+	135A/0030
Stone Energy Corporation	EQT Production Company	Assignment	183A/0305
EQT Production Company	Antero Resources Corporation	Assignment	230A/0801

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APR 22 2022

WV Department of  
Environmental Protection



WW-6A1

Operator's Well Number Cavatica Unit 2H 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)

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<b><u>AO: Charmaine A. Starkweather, et vir Lease</u></b>			
Charmaine A. Starkweather & Heath C. Starkweather	Stone Energy Corporation	1/8+	135A/0013
Stone Energy Corporation	EQT Production Company	Assignment	183A/0305
EQT Production Company	Antero Resources Corporation	Assignment	230A/0801

\*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.

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Office of Oil and Gas  
**APR 22 2022**  
WV Department of  
Environmental Protection

05/20/2022

WW-6A1  
(5/13)

Operator's Well No. Cavatica Unit 2H MOD

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
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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	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>AP: Stone Hill Minerals Holdings, LLC Lease</u>	Stone Hill Minerals Holdings, LLC	Antero Resources Corporation	1/8+	295A/0769

\*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.

**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

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Office of Oil and Gas

APR 22 2022

WV Department of  
Environmental Protection

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: VP of Land