

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

Tuesday, December 14, 2021 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for MAROON UNIT 1H 47-095-02756-00-00

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 hief

Operator's Well Number:
Farm Name:MAROON UNIT 1H
CLARA SUZANNE WALLACE & RICKIE WALLAGEU.S. WELL NUMBER:
Horizontal 6A47-095-02756-00-00
New DrillDate Modification Issued:12/14/2021

Promoting a healthy environment.

OPERATOR WELL NO. Maroon Unit 1H Well Pad Name: Thin Air Pad

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

1) Well Operator: Antero Reso	urces Corporat	494507062	095-Tyler	Ellsworth Porter Falls 7.5	5'
,		Operator ID	County	District Quadrangle	
2) Operator's Well Number: Mar	oon Unit 1H	Well Pad	Name: Thin A	Air Pad	
3) Farm Name/Surface Owner:	ara Suzanne Wallace & Rickie	^{wallace} Public Roa	d Access: CR	11	
4) Elevation, current ground: <u>1</u>	235' Ele	evation, proposed	post-construction	on: ~1200'	
5) Well Type (a) Gas X	Oil	Unde	erground Storag	je	
Other					
(b)If Gas Shall	low X	Deep			
Horiz	zontal X				
6) Existing Pad: Yes or No No			-		
7) Proposed Target Formation(s), Marcellus Shale: 7300' TVD, An		-	-		
8) Proposed Total Vertical Depth	7300' TVD				
9) Formation at Total Vertical De					
10) Proposed Total Measured Dep	pth: 25,800 M	D	· · · · · · · · · · · · · · · · · · ·		
11) Proposed Horizontal Leg Len	gth: 16,458'	· · · · · · · · · · · · · · · · · · ·			
12) Approximate Fresh Water Str	ata Depths:	76' and 328'			
13) Method to Determine Fresh V	Vater Depths: 4	7-095-02266			
14) Approximate Saltwater Depth	ns: 1660'				
15) Approximate Coal Seam Dep	ths: None Iden	tified			
16) Approximate Depth to Possib	le Void (coal mi	ne, karst, other):	None Anticipat	ed	
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:			RECEIVED	
	Depth:			Office of Oil and Gas	s
	Seam:			DEC 1 3 2021	
	Owner:			WV Department of Environmental Protecti	tion

API NO. 47-_095__02756 MOD

WW-6B (04/15)

OPERATOR WELL NO. Maroon Unit 1H Well Pad Name: Thin Air Pad

18)

CASING AND TUBING PROGRAM

ТҮРЕ	<u>Size</u> (in)	<u>New</u> or Used	Grade	<u>Weight per ft.</u> (lb/ft)	<u>FOOTAGE: For</u> <u>Drilling (ft)</u>	INTERVALS: Left in Well (ft)	<u>CEMENT:</u> <u>Fill-up</u> (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	80	80	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	378'	378'	CTS, 341 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#	25,800'	25,800'	5573 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

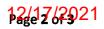
ТҮРЕ	Size (in)	<u>Wellbore</u> <u>Diameter (in)</u>	<u>Wall</u> <u>Thickness</u> <u>(in)</u>	<u>Burst Pressure</u> (psi)	<u>Anticipated</u> <u>Max. Internal</u> Pressure (psi)	<u>Cement</u> <u>Type</u>	<u>Cement</u> <u>Yield</u> (cu. ft./k)
Conductor	30"	24"	0.438"	1530	50	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	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"	0.361"	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

Kind:	N/A		
Sizes:	N/A		
Depths Set:	N/A		RECEIVED Office of Oil and O

DEC 1 3 2021

WV Department of Environmental Protection



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

Drill, perforate, fracture a new horizontal shallow well and complete 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): 45.05 acres

22) Area to be disturbed for well pad only, less access road (acres): 17.67 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.	RECEIVED
	Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake	Office of Oil and Gas
	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	DEC 1 3 2021
	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	
1		WV Department of

Environmental Protection

25) Proposed borehole conditioning procedures:

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

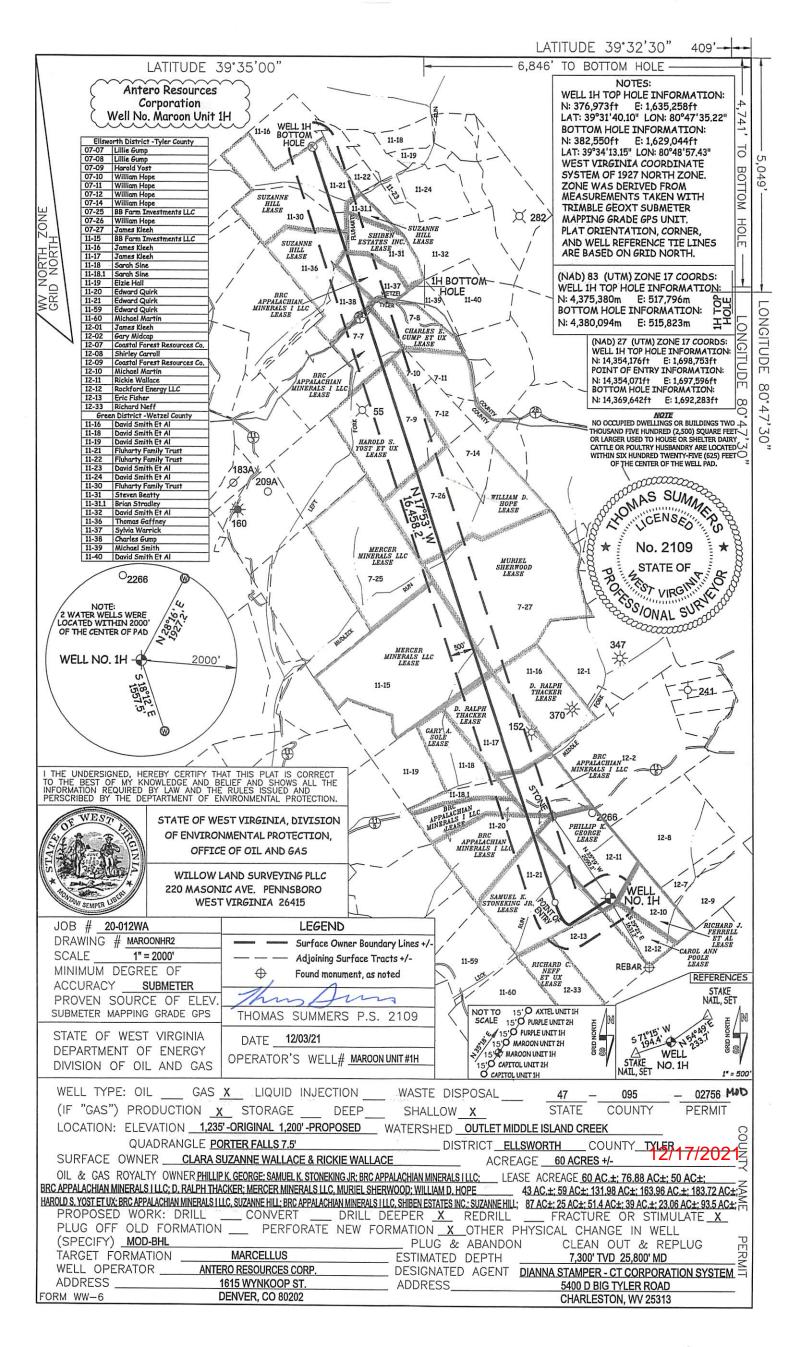
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

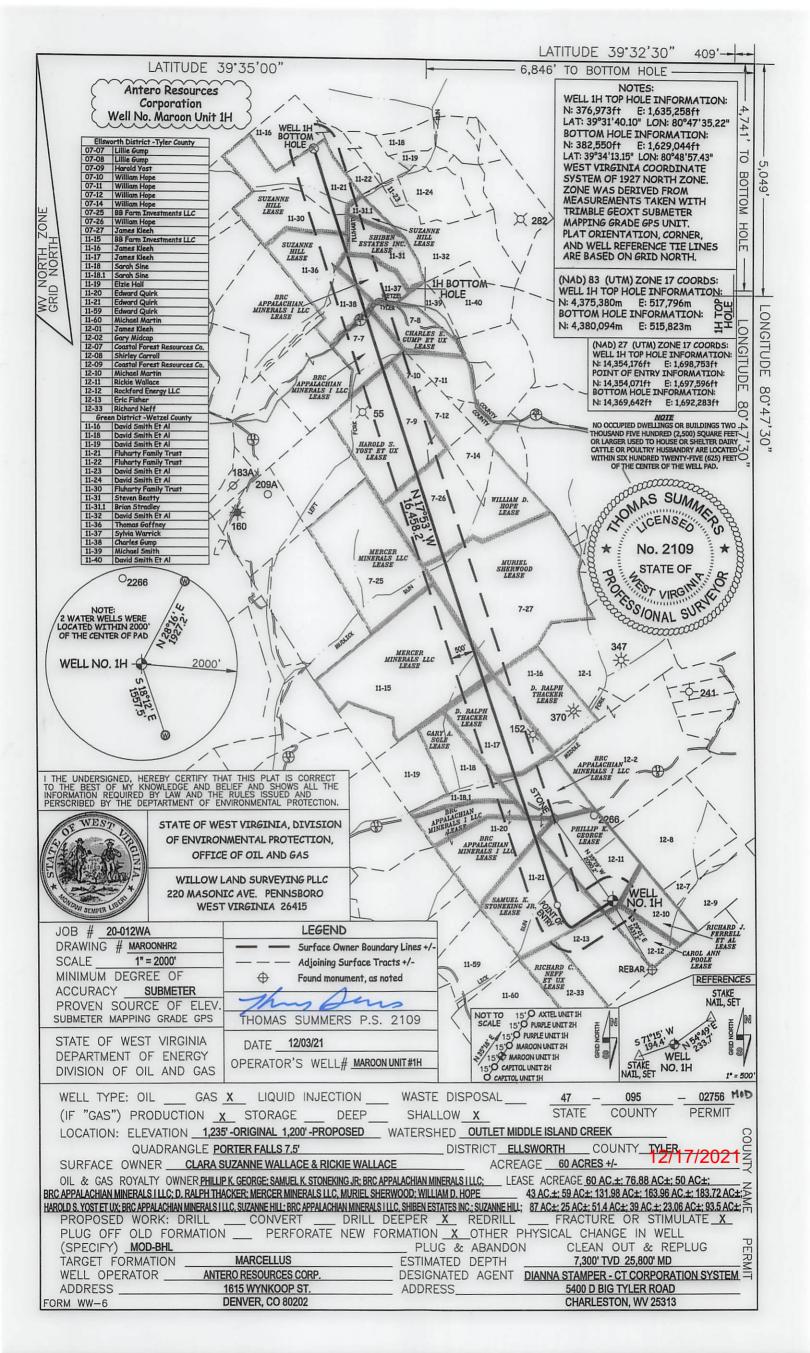
Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

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.









Operator's Well Number Maroon 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
Philip K. George Lease			
Philip K. George	Statoil USA Onshore Properties	1/8+	0466/0193
Statoil USA Onshore Properties	EQT Production Company	Assignment	0539/0239
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001
Samuel K Stoneking Jr Lease			
Samuel K Stoneking Jr	Statoil USA Onshore Properties Inc	1/8	456/688
Statoil USA Onshore Properties Inc	EQT Production Company	Assignment	539/239
EQT Production Company	Antero Resources Corporation	Assignment	663/1
BRC Appalachian Minerals I LLC Lease			
BRC Appalachia Minerals I LLC	BRC Working interest Company LLC	1/8	369/300
BRC Working Interest Company LLC	Chesapeake Appalachia LLC	Assignment	369/784
Chesapeake Appalachia LLC	Statoil USA Onshore Properties Inc	Assignment Assignment	423/165 539/239
Statoil USA Onshore Properties Inc EQT Production Company	EQT Production Company Antero Resources Corporation	Assignment	663/1
EQT Production Company	Antero Resources Corporation	Assignment	003/1
D. Ralph Thacker Lease			
D. Ralph Thacker	Petroedge Energy LLC	1/8	385/157
Petroedge Energy LLC	Statoil USA Onshore Properties Inc	Assignment	406/147
Statoil USA Onshore Properties Inc	EQT Production Company	Assignment	539/239
EQT Production Company	Antero Resources Corporation	Assignment	663/1
Mercer Minerals LLC Lease			
Mercer Minerals LLC	Antero Resources Corporation	1/8+	81/182
Muriel Sherwood Lease			
Muriel Sherwood	Petroedge Energy LLC	1/8	383/318
Petroedge Energy LLC	Statoil USA Onshore Properties Inc	Assignment	406/147
Statoil USA Onshore Properties Inc	EQT Production Company	Assignment	539/239
EQT Production Company	Antero Resources Corporation	Assignment	663/1
William D Hope Lease			
William D Hope	Antero Resources Corporation	1/8+	4/734
Harold S Yost et ux Lease			
Harold S Yost et ux	Harrison Energy Services LLC	1/8	569/424
Harrison Energy Services LLC	Antero Resources Corporation	Assignment	584/437

*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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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
BRC Appalachia Mineral I LLC Lease			
BRC Appalachia Mineral I LLC	BRC Working Interest Company LLC	1/8	369/300
BRC Working interest Company LLC	Chesapeake Appalachia LLC	Assignment	369/784
Chesapeake Appalachia LLC	Statoil USA Onshore Properties	Assignment	423/165
Statoil USA Onshore Properties Inc	EQT Production Company	Assignment	539/239
EQT Production Company	Antero Resources Corporation	Assignment	663/1
Suzanne Hill Lease			
Suzanne Hill	Antero Resources Corporation	1/8+	263A/587
BRC Appalachia Mineral I LLC Lease			
BRC Appalachia Mineral I LLC	BRC Working Interest Company LLC	1/8	369/300
BRC Working interest Company LLC	Chesapeake Appalachia LLC	Assignment	369/784
Chesapeake Appalachia LLC	Statoil USA Onshore Properties	Assignment	423/165
Statoil USA Onshore Properties Inc	EQT Production Company	Assignment	539/239
EQT Production Company	Antero Resources Corporation	Assignment	663/1
Shiben Estates Inc Lease			
Shiben Estates Inc	Antero Resources Corporation	1/8+	197A/829

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WW-6A1 (5/13)

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
Suzanne Hill Lease				
	Suzanne Hill	Antero Resources Corporation	1/8+	273A130

*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

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	Lan Verla	
Its:	VP of Land		



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

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

Mr. Brewer:

December 8, 2021

Antero Resources Corporation (Antero) would like to submit the following permit modifications for approved well on the existing Thin Air Pad: Capitol Unit 2H (47-095-02755-00) and Maroon Unit 1H (47-095-02756-00) Expedited.

Attached you will find the following:

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



If you have any questions please feel free to contact me at (303) 357-7182.

Thank you in advance for your consideration.

Sincerely,

MMS

Mallory Stanton Permitting Supervisor Antero Resources Corporation

Enclosures

RECEIVED Office of Oil and Gas

DEC 09 2021

WV Department of Environmental Protection

12/17/2021



Stansberry, Wade A <wade.a.stansberry@wv.gov>

Modification Horizontal H6A Well Work Permit (API: 47-095-02755 & 47-095-02756)

1 message

Stansberry, Wade A <wade.a.stansberry@wv.gov>

Wed, Dec 15, 2021 at 11:28 AM

12/17/2021

To: Mallory Stanton <mstanton@anteroresources.com>, mhamsher@anteroresources.com, Dani DeVito <ddevito@shalepro.com>, Douglas Newlon <douglas.c.newlon@wv.gov>, ljackson@wvassessor.com

I have attached a copy of the newly issued well permit number:

47-095-02755 - CAPITOL UNIT 2H 47-095-02756 - MAROON UNIT 1H

This will serve as your copy.

If you have any questions, then please contact us here at the Office of Oil and Gas.

Thank you,

Wade A. Stansberry

Environmental Resource Specialist 3

West Virginia Department of Environmental Protection

Office of Oil & Gas

601 57th St. SE

Charleston, WV 25304

(304) 926-0499 ext. 41115

(304) 926-0452 fax

Wade.A.Stansberry@wv.gov

2 attachments

₩ 47-095-02755 - mod.pdf 2845K

₱ 47-095-02756 - mod.pdf 2383K