

#### 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, March 20, 2023 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re:

Permit Modification Approval for PEACH FORK UNIT 1H

47-095-02841-00-00

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

Operator's Well Number: PEACH FORK UNIT 1H

Farm Name: EDWARD YOST ESTATE U.S. WELL NUMBER: 47-095-02841-00-00

Horizontal 6A New Drill Date Modification Issued: 3/20/2023

Promoting a healthy environment.

API NO. 47-095	- 028	41	
OPERATOR WI	ELL N	0.	Peach Fork Unit 1H MOD
Well Pad Nam	e: Ed	Yos	st

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

1) Well Operator: Antero Resources Corporat 494507062 095 - Tyler Ellsworth Porter Falls 7.5'
Operator ID County District Quadrangle
2) Operator's Well Number: Peach Fork Unit 1H MOD Well Pad Name: Ed Yost
3) Farm Name/Surface Owner: Edward Yost Estate Public Road Access: CR 11
4) Elevation, current ground: 1233' - As Built Elevation, proposed post-construction:
5) Well Type (a) Gas X Oil Underground Storage Other
4 \10 C
Horizontal X
6) Existing Pad: Yes or No No
7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s): Marcellus Shale: 7200' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2850#
8) Proposed Total Vertical Depth: 7200' TVD
9) Formation at Total Vertical Depth: Marcellus
10) Proposed Total Measured Depth: 27400' MD
11) Proposed Horizontal Leg Length: 18186'
12) Approximate Fresh Water Strata Depths: 70', 203'
13) Method to Determine Fresh Water Depths: 4709500165 Offset well records. Depths have been adjusted according to surface elevations.  14) Approximate Saltwater Depths: 1810'
15) Approximate Coal Seam Depths: None Anticipated
6) 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:

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OPERATOR WELL NO. Peach Fork Unit 1H MOD
Well Pad Name: Ed Yosl

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	94#	100	100	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	300	300	CTS, 417 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#	27400	27400	5977 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

ТҮРЕ	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**

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

Page 2 of 3

OPERATOR WELL NO. Peach Fork Unit 1H MOD
Well Pad Name: Ed Yost

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): 81.74 acres
- 22) Area to be disturbed for well pad only, less access road (acres): 8.91 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.

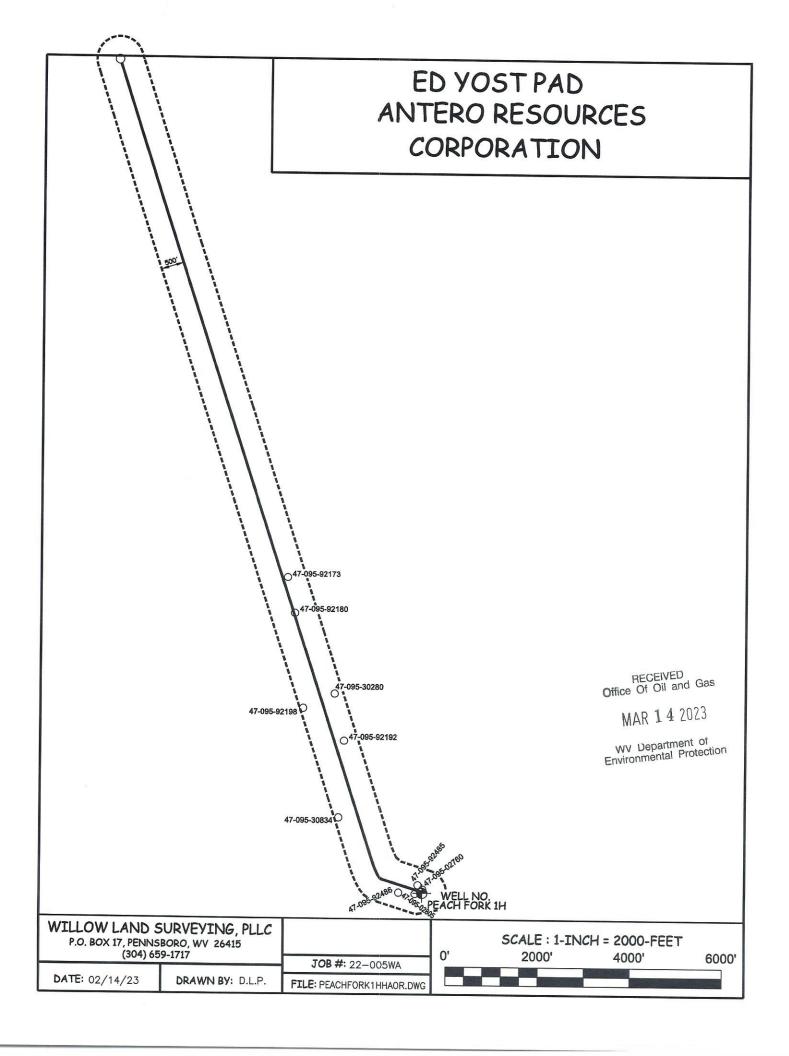
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

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.

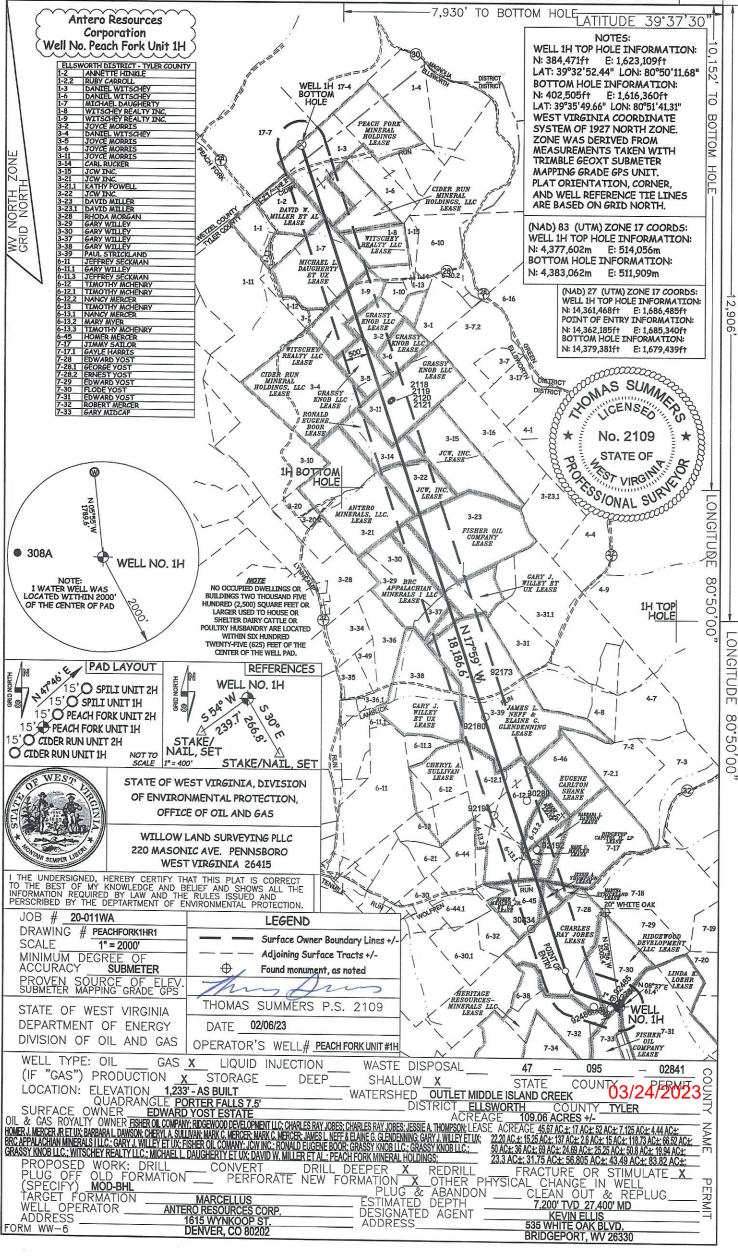
\*Note: Attach additional sheets as needed.

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SN1907



UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD	TD Perforated Interval (shallowest decreet)	Dorformed Louisian (2)	
7095027600000	47095027600000 AR ED YOST UNIT 5H	SH	ANTERO RESOURCES CORP	ANTERO RESOLIBEES CORP.		and an analysis of the control of th	renorated ronnation(s)	Producible Formation(s) not perf'd
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47095921920000								Weir, benson, Alexander
47095921980000								
7095302800000	47095302800000 CLARENCE MERCER	5	RENO OIL CO	RENO OIL CO				
47095921800000								
47095921730000								The state of the second



#### 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	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Peach Fork Mineral Holdings Lease				
	Peach Fork Mineral Holdings	Antero Resources Corporation	1/8+	0177/0184

\*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.

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	Can Rech			
Its:	Senior Vice President of Land				

Page 1 of 1

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
Linda K Loehr Lease			
Linda K. Loehr	Antone Bergunne Communic		
Linda K. Loeni	Antero Resources Corporation	1/8+	494/518
Fisher Oil Company Lease			
Fisher Oil Company	Antero Resources Corporation	1/8+	40/525
	the state of the s	1/8+	19/535
Ridgewood Development LLC Lease			
Ridgewood Development LLC	Antero Resources Corporation	1/8+	185/337
			103/33/
Charles Ray Jobes Lease			
Charles Ray Jobes	EOG Resources Inc.	1/8	353/284
EOG Resources Inc.	PC Exploration Inc.	Assignment	357/210
PC Exploration Inc.	Phillips Exploration Inc.	Merge	PA SOS
Phillips Exploration Inc.	Chesapeake Appalachia LLC	Assignment	375/312
Chesapeake Appalachia LLC	Statoil USA Onshore Properties Inc.	Assignment	423/165
Statoil USA Onshore Properties Inc.	SWN Exchange Titleholder LLC	Assignment	470/668
SWN Exchange Titleholder LLC	SWN Production Company LLC	Merge	9/404
SWN Production Company LLC	Antero Exchange Properties LLC	Assignment	544/242
Antero Exchange Properties LLC	Antero Resources Corporation	Merge	552/315
lossic A. Themaseu Leave			
Jessie A. Thompson Lease	4 × 10 × 10		
Jessie A. Thompson	Antero Resources Corporation	1/8+	187/138
Homer J. Mercer, Jr. et ux Lease			
Homer J. Mercer, Jr. et ux	Antero Resources Corporation	1/0	
,	Antero Resources Corporation	1/8	227/110
Barbara L. Dawson Lease			
Barbara L. Dawson	Antero Resources Corporation	1/8+	400/440
	Antero Resources corporation	1/8+	190/419
Cheryl A. Sullivan Lease			
Cheryl A. Sullivan	Antero Resources Corporation	1/8+	167/7
		270.	10///
Mark C. Mercer Lease			
Mark C. Mercer	Antero Resources Corporation	1/8+	189/507
	In a state of the first transfer trans	7	103/307
Mark C. Mercer Lease			
Mark C. Mercer	Antero Resources Corporation	1/8+	189/507
			203/30/
Cheryl A. Sullivan Lease			
Cheryl A. Sullivan	Antero Resources Corporation	1/8+	167/7
			85.0°195.000 •
James L. Neff & Elaine G. Glendenning Lease			
James L. Neff & Elaine G. Glendenning	Antero Resources Corporation	1/8+	591/427
Gary I Willow et un lee			
Gary J. Willey et ux Lease			
Gary J. Willey et ux	EQT Production Company	1/8	592/327
EQT Production Company	Antero Resources Corporation	Assignment	663/1

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
BRC Appalachian Minerals I LLC Lease BRC Appalachian Minerals I LLC BRC Working Interest Company LLC Chesapeake Appalachia LLC Statoil USA Onshore Properties Inc. EQT Production Company	BRC Working Interest Company LLC Chesapeake Appalachia LLC Statoil USA Onshore Properties Inc. EQT Production Company Antero Resources Corporation	1/8 Assignment Assignment Assignment <b>Assignment</b>	369/300 369/784 378/764 539/239 <b>663/1</b>
Gary J. Willey et ux Lease Gary J. Willey et ux EQT Production Company Fisher Oil Company Lease	EQT Production Company Antero Resources Corporation	1/8 Assignment	592/327 <b>663/1</b>
Fisher Oil Company	Antero Resources Corporation	1/8+	667/682
JCW, Inc. Lease JCW, Inc.	Antero Resources Corporation	1/8+	667/682
Ronald Eugene Boor Lease Ronald Eugene Boor EOG Resources Inc. PC Exploration Inc. Phillips Exploration Inc. Chesapeake Appalachia LLC Statoil USA Onshore Properties Inc. Antero Exchange Properties LLC	EOG Resources Inc. PC Exploration Inc. Phillips Exploration Inc. Chesapeake Appalachia LLC Statoil USA Onshore Properties Inc. Antero Exchange Properties LLC Antero Resources Corporation	1/8 Assignment Merge Assignment Assignment Assignment Merge	353/286 357/210 PA SOS 375/312 423/165 544/291 552/315
Grassy Knob LLC Lease Grassy Knob LLC	Antero Resources Corporation	1/8+	177/207
Grassy Knob LLC Lease Grassy Knob LLC	Antero Resources Corporation	1/8+	177/207
Witschey Realty LLC Lease Witschey Realty LLC	Antero Resources Corporation	1/8+	177/193
Grassy Knob LLC Lease Grassy Knob LLC	Antero Resources Corporation	1/8+	177/207
<u>Witschey Realty LLC Lease</u> Witschey Realty LLC	Antero Resources Corporation	1/8+	177/193
Michael L. Daugherty et ux Lease Michael L. Daugherty et ux	Antero Resources Corporation	1/8+	177/189
<u>David W. Miller et al Lease</u> David W. Miller et al	Antero Resources Corporation	1/8+	192/69

<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.



March 13, 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 Ed Yost Pad: Peach Fork Unit 1H (47-095-02841) and Peach Fork Unit 2H (47-095-02842) Expedited.

Attached you will find the following:

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

Office Of Oil and Gas

MAR 14 7.3

WV Department of Environmental Protection

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

Thank you in advance for your consideration.

Sincerely,

Stefan Gaspar Permitting Agent

Antero Resources Corporation

Enclosures

CXXX 401583 Prox 22823 CXX 401585 CXX 401585 CXX 401585 218/23