

west virginia department of environmental protection

02/24/2023

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, February 21, 2023 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re:

Permit Modification Approval for CIDER RUN UNIT 1H

47-095-02839-00-00

LATERAL EXTENSION/ New Leases

#### 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) 926-0456

James A. Martin

Chief

Operator's Well Number: CIDER RUN UNIT 1H

Farm Name: EDWARD YOST ESTATE

U.S. WELL NUMBER: 47-095-02839-00-00

Horizontal 6A New Drill Date Modification Issued: 2/21/2023

Promoting a healthy environment.

# 4709502839

API NO. 47-095 - 02839

OPERATOR WELL NO. Cider Run Unit 1H MOD

Well Pad Name: Ed Yost

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

				p		/ /	02/24/2023
1) Well Operat	tor: Antero	Resources	Corporat	494507062	095 - Tyler	Ellsworth	Porter Falls 7.5'
				Operator ID	County	District	Quadrangle
2) Operator's V	Well Numbe	r: Cider Run	Unit 1H I	MOD Well Pac	Name: Ed Yo	ost /	
3) Farm Name	/Surface Ow	ner: Edward	Yost Est	ate Public Roa	d Access: CR	11	
4) Elevation, co	urrent groun	d: 1233' As	Built Ele	evation, proposed	post-construction	on:	
5) Well Type	(a) Gas	X		Unde		-	
	Other				0		
	(b)If Gas	Shallow	Χ	Deep			
		Horizontal	X				
6) Existing Pad	l: Yes or No	No					
<ol><li>Proposed Ta Marcellus Sh</li></ol>	rget Format nale: 7200' T	ion(s), Depth VD, Anticipate	(s), Antici d Thicknes	pated Thickness ares- s- 55 feet, Associa	nd Expected Pr ted Pressure- 2	essure(s):	
8) Proposed To				7			
9) Formation at			/larcellus				
10) Proposed T		-	28000' ME	) /			
11) Proposed H	Iorizontal Le	eg Length:	7549'				
12) Approxima	te Fresh Wa	ter Strata Dej	oths:	70', 203'			
13) Method to 1	Determine F	resh Water D	epths: 47	09500165 Offset well reco	ords. Depths have bee	en adjusted acco	ording to surface elevations.
14) Approxima							
15) Approxima	te Coal Sean	n Depths: No	one Antici	pated			
16) Approxima	te Depth to 1	Possible Void	(coal min	e, karst, other):	Ione Anticipate	ed	
17) Does Propo directly overlyi	sed well loc ng or adjace	ation contain nt to an active	coal seam e mine?	Yes	No	Х	
(a) If Yes, pro	vide Mine I	nfo: Name:					
		Depth:	- <del>2200</del>				-
		Seam:					
		Owner					

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OPERATOR WELL NO. Gider Run Unit 1H MOD
Well Pad Name: Ed Yost

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: Fil02/24/2 (Cu. Ft.)/CTS	2023
Conductor	20"	New	H-40	94#	100	100	CTS, 96 Cu. Ft.	
Fresh Water	13-3/8"	New	J-55	54.5#	300	300 ′	CTS, 313 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#	28000	28000 -	6128 Cu. Ft	
Tubing	2-3/8"	New	N-80	4.7#			5.20 04.11	
Liners								
Lineis					STAGEST THE ASSESSED A			

TYPE	Size (in)	Wellbore Diameter (in)	Th	Wall ckness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	(	.438"	1530	50	Class A/L	
Fresh Water	13-3/8"	17-1/2"		).38"	2730	1000	Class A/L	~1.18
Coal	9-5/8"	12-1/4"	(	.352"	3520	1500	Class A/L	~1.18
Intermediate							-10.007.42	1.10
Production	5-1/2"	8-3/4" & 8-1/2"	(	.415"	12,630	2500	Lead-H/POZ & Tail • H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"		).19"	11,200			
Liners					,			

#### **PACKERS**

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

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OPERATOR WELL NO. Cider Run 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.

02/24/2023

\*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): 81.82 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.

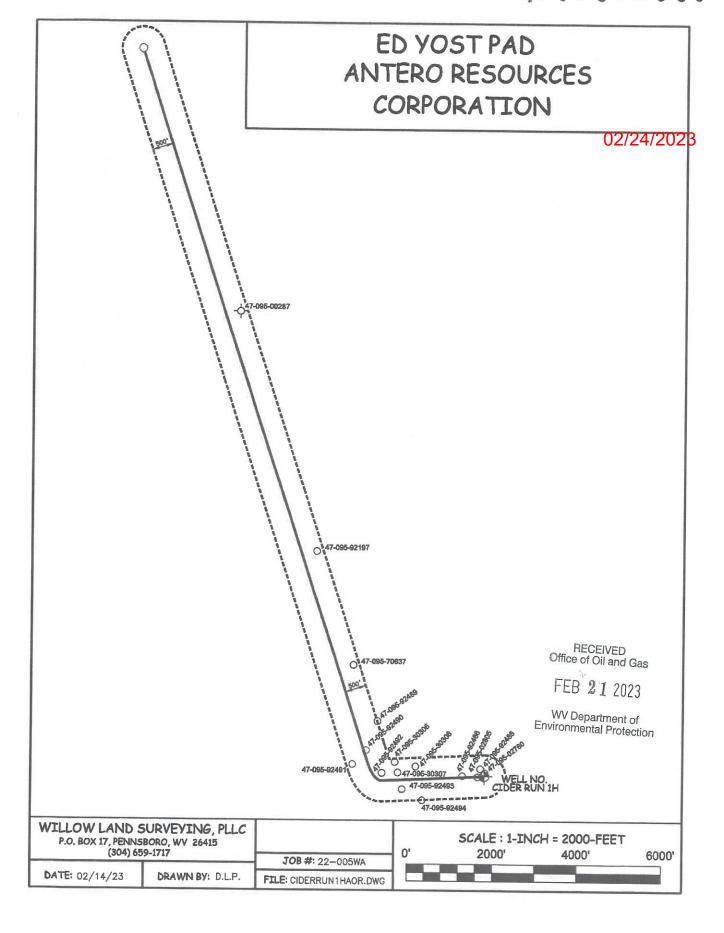
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls 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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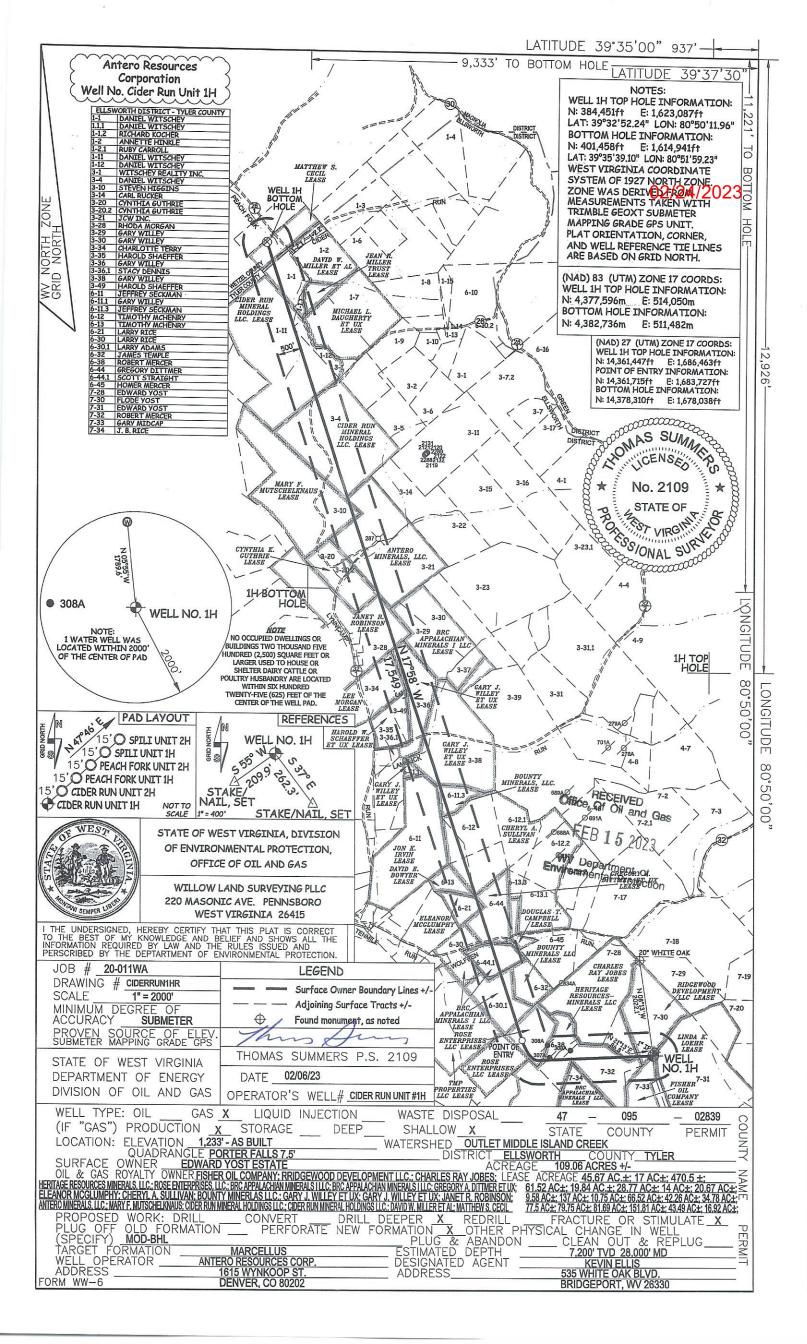
WV Department of Environmental Protection Page 3 of 3



UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)		
47095027600000	AR ED YOST UNIT 5H	5H	ANTERO RESOURCES CORP	ANTERO RESOURCES CORP	10	remorated interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
47095924850000				ANTENO RESOURCES CORP				
47095028050000								
47095924860000								
47095924940000					And the second			
47095924930000								
47095303080000	W E MERCER	7	RENO OIL CO	RENO OIL CO				
47095303070000	W E MERCER		RENO OIL CO	RENO OIL CO				
47095303060000	W E MERCER		RENO OIL CO	RENO OIL CO	2,177		Big Injun	Weir, Benson, Alexander
47095924920000	White the same of		TENO OIL CO	RENO OIL CO				
47095924910000								
47095924900000								
47095706370000	R A MYERS	2	SOUTH PENN OIL	SOUTH PENN OIL			Mark Andrews Warning	
47095921970000			SCOTT LINE OIL	SOUTH PENN OIL				
47095002870000	JAMES PORTER ET AL	1	APPALACHIAN MID CONT	ADDALACINANIAND CONT				
47095924890000		-	ALL ADACHIAN WID CONT	APPALACHIAN MID CONT	2,906		Up Devonian	Weir, Benson, Alexander

Office of Oil and Gas
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WV Department of
Environmental Protection



# 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 -0.02/24/2023

- (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
Linda K Loehr Lease			200101 490
Linda K. Loehr	A		
Z. Z	Antero Resources Corporation	1/8+	494/518
Fisher Oil Company Lease			
Fisher Oil Company	Antero Resources Corporation	Service Control of the Control of th	
	Antero Resources Corporation	1/8+	19/535
Ridgewood Development LLC Lease			
Ridgewood Development LLC	Antero Resources Corporation	1/0.	USP49994• DSS-197
	and the second second	1/8+	185/337
Heritage Resources Minerals LLC Lease			
Heritage Resources Minerals LLC	Antero Resources Corporation	1/8+	6E /10
/ Charles Boulet .		2/3	65/18
Charles Ray Jobes Lease Charles Ray Jobes			
EOG Resources Inc	EOG Resources Inc	1/8	353/284
PC Exploration Inc	PC Exploration Inc	Assignment	357/210
Phillips Exploration Inc	Phillips Exploration Inc	Merge	PA SOS
Chesapeake Appalachia LLC	Chesapeake Appalachia LLC	Assignment	375/312
Statoil USA Onshore Properties Inc	Statoil USA Onshore Properties Inc	Assignment	423/165
SWN Exchange Titleholder LLC	SWN Exchange Titleholder LLC	Assignment	470/668
SWN Production Company LLC	SWN Production Company LLC	Merge	9/404
Antero Exchange Properties LLC	Antero Exchange Properties LLC  Antero Resources Corporation	Assignment	544/242
	Antero Resources Corporation	Merge	552/315
Heritage Resources Minerals LLC Lease			
Heritage Resources Minerals LLC	Antero Resources Corporation	1/8+	55 /40
4	** ***********************************	1/6+	65/18
Rose Enterprises LLC Lease			
Rose Enterprises LLC	Antero Resources Corporation	1/8+	599/765
/ PPC Appeloshion 88'			333/103
BRC Appalachian Minerals I LLC Lease			
BRC Appalachian Mineral LLC BRC Working Interest Company LLC	BRC Working interest Company LLC	1/8	369/300
Chesapeake Appalachia LLC	Chesapeake Appalachia LLC	Assignment	369/784
Statoil USA Onshore Properties Inc	Statoil USA Onshore Properties Inc	Assignment	378/764
EQT Production Company	EQT Production Company	Assignment	539/239
	Antero Resources Corporation	Assignment	663/1
BRC Appalachian Minerals I LLC Lease			
BRC Appalachian Minerals I LLC	BRC Working Interest Company LLC	1/0	
BRC Working Interest Company LLC	Chesapeake Appalachia LLC	1/8	369/300
Chesapeake Appalachia LLC	Statoil USA Onshore Properties Inc	Assignment	369/784
Statoil USA Onshore Properties Inc	SWN Exchange Titleholder LLC	Assignment	378/764
SWN Exchange Titleholder LLC	EQT Production Company	Assignment Assignment	470/668
EQT Production Company	Antero Resources Corporation	Assignment	539/239
/ Grocery A. Dist	2000 00 00 00 00 00 00 00 00 00 00 00 00		663/1
Gregory A. Dittmer et ux Lease			
Gregory A. Dittmer et ux	Antero Resources Corporation	1/8+	545/707
		ADM/Cod	0.0/.0/

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and the original and as follows.					
	Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page	
	Eleanor McGlumphy Lease			0.90	
	Eleanor McGlumphy	Stone Energy Corporation	MT-080		
	Stone Energy Corporation	EQT Production Company	1/8	434/289	
	<b>EQT Production Company</b>	Antero Resources Corporation	Assignment	556/132	
		rintero resources corporation	Assignment	663/1	
1	Gregory A. Dittmer et ux Lease				
	Gregory A. Dittmer et ux	Antero Resources Corporation	1/8+		
	/ <u>David E. Bowyer Lease</u>		2/01	545/707	
-	David E. Bowyer				
	= and in bonyer	Antero Resources Corporation	1/8+	191/93	
	Cheryl A. Sullivan Lease			202/00	
4	Cheryl A. Sullivan	Antero Resources Corporation			
		Antero Resources Corporation	1/8+	167/7	
1	Bounty Minerals, LLC Lease				
	Bounty Minerals, LLC	Antero Resources Corporation	1/8+	9900 ACC   100 A	
	Gamy I. Milley, et	The substance residence of the desired and the substance of the substance	1/0+	177/49	
1	Gary J. Willey et ux Lease Gary J. Willey et ux	_			
	EQT Production Company	EQT Production Company	1/8	592/327	
	t a same company	Antero Resources Corporation	Assignment	663/1	
	Gary J. Willey et ux Lease		Office RECEIVED  1/8  Assignment FD  Assignment FD		
-	Gary J. Willey et ux	EQT Production Company	Of Oil Oil		
	EQT Production Company	Antero Resources Corporation	1/8 Fra and Gas	592/405	
	to the same of the	on portation	5 2000	662/686	
-	Janet R. Robinson Lease Janet R. Robinson		WV Department of Assignment Assignment		
	Stone Energy Corporation	Stone Energy Corporation	178 ronme	404/721	
	EQT Production Company	EQT Production Company	Assignment Protection	404/731 556/132	
	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	Antero Resources Corporation	Assignment	662/686	
1	Cynthia K. Guthrie Lease			,	
	Cynthia K. Guthrie	Stone Energy Corporation	÷ 4=		
	Stone Energy Corporation	EQT Production Company	1/8	400/245	
	EQT Production Company	Antero Resources Corporation	Assignment	556/132	
	Amtoro Mirrordo La Ca		Assignment	662/686	
1	Antero Minerals, LLC Lease Antero Minerals, LLC				
	Antero Willerais, LLC	Antero Resources Corporation	1/8+	67/618	
/	Mary F. Mutschelknaus Lease			07/018	
	Mary F. Mutschelknaus	Antero Resources Corporation			
		Antero Resources Corporation	1/8+	76/257	
,	Cider Run Mineral Holdings LLC Lease				
	Cider Run Mineral Holdings LLC	Antero Resources Corporation	1/8+		
	Cidor Dun Minanda La La		1/0+	177/165	
/	Cider Run Mineral Holdings LLC Lease Cider Run Mineral Holdings LLC		4		
	Man Miller at Holdings LLC	Antero Resources Corporation	1/8+	177/165	
1	David W. Miller et al Lease				
	David W. Miller et al	Antero Resources Corporation			
		onesources 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.

## 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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- (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

Matthew S. Cecil Lease

Matthew S. Cecil L

### 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					
Ву:	Tim Rady	(m Veds				
Its:	Senior Vice President of Land					

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February 14, 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 80202/24/2023
Office 303.357.7310
Fax 303.357.7315

Mr. Brewer:

Antero Resources Corporation (Antero) would like to submit the following permit modification for approved well on the existing Ed Yost Pad: Cider Run Unit 1H (47-095-02839) Expedited.

Attached you will find the following:

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

Office Of Oil and Gas
FEB 1 5 2023

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

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