

#### 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

Wednesday, August 3, 2022 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re:

Permit Modification Approval for CONIFER 1H

47-017-06928-00-00

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.

Operator's Well Number: CONIFER 1H

Farm Name: MICHAEL R BRITTON & ANGELA D PRATT

U.S. WELL NUMBER: 47-017-06928-00-00

Horizontal 6A New Drill

Date Modification Issued: 8/3/2022

Promoting a healthy environment.



July 20, 2022

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 57<sup>th</sup> Street Charleston, WV 25304

Mr. Brewer:

Antero Resources Corporation (Antero) would like to submit the following permit modifications for approved wells on the existing Oxford 98 Pad; Conifer Unit 1H & 2H.

Attached you will find the following:

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

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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,

Diane Blair

Permitting Agent

Antero Resources Corporation

**Enclosures** 

WW-6B (04/15)



API NO. 47- 017 OPERATOR WELL NO. Confider Unit 1H MOD
Well Pad Name: Oxford 98 Pad

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

1) Well Operator	Antero Rese	ources Corpo	oral 4	94507062	017 - Doddri	West Upi	West Union 7.5'
N 11 21 12				Operator ID	County	District	Quadrangle
2) Operator's We	ell Number: Co	nifer Unit 1H	MOD	Well Pa	d Name: Oxfor	d 98 Pad	
3) Farm Name/Su	urface Owner:	Michael R. Britton & A	ingela D. I	Pratt Public Ro	ad Access: CR	11/4	
4) Elevation, curr	rent ground:	1120' AS-BUILT	Eleva	ation, proposed	l post-constructi	on:	
5) Well Type (	a) Gas X	Oil		Und	lerground Storag	ge	
(	Other						
(		llow X		Deep			
		izontal X		_			
6) Existing Pad: '				1 779 1 1	-		
<ol><li>Proposed Targ Marcellus Shal</li></ol>					and Expected P iated Pressure- 2		
8) Proposed Tota	l Vertical Dept	h: 7200' TVI	)				
9) Formation at T	Total Vertical D	epth: Marce	llus				
10) Proposed Tot	tal Measured D	epth: 16,000	0'				
11) Proposed Ho	rizontal Leg Le	ngth: 5428.	0'				
12) Approximate	Fresh Water S	trata Depths:	1	23'			
13) Method to De	etermine Fresh	Water Depths	: 47-01	7-02837, 47-017-06326	Offset well records. Depths	s have been adjust	ed according to surface elevation
14) Approximate	Saltwater Dept	ths: 1653'					
15) Approximate	Coal Seam De	pths: 120'					
16) Approximate	Depth to Possi	ble Void (coa	l mine	, karst, other):	None Anticipa	ted	
17) Does Propose directly overlying				Yes	No	X	
(a) If Yes, prov	ide Mine Info:	Name:					
A-76 N X X X X X X		Depth:					CEIVED
		Seam:				****	Oil and Gas
		Owner:				AUG	0 1 2022
						WV Dep Environme	partment of ntal Protection

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Steve May 7/28/22

WW-6B (04/15)

API NO. 47-017		
<b>OPERATOR WELL</b>	NO.	Conifer Unit 1H MOD
Well Pad Name:		

## 18)

#### **CASING AND TUBING PROGRAM**

ТҮРЕ	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#	300'	300'	CTS, 313 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#	16000'	16000'	CTS, 3114 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"	0.375"	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		∴VED and Gas
Sizes:	N/A	AU	0 1 2022
Depths Set:	N/A	WV Environ	Department of mental Protection

Page 2 of 3

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WW-6B (10/14) API NO. 47- 017 OPERATOR WELL NO. Conifer Unit 1H MOD
Well Pad Name: Oxford 98 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 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): 24.47 acres
- 22) Area to be disturbed for well pad only, less access road (acres): 5.73 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.

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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.

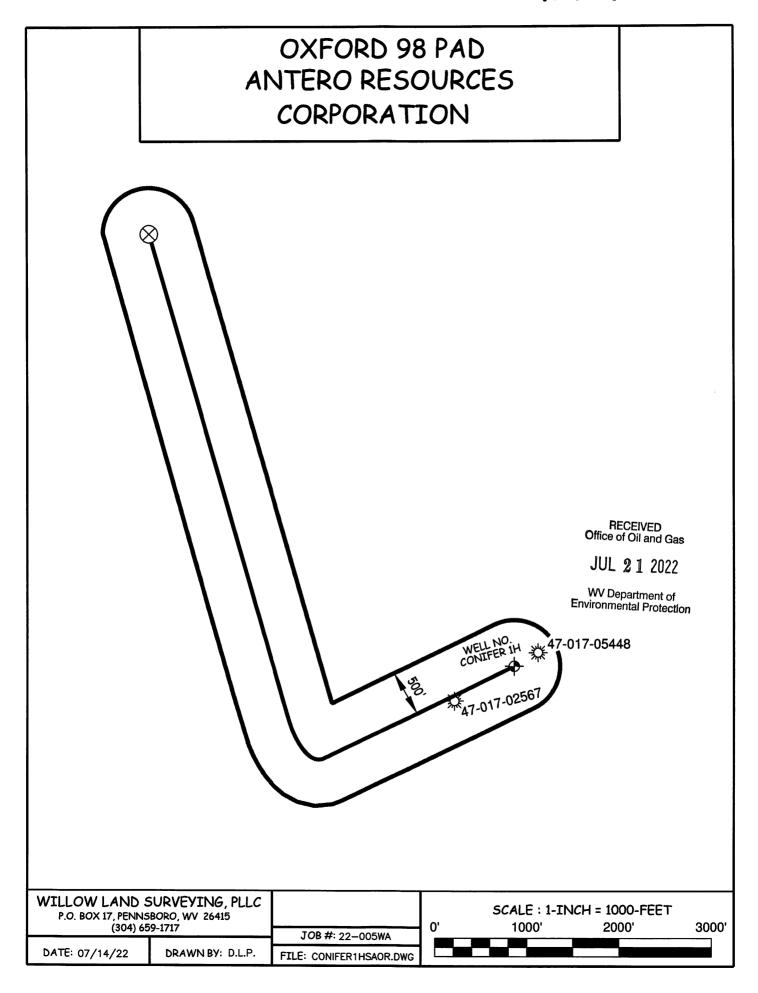
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

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.

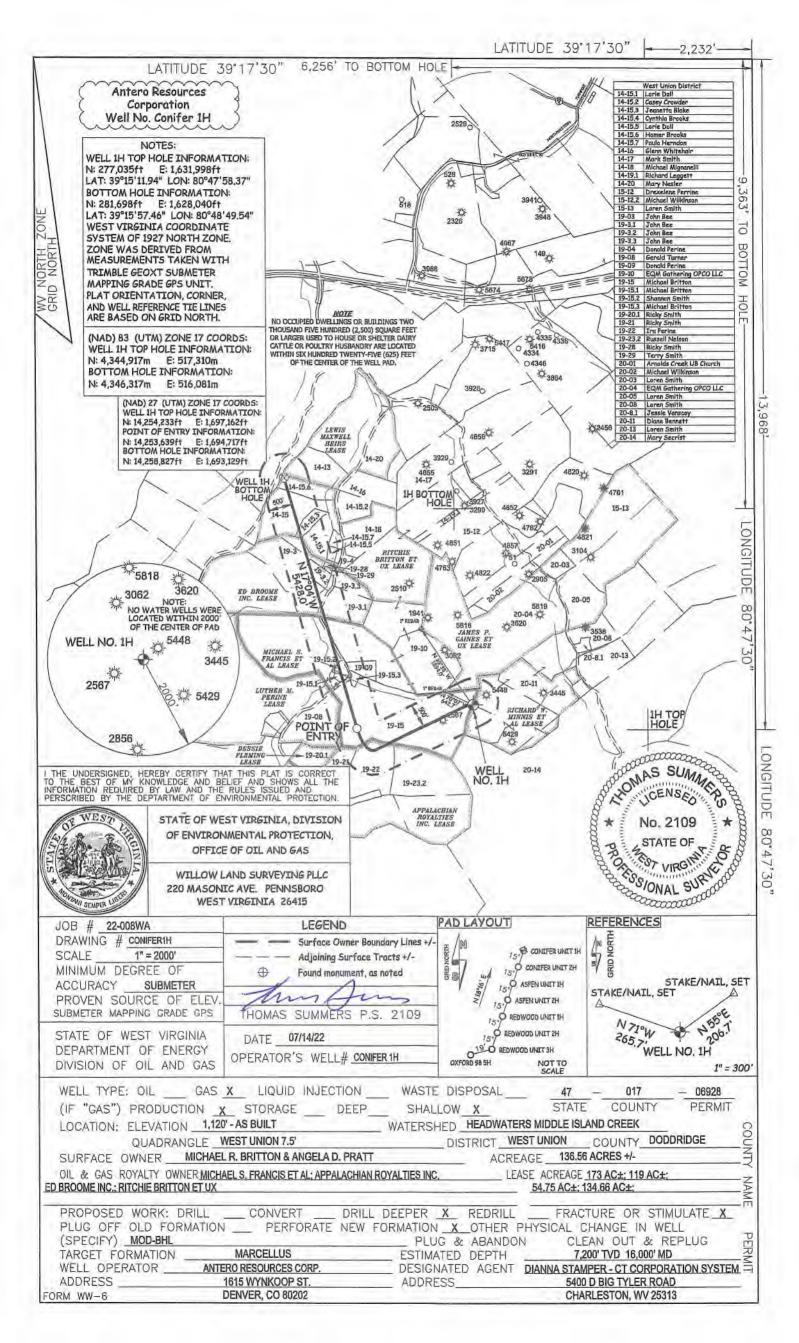
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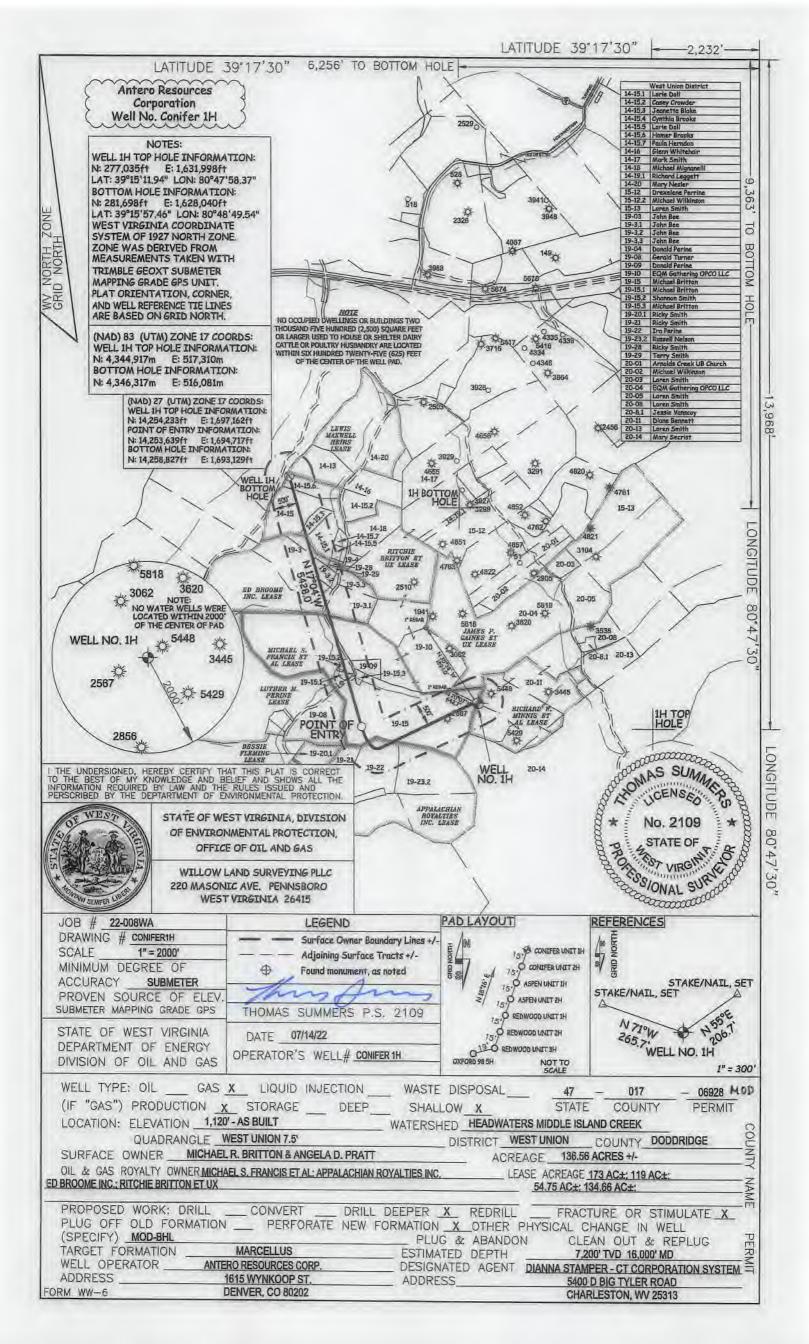


UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
47017025670000	FRANCIS MICHAEL S	J-108	GREYLOCK CONVENTILLC	J & J ENTERPRISES	5,366	5156-5190	Gordon, Balltown, Riley, Benson, Alexander	Weir, Berea
47017054480000	DEPI	15129	DIVERSIFIED PROD LLC	DOMINION EXPL&PROD	5,310	2589 - 5174	Gordon, Warren, Riley, Alexander	Weir, Berea, Benson

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Operator's Well Number

Conifer 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
I S. Francis, et al Lease				
I S. Francis, et al	Key Oil Company	1/8		0106/0273
Company	Columbia Gas Transmission Corporation	Assignment		0115/0436
ia Gas Transmission Corporation	Columbia Natural Resources Inc	Assignment		0161/0068
oia Natural Resources Inc	Columbia Natural Resources LLC	Name Change		0256/0588
oia Natural Resources LLC	Chesapeake Appalachia LLC	Merger		0264/0447
eake Appalachia LLC	CNX Gas Company	Assignment		0372/0585
s Company	Antero Resources Corporation	Assignment		0387/0216
chian Royalties Inc. Lease				
chian Royalties Inc.	Key Oil Company	1/8		0105/0677
Company	Columbia Gas Transmission Corporation	Assignment	Assignment	
ola Gas Transmission Corporation	Columbia Natural Resources Inc	Assignment		
oia Natural Resources Inc.	Columbia Natural Resources LLC	Name Change		0256/0588
oia Natural Resources LLC	Chesapeake Appalachia, LLC	Merger		0264/0447
eake Appalachia, LLC	CNX Gas Company	Assignment		
s Company	Antero Resources Corporation	Assignment		0387/0216
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oia Natural Resources LLC	Chesapeake Appalachia LLC	Merger		0264/0447
sapeake Appalachia LLC CNX Gas Company		Assignment		0372/0585
s Company	Antero Resources Corporation	Assignment		0387/0216
ome, Inc. Lease				
ome, Inc.	Antero Resources Corporation	1/8+	RECEIVED  Iffice of Oil and Gas	0472/0367
Telegraphy	Antero Resources Corporation	1/8+		

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<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.

WW-6A1 (5/13)

Operator's Well No.	Confier Unit 1H MOD
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Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Ritchie Britton, et ux Lease	l.			
	Ritchie Britton, et ux	Key Oil Company	1/8	0104/0345
	Key Oil Company	Columbia Gas Transmission Corporation	Assignment	0115/0436
	Columbia Gas Transmission Corporation	Columbia Natural Resources Inc	Assignment	0161/0068
	Columbia Natural Resources Inc	Columbia Natural Resources LLC	Name Change	0256/0588
	Columbia Natural Resources LLC	Chesapeake Appalachia LLC	Merger	0264/0447
	Chesapeake Appalachia LLC	CNX Gas Company	Assignment	0372/0585
	CNX Gas Company	Antero Resources Corporation	Assignment	0387/0216

\*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

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The permit applicant for the proposed well work addressed in this application hereby Jaknowledges 2the 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 Department of Environmental Protection

- 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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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	Can Reila		
Its:	VP of Land			



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

#### Modification Horizontal H6A Well Work Permits API: (47-017-06928)

1 message

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

Thu, Aug 4, 2022 at 11:40 AM

To: Mallory Stanton <mstanton@anteroresources.com>, Diane Blair <dblair@anteroresources.com>, Dani DeVito <ddevito@shalepro.com>, David Sponaugle <dsponaug@assessor.state.wv.us>, "Ward, Samuel D" <samuel.d.ward@wv.gov>

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

47-017-06928 - CONIFER 1H

These will serve as your copy.

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

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