

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, February 3, 2025 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re:

Permit Modification Approval for Saturn Unit 1H

47-085-10536-00-00

Change wellbore path

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: Saturn Unit 1H

Farm Name: Richard E Blouir ET UX

U.S. WELL NUMBER: 47-085-10536-00-00

Horizontal 6A New Drill

Date Modification Issued: 02/04/2025

Promoting a healthy environment.



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

1615 Wynkoop Street

						Denver	, CO 802	202
1) Well Opera	tor: Antero	Resources	Corpora			OFF		Ellenboro 7.5'
				Operator ID	County	/ Dist	rict	Quadrangle
2) Operator's '	Well Numbe	er: Saturn Un	it 1H MC	D Wel	l Pad Name:	Husher Pac	Ŀ	
3) Farm Name	/Surface Ow	vner: Richard	E. Blouir	et ux Public	Road Access	E Lamberto	n Rd	
4) Elevation, c	urrent groun	nd: 1,007' A	s-Built El	evation, propo	sed post-con	struction:		
5) Well Type	(a) Gas Other	X	_ Oil	1	Underground	Storage		
	(b)If Gas	Shallow	X	Deep				
	(0)11 000	Horizontal	X	Deep				
6) Existing Pac	d: Yes or No							
7) Proposed Ta Marcellus Sh				ipated Thickness- 55 feet, Ass			(s):	
8) Proposed To	otal Vertical	Depth: 760	D' TVD					
9) Formation a	t Total Verti	ical Depth:	Marcellus)				
10) Proposed T	Total Measur	red Depth:	10900' M	D /	172 11 11 11 11 11 11 11 11 11 11 11 11 11			
11) Proposed F	Horizontal L	eg Length:	500' *O	pen to modifi	cation at a la	ater date		
12) Approxima	ate Fresh Wa	ater Strata De	oths:	147', 406'	/			
13) Method to 14) Approxima				7085015510000, 470850	38820000Offset well re	cords. Depths have be	en adjuste	ed according to surface elevations.
15) Approxima	ate Coal Sear	m Depths: N	/A					
l6) Approxima	ate Depth to	Possible Void	l (coal mi	ne, karst, othe	r): None An	ticipated		
17) Does Propo directly overlyi				ns Yes		No X		BECEIVED
(a) If Yes, pro	ovide Mine I	Info: Name:						Office of Oil and Gas
	1037682	Depth:	-					FEB 0 3 2025
CK.	750000	Seam:	-1					WV Department of Environmental Protection
P	750000	Owner						
	1/9/000	,				/		
				1	17			

1-31-25

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API NO. 47- 085 _ 10536-00

OPERATOR WELL NO. Saturn Unit 1H MOD
Wall Pad Name: Husher Pad

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	Left in Well, (ft) Office 3	Resource MENT: nkoop 5 Fill-up 802 Fill-up 803 (Chr.3 Ft.)/CTS
Conductor	20"	New	J-55	94#	100'	100' / 303	CTS, 96 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	456'	456' /	CTS, 475 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	5920	5920' /	CTS, 2410 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P110-ICY	23#	10900'	10900' /	CTS, 1819 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"	0.375"	2250	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"	14,360	2500	Class G/H	~1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							0.00

PACKERS

Kind:	N/A	
Sizes:	N/A	RECEIVED Office of Oil and Gas
Depths Set:	N/A	FEB 0 3 2025 WV Department of Environmental Protectio

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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.

1615 Wynkoop Street Denver, CO 80202 Office 303.357.7310

*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): 20.13 acres

22) Area to be disturbed for well pad only, less access road (acres): 9.66 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 G/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.

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

Environmental Protection

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.

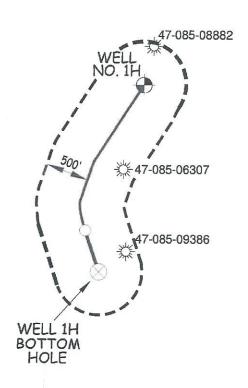
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls 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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02/07/2025

HUSHER PAD ANTERO RESOURCES CORPORATION



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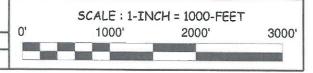
WV Department of Environmental Protection

WILLOW LAND SURVEYING, PLLC P.O. BOX 17, PENNSBORO, WV 26415 (304) 659-1717

DATE: 11/12/24

DRAWN BY: D.L.P.

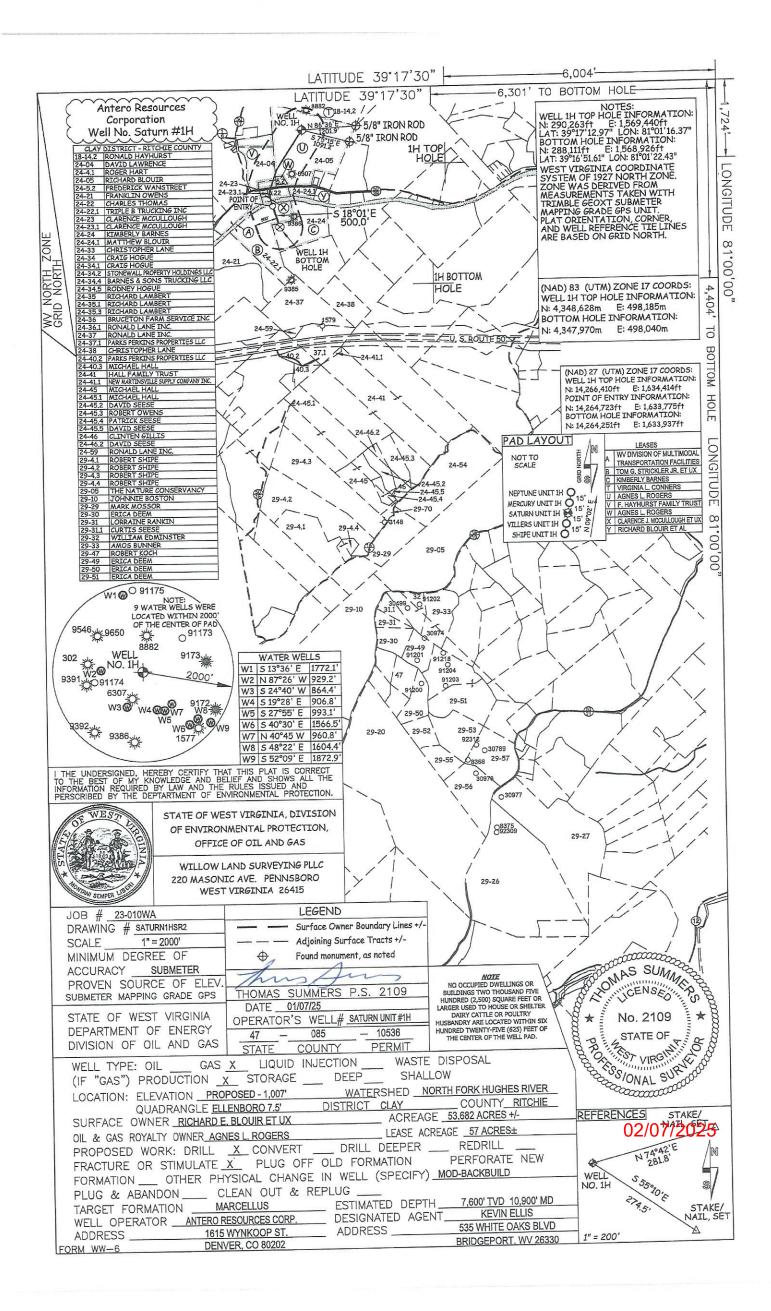
JOB #: 24-005WA
FILE: SATURN1HSAOR2.DWG



	UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
	47085088820000	HAYHURST	1	ANJA RESOURCES	ANJA RESOURCES	3,072	1210 - 2879	Salt Sands, Big Injun, Tiona	Weir, Benson, Alexander
-	47085063070000	BLOUIR R E & M L	3	MUTSCHELKNAUS CLARENCE W	JENKINS ENERGY	5,815	4632 - 5704		Weir, Alexander
-	47085093860000	STRICKLER	7	RITCHIE PETROLEUM CORP INC	JAY-BEE OIL & GAS	3,540	1880 - 2772		Weir, Benson, Alexander

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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: Agnes L. Ro Agnes L. Roge Jenkins Energy Clarence W. M	rs	Jenkins Energy Corporation Clarence W. Mutschelknaus Antero Resources Corporation	1/8 Assignment Assignment	0204/0778 0273/0692 0274/1002
V: F. Hayhurst F. Hayhurst Fa	t Family Trust Lease Imily Trust	Antero Resources Corporation	1/8+	0298/0401
	McCullough Et Ux Lease Cullough Et Ux	Antero Resources Corporation	1/8+	0294/0920
Tom G. Strickle Palmer Hill Clyde Kelly Ira M. Jones &		Palmer Hill Clyde Kelly Ira M. Jones & Clyde Kelly R.L. Zickefoose & W.F. Zickefoose Antero Resources Corporation	1/8 Assignment Assignment Assignment Assignment	0119/0405 0130/0048 0131/0224 0201/0659 0294/0971
Facilities Lease	n of Multimodal Transportation E f Multimodal Transportation	Antero Resources Corporation	1/8+	0336/0335
Tom G. Strickle Palmer Hill Clyde Kelly Ira M. Jones &		Palmer Hill Clyde Kelly Ira M. Jones & Clyde Kelly R.L. Zickefoose & W.F. Zickefoose Antero Resources Corporation	1/8 Assignment Assignment Assignment Assignment	0119/0405 0130/0048 0131/0224 0201/0659 0294/0971

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^{*}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.

^{*}Co-tenancy utilization – Antero is utilizing the Co-tenancy Modernization and Majority Protection Act to proceed with development of certain royalty owners' interests in this tract.

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
C: Kimberly Barnes Lease				
	Kimberly Barnes	Antero Resources Corporation	1/8+	0311/0290

^{*}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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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	Cun Redy				
Its:	Senior Vice	President of Land				

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^{*}Co-tenancy utilization – Antero is utilizing the Co-tenancy Modernization and Majority Protection Act to proceed with the development of certain royalty owners' interests in this tract.

^{**}Pooling/Unitization — Antero has filed a horizontal well unitization application with the West Virginia Oil and Gas Conservation Commission that seeks to pool certain owners in this tract.



January 13, 2025

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 601 57th Street Charleston, WV 25304

Antero Resources Corporation (Antero) would like to submit the following permit modifications for approved well on the existing Husher Pad. We are requesting to change the back-build location for the Saturn Unit 1H (API# 47-085-10536-00).

Attached you will find the following documents:

- ➤ REVISED Form WW-6B
- > REVISED Form WW-6A1, which shows the new leases we will be drilling into
- ➤ REVISED Mylar Plat

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

Thank you in advance for your consideration.

Sincerely,

Mallory Turco Permitting Manager

Antero Resources Corporation

4037682 1/9/25 \$ 7,500.00

Enclosures

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