

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

Thursday, September 5, 2024 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re:

Permit Modification Approval for IVORY UNIT 1H

47-095-02889-00-00

Extended Lateral Length

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

Chief

Operator's Well Number: IVORY UNIT 1H

Farm Name: NEIL R STEBBINS

U.S. WELL NUMBER: 47-095-02889-00-00

Horizontal 6A New Drill

Date Modification Issued: 9/5/2024

Promoting a healthy environment.

API NO. 47-095	_ 02889	
OPERATOR W	ELL NO.	Ivory Unit 1H MOD
Well Pad Nan	ne: Starke	y Pad

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

1) Well Operator: Antero Re	sources Corpora		095-Tyler	Lincoln	Paden City 7.5'
		Operator ID	County	District	Quadrangle
2) Operator's Well Number: 1	vory Unit 1H MOD	Well Pa	d Name: Stark	ey Pad	
3) Farm Name/Surface Owner	Neil R. Stebbins	Public Ros	ad Access: Ha	milton Driv	е
4) Elevation, current ground:	1107' El	evation, proposed	post-construct	ion: 1091'	
5) Well Type (a) Gas X Other	Oil	Und	erground Stora	ge	
. ,	nallow X orizontal X	Deep			
6) Existing Pad: Yes or No Y	es				
7) Proposed Target Formation Marcellus Shale: 6800' TVD,		•		1,	
8) Proposed Total Vertical Dep	oth: 6800' TVD				
9) Formation at Total Vertical	Depth: Marcellus				
10) Proposed Total Measured	Depth: 22400' M	D			
11) Proposed Horizontal Leg I	Length: 11771.9'				
12) Approximate Fresh Water	Strata Depths:	464'			
13) Method to Determine Fres	h Water Depths: 4	7-095-00275			
14) Approximate Saltwater De	pths: 1522'				
15) Approximate Coal Seam D	epths: None Iden	tified			
16) Approximate Depth to Pos	sible Void (coal mi	ne, karst, other):	None Anticipa	ted	
17) Does Proposed well location directly overlying or adjacent			No	X	RECEIVED ce of Oil and Gas
(a) If Yes, provide Mine Info	: Name:				
	Depth:				AUG 2 8 2024
	Seam:				repartment of
	Owner:			Env	nonmental Protection

Page 1 of 3

09/06/2024

API NO. 47-095	_ 02889	
OPERATOR W	ELL NO.	Ivory Unit 1H MOD
Well Pad Nam	Starke	v Pad

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

1) Well Operato	r: Antero Re	esources	Corporat	494507062	095-Tyler	Lincoln	Paden City 7.5'
7)				Operator ID	County	District	Quadrangle
2) Operator's W	ell Number: <u>I</u>	vory Unit	1H MOD	Well Pad	Name: Starke	y Pad	
3) Farm Name/S	Surface Owner	Neil R.	Stebbins	Public Road	d Access: Ham	nilton Drive	
4) Elevation, cur	rrent ground:	1107'	Ele	evation, proposed j	post-construction	on: 1091'	
5) Well Type	(a) Gas X	-	Oil	Unde	erground Storag	e	
	Other						
	(b)If Gas S	hallow	X	Deep			
	Н	lorizontal	X				
6) Existing Pad:	Yes or No Y	'es			<u>.</u>		
	7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s): Marcellus Shale: 6800' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2800#						
B) Proposed Total Vertical Depth: 6800' TVD							
9) Formation at			Marcellus	1			
10) Proposed To	otal Measured	Depth:	22400' M	D			
11) Proposed He	orizontal Leg	Length:	11771.9'				
12) Approximat	e Fresh Water	Strata De	pths:	464'			
13) Method to I	Determine Fres	sh Water I	Depths: 4	17-095-00275			
14) Approximat	e Saltwater De	epths: 15	522'				
15) Approximat	e Coal Seam I	Depths: N	lone Iden	tified			
16) Approximat	e Depth to Po	ssible Voi	d (coal mi	ine, karst, other):	None Anticipat	ted	
17) Does Propo				ms Yes	No	X	
(a) If Yes, pro							RECEIVED Office of Oil and Gas
		Depth	ı:				AUG 19 2024
CV	# 1024471	Seam				-	WV Department of
	405770	Owne	r:			En	rironmental Protection
	#4034424 # 2500 08 8/15/24	f					

API NO. 47- 095 _ 02889

OPERATOR WELL NO. Normal Unit 1H MOD Well Pad Name: Starkey Pad

18)

CASING AND TUBING PROGRAM

ТҮРЕ	Size (in)	New or Used	<u>Grade</u>	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, 89 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	514	514	CTS, 536 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500	CTS, 1018 Cu. Ft.
Intermediate			1				
Production	5-1/2"	New	P-110	23#	22400	22400	4717 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	Land-H/POZ & Tell - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							1/

PACKERS

Kind:	N/A	RECEIVED Office of Oil and Gas
Sizes:	N/A	AUG 2 8 2024
Depths Set:	N/A	W/V Department of

Environmental Protection

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09/06/2024

API NO. 47- 095 - 02889

OPERATOR WELL NO. Ivory Unit 1H MOD

Well Pad Name: Starkey Pad

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

Drill, perforate, fracture a new shallow well and complete Marcellus Shale.

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): 35.27 acres
- 22) Area to be disturbed for well pad only, less access road (acres): 14.87 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

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/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

WV Department of Environmental Protection

25) Proposed borehole conditioning procedures:

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

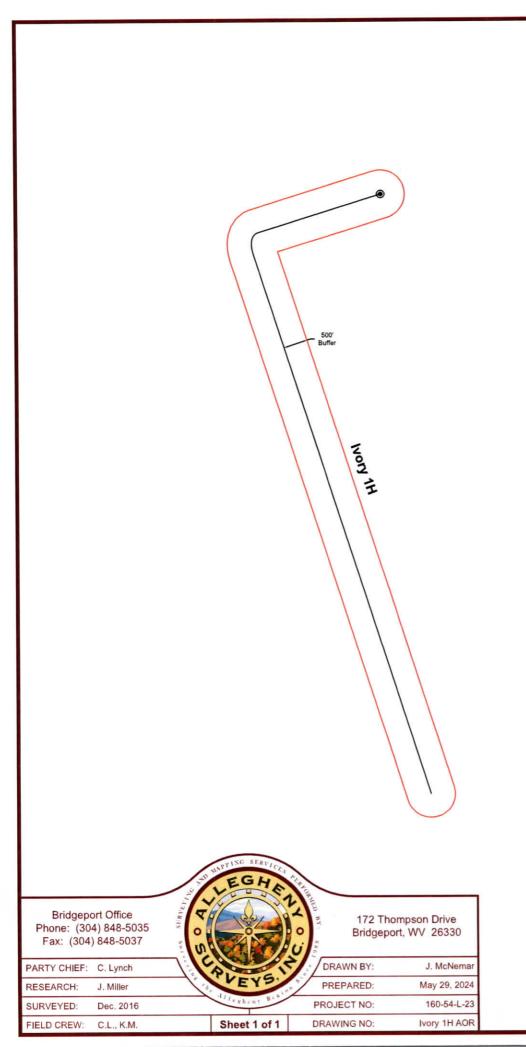
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

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.

*Note: Attach additional sheets as needed.

Page 3 of 3



LEGEND

Proposed gas well

Existing Well, as noted

Digitized Well, as noted

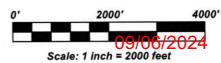


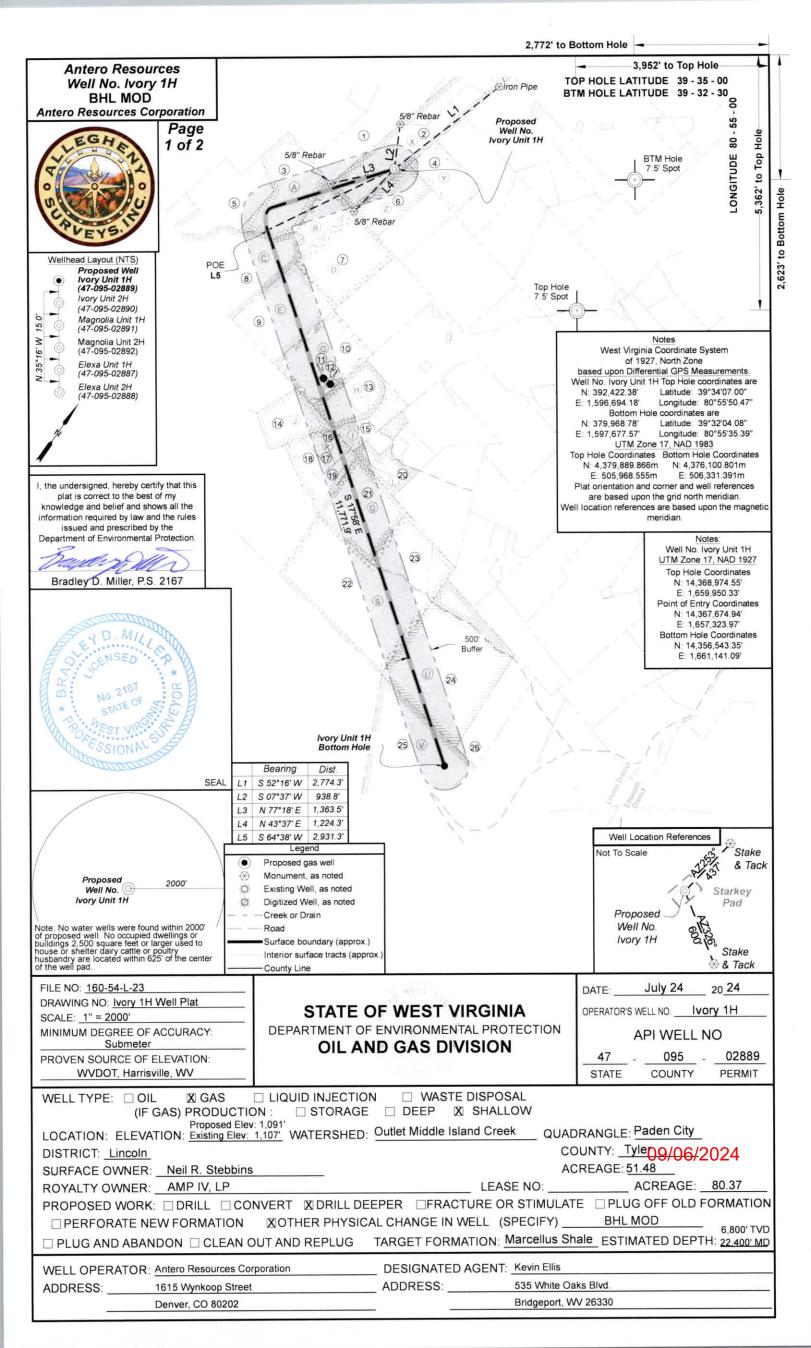
The orientation of this survey is Grid North, and its coordinate base is the West Virginia Coordinate System of 1927, North Zone

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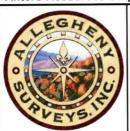




Antero Resources Well No. Ivory 1H

BHL MOD

Antero Resources Corporation



Page 2 of 2

	Leases
A	Moore Self Storage, North Carolina, LLC
В	Robert F. & Rita K. Scardina
С	Evon Heintzman, by Debra K. Spencer as AIF
D	Robert F. & Rita K. Scardina
E	Bounty Minerals, LLC
G	Theresa J. Drain
Н	Bounty Minerals, LLC
1	Delbert D. & Betty R. Rush
J	M. Sharon Deaton
K	Larry A. & Karen B. Wells
L	Delbert D. & Betty R. Rush
Q	Gerald W. Meckley, Jr. et al
S	Arlen Glen Wells, Jr.
U	Gerald W. Meckley, Jr. et al
V	Gerald W. Meckley, Jr. et al
X	AMP IV, LP
Y	Robert F. & Rita K. Scardina
Z	Robert F. & Rita K. Scardina

ID	TM-Par	Owner	Bk/Pg	Acres
1	5-4	Ralph D. & Sophia Judge	306/681	60.77
2	5-9.4	Neil R. Stebbins	366/436	51.48
3	4-91	Donna Kathy Johnston	184/133	54.06
4	5-12	Robert F. & Rita K. Scardina	320/646	25.00
5	4-90.1	Gary B. & Melinda J. Lewis	473/1	47.33
6	5-11	Robert F. & Rita K. Scardina	320/646	25.00
7	8-14	Robert F. & Rita K. Scardina	320/646	72.79
8	8-12	Donna Kathy Johnston	184/133	86.89
9	8-13	Donna Kathy Johnston	184/133	50.00
10	8-24	Theresa J. Drain	428/607	49.47
11	8-25	Theresa J. Drain	342/614	0.53
12	8-24.1	Thomas P. & Debra N. Doig	383/394	1.09
13	8-26	Delbert D. & Betty Ruth Rush	191/125	20.65
14	8-27	Sharon M. & Jeffrey Darrin Deaton	349/176	24.652
15	9-12	Betty Ruth Rush	162/25	23.00
16	8-30.4	Rada Ann Weekley	OR135/379	5.007
17	8-30.1	Rada Ann Weekley	WB30/516	5.007
18	8-30.3	Coy L. Moffitt	10/439	6.772
19	8-30.2	Nevin J. Moffitt	332/25	16.380
20	9-14	Donal Lee & Ronal Wayne Rush	368/825	32.71
21	9-22	GR Meckley Family Trust	OR50/28	43.75
22	8-61	GR Meckley Family Trust	OR50/28	106,51
23	9-45	GR Meckley Family Trust	OR50/606	26.05
24	13-1	GR Meckley Family Trust	OR50/28	99.00
25	13-9.6	GR Meckley Family Trust	OR50/28	65.48
26	13-5	GR Meckley Family Trust	OR50/28	31.50

FILE NO: 160-54-L-23	
DRAWING NO: Ivory 1H Well Plat	
SCALE: 1" = 2000'	
MINIMUM DEGREE OF ACCURAC' Submeter	Y:
PROVEN SOURCE OF ELEVATION WVDOT, Harrisville, WV	l:

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION **OIL AND GAS DIVISION**

DA	TE:	8	July 24		20_24	
OPE	RATOR	'S W	ELL NO	lvo	ry 1H	
API WELL NO						
	47		095		02889	
s	TATE		COUNT	Υ	PERMIT	

PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV		STATE	COUNTY	DERMIT
(IF GAS) PRODUCTIO Proposed Elev LOCATION: ELEVATION: Existing Elev:	1,107' WATERSHED: Outlet Middle Island Creek QUAD		Paden City	1024
DISTRICT: Lincoln SURFACE OWNER: Neil R. Stebbins ROYALTY OWNER: AMP IV, LP		REAGE: 5	1.48	
PROPOSED WORK: □ DRILL □ CON □ PERFORATE NEW FORMATION	NVERT ⊠ DRILL DEEPER □FRACTURE OR STIMULAT ⊠OTHER PHYSICAL CHANGE IN WELL (SPECIFY) OUT AND REPLUG TARGET FORMATION: Marcellus Sh	BHL	MOD	6.800' TVD
WELL OPERATOR: Antero Resources Cor ADDRESS: 1615 Wynkoop Street Denver, CO 80202	poration DESIGNATED AGENT: Kevin Ellis ADDRESS: 535 White Oal Bridgeport, W			

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)

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
V: Gerald W. Meckley, Jr et al Lease				
	Gerald W. Meckley, Jr et al	Triad Hunter, LLC	1/8	2/642
	Triad Hunter, LLC	Blue Ridge Mountain Resources, Inc	Assignment	104/354
	Blue Ridge Mountain Resources, Inc	Eclipse Resources I, LP	Assignment	104/357
	Eclipse Resources I, LP	SWN Production (Ohio), LLC	Name Change	WVSOS
	SWN Production (Ohio), LLC	Antero Resources Corporation	Assignment	235/291

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

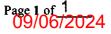
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The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator:	Antero Resources Corporation		
By:	Tim Rady		
Its:	Senior Vice President of Land		



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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
X: AMP IV, LP Lease AMP IV, LP	Antero Resources Corporation	1/8+	231/747
B: Robert F. & Rita K. Scardina Lease Robert F. & Rita K. Scardina	Antero Resources Corporation	1/8+	235/654
A: Moore Self Storage, North Carolina, LLC Lease Moore Self Storage, North Carolina, LLC	Antero Resources Corporation	1/8+	261/175
C: Evon Heintzman, by Debra K. Spencer as AIF Lease Evon Heintzman, by Debra K. Spencer as AIF	Antero Resources Corporation	1/8+	631/387
E: Bounty Minerals, LLC Lease Bounty Minerals, LLC	Antero Resources Corporation	1/8+	286/571
G: Theresa J. Drain Lease Theresa J. Drain	Antero Resources Corporation	1/8+	192/90
H: Bounty Minerals, LLC Lease Bounty Minerals, LLC SWN Production Company	SWN Production Company Antero Resources Corporation	1/8+ Assignment	222/315 235/291
J: M. Sharon Deaton Lease M. Sharon Deaton	Antero Resources Corporation	1/8+	197/208
I: Delbert D. & Betty R. Rush Lease Delbert D. & Betty R. Rush	Antero Resources Corporation	1/8+	665/159
K: Larry A. & Karen B. Wells Lease Larry A. & Karen B. Wells	Antero Resources Corporation	1/8+	220/613
O: Gerald W. Meckley, Jr. et al Lease Gerald W. Meckley, Jr. et al Triad Hunter, LLC Blue Ridge Mountain Resources, Inc Eclipse Resources I, LP SWN Production Company	Triad Hunter, LLC Blue Ridge Mountain Resources, Inc Eclipse Resources I, LP SWN Production Company Antero Resources Corporation	1/8 Assignment Assignment Name Change Assignment	2/644 104/354 104/357 WVSOS 235/291
S: Arlen Glen Wells, Jr. Lease Arlen Glens Wells, Jr.	Antero Resources Corporation	1/8+	211/509

Operator's Well Number

Ivory Unit 1H MOD

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
U: Gerald W. Meckley, Jr. et al Lease Gerald W. Meckley, Jr. et al Triad Hunter, LLC Blue Ridge Mountain Resources, Inc Eclipse Resources I, LP SWN Production Company	Triad Hunter, LLC Blue Ridge Mountain Resources, Inc Eclipse Resources I, LP SWN Production Company Antero Resources Corporation	1/8 Assignment Assignment Name Change Assignment	2/640 104/354 104/357 WVSOS 235/291

^{*}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.

*Cotenancy Utilization - Antero is utilizing the Co-tenancy Modernization and Majority Protection Act to proceed with 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

Office of Oil and Gas

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