



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL

June 13, 2016

4709502307 MOD

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET
DENVER, CO 80202


Re: Permit Modification Approval for API Number 9502307, Well #: JOHNSTON UNIT 1H

Extended Lateral

Oil and Gas Operator:

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.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely, 
For

Gene Smith
Assistant Chief of Permitting
Office of Oil and Gas

Promoting a healthy environment.

06/17/2016



May 26, 2016

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: Ms. Melanie Hankins
601 57th Street
Charleston, WV 25304

Ms. Hankins:

Antero Resources Corporation (Antero) would like to submit the following permit modification for one approved well on the Dale Pad. We are requesting to extend the horizontal lateral length which will change the bottom hole location of the Johnston Unit 1H (API# 47-095-02307). Please note that the Revised Mylar Plat showing the new bottom hole location was overnighted to the WVDEP and has not been included with this shipment.

Attached you will find the following documents:

- REVISED Form WW-6B, which shows the revised lateral length, Measured Depth and Production Casing/Cement program
- REVISED Form WW-6A1, which shows the new leases we will be drilling into

If you have any questions please feel free to contact me at (303) 357-6820.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in blue ink that reads "Natalie Komp". The signature is fluid and cursive.

Natalie Komp
Permitting Agent
Antero Resources Corporation

Enclosures

Received
Office of Oil & Gas
MAY 27 2016

06/17/2016

WW-6B
(04/15)

API NO. 47-095 - 02307

OPERATOR WELL NO. Johnston Unit 1H

Well Pad Name: Existing Dale Pad

4709502307 MOD

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

1) Well Operator: Antero Resources Corporal 494507062 095 - Tyler Centerville Shirley 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Johnston Unit 1H Well Pad Name: Existing Dale Pad

3) Farm Name/Surface Owner: Raymond Underwood Public Road Access: CR 7/6 & CR 48

4) Elevation, current ground: 1017' Elevation, proposed post-construction: 1017'

5) Well Type (a) Gas X Oil Underground Storage

Other

(b) If Gas Shallow X Deep

Horizontal X

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 6700' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2800#

8) Proposed Total Vertical Depth: 6700' TVD

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 20,700' MD

11) Proposed Horizontal Leg Length: 13,205'

12) Approximate Fresh Water Strata Depths: 107', 218', 389'

13) Method to Determine Fresh Water Depths: Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: 727', 2051', 2134'

15) Approximate Coal Seam Depths: 107', 712', 1734'

16) 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:

Received
Office of Oil & Gas
MAY 27 2016

WW-6B
(04/15)

API NO. 47-095 - 02307
OPERATOR WELL NO. Johnston Unit 1H
Well Pad Name: Existing Dale Pad

18)

CASING AND TUBING PROGRAM

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20"	New	H-40	94#	40'	40'	CTS, 38 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	445'	445' *see #19	CTS, 618 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500'	2500'	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	20,700'	20,700'	5284 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	30"	24"	0.438"	1530	50	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	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"	0.361"	12,630	2500	Lead-HIPOZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

4709502307 MOP
PACKERS

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

Received
Office of Oil & Gas
MAY 27 2016

WW-6B
(10/14)

API NO. 47- 095 - 02307
OPERATOR WELL NO. Johnston Unit 1H
Well Pad Name: Existing Dale Pad

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 freshwater 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): 38.32 existing acres

22) Area to be disturbed for well pad only, less access road (acres): 5.68 existing 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.

4709502307 Mod

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
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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Office of Oil & Gas
MAY 27 2016

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.

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>Raymond V. Underwood, et ux Lease</u>			
Raymond V. Underwood, et ux	Tyler Pipeline, Inc.	1/8	0338/0440
Tyler Pipeline, Inc.	Sancho Oil & Gas Corp.	Assignment	0375/0773
Sancho Oil & Gas Corp.	Trans Energy	Assignment	0375/0792
Trans Energy	Antero Resources Corporation	Assignment	0436/0177
<u>W.V.D.N.R. Lease</u>			
West Virginia Division of Natural Resources	Antero Resources Corporation	1/8+	0467/0249
<u>Forrest E. Leaseburg, et ux Lease</u>			
Forrest E. Leaseburg, et ux	Sancho Oil and Gas Corporation	1/8	0276/0341
Sancho Oil and Gas Corporation	The Coastal Corporation	Assignment	0282/0636
The Coastal Corporation	Pardee Exploration Company	Assignment	0283/0355
Pardee Exploration Company	Pardee Resources Group, Inc.	Name Change	COI 0008/0580
Pardee Resources Group, Inc.	Pardee Minerals, LLC	Merger	Exhibit 2
Pardee Minerals, LLC	Antero Resources Appalachian Corporation	Assignment	0416/0469
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Helen L. Osborne Lease (TM 8-3.4)</u>			
Helen L. Osborne, et al	Sancho Oil and Gas Corporation	1/8	0276/0337
Sancho Oil and Gas Corporation	The Coastal Corporation	Assignment	0282/0636
The Coastal Corporation	Pardee Exploration Company	Assignment	0283/0355
Pardee Exploration Company	Pardee Resources Group, Inc.	Name Change	COI 0008/0580
Pardee Resources Group, Inc.	Pardee Minerals, LLC	Merger	Exhibit 2
Pardee Minerals, LLC	Antero Resources Appalachian Corporation	Assignment	0416/0469
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Rita J. Hitchcock Lease</u>			
Rita Jean Hitchcock	Antero Resources Appalachian Corporation	1/8+	0386/0150
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Ronald Ash, et ux Lease</u>			
Ronald Ash, et ux	Sancho Oil and Gas Corporation	1/8	0278/0188
Sancho Oil and Gas Corporation	The Coastal Corporation	Assignment	0283/0134
The Coastal Corporation	Pardee Gas Company	Merger	Exhibit 3
Pardee Gas Company	Pardee Exploration Company	Assignment	0287/0430
Pardee Exploration Company	Pardee Resources Group, Inc.	Name Change	COI 0008/0580
Pardee Resources Group, Inc.	Pardee Minerals, LLC	Merger	Exhibit 2
Pardee Minerals, LLC	Antero Resources Appalachian Corporation	Assignment	0419/0526
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

Received
Office of Oil & Gas
MAY 27 2016

*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)

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>p/o Helen L. Osborne Lease (TM 8-8.1)</u>			
Helen L. Osborne, et al	Sancho Oil and Gas Corporation	1/8	0276/0337
Sancho Oil and Gas Corporation	The Coastal Corporation	Assignment	0282/0636
The Coastal Corporation	Pardee Exploration Company	Assignment	0283/0355
Pardee Exploration Company	Pardee Resources Group, Inc.	Name Change	COI 0008/0580
Pardee Resources Group, Inc.	Pardee Minerals, LLC	Merger	Exhibit 2
Pardee Minerals, LLC	Antero Resources Appalachian Corporation	Assignment	0416/0469
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Carl W. Ash, et ux Lease (TM 8-15)</u>			
Carl W. Ash, et ux	Dominion Appalachian Development, Inc.	1/8	0330/0015
Dominion Appalachian Development, Inc.	Dominion Appalachian Development, LLC	Name Change	Exhibit 4
Dominion Appalachian Development, LLC	CONSOL Gas Appalachian Development, LLC	Certificate of Amendment	COI 0009/0131
CONSOL Gas Appalachian Development, LLC	CNX Gas Company, LLC	Affidavit of Name	0384/0191
CNX Gas Company, LLC	Antero Resources Corporation	Changes and Mergers	
		Notice of Agreement	0489/0812
<u>Richard Deulley, et ux Lease</u>			
Richard Deulley, et ux	Sancho Oil and Gas Corp.	1/8	0340/0683
Sancho Oil and Gas Corp.	Antero Resources Corporation	Assignment	0436/0216
<u>WVDNR Lease</u>			
West Virginia Division of Natural Resources	Antero Resources Corporation	Agreement	0534/0106
<u>Paul Clelland Lease</u>			
Paul Clelland	Anvil Oil Company	1/8	0267/0383
Anvil Oil Company	Dominion Appalachian Development, Inc.	Assignment	0323/0383
Dominion Appalachian Development, Inc.	Dominion Appalachian Development, LLC	Name Change	Exhibit 4
Dominion Appalachian Development, LLC	CONSOL Gas Appalachian Development, LLC	Certificate of Amendment	COI 0009/0131
CONSOL Gas Appalachian Development, LLC	CNX Gas Company, LLC	Affidavit of Name	0384/0191
CNX Gas Company, LLC	Noble Energy, Inc.	Changes and Mergers	
Noble Energy, Inc.	Antero Resources Corporation	Assignment	0388/0286
		Agreement	0527/0354

*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.

CONTINUED ON NEXT PAGE

47-095-02307 MOD

Received
Office of Oil & Gas

MAY 27 2016

06/17/2016

WW-6A1
(5/13)

Operator's Well No. Johnston Unit 1H

**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
Dennis Spencer, Jr. Lease	Dennis Spencer, Jr. West Virginia Gas, Inc. Sancho Oil and Gas Corp.	West Virginia Gas, Inc. Sancho Oil and Gas Corp. Antero Resources Corporation	1/8 Assignment Assignment	0334/0388 0375/0771 0436/0216

*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.

4709502307 Mod

**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

Received
Office of Oil & Gas

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: Kevin Kilstrom
Its: Senior VP of Production

FILED

JUN 10 2013

Natalie E. Tennant,
Secretary of State
1900 Kanawha Blvd E
Bldg 1, Suite 157-K
Charleston, WV 25305



Penney Barker, Manager
Corporations Division
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvssos.com
E-mail: business@wvssos.com

APPLICATION FOR
AMENDED CERTIFICATE
OF AUTHORITY

Office Hours: Monday - Friday
8:30 a.m. - 5:00 p.m. ET

FILE ONE ORIGINAL
(Two if you want a filed
stamped copy returned to you)
FEE: \$25.00

**** In accordance with the provisions of the West Virginia Code, the undersigned corporation hereby ****
applies for an Amended Certificate of Authority and submits the following statement:

- Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
- Date Certificate of Authority was issued in West Virginia: 6/25/2008
- Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)
- Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)
- Other amendments: _____
(attach additional pages if necessary)

6. Name and phone number of contact person. (This is optional; however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)

Alvyn A. Schopp
Contact Name

(303) 357-7310
Phone Number

4709502307 MD

7. Signature information (See below **Important Legal Notice Regarding Signature**):

Print Name of Signer: Alvyn A. Schopp

Title/Capacity: Authorized Person

Signature: *Alvyn A. Schopp*

Date: June 10, 2013

**Important Legal Notice Regarding Signature:* For West Virginia Code §31D-1-129. Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.

State of West Virginia



Certificate

*I, Joe Manchin III, Secretary of State of the
State of West Virginia, hereby certify that*

by the provisions of the West Virginia Code, Articles of Merger were received and filed,

MERGING PARDEE RESOURCES GROUP, INC., A QUALIFIED PA ORGANIZATION, WITH AND INTO PARDEE MINERALS
LLC, A QUALIFIED DE ORGANIZATION.

Therefore, I hereby issue this

CERTIFICATE OF MERGER

4709502307 M.07



*Given under my hand and the
Great Seal of the State of
West Virginia on this day of
March 2, 2004*

Secretary of State



*J. Ken Flechler, Secretary of State of the
State of West Virginia, hereby certify that*

THE FOLLOWING IS A TRUE AND CORRECT COPY OF THE
ARTICLES OF MERGER OF:

THE COASTAL CORPORATION, A WV CORPORATION,
AND PARDEE GAS COMPANY, A WV CORPORATION, DULY
SIGNED AND VERIFIED PURSUANT TO THE PROVISIONS
OF SECTION 31-1-34 OF THE WV STATE CODE.

302307 MOD

ACCORDINGLY, I HEREBY ISSUE THIS CERTIFICATE OF
MERGER, MERGING THE COASTAL CORPORATION WITH AND INTO PARDEE
GAS COMPANY, THE SURVIVOR, AND ATTACHED A DUPLICATE
ORIGINAL AS FILED IN MY SAID OFFICE.

*Given under my hand and the
Great Seal of the State of
West Virginia, on this*

TWENTY-EIGHTH day of
FEBRUARY 1990



Ken Flechler
Secretary of State

AC

State of West Virginia



Certificate

*I, Betty Ireland, Secretary of State of the
State of West Virginia, hereby certify that*

DOMINION APPALACHIAN DEVELOPMENT, INC.
(a Virginia corporation)

filed an application for Conversion in my office as required by the provisions of the West Virginia Code and was found to conform to law.

Therefore, I issue this

CERTIFICATE OF CONVERSION

converting the corporation to

DOMINION APPALACHIAN DEVELOPMENT, LLC 2307 MOD
(a Virginia Limited Liability Company)



*Given under my hand and the
Great Seal of the State of
West Virginia on*

February 23, 2006

Betty Ireland

Secretary of State

LATITUDE 39°27'30"

8,260'

5,046' TO BOTTOM HOLE

LATITUDE 39°25'00"

LONGITUDE 80°50'00"

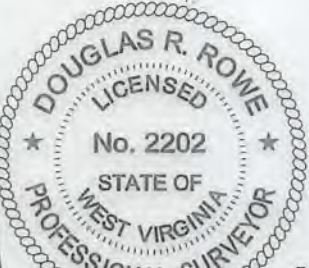
7,266' TO BOTTOM HOLE

9,583'

LONGITUDE 80°50'00"

RAYMOND UNDERWOOD
W.B. 28 PG. 70
T.M. 04 PAR. 12
76.5 AC. ±

WV NORTH ZONE
GRID NORTH



Antero Resources Corporation
Well No. Johnston Unit 1H
A.P.I. #47-095-02307

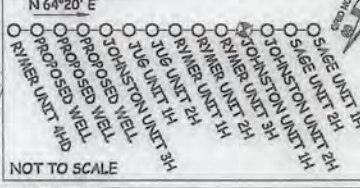
NOTES:
WELL 1H TOP HOLE INFORMATION:
N: 342,381ft E: 1,615,138ft
LAT: 39°25'55.28" LON: 80°51'45.27"
BOTTOM HOLE INFORMATION:
N: 329,478ft E: 1,618,161ft
LAT: 39°23'48.22" LON: 80°51'04.28"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
N: 4,364,738m E: 511,842m
BOTTOM HOLE INFORMATION:
N: 4,360,823m E: 512,828m

A = LOREN E. BAGLEY D.B. 349 PG. 284 T.M. 8 PAR. 3.1
B = LOREN E. BAGLEY D.B. 349 PG. 284 T.M. 8 PAR. 3.3
C = ARLIT ARBOGAST D.B. 376 PG. 826 T.M. 8 PAR. 3.2
D = DAVID D. CHIPPS D.B. 290 PG. 682 T.M. 8 PAR. 3.5

NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR STABLE DAILY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.

PAD LAYOUT



W.V. CONSERVATION COMMISSION
D.B. 156 PG. 353
T.M. 08 PAR. 22
111.41 AC. ±

(NAD) 27 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
N: 14,319,265ft E: 1,679,220ft
POINT OF ENTRY INFORMATION:
N: 14,318,854ft E: 1,678,029ft
BOTTOM HOLE INFORMATION:
N: 14,306,419ft E: 1,682,457ft

STATE OF WV DNR
D.B. 156 PG. 54
T.M. 04 PAR. 14
244.25 AC. ±

RAYMOND V. UNDERWOOD
ET UX LEASE
RAYMOND UNDERWOOD
D.B. 114 PG. 272
T.M. 04 PAR. 13
96 AC. ±

FORREST E. LEASEBURG
ET UX LEASE

WILLIAM LEASEBURG ET UX
D.B. 408 PG. 210
T.M. 08 PAR. 02
77.25 AC. ±

ROBERT JOHNSTON
D.B. 207 PG. 47
T.M. 08 PAR. 2.1
3.5 AC. ±

ROBERT JOHNSTON
D.B. 322 PG. 371
T.M. 08 PAR. 09
68.31 AC. ±

EDNA MONROE
D.B. 407 PG. 528
T.M. 08 PAR. 3.4
37.51 AC. ±

HELEN L. OSBORNE
LEASE

EATHEL JOHNSTON
LEASE

RITA J. HITCHCOCK
LEASE

ROBERT LEASURE
ET UX
D.B. 222 PG. 191
T.M. 08 PAR. 08
50 AC. ±

ROBERT JOHNSTON
D.B. 322 PG. 371
T.M. 08 PAR. 9.2
33.51 AC. ±

RONALD ASH
ET UX LEASE
CLINTON J. LANTZ
ET AL
D.B. 420 PG. 124
T.M. 08 PAR. 07
71.19 AC. ±

p/o HELEN L. OSBORNE
LEASE
MARY LOU WELLS
D.B. 334 PG. 526
T.M. 08 PAR. 8.1
84.25 AC. ±

JAMES L. HOWARD
ET AL
D.B. 297 PG. 95
T.M. 08 PAR. 10
68.31 AC. ±

CARL W. ASH
ET UX LEASE

RALPH J. UNDERWOOD
ET AL
D.B. 184 PG. 443
T.M. 08 PAR. 15
74.452 AC. ±

BRENDA S. SECKMAN ET AL
D.B. 372 PG. 411
T.M. 08 PAR. 19.2
18 AC. ±

MARY LOU WELLS
D.B. 340 PG. 792
T.M. 08 PAR. 20.1
2.75 AC. ±

MARY LOU WELLS
D.B. 39 PG. 33
T.M. 08 PAR. 20
6.66 AC. ±

RICHARD DEULLY
ET UX LEASE
CAROL L. JONES
D.B. 351 PG. 319
T.M. 08 PAR. 19
113 AC. ±

PAUL CLELLAND
LEASE

PETER D. JARRETT ET AL
D.B. 380 PG. 828
T.M. 12 PAR. 02
176.97 AC. ±

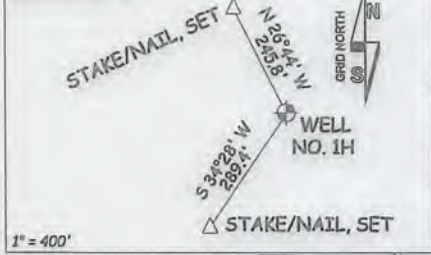
DONNA VANDINE ET AL
D.B. 327 PG. 718
T.M. 12 PAR. 33
74.47 AC. ±

DENNIS SPENCER
LEASE

1996

ROBERT H. TENNANT ET AL
D.B. 149 PG. 89
T.M. 12 PAR. 11
104.02 AC. ±

REFERENCES



47 - 095 - 02307
STATE COUNTY PERMIT

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WILLOW LAND SURVEYING PLLC
220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

JOB # 15-034WA
DRAWING # JOHNSTON1HR3
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

LEGEND
- - - - - Surface Owner Boundary Lines +/-
- - - - - Interior Surface Tracts +/-
- x - x - Existing Fence
⊕ Found monument, as noted

DOUGLAS R. ROWE P.S. 2202
DATE 05/26/16
OPERATOR'S WELL# JOHNSTON UNIT 1H

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X
LOCATION: ELEVATION 1,036' ORIGINAL - 1,017' PROPOSED WATERSHED HEADWATERS MIDDLE ISLAND CREEK
QUADRANGLE SHIRLEY 7.5' DISTRICT CENTERVILLE COUNTY TYLER
SURFACE OWNER RAYMOND UNDERWOOD ACREAGE 96 ACRES +/-
OIL & GAS ROYALTY OWNER RAYMOND V. UNDERWOOD ET UX; WVDNR;
FOREST E. LEASEBURG ET UX; HELEN L. OSBORNE; RITA J. HITCHCOCK; RONALD ASH ET UX; CARL W. ASH ET UX;
RICHARD DEULLY ET UX; WVDNR; PAUL CLELLAND; DENNIS SPENCER JR.
LEASE ACREAGE 96 ACRES±; 244.25 ACRES±; 78 ACRES±; 168.75 ACRES±; 50 ACRES±; 72 ACRES±; 88 ACRES±; 113 ACRES±; 4.7 ACRES±; 156 ACRES±; 221 ACRES±
PROPOSED WORK: DRILL CONVERT DRILL DEEPER X REDRILL FRACTURE OR STIMULATE X
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY) MOD - BHL PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,700' TVD 20,700' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

06/17/2016

COUNTY NAME PERMIT

LATITUDE 39°27'30"

8,260'

5,046' TO BOTTOM HOLE

LATITUDE 39°25'00"

LONGITUDE 80°50'00"

7,266' TO BOTTOM HOLE

9,583'

LONGITUDE 80°50'00"

47-095-02307 WELL NO. 1H

Antero Resources Corporation
Well No. Johnston Unit 1H
A.P.I. #47-095-02307

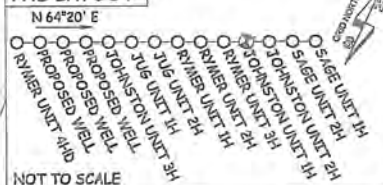
NOTES:
WELL 1H TOP HOLE INFORMATION:
N: 342,381ft E: 1,615,138ft
LAT: 39°25'55.28" LON: 80°51'45.27"
BOTTOM HOLE INFORMATION:
N: 329,478ft E: 1,618,161ft
LAT: 39°23'48.22" LON: 80°51'04.28"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
N: 4,364,738m E: 511,842m
BOTTOM HOLE INFORMATION:
N: 4,360,823m E: 512,828m

A = LOREN E. BAGLEY D.B. 349 PG. 284 T.M. 8 PAR. 3.1
B = LOREN E. BAGLEY D.B. 349 PG. 284 T.M. 8 PAR. 3.2
C = ARLIT ARBOGAST D.B. 376 PG. 826 T.M. 8 PAR. 3.2
D = DAVID D. CHIPPS D.B. 290 PG. 682 T.M. 8 PAR. 3.5

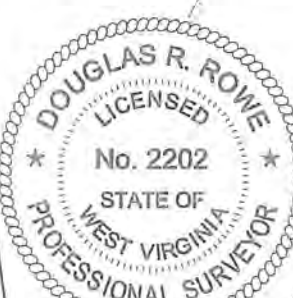
NOTE:
NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.

PAD LAYOUT



(NAD) 27 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
N: 14,319,265ft E: 1,679,220ft
POINT OF ENTRY INFORMATION:
N: 14,318,854ft E: 1,678,029ft
BOTTOM HOLE INFORMATION:
N: 14,306,419ft E: 1,682,457ft

RAYMOND UNDERWOOD
W.B. 28 PG. 70
T.M. 04 PAR. 12
76.5 AC. ±



POINT OF ENTRY

WVDNR LEASE
STATE OF WV DNR
D.B. 156 PG. 54
T.M. 04 PAR. 14
244.25 AC. ±

RAYMOND V. UNDERWOOD
ET UX LEASE
RAYMOND UNDERWOOD
D.B. 114 PG. 272
T.M. 04 PAR. 13
96 AC. ±

STONE, FOUND

FORREST E. LEASEBURG
ET UX LEASE

WILLIAM LEASEBURG ET UX
D.B. 408 PG. 210
T.M. 08 PAR. 02
77.25 AC. ±

STONE, FOUND

ROBERT JOHNSTON
D.B. 207 PG. 47
T.M. 08 PAR. 2.1
3.5 AC. ±

ROBERT JOHNSTON
D.B. 322 PG. 371
T.M. 08 PAR. 09
68.31 AC. ±

EDNA MONROE
D.B. 407 PG. 528
T.M. 08 PAR. 3.4
37.51 AC. ±

HELEN L. OSBORNE
LEASE

EATHEL JOHNSTON
LEASE

RITA J. HITCHCOCK
LEASE

ROBERT LEASURE
ET UX
D.B. 222 PG. 15
T.M. 08 PAR. 05
50 AC. ±

ROBERT JOHNSTON
D.B. 322 PG. 371
T.M. 08 PAR. 9.2
33.51 AC. ±

RONALD ASH
ET UX LEASE
CLINTON J. LANTZ
ET AL
D.B. 420 PG. 124
T.M. 08 PAR. 07
71.19 AC. ±

p/o HELEN L. OSBORNE
LEASE
MARY LOU WELLS
D.B. 334 PG. 526
T.M. 08 PAR. 8.1
84.25 AC. ±

CARL W. ASH
ET UX LEASE

RALPH J. UNDERWOOD
ET AL
D.B. 184 PG. 443
T.M. 08 PAR. 15
74.452 AC. ±

BRENDA S. SECKMAN ET AL
D.B. 372 PG. 411
T.M. 08 PAR. 19.2
18 AC. ±

MARY LOU WELLS
D.B. 340 PG. 792
T.M. 08 PAR. 20.1
2.75 AC. ±

MARY LOU WELLS
D.B. 39 PG. 33
T.M. 08 PAR. 20
6.66 AC. ±

RICHARD DEULLY
ET UX LEASE
CAROL L. JONES
D.B. 351 PG. 319
T.M. 08 PAR. 19
113 AC. ±

PAUL CLELLAND
LEASE

DONNA VANDINE ET AL
D.B. 327 PG. 718
T.M. 12 PAR. 33
74.47 AC. ±

PETER D. JARRETT ET AL
D.B. 380 PG. 828
T.M. 12 PAR. 02
176.97 AC. ±

DENNIS SPENCER
LEASE

ROBERT H. TERHANT ET AL
D.B. 105 PG. 13
T.M. 12 PAR. 11
104.02 AC. ±

REFERENCES



NOTE:
4 WATER WELLS AND
1 SPRING WERE
LOCATED WITHIN 2000'
OF CENTER OF PAD



47 - 095 - 02307
STATE COUNTY PERMIT

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LEGEND
--- Surface Owner Boundary Lines +/-
--- Interior Surface Tracts +/-
-x-x-x- Existing Fence
⊕ Found monument, as noted
DATE 05/26/16
OPERATOR'S WELL# JOHNSTON UNIT #1H

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(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
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