

State of West Virginia  
Department of Environmental Protection - Office of Oil and Gas  
Well Operator's Report of Well Work

RECEIVED  
Office of Oil and Gas  
OCT 12 2017  
WV Department of  
Environmental Protection

API 47-095-02308 County Tyler District Centerville  
Quad Shirley 7.5' Pad Name Dale Pad Field/Pool Name ---  
Farm name Raymond Underwood Well Number Johnston Unit 3H  
Operator (as registered with the OOG) Antero Resources Corporation  
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4364730m Easting 511825m  
Landing Point of Curve Northing 4364491.02m Easting 511932.48m  
Bottom Hole Northing 4362653m Easting 512605m

Elevation (ft) 1017' GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine  
Mud Type(s) and Additive(s)  
Air - Foam & 4% KCL  
Mud - Polymer

Date permit issued 09/17/2015 Date drilling commenced 03/02/2016 Date drilling ceased 05/15/2016  
Date completion activities began 01/16/2017 Date completion activities ceased 07/14/2017  
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 55' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft NONE IDENTIFIED Void(s) encountered (Y/N) depths No  
Coal depth(s) ft 1166', 1331' Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

**APPROVED**

NAME: See n 13  
DATE: 10-25-17

Reviewed by: \_\_\_\_\_

02/16/2018

API 47-095 - 02308 Farm name Raymond Underwood Well number Johnston Unit 3H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	40'	New	94#, J-55	N/A	Y
Surface	17- 1/2"	13- 3/8"	575'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2526'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	13993'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6615'		4.7#, N-80		
Packer type and depth set		N/A					

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	185 sx	15.6	1.18	218	0	8 Hrs.
Surface	Class A	670 sx	15.41	1.2	804	0	8 Hrs.
Coal							
Intermediate 1	Class A	920 sx	15.6	1.18	1086	0	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	864 sx (Lead) 1166 sx (Tail)	13.8 (Lead), 15.02 (Tail)	1.44 (Lead), 1.84 (Tail)	3390	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 13993' MD, 6556' TVD (BHL) & 6558' TVD (Deepest Point Drilled) Loggers TD (ft) 13975' MD  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 5884'

\*\* There were no wireline logs run on this pad. Please reference the wireline logs submitted with Rymer Unit 4HD (API#47-095-02273). A Cement Bond Log has been included with this submittal.

Check all wireline logs run  caliper  density  deviated/directional  induction  
 neutron  resistivity  gamma ray  temperature  sonic

Well cored  Yes  No Conventional Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_

Conductor - 0  
 Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface  
 Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface  
 Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED N/A

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API 47- 095 - 02308 Farm name Raymond Underwood Well number Johnston Unit 3H

PRODUCING FORMATION(S)	DEPTHS	
<u>Marcellus</u>	<u>6477' (Top)</u> TVD	<u>6736' (Top)</u> MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 4100 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 7615 mcfpd Oil 108 bpd NGL --- bpd Water 120 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	<u>0</u>		<u>0</u>		
<b>* PLEASE SEE ATTACHED EXHIBIT 3</b>					

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling Company, LP  
Address 2640 Reach Road City Williamsport State PA Zip 17701

Logging Company Allied Horizontal  
Address 381 Colonial Manor Rd City North Huntingdon State PA Zip 15642

Cementing Company C&J Energy Services  
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company Halliburton  
Address 121 Champion Way Suite 200 City Cannonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Samantha Klaas Telephone 303-357-6759 RECEIVED  
Signature [Signature] Title Permitting Agent Date 10/11/2017 Office of Oil and Gas

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry **OCT 12 2017**  
WV Department of Environmental Protection **03/16/2018**

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**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	1/16/2017	13734	13902	60	Marcellus
2	3/22/2017	13536	13703	60	Marcellus
3	3/23/2017	13337	13504	60	Marcellus
4	3/23/2017	13138	13306	60	Marcellus
5	3/24/2017	12939	13107	60	Marcellus
6	3/25/2017	12740	12908	60	Marcellus
7	3/25/2017	12541	12709	60	Marcellus
8	3/26/2017	12342	12510	60	Marcellus
9	3/26/2017	12143	12311	60	Marcellus
10	3/27/2017	11944	12112	60	Marcellus
11	3/28/2017	11745	11913	60	Marcellus
12	3/28/2017	11547	11714	60	Marcellus
13	3/29/2017	11348	11515	60	Marcellus
14	3/29/2017	11149	11317	60	Marcellus
15	3/30/2017	10950	11118	60	Marcellus
16	3/31/2017	10751	10919	60	Marcellus
17	3/31/2017	10552	10720	60	Marcellus
18	4/1/2017	10353	10521	60	Marcellus
19	4/1/2017	10154	10322	60	Marcellus
20	4/2/2017	9955	10123	60	Marcellus
21	4/2/2017	9756	9924	60	Marcellus
22	4/3/2017	9558	9725	60	Marcellus
23	4/3/2017	9359	9526	60	Marcellus
24	4/4/2017	9160	9328	60	Marcellus
25	4/4/2017	8961	9129	60	Marcellus
26	4/5/2017	8762	8930	60	Marcellus
27	4/5/2017	8563	8731	60	Marcellus
28	4/6/2017	8364	8532	60	Marcellus
29	4/6/2017	8165	8333	60	Marcellus
30	4/6/2017	7966	8134	60	Marcellus
31	4/7/2017	7767	7935	60	Marcellus
32	4/8/2017	7569	7736	60	Marcellus
33	4/8/2017	7370	7537	60	Marcellus
34	4/8/2017	7171	7339	60	Marcellus
35	4/9/2017	6972	7140	60	Marcellus
36	4/9/2017	6773	6941	60	Marcellus

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**EXHIBIT 2**

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbbls)	Amount of Nitrogen/ other (units)
1	3/17/2017	78.7	7002	5012	4385	499460	12870	N/A
2	3/22/2017	80.4	7454	5742	2966	508500	11301	N/A
3	3/23/2017	79.7	7199	5140	3836	513840	10089	N/A
4	3/23/2017	78.0	7452	5289	4910	516260	12271	N/A
5	3/24/2017	80.1	6950	5336	3903	515850	9972	N/A
6	3/25/2017	79.3	6833	5269	3609	519940	10112	N/A
7	3/25/2017	79.1	6968	5311	3437	511140	10288	N/A
8	3/26/2017	79.4	6949	5521	3442	516300	10278	N/A
9	3/26/2017	78.8	6659	4495	3561	518780	10200	N/A
10	3/27/2017	79.7	6836	5419	3288	513180	10197	N/A
11	3/28/2017	79.9	6755	5481	3280	508300	10321	N/A
12	3/28/2017	79.7	7300	5237	3712	516920	13483	N/A
13	3/29/2017	77.1	7044	5279	3353	489080	10367	N/A
14	3/29/2017	74.7	6928	5289	3289	508530	10373	N/A
15	3/30/2017	73.4	7044	5468	3792	497440	13156	N/A
16	3/31/2017	71.7	6927	5357	4462	482330	11384	N/A
17	3/31/2017	76.2	6730	5109	3956	514540	10531	N/A
18	4/1/2017	76.7	6606	5115	3402	513320	10174	N/A
19	4/1/2017	76.0	6386	5155	3687	512990	10521	N/A
20	4/2/2017	77.0	6485	5556	3202	514580	10464	N/A
21	4/2/2017	72.3	6637	4983	3286	515430	11924	N/A
22	4/3/2017	76.9	6303	5284	3264	512570	10585	N/A
23	4/3/2017	76.2	6175	4932	3477	513430	10663	N/A
24	4/4/2017	76.4	6233	5047	3340	514960	10505	N/A
25	4/4/2017	76.1	6652	5041	4750	509940	11860	N/A
26	4/5/2017	76.9	6273	5405	3201	500480	10452	N/A
27	4/5/2017	78.0	6198	5501	3473	510770	10583	N/A
28	4/6/2017	78.0	6306	5014	3384	512530	10361	N/A
29	4/6/2017	75.2	6326	5343	3322	514680	10465	N/A
30	4/6/2017	78.1	6497	5534	4211	506300	10285	N/A
31	4/7/2017	78.5	7045	5614	3167	513140	10345	N/A
32	4/8/2017	77.3	6736	5212	3548	488850	9866	N/A
33	4/8/2017	76.6	6367	5457	3589	483830	10367	N/A
34	4/8/2017	77.8	6883	5216	3719	484470	11257	N/A
35	4/9/2017	79.1	6088	5011	3519	514360	10191	N/A
36	4/9/2017	78.0	5914	5389	3498	532810	10518	N/A
	AVG=	77.4	6,698	5,266	3,617	18,319,830	388,580	TOTAL

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**EXHIBIT 3**

<b>LITHOLOGY/ FORMATION</b>	<b>TOP DEPTH (TVD) From Surface</b>	<b>BOTTOM DEPTH (TVD) From Surface</b>	<b>TOP DEPTH (MD) From Surface</b>	<b>BOTTOM DEPTH (MD) From Surface</b>
Fresh Water	55'	N/A	55'	N/A
Shale	est. -19	341	est. -19	341
Sandstone	est. 341	521	est. 341	521
Siltstone	est. 521	701	est. 521	701
Limestone	est. 701	751	est. 701	751
Shale	est. 751	1166	est. 751	1166
Trace Coal	est. 1166	1171	est. 1166	1171
Shale	est. 1171	1331	est. 1171	1331
Trace Coal	est. 1331	1336	est. 1331	1336
Sandstone	est. 1336	1631	est. 1336	1631
Shale	est. 1631	1925	est. 1631	1925
Big Lime	1925	2025	1925	2025
Big Injun	2025	2535	2025	2535
Gantz Sand	2535	2664	2535	2664
Fifty Foot Sandstone	2664	2756	2664	2756
Gordon	2756	3111	2756	3111
Fifth Sandstone	3111	3159	3111	3159
Bayard	3159	3511	3159	3511
Warren	3511	3880	3511	3880
Speechley	3880	4622	3880	4622
Bradford	4622	5043	4622	5043
Benson	5043	5253	5043	5253
Alexander	5253	5431	5253	5431
Elk	5431	5812	5431	5841
Rhinestreet	5812	6133	5841	6172
Sycamore	6133	6308	6172	6382
Middlesex	6308	6406	6382	6540
Burkett	6406	6441	6540	6616
Tully	6441	6477	6616	6736
Marcellus	6477	NA	6736	NA

\*Please note Antero determines formation tops based on mud logs that are only run on one well on a multi-well pad. The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	3/21/2017
Job End Date:	4/10/2017
State:	West Virginia
County:	Tyler
API Number:	47-095-02308-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Johnston 3H
Latitude:	39.43195000
Longitude:	-80.86276667
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,557
Total Base Water Volume (gal):	16,320,368
Total Base Non Water Volume:	0



### Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	87.89782	Density = 8.340
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.18886	



SP BREAKER	Halliburton	Breaker					
				Listed Below			
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
				Listed Below			
HYDROCHLORIC ACID	Halliburton	Solvent					
				Listed Below			
MC S-2510T	Halliburton	Scale Inhibitor					
				Listed Below			
FR-76	Halliburton	Friction Reducer					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
SAND-PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			

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WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Crystalline silica, quartz	14808-60-7	100.00000	11.86504	
			Hydrochloric acid	7647-01-0	15.00000	0.02045	
			Acrylamide acrylate copolymer	Proprietary	30.00000	0.01821	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01821	
			Inorganic salt	Proprietary	30.00000	0.01821	
			Guar gum	9000-30-0	100.00000	0.01646	
			Ethylene Glycol	107-21-1	60.00000	0.00827	
			Glutaraldehyde	111-30-8	30.00000	0.00282	
			Neutralized Polyacrylic Emulsion	Proprietary	10.00000	0.00138	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00047	
			Sodium persulfate	7775-27-1	100.00000	0.00032	
			Ethanol	64-17-5	1.00000	0.00009	
			Methanol	67-56-1	60.00000	0.00008	
			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1	30.00000	0.00003	
			Ethoxylated alcohols	Proprietary	30.00000	0.00003	
			Fatty acids, tall oil	Proprietary	30.00000	0.00003	
			Olefins	Proprietary	5.00000	0.00001	
			Propargyl alcohol	107-19-7	10.00000	0.00001	
			Phosphoric acid	7664-38-2	0.10000	0.00001	

			Sodium sulfate	7757-82-6	0.10000	0.00000
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\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water  
 \*\* Information is based on the maximum potential for concentration and thus the total may be over 100%  
 \*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.  
 Ingredient information for chemicals subject to 29 CFR 1910.1200(j) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

LATITUDE 39°27'30"

8,314'

5,769' TO BOTTOM HOLE

LATITUDE 39°25'00"

LONGITUDE 80°50'00"

9,610'

LONGITUDE 80°50'00"

Antero Resources Corporation  
Well No. Johnston Unit 3H  
47-095-02308

WILLIE R. LESTER  
D.B. 326 PG. 402  
T.M. 04 PAR. 07  
97.75 AC. ±

ROBERT L. RIPLEY ET AL  
D.B. 327 PG. 77  
T.M. 04 PAR. 06.2  
18.75 AC. ±

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

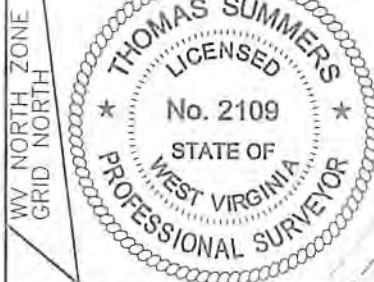
RAYMOND V. UNDERWOOD  
ET UX LEASE

REGINA H. BERTOZZI ET AL  
D.B. 334 PG. 420  
T.M. 04 PAR. 08.3  
41.86 AC. ±

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

AS DRILLED DATA:  
WELL 3H TOP HOLE INFORMATION:  
N: 342,355ft E: 1,615,084ft  
LAT: 39°25'55.02" LON: 80°51'45.96"  
BOTTOM HOLE INFORMATION:  
N: 335,494ft E: 1,617,527ft  
LAT: 39°24'47.59" LON: 80°51'13.51"  
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 3H TOP HOLE INFORMATION:  
N: 4,364,730m E: 511,825m  
BOTTOM HOLE INFORMATION:  
N: 4,362,653m E: 512,605m



**NOTE**  
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR FOLIARY MAMMALS ARE LOCATED WITHIN ONE HUNDRED TWENTY-FIVE (125) FEET OF THE CENTER OF THE WELL PAD.  
2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.  
3. AS COLLECTED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.  
4. WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONS UP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.  
5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INCONGRUITIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

W.V.D.N.R. LEASE  
STATE OF WV DNR  
D.B. 156 PG. 54  
T.M. 04 PAR. 14  
244.25 AC. ±

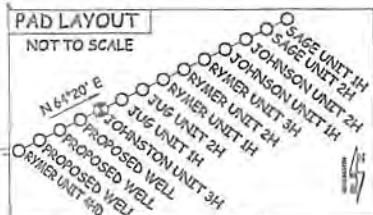
ROBERT JOHNSTON  
D.B. 207 PG. 47  
T.M. 08 PAR. 2.1  
3.5 AC. ±

FORREST E. LEASEBURG  
ET UX LEASE

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

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

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



STONE FOUND

JOHN GRAFF  
ET UX LEASE

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

EATHEL  
JOHNSTON  
LEASE

RITA J. HITCHCOCK  
LEASE

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

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

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

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

MARY LOU WELLS  
D.B. 334 PG. 526  
T.M. 08 PAR. 8.1  
84.25 AC. ±

1360

BOTTOM HOLE  
WELL 3H

LILLIE H. MAPLE  
ET AL LEASE

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

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 # JOHNSTON3HAD  
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 +/-  
○ Proposed Well Path  
○ As Drilled Well Path  
*Thomas Summers*  
THOMAS SUMMERS P.S. 2109  
DATE 09/28/17  
OPERATOR'S WELL# JOHNSTON UNIT 3H

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 = ARBIT ARBOGAST D.B. 376 PG. 826 T.M. 8 PAR 3.2  
D = DAVID D. CHIPPS D.B. 250 PG. 692 T.M. 8 PAR 3.5

WELL TYPE: OIL \_\_\_ GAS  LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_ 47 - 095 - 02308  
(IF "GAS") PRODUCTION  STORAGE \_\_\_ DEEP \_\_\_ SHALLOW  STATE COUNTY PERMIT  
LOCATION: ELEVATION 1,017' AS BUILT 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; W.V.D.N.R.; EATHEL JOHNSTON; LILLIE H. MAPLE ET AL LEASE ACREAGE 96 ACRES±; 244.25 ACRES±; 108 ACRES±; 341 ACRES±  
PROPOSED WORK: DRILL \_\_\_ CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE \_\_\_  
PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL  
(SPECIFY) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG  
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,556' TVD 13,993' 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

02/16/2018

LATITUDE 39°27'30"

8,314'

LATITUDE 39°25'00"

LONGITUDE 80°50'00"

9,610'

LONGITUDE 80°50'00"

Antero Resources Corporation  
Well No. Johnston Unit 3H  
47-095-02308

WILLIE R. LESTER  
D.B. 326 PG. 402  
T.M. 04 PAR. 07  
97.75 AC. ±

ROBERT L. RIFLEY ET AL  
D.B. 327 PG. 77  
T.M. 04 PAR. 06.2  
18.75 AC. ±

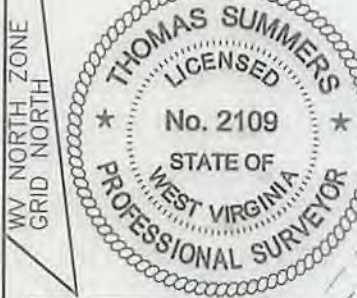
RAYMOND UNDERWOOD  
W.B. 28 PG. 70  
T.M. 04 PAR. 12  
76.5 AC. ±

REGINA H. BERTOZZI ET AL  
D.B. 334 PG. 420  
T.M. 04 PAR. 08.3  
41.86 AC. ±

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

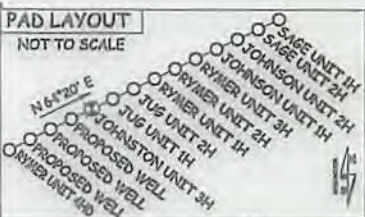
AS DRILLED DATA:  
WELL 3H TOP HOLE INFORMATION:  
N: 342,355ft E: 1,615,084ft  
LAT: 39°25'55.02" LON: 80°51'45.96"  
BOTTOM HOLE INFORMATION:  
N: 335,494ft E: 1,617,527ft  
LAT: 39°24'47.59" LON: 80°51'13.51"  
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE.  
ZONE WAS DERIVED FROM MEASUREMENTS 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 3H TOP HOLE INFORMATION:  
N: 4,364,730m E: 511,825m  
BOTTOM HOLE INFORMATION:  
N: 4,362,653m E: 512,605m



- NOTE
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHEDDERS DAILY CATTLE OR POULTRY FURNISHING ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
  2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
  3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
  4. WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
  5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR DISCREPANCIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

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



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

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