

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
100 217
WV Department of
Environmental Protection

API 47-095-02171 County Tyler District Centerville
Quad Shirley 7.5' Pad Name Dale Pad Field/Pool Name ---
Farm name Raymond Underwood Well Number Jug Unit 2H
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 4364733m Easting 511831m
Landing Point of Curve Northing 4364853.178m Easting 511618.580m
Bottom Hole Northing 4367102m Easting 510818m

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 06/12/2014 Date drilling commenced 03/02/2016 Date drilling ceased 05/27/2016
Date completion activities began 01/15/2017 Date completion activities ceased 07/06/2017
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: Sean M. [Signature]
DATE: 10-25-17

Reviewed by: _____

02/16/2018

API 47-095 - 02171 Farm name Raymond Underwood Well number Jug Unit 2H

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	133#, J-55	N/A	Y
Surface	17- 1/2"	13- 3/8"	489'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2531'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	15035'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6598'		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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	185 sx	15.6	1.18	218	0	8 Hrs.
Surface	Class A	597 sx	15.6	1.2	716	0	8 Hrs.
Coal							
Intermediate 1	Class A	926 sx	15.6	1.18	1093	0	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	859 sx (Lead) 1322 sx (Tail)	13.4 (Lead), 15.23 (Tail)	1.44 (Lead), 1.83 (Tail)	3656	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15035' MD, 6468' TVD (BHL) & 6507' TVD (Deepest Point Drilled) Loggers TD (ft) 15011' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6254'

** There were no wireline logs run on this pad. Please reference the wireline logs submitted with Rymur 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 shoes, 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

API 47- 095 - 02171 Farm name Raymond Underwood Well number Jug Unit 2H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6468' (Top)</u>	<u>TVD</u>	<u>6751' (Top) MD</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

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 8860 mcfpd Oil 105 bpd NGL --- bpd Water 227 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 ₂ 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>		
* PLEASE SEE ATTACHED EXHIBIT 3					

Please insert additional pages as applicable.

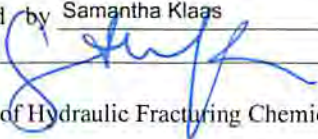
Drilling Contractor Precision Drilling Company, LP
Address 2640 Reach Road City Williamsport State PA Zip 17701

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
Signature  Title Permitting Agent Date 10/11/2017

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API 47-095-02171 Farm Name Raymond Underwood Well Number Jug Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	1/15/2017	14768	14936	60	Marcellus
2	3/23/2017	14568	14737	60	Marcellus
3	3/23/2017	14369	14537	60	Marcellus
4	3/24/2017	14169	14338	60	Marcellus
5	3/25/2017	13970	14138	60	Marcellus
6	3/25/2017	13771	13939	60	Marcellus
7	3/26/2017	13571	13739	60	Marcellus
8	3/26/2017	13372	13540	60	Marcellus
9	3/27/2017	13172	13340	60	Marcellus
10	3/27/2017	12973	13141	60	Marcellus
11	3/28/2017	12773	12942	60	Marcellus
12	3/29/2017	12574	12742	60	Marcellus
13	3/29/2017	12375	12543	60	Marcellus
14	3/30/2017	12175	12343	60	Marcellus
15	3/31/2017	11976	12144	60	Marcellus
16	3/31/2017	11776	11944	60	Marcellus
17	4/1/2017	11577	11745	60	Marcellus
18	4/1/2017	11377	11546	60	Marcellus
19	4/2/2017	11178	11346	60	Marcellus
20	4/2/2017	10978	11147	60	Marcellus
21	4/3/2017	10779	10947	60	Marcellus
22	4/3/2017	10580	10748	60	Marcellus
23	4/4/2017	10380	10548	60	Marcellus
24	4/4/2017	10181	10349	60	Marcellus
25	4/4/2017	9981	10149	60	Marcellus
26	4/5/2017	9782	9950	60	Marcellus
27	4/5/2017	9582	9751	60	Marcellus
28	4/6/2017	9383	9551	60	Marcellus
29	4/6/2017	9183	9352	60	Marcellus
30	4/7/2017	8984	9152	60	Marcellus
31	4/7/2017	8785	8953	60	Marcellus
32	4/8/2017	8585	8753	60	Marcellus
33	4/8/2017	8386	8554	60	Marcellus
34	4/9/2017	8186	8354	60	Marcellus
35	4/9/2017	7987	8155	60	Marcellus
36	4/10/2017	7787	7956	60	Marcellus
37	4/10/2017	7588	7756	60	Marcellus
38	4/10/2017	7389	7557	60	Marcellus
39	4/10/2017	7189	7357	60	Marcellus
40	4/11/2017	6990	7158	60	Marcellus
41	4/11/2017	6790	6958	60	Marcellus

02/16/2018

API 47-095-02171 Farm Name Raymond Underwood Well Number Jug Unit 2H

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 (bbls)	Amount of Nitrogen/ other (units)
1	3/22/2017	79.4	7457	5181	4568	298730	6958	N/A
2	3/23/2017	65.5	7088	5285	3364	357180	8112	N/A
3	3/23/2017	79.5	7480	4972	3946	349960	7492	N/A
4	3/24/2017	78.2	7385	5591	4849	349920	7237	N/A
5	3/25/2017	78.8	7254	5310	4087	349140	7919	N/A
6	3/25/2017	78.4	7094	4790	4554	361620	7409	N/A
7	3/26/2017	79.4	7124	5372	3388	349420	7462	N/A
8	3/26/2017	78.3	6991	5318	3536	348440	7355	N/A
9	3/27/2017	78.8	6989	5239	4443	358550	7542	N/A
10	3/27/2017	78.1	7341	5149	3466	349090	9514	N/A
11	3/28/2017	79.7	7174	5187	3355	340020	7369	N/A
12	3/29/2017	79.7	7181	5200	3975	361130	7607	N/A
13	3/29/2017	77.0	6963	5436	3103	355330	7434	N/A
14	3/30/2017	76.6	6969	5263	3483	354750	7258	N/A
15	3/31/2017	76.8	6953	5611	4023	360080	7500	N/A
16	3/31/2017	74.9	6877	5216	3682	343700	7350	N/A
17	4/1/2017	76.3	6890	5167	3251	362120	7532	N/A
18	4/1/2017	76.7	6832	5309	3484	362070	7630	N/A
19	4/2/2017	76.0	6963	5840	3418	361790	7618	N/A
20	4/2/2017	76.4	6899	5041	3469	360710	7596	N/A
21	4/3/2017	76.1	6684	5683	3274	361570	7736	N/A
22	4/3/2017	78.2	6658	5973	3134	342040	7087	N/A
23	4/4/2017	76.2	6500	5185	3131	362150	7752	N/A
24	4/4/2017	76.8	6979	5084	3314	344020	7820	N/A
25	4/4/2017	75.5	6577	4979	3398	361540	7758	N/A
26	4/5/2017	79.0	6488	5010	3432	360330	7545	N/A
27	4/5/2017	77.9	6642	5341	3156	359320	7458	N/A
28	4/6/2017	76.4	6499	5076	3227	360830	7369	N/A
29	4/6/2017	77.0	6878	5051	4410	356280	8842	N/A
30	4/7/2017	77.2	6615	4944	3170	359190	7386	N/A
31	4/7/2017	78.1	6685	5492	3327	355490	7332	N/A
32	4/8/2017	62.1	6979	5514	3996	343470	8756	N/A
33	4/8/2017	76.2	7025	5104	5654	361950	8465	N/A
34	4/9/2017	77.5	6394	5001	3736	361840	7504	N/A
35	4/9/2017	75.4	6939	4916	3915	361500	8512	N/A
36	4/10/2017	74.9	6767	4942	4796	324670	6944	N/A
37	4/10/2017	76.0	6647	4833	3142	362190	7986	N/A
38	4/10/2017	76.5	6242	5123	3399	356660	7234	N/A
39	4/10/2017	77.1	6097	5064	3180	356160	7338	N/A
40	4/11/2017	77.0	6339	5057	3331	358260	7239	N/A
41	4/11/2017	75.8	5800	5080	3153	346220	7202	N/A
	AVG=	76.6	6,838	5,218	3,676	14,489,430	313,155	TOTAL

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
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	1918	est. 1631	1921
Big Lime	1918	2019	1921	2023
Big Injun	2019	2548	2023	2553
Gantz Sand	2548	2650	2553	2655
Fifty Foot Sandstone	2650	2751	2655	2756
Gordon	2751	3163	2756	3108
Fifth Sandstone	3163	3504	3108	3168
Bayard	3504	3870	3168	3509
Warren	3870	4192	3509	3875
Speechley	4192	4585	3875	4197
Bradford	4585	5008	4197	4590
Benson	5008	5251	4590	5019
Alexander	5251	5403	5019	5423
Elk	5403	5816	5423	5846
Rhinestreet	5816	6133	5846	6176
Sycamore	6133	6305	6176	6386
Middlesex	6305	6401	6386	6545
Burkett	6401	6434	6545	6626
Tully	6434	6468	6626	6751
Marcellus	6468	NA	6751	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.

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	3/22/2017
Job End Date:	4/11/2017
State:	West Virginia
County:	Tyler
API Number:	47-095-02171-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Jug 2H
Latitude:	39.43197500
Longitude:	-80.86270278
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,475
Total Base Water Volume (gal):	13,542,563
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	88.40759	Density = 8.340
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.20010	

WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
				Listed Below			
SP BREAKER	Halliburton	Breaker					
				Listed Below			
SAND-PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
FR-76	Halliburton	Friction Reducer					
				Listed Below			
MC S-2510T	Halliburton	Scale Inhibitor					
				Listed Below			

HYDROCHLORIC ACID	Halliburton	Solvent					
				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	11.36556	
			Hydrochloric acid	7647-01-0	15.00000	0.02767	
			Guar gum	9000-30-0	100.00000	0.01924	
			Ethylene Glycol	107-21-1	60.00000	0.00813	
			Glutaraldehyde	111-30-8	30.00000	0.00269	
			Neutralized Polyacrylic Emulsion	Proprietary	10.00000	0.00135	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00045	
			Sodium persulfate	7775-27-1	100.00000	0.00040	
			Methanol	67-56-1	60.00000	0.00010	
			Ethanol	64-17-5	1.00000	0.00009	
			Fatty acids, tall oil	Proprietary	30.00000	0.00004	
			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1	30.00000	0.00004	
			Ethoxylated alcohols	Proprietary	30.00000	0.00004	
			Inorganic salt	Proprietary	30.00000	0.00002	
			Acrylamide acrylate copolymer	Proprietary	30.00000	0.00002	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.00002	
			Olefins	Proprietary	5.00000	0.00002	
			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(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 095 02171
 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT
 LOCATION: ELEVATION 1,077 AS DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK QUADRANGLE SHIRLEY 7.5 - SHL MIDDLEBOURNE 7.5 - BHL DISTRICT CENTERVILLE COUNTY TYLER SURFACE OWNER RAYMOND UNDERWOOD ACREAGE 23 ACRES +/- LEASE ACRES 96 ACRES +/- 97.75 ACRES +/- CATHY JO ASH ET AL; MARK DOUGLAS FLETCHER
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION OTHER PHYSICAL CHANGE IN WELL PLUG & ABANDON ESTIMATED DEPTH 6,468' TVD 15,035' MD DIANNA STAMPER - CT CORPORATION SYSTEM WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT ADDRESS 1615 WYNKOOP STREET DENVER, CO 80202

JOB # 13-102WA DRAWING # JUGZHAD SCALE 1" = 1000' MINIMUM DEGREE OF ACCURACY SUBMETER PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS DEPARTMENT OF ENERGY DATE 09/28/17 OPERATOR'S WELL # JUG UNIT # 2H DIVISION OF OIL AND GAS



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



LONGITUDE 80°50'00"

9,601'

1,821' TO BOTTOM HOLE
 LONGITUDE 80°50'00"

8,296'



NOTE:
 1. NO OCCUPIED DWELLINGS OR BUILDINGS WITHIN TWO THOUSAND FIVE HUNDRED (2500) SQUARE FEET OR LARGER 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 ALLEGENT SURVEY, INC.
 3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
 4. THIS IS NOT CERTIFYING THE DATA AND DEVIATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION RECEIVED TO THE SURVEYOR.
 5. THIS IS NOT A GUARANTEE FOR ANY ERROR OR MISTAKE IN THE DATA PROVIDED TO THE SURVEYOR.
 6. UNLESS OTHERWISE SHOWN HEREON IS GREATER THAN 400 FEET FROM THE AS-DRILLED WELLBORE. AS-DRILLED WELLBORE CONFORMS TO THE 100' FOOT BOUNDARY SETBACK REQUIREMENTS.



Antero Resources Corporation
 Well No. 2H Jug Unit 2H (AS DRILLED)
 47-095-02171
 02/16/2018

PAD LAYOUT
 NOT TO SCALE
 STATE OF WV DNR
 D.B. 255 PG. 17
 T.M. 04 PAR. 01
 222.85 AC. ±
 STATE OF WV DNR
 D.B. 255 PG. 248
 T.M. 04 PAR. 01.2
 10 AC. ±
 STATE OF WV DNR
 D.B. 255 PG. 249
 T.M. 04 PAR. 01.4
 10 AC. ±
 SCOTT C. BLAIR ET AL
 D.B. 296 PG. 589
 T.M. 04 PAR. 08.4
 64.17 AC. ±
 STAR FURNITURE CO.
 D.B. 248 PG. 486
 T.M. 04 PAR. 08.2
 2.79 AC. ±
 ROBERT L. BROWN
 ET UX LEASE
 WILLIE R. LESTER
 D.B. 326 PG. 402
 T.M. 04 PAR. 07
 97.75 AC. ±
 REGINA H. BERTOLZI ET AL
 D.B. 334 PG. 420
 T.M. 04 PAR. 08.3
 41.86 AC. ±
 RAYMOND V.
 UNDERWOOD
 ET UX LEASE
 RAYMOND UNDERWOOD
 D.B. 114 PG. 272
 T.M. 04 PAR. 13
 96 AC. ±

(NAD) 83 (UTM) ZONE 17 COORDS:
 WELL 2H TOP HOLE INFORMATION:
 N: 4,364,733m E: 511,831m
 BOTTOM HOLE INFORMATION:
 N: 4,367,102m E: 510,818m

AS DRILLED DATA:
 WELL 2H TOP HOLE INFORMATION:
 N: 342,363ft E: 1,615,102ft
 LAT: 39°25'55.11" LON: 80°51'45.74"
 BOTTOM HOLE INFORMATION:
 N: 350,192ft E: 1,611,907ft
 LAT: 39°27'11.99" LON: 80°52'27.97"
 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.

LATITUDE 39°27'30"

8,296'

11,606' TO BOTTOM HOLE
LATITUDE 39°27'30"

LONGITUDE 80°50'00"

9,601'

LONGITUDE 80°50'00"

Antero Resources Corporation
Well No. Jug Unit 2H
47-095-02171 (AS DRILLED)

DAVID L. MAPLE LEASE

STATE OF WV DNR
D.B. 307 PG. 217
T.M. 27 PAR. 25
100 AC. ±

AS DRILLED DATA:
WELL 2H TOP HOLE INFORMATION:
N: 342,363ft E: 1,615,102ft
LAT: 39°25'55.11" LON: 80°51'45.74"
BOTTOM HOLE INFORMATION:
N: 350,192ft E: 1,611,907ft
LAT: 39°27'11.99" LON: 80°52'27.97"
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.

2H BOTTOM HOLE

STATE OF WV DNR
D.B. 227 PG. 141
T.M. 27 PAR. 30
125 AC. ±

STATE OF WV DNR
D.B. 227 PG. 141
T.M. 27 PAR. 28
88.75 AC. ±

MARK D. FLETCHER
D.B. 230 PG. 627
T.M. 27 PAR. 27
34.94 AC. ±

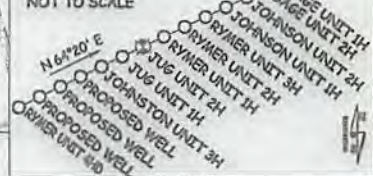
THOMAS SUMMERS
LICENSED
No. 2109
STATE OF WEST VIRGINIA
PROFESSIONAL SURVEYOR

MARK DOUGLAS FLETCHER LEASE
MARK D. FLETCHER
D.B. 230 PG. 627
T.M. 27 PAR. 29
92 AC. ±

JOHN R. SPENCE ET AL
D.B. 373 PG. 720
T.M. 27 PAR. 26
21.71 AC. ±

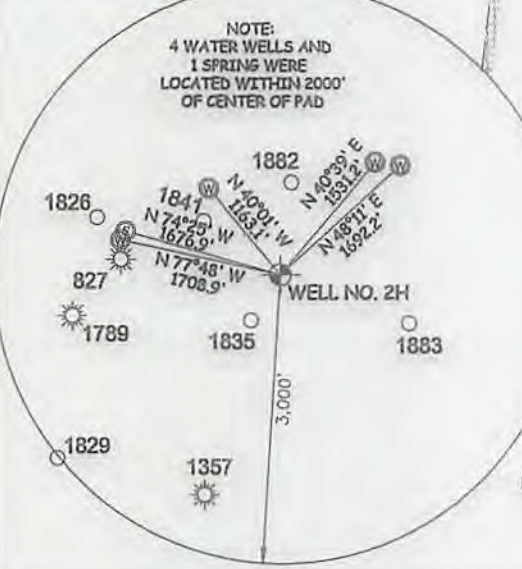
(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 2H TOP HOLE INFORMATION:
N: 4,364,733m E: 511,831m
BOTTOM HOLE INFORMATION:
N: 4,367,102m E: 510,818m

PAD LAYOUT
NOT TO SCALE



- 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 POULTRY HUSBANDRY 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 ALLEGHANY 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.
6. UNIT BOUNDARY SHOWN HEREON IS GREATER THAN 400' FROM THE AS-DRILLED WELLBORE. AS-DRILLED WELLBORE CONFORMS TO THE 400' UNIT BOUNDARY SETBACK REQUIREMENTS.

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



2H TOP HOLE

ELLSWORTH CENTERVILLE

CATHY JO ASH ET AL LEASE

STONE FOUND

FENCE CORNER FOUND

ROBERT L. RIFLEY ET AL
D.B. 327 PG. 77
T.M. 04 PAR. 06
53.5 AC. ±

ROBERT L. RIFLEY ET AL
D.B. 327 PG. 77
T.M. 04 PAR. 06.1
9.25 AC. ±

ROBERT L. BROWN ET UX LEASE
WILLIE R. LESTER
D.B. 326 PG. 402
T.M. 04 PAR. 07
97.75 AC. ±

STATE OF WV DNR
D.B. 255 PG. 245
T.M. 04 PAR. 01.4
10 AC. ±

SCOTT C. BLAIR ET AL
D.B. 296 PG. 589
T.M. 04 PAR. 08.4
64.17 AC. ±

STAR FURNITURE CO.
D.B. 248 PG. 486
T.M. 04 PAR. 08.2
2.79 AC. ±

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

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

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

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. ±

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 # 13-102WA
DRAWING # JUG2HAD
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# JUG UNIT #2H

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ 47 - 095 - 02171
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X STATE COUNTY PERMIT
LOCATION: ELEVATION 1,017' AS DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK
QUADRANGLE SHIRLEY 7.5' - SHL MIDDLEBOURNE 7.5' - BHL DISTRICT CENTERVILLE COUNTY TYLER
SURFACE OWNER RAYMOND UNDERWOOD ACREAGE 23 ACRES +/-
OIL & GAS ROYALTY OWNER RAYMOND V. UNDERWOOD ET UX; ROBERT L. BROWN ET UX; LEASE ACREAGE 96 ACRES +/-; 97.75 ACRES +/-
CATHY JO ASH ET AL; MARK DOUGLAS FLETCHER 315.25 ACRES +/-; 86 AC +/-
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 6,468' TVD 15,035' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
DENVER, CO 80202 CHARLESTON, WV 25313

02/16/2018