

APPROVED

WR-35
Rev. 8/23/13

Page ___ of ___

NAME: John G. [signature]

DATE: 10/18/17

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

API 47-017-06232 County Doddridge District Greenbrier
Quad Salem & Big Isaac 7.5' Pad Name Leonard Pad Field/Pool Name ----
Farm name Walter V. Davidson & Leonard J. Davidson Well Number Irons 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 4346303.326m Easting 534813.250m
Landing Point of Curve Northing 4346011.421m Easting 534773.867m
Bottom Hole Northing 4343818.224m Easting 536326.562m

Elevation (ft) 1320' 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 06/13/2013 Date drilling commenced 01/15/2014 Date drilling ceased 04/30/2014
Date completion activities began 04/18/2017 Date completion activities ceased 05/27/2017
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 27', 107', 212' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1302', 1911' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 517', 1077', 2013' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by: _____

RECEIVED
Office of Oil and Gas
SEP 11 2017
West Virginia Department of
Environmental Protection

01/05/2018

API 47-017 - 06232 Farm name Walter V. Davidson & Leonard J. Davidson Well number Irons 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	106.5#, J-55	N/A	Y
Surface	17-1/2"	13-3/8"	361'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2608'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	17014'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	7620'		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	198 sx	15.6	1.18	234	0'	8 Hrs.
Surface	Class A	426 sx	15.6	1.18	503	0'	8 Hrs.
Coal							
Intermediate 1	Class A	960 sx	15.6	1.18	1133	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1153 sx (Lead) 1543 sx (Tail)	14.5 (Lead), 15.2 (Tail)	1.30 (Lead), 1.86 (Tail)	4369	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 17014' MD, 7421' TVD (BHL) & 7519' TVD (Deepest Point Drilled) Loggers TD (ft) 16962' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6729'

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

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Rikk Unit 1H API #47-017-06228). Please reference the wireline logs submitted with Form WR-35 for Rikk Unit 1H. A Cement Bond Log has been included with this submittal.

RECEIVED
Office of Oil and Gas
SEP 11 2017

WV Department of
Environmental Protection

API 47- 017 - 06232 Farm name Walter V. Davidson & Leonard J. Davidson Well number Irons Unit 2H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
*PLEASE SEE ATTACHED EXHIBIT 1					

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
*PLEASE SEE ATTACHED EXHIBIT 2								

Please insert additional pages as applicable.

RECEIVED
Office of Oil and Gas
SEP 11 2017

WV Department of Environmental Protection

API 47- 017 - 06232 Farm name Walter V. Davidson & Leonard J. Davidson Well number Irons Unit 2H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	7409' (TOP)	TVD	7822' (TOP) MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 3523 mcfpd Oil --- bpd NGL --- bpd Water 158 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	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	

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Patterson – UTI Drilling Company LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Rush Wellsite Services
Address 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company US Well Services
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Samantha Klaas Telephone 303-357-6759
Signature *Samantha Klaas* Title Permitting Agent Date 09/08/2017

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

RECEIVED
Office of Oil and Gas

SEP 11 2017

WV Department of
Environmental Protection

01/05/2018

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	4/18/2017	16924	16758	60	Marcellus
2	5/2/2017	16727	16562	60	Marcellus
3	5/2/2017	16531	16366	60	Marcellus
4	5/3/2017	16335	16170	60	Marcellus
5	5/3/2017	16139	15974	60	Marcellus
6	5/3/2017	15943	15778	60	Marcellus
7	5/3/2017	15747	15582	60	Marcellus
8	5/3/2017	15551	15386	60	Marcellus
9	5/4/2017	15355	15190	60	Marcellus
10	5/4/2017	15159	14994	60	Marcellus
11	5/4/2017	14963	14798	60	Marcellus
12	5/5/2017	14767	14602	60	Marcellus
13	5/5/2017	14571	14406	60	Marcellus
14	5/5/2017	14375	14210	60	Marcellus
15	5/5/2017	14179	14014	60	Marcellus
16	5/5/2017	13983	13818	60	Marcellus
17	5/6/2017	13787	13622	60	Marcellus
18	5/6/2017	13591	13425	60	Marcellus
19	5/6/2017	13395	13229	60	Marcellus
20	5/6/2017	13199	13033	60	Marcellus
21	5/6/2017	12745	12583	60	Marcellus
22	5/7/2017	12553	12391	60	Marcellus
23	5/7/2017	12361	12198	60	Marcellus
24	5/7/2017	12168	12006	60	Marcellus
25	5/7/2017	11976	11814	60	Marcellus
26	5/7/2017	11784	11622	60	Marcellus
27	5/7/2017	11362	11197	60	Marcellus
28	5/8/2017	11166	11001	60	Marcellus
29	5/8/2017	10970	10805	60	Marcellus
30	5/8/2017	10774	10609	60	Marcellus
31	5/8/2017	10578	10413	60	Marcellus
32	5/8/2017	10382	10217	60	Marcellus
33	5/9/2017	10186	10021	60	Marcellus
34	5/9/2017	9990	9825	60	Marcellus
35	5/9/2017	9794	9629	60	Marcellus
36	5/9/2017	9598	9433	60	Marcellus
37	5/9/2017	9402	9237	60	Marcellus
38	5/10/2017	9206	9041	60	Marcellus
39	5/10/2017	9010	8845	60	Marcellus
40	5/10/2017	8814	8649	60	Marcellus
41	5/10/2017	8618	8453	60	Marcellus
42	5/10/2017	8422	8257	60	Marcellus
43	5/11/2017	8226	8061	60	Marcellus
44	5/11/2017	8030	7865	60	Marcellus

RECEIVED
Office of Oil and Gas

SEP 11 2017

WV Department of
Environmental Protection

01/05/2018

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	4/26/2017	73.2	8466	6055	7997	398400	9205	N/A
2	5/2/2017	24.2	8989	9162	5765	1500	3365	N/A
3	5/2/2017	75.5	8442	6763	4617	398200	8820	N/A
4	5/3/2017	72.7	8273	7242	5339	397200	8938	N/A
5	5/3/2017	78.3	8504	6602	4957	398900	8884	N/A
6	5/3/2017	80.2	8429	5543	4853	398500	8780	N/A
7	5/3/2017	79.6	8309	6473	4917	399300	8688	N/A
8	5/3/2017	78.6	8404	6777	5118	398300	8724	N/A
9	5/4/2017	80.9	8506	6770	5168	399400	8709	N/A
10	5/4/2017	79.3	8544	6691	5368	397400	8676	N/A
11	5/4/2017	80.2	8408	6602	5372	398700	8229	N/A
12	5/5/2017	79.9	8325	6605	5043	398600	7823	N/A
13	5/5/2017	77.4	8627	6269	5318	400600	9048	N/A
14	5/5/2017	79.7	8226	6706	4846	402200	7769	N/A
15	5/5/2017	80.2	8206	6713	5432	401000	7778	N/A
16	5/5/2017	81.5	8137	6284	5615	402200	7512	N/A
17	5/6/2017	78.5	8858	6899	5107	401300	9888	N/A
18	5/6/2017	80.2	8253	6205	4885	403400	7329	N/A
19	5/6/2017	79.9	7929	6548	5218	400400	7205	N/A
20	5/6/2017	75.7	7884	6709	5182	401400	7178	N/A
21	5/6/2017	76.5	7597	5704	4821	399900	7167	N/A
22	5/7/2017	74.3	7502	6280	5089	400800	7139	N/A
23	5/7/2017	72.5	7500	6505	5568	402500	7168	N/A
24	5/7/2017	80.2	7793	6248	5715	401600	7160	N/A
25	5/7/2017	74.3	7602	6384	5060	401000	7047	N/A
26	5/7/2017	73.0	7750	5238	5118	400900	7087	N/A
27	5/7/2017	73.5	7822	6491	5568	399000	7065	N/A
28	5/8/2017	74.0	7616	6795	5826	400800	7079	N/A
29	5/8/2017	74.5	7518	6355	5218	401000	6942	N/A
30	5/8/2017	73.8	7261	6262	5368	402100	6951	N/A
31	5/8/2017	74.0	7270	6584	5357	400500	6939	N/A
32	5/8/2017	73.7	7598	6716	5751	402900	6916	N/A
33	5/9/2017	74.3	7284	6652	5322	403300	6956	N/A
34	5/9/2017	74.1	7408	6956	5128	403100	6914	N/A
35	5/9/2017	74.3	7359	6509	5250	403300	6903	N/A
36	5/9/2017	74.2	7270	6437	5443	402700	6880	N/A
37	5/9/2017	71.4	7818	6258	5783	404100	8254	N/A
38	5/10/2017	74.8	7534	6284	5472	403600	6904	N/A
39	5/10/2017	73.1	7353	3909	5114	402800	6908	N/A
40	5/10/2017	72.9	7677	7228	5457	401500	8246	N/A
41	5/10/2017	73.2	7446	6366	5472	401440	8222	N/A
42	5/10/2017	73.4	7284	6537	5625	401700	6840	N/A
43	5/11/2017	73.8	7251	5947	5160	402900	6881	N/A
44	5/11/2017	73.4	7402	6713	5440	405390	7666	N/A
AVG=		74.8	7901	6477	5346	17,245,730	334,782	TOTAL

RECEIVED
Office of Oil and Gas

SEP 11 2017

WV Department of
Environmental Protection

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Fresh Water	27'	N/A	27'	N/A
Fresh Water	107'	N/A	107'	N/A
Fresh Water	212'	N/A	212'	N/A
Siltstone	0	217	0	217
Sand	est. 217	457	est. 217	457
Siltstone	est. 457	497	est. 457	497
Sandstone	est. 497	517	est. 497	517
Coal	est. 517	657	est. 517	657
Siltstone	est. 657	697	est. 657	697
Sandstone	est. 697	857	est. 697	857
Siltstone	est. 857	927	est. 857	927
Limestone	est. 927	1057	est. 927	1057
Sandstone/ Silt	est. 1057	1077	est. 1057	1077
Coal	est. 1077	1477	est. 1077	1477
Limestone/Silt	est. 1477	1577	est. 1477	1577
Siltstone	est. 1577	1737	est. 1577	1737
Sandstone/ Limestone	est. 1737	2004	est. 1737	2004
Sandstone/ Silt	est. 2004	2013	est. 2004	2013
Coal	est. 2013	2317	est. 2013	2317
Sandstone/ Silt	est. 2317	2398	est. 2317	2401
Big Lime	2398	2506	2401	2509
Big Injun	2506	2836	2509	2840
Gantz Sand	2836	2969	2840	2972
Fifty Foot Sandstone	2969	3128	2972	3131
Gordon	3128	3398	3131	3401
Fifth Sandstone	3398	3473	3401	3477
Bayard	3473	3742	3477	3745
Warren	3742	3978	3745	3981
Speechley	3978	4294	3981	4297
Baltown	4294	4752	4297	4755
Bradford	4752	5357	4755	5360
Benson	5357	5606	5360	5609
Alexander	5606	5836	5609	5840
Elk	5836	6396	5840	6400
Rhinstreet	6396	6896	6400	6878
Sycamore	6873	7084	6855	7155
Middlesex	7084	7237	7155	7400
Burkett	7237	7273	7400	7468
Tully	7273	7409	7468	7822
Marcellus	7409	NA	7822	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.

RECEIVED
Office of Oil and Gas

SEP 11 2017

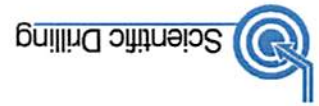
WV Department of
Environmental Protection

01/05/2018

Irons Unit 2H
 Doddridge County WV
 Northing: 14258780.68
 Easting: 1754584.94
 As Drilled

WELL DETAILS Irons Unit 2H

+N/-S	0.0	+E/-W	0.0	14258780.68	1754584.94
North	0.0	West	0.0	15 55 02.1 N 0° 35' 47.872 W	
Ground Level:	1318.0				



Gene Lightfoot
 10/25, May 08 2014
 Scientific Drilling
 421 South Eagle Lane
 Oklahoma City, OK 73128

LEGEND

- △ Rikk Unit 1H, Original Wellpath, As Drilled V0
- + Rikk Unit 2H, Original Wellpath, As Drilled V0
- Irons Unit 2H, Original Wellpath, Plan 4 V0
- As Drilled

PROJECT DETAILS: Doddridge County WV

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: 17N (84 W to 78 W)
 System Datum: Mean Sea Level

SITE DETAILS: Rikk/Pratt/Blackwood/Irons

Site Center Rikk Unit 1H
 Site Centre Northing: 14258782.29
 Easting: 1754594.81
 Positional Uncertainty: 2
 Convergence: 0.26
 Local North: Grid

DESIGN TARGET DETAILS

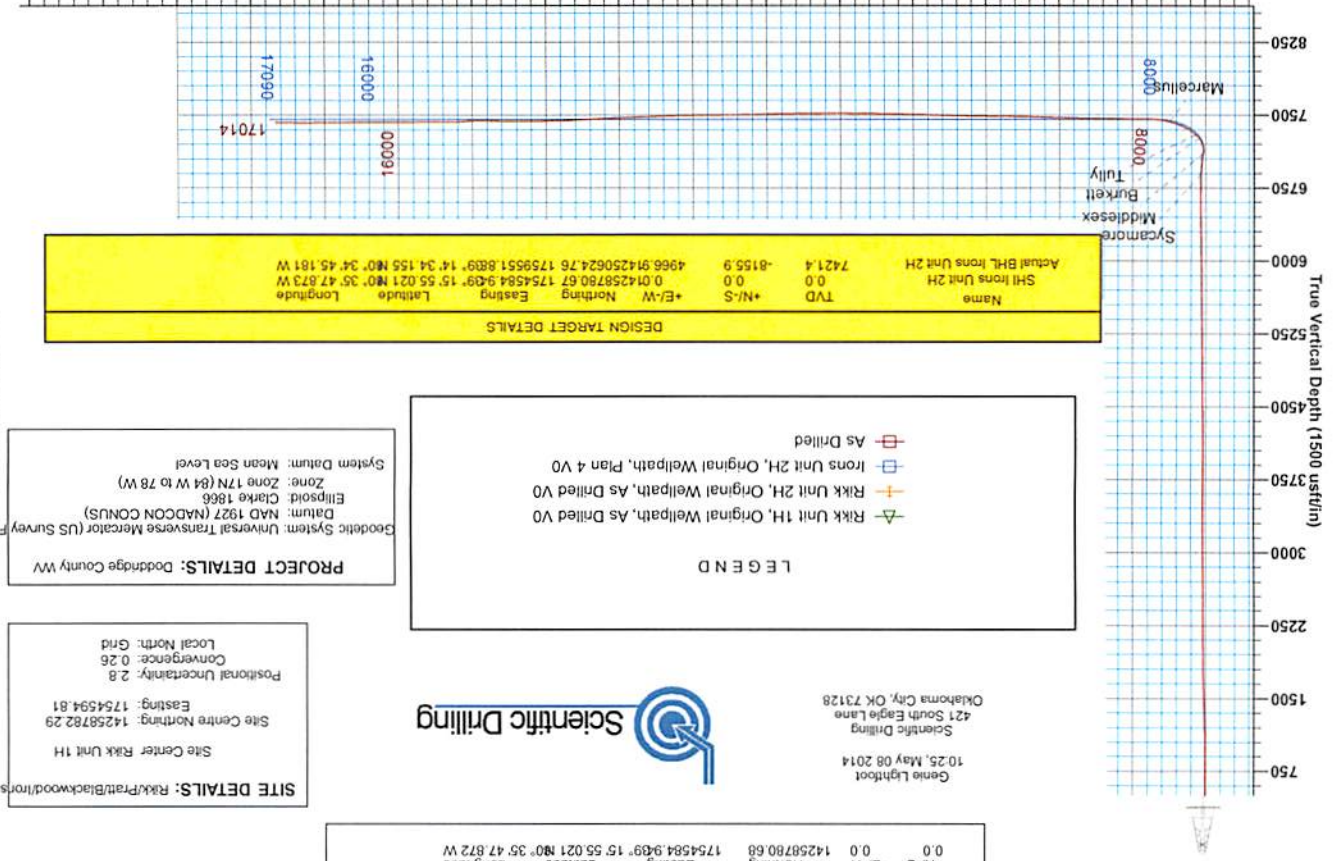
Name	SHI Irons Unit 2H	TVD	7421.4	+N/-S	0.0
	Actual BHL Irons Unit 2H		-8155.9	+E/-W	0.0
Latitude	15 55 02.1 N 0° 35' 47.873 W	Longitude	1754584.949°		
Latitude	14 34 15.5 N 0° 34' 45.181 W	Longitude	1759551.809°		

RECEIVED
 Office of Oil and Gas

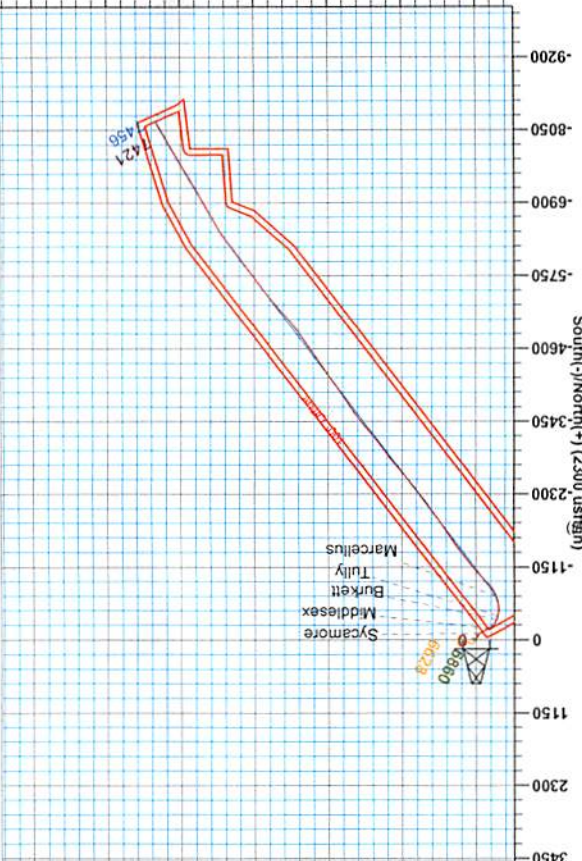
SEP 11 2017

WV Department of
 Environmental Protection

Vertical Section at 143.05° (1500 usft/in)



West(-)/East(+) (2300 usft/in)



To convert True North to Grid, Subtract 8.84°
 Magnetic North - 8.84°
 True North - 0.25°
 Magnetic Field Strength: 52312.6nT
 Dip Angle: 66.81°
 Date: 1/6/2014
 Model: IGRF2010



Company:	Antero Resources	Local Co-ordinate Reference:	Well Irons Unit 2H
Project:	Doddridge County WV	TVD Reference:	PATT 317: Irons 2H 1318 GL + 22.5 KB @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	MD Reference:	PATT 317: Irons 2H 1318 GL + 22.5 KB @ 1340.5
Well:	Irons Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Project	Doddridge County WV, McClellan District		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Rikk/Pratt/Blackwood/Irons				
Site Position:		Northing:	14,258,782.29 usft	Latitude:	39° 15' 55.036 N
From:	Map	Easting:	1,754,594.81 usft	Longitude:	80° 35' 47.747 W
Position Uncertainty:	2.8 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.26 °

Well	Irons Unit 2H					
Well Position	+N/-S	0.0 usft	Northing:	14,258,780.68 usft	Latitude:	39° 15' 55.021 N
	+E/-W	0.0 usft	Easting:	1,754,584.94 usft	Longitude:	80° 35' 47.872 W
Position Uncertainty		2.8 usft	Wellhead Elevation:	1,340.5 usft	Ground Level:	1,318.0 usft

Wellbore	Original Wellpath				
-----------------	-------------------	--	--	--	--

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/6/2014	-8.58	66.81	52,313

Design	As Drilled				
---------------	------------	--	--	--	--

Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	143.05	

Survey Program	Date 5/8/2014				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
109.5	6,637.5	Survey #4 Full Gyro to KOP (Original Well)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
6,697.0	17,014.0	Survey #5 MWD (Original Wellpath)	MWD SDI	MWD - Standard ver 1.0.1	

RECEIVED
 Office of Oil and Gas
 SEP 11 2017

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
109.5	1.74	137.22	109.5	-1.2	1.1	1.7	1.59
209.5	0.66	135.71	209.5	-2.7	2.6	3.7	1.08
309.5	0.34	144.17	309.5	-3.4	3.1	4.6	0.33
409.5	0.32	136.05	409.5	-3.8	3.5	5.2	0.05
509.5	0.28	152.26	509.5	-4.3	3.8	5.7	0.09
609.5	0.13	118.81	609.5	-4.5	4.0	6.0	0.19
709.5	0.15	67.12	709.5	-4.5	4.2	6.2	0.12
809.5	0.06	154.42	809.5	-4.5	4.4	6.3	0.16
909.5	0.05	163.62	909.5	-4.6	4.4	6.4	0.01
1,009.5	0.23	188.24	1,009.5	-4.9	4.4	6.5	0.19



Company:	Antero Resources	Local Co-ordinate Reference:	Well Irons Unit 2H
Project:	Doddridge County WV	TVD Reference:	PATT 317: Irons 2H 1318 GL + 22.5 KB @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	MD Reference:	PATT 317: Irons 2H 1318 GL + 22.5 KB @ 1340.5
Well:	Irons Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
1,109.5	0.38	206.62	1,109.4	-5.4	4.2	6.8	0.18	
1,209.5	2.07	197.54	1,209.4	-7.4	3.5	8.0	1.70	
1,309.5	4.74	200.32	1,309.2	-13.0	1.6	11.3	2.67	
1,409.5	5.78	210.00	1,408.8	-21.2	-2.4	15.5	1.36	
1,509.5	6.64	215.21	1,508.2	-30.3	-8.2	19.3	1.03	
1,609.5	5.84	215.21	1,607.6	-39.2	-14.5	22.6	0.80	
1,709.5	5.61	224.50	1,707.1	-46.8	-20.9	24.9	0.95	
1,809.5	4.23	228.45	1,806.8	-52.7	-27.1	25.9	1.42	
1,909.5	3.06	228.68	1,906.6	-57.0	-31.8	26.4	1.17	
2,009.5	1.99	226.97	2,006.5	-59.9	-35.1	26.8	1.07	
2,109.5	1.27	223.20	2,106.4	-61.9	-37.1	27.1	0.73	
2,209.5	0.63	214.77	2,206.4	-63.2	-38.2	27.5	0.65	
2,309.5	0.20	198.51	2,306.4	-63.8	-38.6	27.8	0.44	
2,409.5	0.21	195.01	2,406.4	-64.1	-38.7	28.0	0.02	
2,509.5	0.14	203.56	2,506.4	-64.4	-38.8	28.2	0.07	
2,609.5	0.19	149.18	2,606.4	-64.7	-38.7	28.4	0.16	
2,709.5	0.21	134.01	2,706.4	-64.9	-38.5	28.7	0.06	
2,809.5	0.16	125.47	2,806.4	-65.1	-38.3	29.1	0.06	
2,909.5	0.19	113.04	2,906.4	-65.3	-38.0	29.3	0.05	
3,009.5	0.14	109.14	3,006.4	-65.4	-37.7	29.6	0.05	
3,109.5	0.06	175.61	3,106.4	-65.5	-37.6	29.7	0.13	
3,209.5	0.13	348.45	3,206.4	-65.4	-37.6	29.7	0.19	
3,309.5	0.13	140.10	3,306.4	-65.4	-37.6	29.7	0.25	
3,409.5	0.16	153.00	3,406.4	-65.6	-37.4	29.9	0.04	
3,509.5	0.17	65.70	3,506.4	-65.7	-37.2	30.1	0.23	
3,609.5	0.31	58.82	3,606.4	-65.5	-36.9	30.2	0.14	
3,709.5	0.29	70.53	3,706.4	-65.2	-36.4	30.3	0.06	
3,809.5	0.21	70.61	3,806.4	-65.1	-36.0	30.4	0.08	
3,909.5	0.17	64.81	3,906.4	-65.0	-35.7	30.5	0.04	
4,009.5	0.13	76.08	4,006.4	-64.9	-35.4	30.5	0.05	
4,109.5	0.13	98.37	4,106.4	-64.9	-35.2	30.7	0.05	
4,209.5	0.12	105.34	4,206.4	-64.9	-35.0	30.8	0.02	
4,309.5	0.24	116.32	4,306.4	-65.0	-34.7	31.1	0.12	
4,409.5	0.30	107.21	4,406.4	-65.2	-34.3	31.5	0.07	
4,509.5	0.43	109.74	4,506.4	-65.4	-33.7	32.0	0.13	
4,609.5	0.67	102.35	4,606.4	-65.7	-32.8	32.8	0.25	
4,709.5	0.70	90.74	4,706.4	-65.8	-31.6	33.6	0.14	
4,809.5	0.66	86.38	4,806.4	-65.8	-30.4	34.3	0.07	
4,909.5	0.68	107.77	4,906.4	-65.9	-29.2	35.1	0.25	
5,009.5	0.81	100.25	5,006.4	-66.2	-28.0	36.1	0.16	
5,109.5	0.71	100.94	5,106.4	-66.5	-26.7	37.1	0.10	
5,209.5	0.72	99.25	5,206.3	-66.7	-25.5	38.0	0.02	
5,309.5	0.68	95.02	5,306.3	-66.8	-24.2	38.8	0.07	
5,409.5	0.69	91.05	5,406.3	-66.9		39.6	0.05	

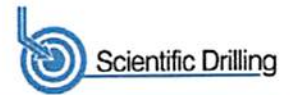
RECEIVED
Office of Oil and Gas



Company:	Antero Resources	Local Co-ordinate Reference:	Well Irons Unit 2H
Project:	Doddridge County WV	TVD Reference:	PATT 317: Irons 2H 1318 GL + 22.5 KB @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	MD Reference:	PATT 317: Irons 2H 1318 GL + 22.5 KB @ 1340.5
Well:	Irons Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
5,509.5	0.69	85.57	5,506.3	-66.9	-21.9	40.3	0.07	
5,609.5	0.81	83.92	5,606.3	-66.7	-20.5	41.0	0.12	
5,709.5	0.78	82.10	5,706.3	-66.6	-19.2	41.7	0.04	
5,809.5	0.89	88.88	5,806.3	-66.5	-17.7	42.5	0.15	
5,909.5	0.93	94.79	5,906.3	-66.5	-16.1	43.5	0.10	
6,009.5	0.80	97.01	6,006.3	-66.7	-14.6	44.5	0.13	
6,109.5	0.82	96.88	6,106.3	-66.8	-13.2	45.5	0.02	
6,209.5	0.95	97.59	6,206.2	-67.0	-11.7	46.5	0.13	
6,309.5	0.74	114.75	6,306.2	-67.4	-10.3	47.7	0.33	
6,409.5	0.61	106.25	6,406.2	-67.8	-9.2	48.7	0.16	
6,509.5	0.63	114.16	6,506.2	-68.2	-8.2	49.6	0.09	
6,609.5	0.59	125.31	6,606.2	-68.7	-7.3	50.6	0.13	
6,637.5	0.73	115.23	6,634.2	-68.9	-7.0	50.9	0.65	
6,697.0	2.34	225.58	6,693.7	-69.9	-7.5	51.4	4.51	
6,729.0	6.95	238.40	6,725.6	-71.4	-9.6	51.3	14.68	
6,760.0	12.49	239.28	6,756.1	-74.1	-14.1	50.7	17.88	
6,792.0	16.08	239.57	6,787.1	-78.1	-20.9	49.8	11.22	
6,823.0	18.03	237.69	6,816.8	-82.8	-28.7	49.0	6.54	
6,854.0	20.66	238.40	6,846.0	-88.3	-37.4	48.1	8.52	
6,886.0	24.28	237.64	6,875.6	-94.7	-47.7	47.0	11.35	
6,902.0	25.54	236.91	6,890.1	-98.4	-53.4	46.5	8.12	
Sycamore								
6,917.0	26.73	236.29	6,903.6	-102.0	-58.9	46.1	8.12	
6,948.0	29.23	237.83	6,930.9	-109.9	-71.1	45.1	8.39	
6,979.0	31.74	239.89	6,957.7	-118.0	-84.6	43.5	8.77	
7,011.0	34.47	241.30	6,984.5	-126.6	-99.8	41.2	8.86	
7,040.0	36.84	242.70	7,008.0	-134.5	-114.8	38.5	8.64	
7,074.0	40.04	242.88	7,034.6	-144.2	-133.5	35.0	9.42	
7,106.0	43.26	242.09	7,058.6	-154.0	-152.4	31.5	10.20	
7,137.0	47.66	240.33	7,080.3	-164.7	-171.8	28.4	14.76	
7,169.0	49.18	240.55	7,101.5	-176.5	-192.6	25.3	4.78	
7,178.0	49.19	239.49	7,107.4	-179.9	-198.5	24.5	8.89	
Middlesex								
7,200.0	49.26	236.91	7,121.8	-188.7	-212.6	23.0	8.89	
7,232.0	50.12	232.95	7,142.5	-202.7	-232.6	22.2	9.81	
7,264.0	50.83	227.59	7,162.9	-218.5	-251.6	23.4	13.11	
7,295.0	51.79	222.66	7,182.2	-235.5	-268.7	26.7	12.79	
7,327.0	51.97	216.34	7,202.0	-254.9	-284.7	32.6	15.54	
7,358.0	52.23	211.94	7,221.1	-275.2	-298.4	40.5	11.23	
7,390.0	52.99	208.24	7,240.5	-297.2	-311.2	50.5	9.49	
7,422.0	54.52	203.86	7,259.4	-320.4	-322.5	62.2	12.03	
7,423.0	54.61	203.73	7,260.0	-321.1	-322.8	62.6	13.95	
Burkett								
7,453.0	57.42	199.99	7,276.8	-344.2	-332.0	75.5	13.95	
7,485.0	60.06	196.12	7,293.4	-370.2	-340.0	91.2	13.22	

RECEIVED
Office of Oil and Gas



Company:	Antero Resources	Local Co-ordinate Reference:	Well Irons Unit 2H
Project:	Doddridge County WV	TVD Reference:	PATT 317: Irons 2H 1318 GL + 22.5 KB @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	MD Reference:	PATT 317: Irons 2H 1318 GL + 22.5 KB @ 1340.5
Well:	Irons Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,491.0	60.49	195.29	7,296.4	-375.2	-341.9	94.3	13.94
Tully							
7,516.0	62.34	191.93	7,308.3	-396.5	-347.1	108.3	13.94
7,548.0	63.22	188.47	7,323.0	-424.5	-352.1	127.6	10.00
7,580.0	63.66	184.52	7,337.3	-453.0	-355.3	148.4	11.13
7,611.0	64.37	182.06	7,350.9	-480.8	-356.9	169.7	7.49
7,643.0	66.21	177.58	7,364.2	-509.8	-356.8	192.9	13.96
7,674.0	68.15	174.59	7,376.3	-538.3	-354.9	216.9	10.87
7,706.0	70.00	171.51	7,387.7	-568.0	-351.3	242.8	10.69
7,738.0	70.26	168.96	7,398.6	-597.7	-346.2	269.5	7.54
7,769.0	70.16	166.59	7,409.1	-626.2	-340.0	296.0	7.20
7,801.0	71.40	163.60	7,419.6	-655.4	-332.2	324.0	9.64
7,833.0	74.23	160.73	7,429.1	-684.5	-322.8	352.9	12.31
7,845.0	75.31	159.59	7,432.2	-695.3	-318.9	364.0	12.86
Marcellus							
7,864.0	77.03	157.80	7,436.8	-712.5	-312.2	381.7	12.86
7,896.0	80.68	154.40	7,442.9	-741.2	-299.5	412.3	15.45
7,928.0	82.31	149.80	7,447.7	-769.2	-284.7	443.6	15.10
7,959.0	83.40	146.91	7,451.5	-795.4	-268.6	474.2	9.90
7,991.0	84.59	144.70	7,454.9	-821.7	-250.7	506.0	7.81
8,022.0	85.82	141.63	7,457.5	-846.4	-232.1	536.9	10.64
8,079.0	89.87	135.74	7,459.6	-889.2	-194.6	593.6	12.53
8,174.0	90.48	136.53	7,459.3	-957.7	-128.7	687.9	1.05
8,269.0	88.99	137.59	7,459.8	-1,027.2	-64.0	782.4	1.92
8,364.0	89.25	139.34	7,461.2	-1,098.3	-1.0	877.1	1.86
8,459.0	88.81	140.66	7,462.8	-1,171.1	60.0	971.9	1.46
8,554.0	89.43	141.10	7,464.3	-1,244.8	119.9	1,066.9	0.80
8,649.0	89.25	143.74	7,465.4	-1,320.0	177.9	1,161.8	2.79
8,744.0	88.72	144.53	7,467.1	-1,397.0	233.5	1,256.8	1.00
8,839.0	88.46	144.09	7,469.4	-1,474.1	288.9	1,351.8	0.54
8,933.0	89.03	144.79	7,471.5	-1,550.6	343.6	1,445.7	0.96
9,028.0	89.08	147.25	7,473.0	-1,629.3	396.7	1,540.6	2.59
9,123.0	87.67	146.90	7,475.7	-1,709.1	448.3	1,635.3	1.53
9,218.0	87.32	146.99	7,479.9	-1,788.6	500.1	1,730.0	0.38
9,313.0	88.11	144.70	7,483.7	-1,867.1	553.3	1,824.8	2.55
9,407.0	88.64	144.62	7,486.3	-1,943.8	607.7	1,918.7	0.57
9,502.0	89.16	144.00	7,488.2	-2,020.9	663.1	2,013.7	0.85
9,597.0	89.78	142.86	7,489.0	-2,097.2	719.7	2,108.6	1.37
9,692.0	90.57	143.74	7,488.7	-2,173.4	776.5	2,203.6	1.24
9,787.0	89.52	142.51	7,488.7	-2,249.4	833.5	2,298.6	1.70
9,882.0	88.29	141.63	7,490.5	-2,324.3	891.9	2,393.6	1.59
9,976.0	88.42	141.65	7,493.2	-2,398.0	950.2	2,487.5	0.14
10,071.0	89.34	141.01	7,495.0	-2,472.1	1,009.5	2,582.5	1.18
10,166.0	88.37	140.84	7,496.9	-2,545.9	1,069.4	2,677.4	1.04
10,261.0	87.41	140.84	7,500.4	-2,619.5	1,129.3	2,772.3	1.01

RECEIVED
Office of Oil and Gas



Company:	Antero Resources	Local Co-ordinate Reference:	Well Irons Unit 2H
Project:	Doddridge County WV	TVD Reference:	PATT 317: Irons 2H 1318 GL + 22.5 KB @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	MD Reference:	PATT 317: Irons 2H 1318 GL + 22.5 KB @ 1340.5
Well:	Irons Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
10,356.0	88.29	141.37	7,504.0	-2,693.4	1,188.9	2,867.1	1.08
10,450.0	89.34	142.16	7,505.9	-2,767.2	1,247.1	2,961.1	1.40
10,545.0	89.16	141.19	7,507.2	-2,841.7	1,306.0	3,056.1	1.04
10,640.0	88.72	141.89	7,508.9	-2,916.1	1,365.1	3,151.0	0.87
10,735.0	88.55	144.44	7,511.2	-2,992.1	1,422.0	3,246.0	2.69
10,830.0	88.99	145.14	7,513.2	-3,069.7	1,476.8	3,340.9	0.87
10,925.0	89.25	142.42	7,514.7	-3,146.3	1,532.9	3,435.9	2.88
11,017.0	89.60	140.57	7,515.6	-3,218.3	1,590.2	3,527.8	2.05
11,108.0	89.87	139.96	7,516.1	-3,288.3	1,648.4	3,618.7	0.73
11,199.0	89.60	140.49	7,516.5	-3,358.2	1,706.6	3,709.6	0.65
11,291.0	89.34	140.57	7,517.3	-3,429.2	1,765.0	3,801.5	0.30
11,382.0	88.99	141.54	7,518.7	-3,500.0	1,822.2	3,892.4	1.13
11,473.0	90.57	144.19	7,519.0	-3,572.5	1,877.2	3,983.4	3.39
11,565.0	91.98	144.97	7,517.0	-3,647.5	1,930.5	4,075.4	1.75
11,656.0	90.40	147.08	7,515.1	-3,722.9	1,981.3	4,166.2	2.90
11,747.0	90.84	147.43	7,514.1	-3,799.5	2,030.5	4,257.0	0.62
11,838.0	91.45	146.81	7,512.3	-3,875.9	2,079.9	4,347.7	0.96
11,929.0	91.80	145.14	7,509.7	-3,951.3	2,130.8	4,438.6	1.87
12,020.0	91.61	143.93	7,507.0	-4,025.3	2,183.6	4,529.5	1.35
12,115.0	91.89	145.32	7,504.1	-4,102.8	2,238.6	4,624.4	1.49
12,210.0	90.75	144.35	7,501.9	-4,180.4	2,293.3	4,719.3	1.58
12,305.0	91.19	144.27	7,500.3	-4,257.6	2,348.7	4,814.3	0.47
12,399.0	91.31	145.94	7,498.2	-4,334.6	2,402.4	4,908.2	1.78
12,494.0	91.10	146.46	7,496.2	-4,413.6	2,455.3	5,003.1	0.59
12,589.0	91.63	147.78	7,494.0	-4,493.3	2,506.8	5,097.8	1.50
12,684.0	89.52	145.58	7,493.0	-4,572.7	2,559.0	5,192.6	3.21
12,779.0	89.60	144.79	7,493.7	-4,650.7	2,613.2	5,287.5	0.84
12,873.0	91.61	144.26	7,492.7	-4,727.2	2,667.8	5,381.5	2.21
12,968.0	92.59	143.47	7,489.3	-4,803.9	2,723.8	5,476.4	1.32
13,063.0	93.56	144.70	7,484.2	-4,880.7	2,779.4	5,571.2	1.65
13,158.0	92.07	141.89	7,479.5	-4,956.8	2,836.1	5,666.1	3.34
13,253.0	91.54	141.63	7,476.5	-5,031.4	2,894.9	5,761.0	0.62
13,348.0	91.28	138.99	7,474.2	-5,104.4	2,955.5	5,855.9	2.79
13,443.0	91.80	138.82	7,471.6	-5,176.0	3,018.0	5,950.6	0.58
13,537.0	93.03	137.59	7,467.7	-5,246.0	3,080.6	6,044.2	1.85
13,632.0	93.74	139.43	7,462.0	-5,317.1	3,143.4	6,138.7	2.07
13,727.0	92.24	141.89	7,457.1	-5,390.4	3,203.5	6,233.5	3.03
13,822.0	92.51	143.21	7,453.2	-5,465.8	3,261.2	6,328.4	1.42
13,917.0	92.86	141.45	7,448.7	-5,540.9	3,319.2	6,423.3	1.89
14,012.0	91.89	143.03	7,444.8	-5,615.9	3,377.3	6,518.2	1.95
14,107.0	92.15	142.07	7,441.4	-5,691.3	3,435.1	6,613.1	1.05
14,202.0	91.71	144.35	7,438.2	-5,767.3	3,491.9	6,708.1	2.44
14,297.0	92.07	144.79	7,435.1	-5,844.7	3,547.0	6,803.0	0.60
14,392.0	90.40	144.44	7,433.0	-5,922.1	3,602.0	6,897.9	1.80

RECEIVED
Office of Oil and Gas



Company:	Antero Resources	Local Co-ordinate Reference:	Well Irons Unit 2H
Project:	Doddridge County WV	TVD Reference:	PATT 317: Irons 2H 1318 GL + 22.5 KB @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	MD Reference:	PATT 317: Irons 2H 1318 GL + 22.5 KB @ 1340.5
Well:	Irons Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
14,487.0	89.25	143.65	7,433.3	-5,999.0	3,657.7	6,992.9	1.47
14,582.0	89.52	144.18	7,434.3	-6,075.8	3,713.7	7,087.9	0.63
14,676.0	88.55	142.07	7,435.9	-6,151.0	3,770.1	7,181.9	2.47
14,771.0	88.55	141.80	7,438.3	-6,225.7	3,828.6	7,276.8	0.28
14,866.0	90.13	142.77	7,439.4	-6,300.9	3,886.7	7,371.8	1.95
14,962.0	91.54	144.27	7,438.0	-6,378.1	3,943.8	7,467.8	2.14
15,057.0	93.03	148.75	7,434.2	-6,457.2	3,996.2	7,562.5	4.97
15,152.0	92.86	150.33	7,429.4	-6,539.0	4,044.3	7,656.8	1.67
15,247.0	91.36	151.03	7,425.9	-6,621.7	4,090.8	7,750.9	1.74
15,342.0	89.26	150.49	7,425.3	-6,704.6	4,137.2	7,845.0	2.28
15,437.0	89.60	150.42	7,426.3	-6,787.3	4,184.0	7,939.2	0.37
15,532.0	89.69	149.63	7,426.9	-6,869.6	4,231.5	8,033.5	0.84
15,627.0	90.40	149.89	7,426.8	-6,951.6	4,279.3	8,127.8	0.80
15,722.0	91.36	149.89	7,425.3	-7,033.8	4,327.0	8,222.2	1.01
15,817.0	89.69	150.59	7,424.5	-7,116.3	4,374.1	8,316.4	1.91
15,912.0	90.04	150.77	7,424.7	-7,199.1	4,420.6	8,410.6	0.41
16,007.0	90.13	149.71	7,424.6	-7,281.6	4,467.8	8,504.8	1.12
16,102.0	90.13	149.89	7,424.3	-7,363.7	4,515.6	8,599.2	0.19
16,197.0	91.01	148.31	7,423.4	-7,445.2	4,564.4	8,693.6	1.90
16,292.0	91.32	149.80	7,421.5	-7,526.6	4,613.2	8,788.1	1.60
16,386.0	90.57	150.68	7,419.9	-7,608.2	4,659.8	8,881.3	1.23
16,481.0	89.43	151.80	7,419.9	-7,691.5	4,705.6	8,975.3	1.68
16,576.0	90.22	151.56	7,420.2	-7,775.1	4,750.6	9,069.3	0.87
16,671.0	90.84	150.86	7,419.3	-7,858.4	4,796.4	9,163.3	0.98
16,766.0	89.08	151.12	7,419.4	-7,941.5	4,842.4	9,257.4	1.87
16,861.0	89.52	150.24	7,420.6	-8,024.3	4,889.0	9,351.5	1.04
16,953.0	89.78	149.36	7,421.1	-8,103.8	4,935.2	9,442.9	1.00
17,014.0	89.78	148.00	7,421.4	-8,155.9	4,966.9	9,503.6	2.23

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,902.0	6,890.1	-98.4	-53.4	Sycamore
7,178.0	7,107.4	-179.9	-198.5	Middlesex
7,423.0	7,260.0	-321.1	-322.8	Burkett
7,491.0	7,296.4	-375.2	-341.9	Tully
7,845.0	7,432.2	-695.3	-318.9	Marcellus

Checked By: _____ Approved By: _____ Date: _____

RECEIVED
Office of Oil and Gas

SEP 11 2017

Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date:	4/26/2017
Job End Date:	5/11/2017
State:	West Virginia
County:	Doddridge
API Number:	47-017-06232-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Irons 2H
Latitude:	39.26528333
Longitude:	-80.59663056
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,517
Total Base Water Volume (gal):	14,539,382
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
Water	Antero Resources	Carrier/Base Fluid	Water	7732-18-5	100.00000	87.25076	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	12.40906	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.40000	0.24102	
			Hydrogen Chloride	7647-01-0	17.50000	0.05604	
WFRA-500	U.S. Well Services, LLC	Friction Reducer	2-Propenoic acid, polymer with 2-propenamide	29003-06-9	30.00000	0.01493	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01202	
LGC-15	U.S. Well Services, LLC	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.00398	
			Petroleum Distillates	64742-47-8	60.00000	0.00377	
			Suspending agent (solid)	14808-60-7	3.00000	0.00061	
			Surfactant	68439-51-0	3.00000	0.00024	

RECEIVED
 Office of Oil and Gas
 SEP 11 2017

Bioclear 2000	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00414	
			Deionized Water	7732-18-5	28.00000	0.00237	
SI-1200s	U.S. Well Services, LLC	Scale Inhibitor					
			Alkyl Phosphonic Acid	Proprietary	5.00000	0.00063	
			Ammonia	7664-41-7	0.50000	0.00010	
AI-303	U.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Ethylene glycol	107-21-1	40.00000	0.00008	
			Cinnamaldehyde	104-55-2	20.00000	0.00003	
			Formic acid	64-18-6	20.00000	0.00003	
			Butyl cellosolve	111-76-2	20.00000	0.00003	
			Polyether	60828-78-6	10.00000	0.00001	
			Acetophenone, thiourea, formaldehyde polymer	68527-49-1	5.00000	0.00001	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00017	

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

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)

RECEIVED
Office of Oil and Gas
SEP 11 2017
WV Department of
Environmental Protection

WELL OPERATOR: Antero Resources Corporation
 ADDRESS: 1615 Wynkoop Street
 Denver, CO 80202

DESIGNATED AGENT: Dianna Stamper - CT Corporation System
 ADDRESS: 5400 D Big Tyler Road
 Charleston, WV 25313
 WV Department of Environmental Protection

FILE NO: 44-30-GR-13
 DRAWING NO: Irons 2H Well Plat As-Drilled
 SCALE: 1" = 1200'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW

LOCATION: ELEVATION: 1320'
 WATERSHED: Headwaters Middle Island Creek
 QUADRANGLE: Salem & Big Isaac

DISTRICT: Greenbrier
 SURFACE OWNER: Walter V. Davidson & M.T. Williams, et ux, et al; Rikk H. Randal, et ux
 ROYALTY OWNER: Charles J. Dennison, Trustee for the C.O. Dennison Estate, et al
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY)
 PLUG AND ABANDON CLEAN OUT AND REPLUG
 TARGET FORMATION: Marcellus Shale

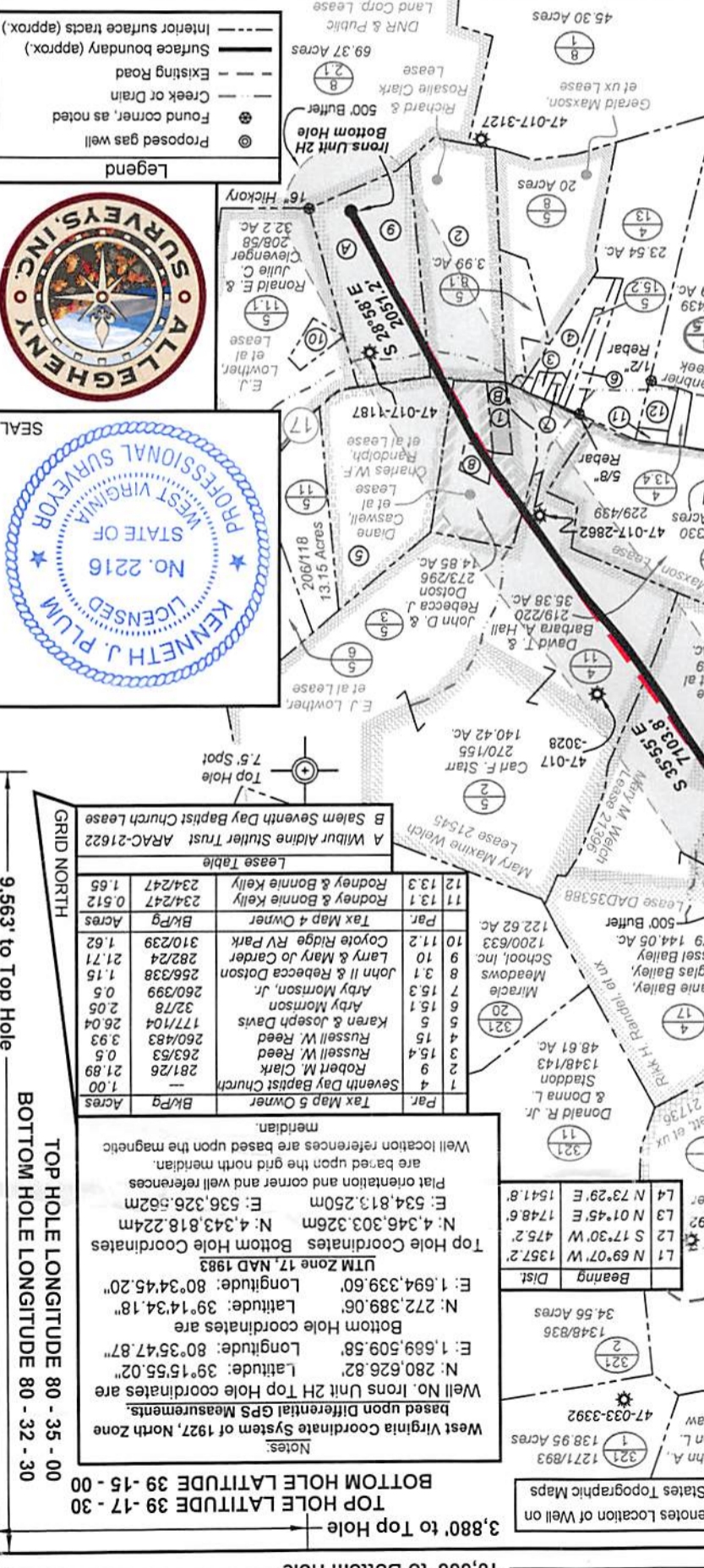
STATE OF WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 OIL AND GAS DIVISION

DATE: July 13 2017
 OPERATORS WELL NO. Irons Unit 2H
 API WELL NO. 47 - 017 - 06232

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 prescribed by the Department of Environmental Protection.

Kenneth J. Plum, P.S. 2216

Top Hole coordinates verified by survey grade GPS. As-Drilled data and information was provided by Antero Resources Corporation. Allegheny Surveys, Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.



Lease Table

Par.	Acres	Bk/Pg	Owner
1	1.00	281/26	Robert M. Clark
2	21.89	263/53	Russell W. Reed
3	263/53	260/483	Russell W. Reed
4	2.05	32/78	Arby Morrison, Jr.
5	2.05	260/399	Arby Morrison, Jr.
6	0.5	260/399	Arby Morrison, Jr.
7	1.15	263/38	John II & Rebecca Dotson
8	3.1	282/24	Larry & Mary Jo Carder
9	10	310/239	Tax Map 4 Owner
10	11.2	310/239	Tax Map 4 Owner
11	13.3	234/247	Rodney & Bonnie Kelly
12	13.3	234/247	Rodney & Bonnie Kelly

West Virginia Coordinate System of 1927, North Zone
 based upon Differential GPS Measurements.

Well No. Irons Unit 2H Top Hole coordinates are
 N: 280,626.82' Longitude: 80°15'55.02"
 E: 1,689,509.58' Longitude: 80°35'47.87"
 Bottom Hole coordinates are
 N: 272,389.06' Longitude: 39°14'34.18"
 E: 1,694,339.60' Longitude: 80°34'45.20"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 L1 N 69°07' W 1357.2'
 L2 S 17°30' W 475.2'
 L3 N 01°45' E 1748.6'
 L4 N 73°29' E 1541.8'

Plate orientation and corner and well references
 are based upon the grid north meridian.
 Well location references are based upon the magnetic
 meridian.

Notes:
 (-) Denotes Location of Well on
 United States Topographic Maps

10,666' to Bottom Hole
 3,880' to Top Hole
 TOP HOLE LATITUDE 39 - 17 - 30
 BOTTOM HOLE LATITUDE 39 - 15 - 00
 2,486' to Bottom Hole
 9,563' to Top Hole
 TOP HOLE LONGITUDE 80 - 35 - 00
 BOTTOM HOLE LONGITUDE 80 - 32 - 30

10,666' to Bottom Hole

3,880' to Top Hole

TOP HOLE LATITUDE 39 -17 - 30
BOTTOM HOLE LATITUDE 39 -15 - 00

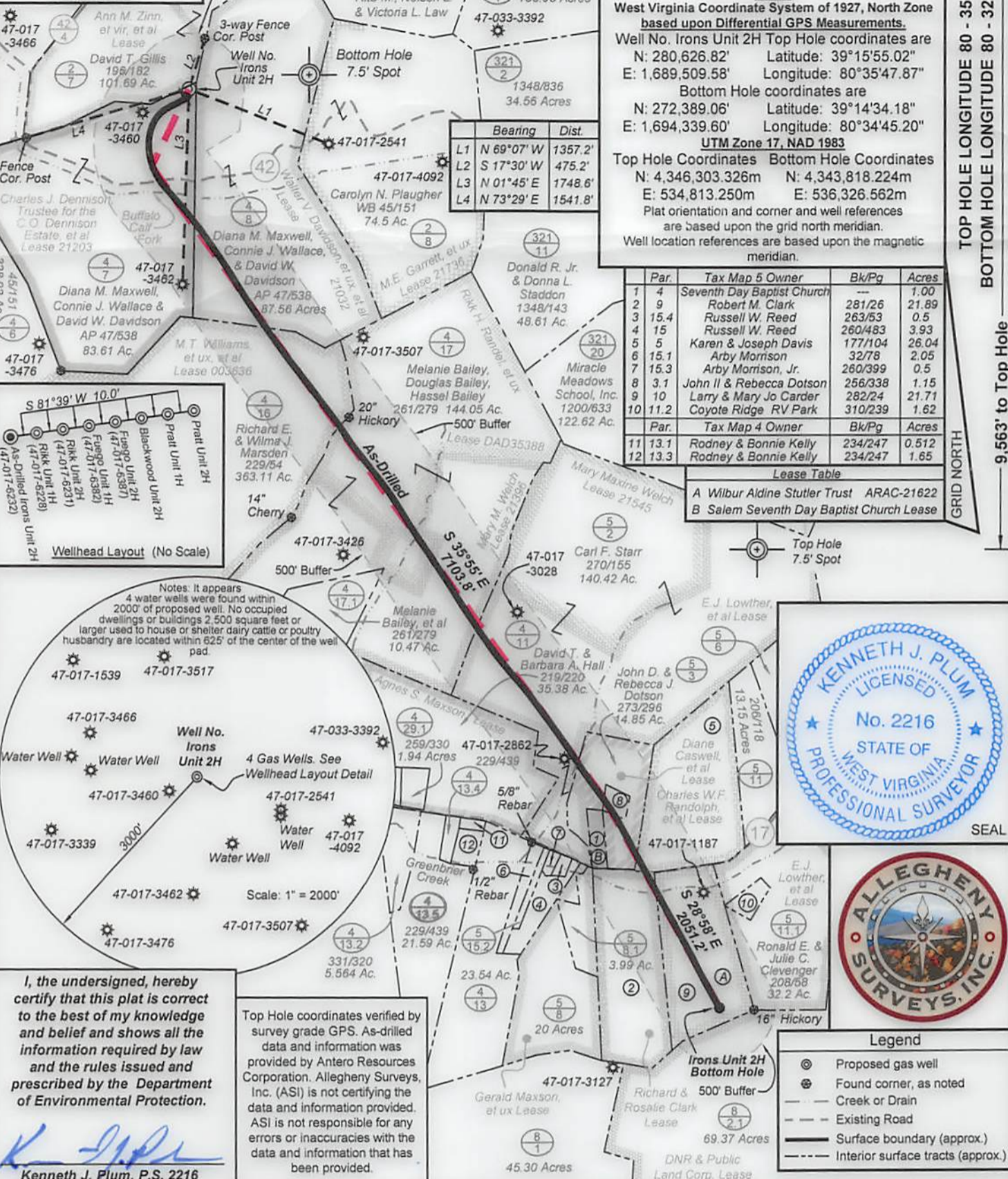
TOP HOLE LONGITUDE 80 - 35 - 00
BOTTOM HOLE LONGITUDE 80 - 32 - 30

2,485' to Bottom Hole

9,563' to Top Hole

GRID NORTH

**Antero Resources
Well No. Irons Unit 2H
As-Drilled Plat
Antero Resources
Corporation**



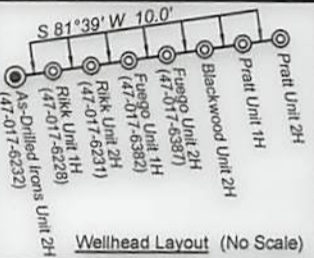
	Bearing	Dist.
L1	N 69°07' W	1357.2'
L2	S 17°30' W	475.2'
L3	N 01°45' E	1748.6'
L4	N 73°29' E	1541.8'

Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Irons Unit 2H Top Hole coordinates are
N: 280,626.82' Latitude: 39°15'55.02"
E: 1,689,509.58' Longitude: 80°35'47.87"
Bottom Hole coordinates are
N: 272,389.06' Latitude: 39°14'34.18"
E: 1,694,339.60' Longitude: 80°34'45.20"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,346,303.326m N: 4,343,818.224m
E: 534,813.250m E: 536,326.562m
Plat orientation and corner and well references are based upon the grid north meridian.
Well location references are based upon the magnetic meridian.

Par.	Tax Map 5 Owner	Bk/Pg	Acres
1	4	Seventh Day Baptist Church	1.00
2	9	Robert M. Clark	281/26 21.89
3	15.4	Russell W. Reed	263/53 0.5
4	15	Russell W. Reed	260/483 3.93
5	5	Karen & Joseph Davis	177/104 26.04
6	15.1	Arby Morrison	32/78 2.05
7	15.3	Arby Morrison, Jr.	260/399 0.5
8	3.1	John II & Rebecca Dotson	256/338 1.15
9	10	Larry & Mary Jo Carder	282/24 21.71
10	11.2	Coyote Ridge RV Park	310/239 1.62

Par.	Tax Map 4 Owner	Bk/Pg	Acres
11	13.1	Rodney & Bonnie Kelly	234/247 0.512
12	13.3	Rodney & Bonnie Kelly	234/247 1.65

Lease Table
A Wilbur Aldine Stutler Trust ARAC-21622
B Salem Seventh Day Baptist Church Lease



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 prescribed by the Department of Environmental Protection.

Kenneth J. Plum
Kenneth J. Plum, P.S. 2216

Top Hole coordinates verified by survey grade GPS. As-drilled data and information was provided by Antero Resources Corporation. Allegheny Surveys, Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.



Legend

- Proposed gas well
- Found corner, as noted
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)

FILE NO: 44-30-GR-13
DRAWING NO: Irons 2H Well Plat, As-Drilled
SCALE: 1" = 1200'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

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

DATE: July 13 2017
OPERATOR'S WELL NO. Irons Unit 2H
API WELL NO
47 - 017 - 06232
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW

LOCATION: ELEVATION: 1320'
DISTRICT: Greenbrier
SURFACE OWNER: Walter V. Davidson & Leonard J. Davidson
ROYALTY OWNER: Charles J. Dennison, Trustee for the C.O. Dennison Estate, et al

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____ 7,421' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale DEPTH: 17,014' MD

WATERSHED: Headwaters Middle Island Creek QUADRANGLE: Salem & Big Isaac
Diane Caswell, et al
Wilbur Aldine Stutler Trust Under Will; Richard & Rosalie Clark
E.J. Lowther, et al; Charles W.F. Randolph, et al
M.T. Williams, et ux, et al; Rikk H. Randel, et ux
Walter V. Davidson, et ux, et al; Mary M. Welch
ARAC-21031 COUNTY: Doddridge
ARAC-21622
21203; 21032; 21396 ACREAGE: 83.61 24; 21
003636; DAD35388 ACREAGE: 84; 87; 350; 27; 65

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
Denver, CO 80202 Charleston, WV 25313

07/05/2018