

APPROVED

WR-35
Rev. 8/23/13

Page ___ of ___

NAME: Jul 9, 2017

DATE: 10/10/17

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

API 47-017-06228 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 Rikk Unit 1H
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 4346303.700m Easting 534815.980m
Landing Point of Curve Northing 4346062.130m Easting 534986.980m
Bottom Hole Northing 4343729.121m Easting 536612.511m

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

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Date permit issued 06/13/2013 Date drilling commenced 12/06/2013 Date drilling ceased 05/15/2014
Date completion activities began 07/24/2014 Date completion activities ceased 05/22/2017
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: _____

01/05/2018

API 47-017 - 06228 Farm name Walter V. Davidson & Leonard J. Davidson Well number Rikk Unit 1H

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#, K-55	N/A	Y
Surface	17-1/2"	13-3/8"	350'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2604'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	17523'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	7586'		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	171 sx	15.6	1.18	202	0'	8 Hrs.
Surface	Class A	412 sx	15.6	1.18	486	0'	8 Hrs.
Coal							
Intermediate 1	Class A	979 sx	15.6	1.18	1155	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1179 sx (Lead) 1533 sx (Tail)	14.5 (Lead), 15.2 (Tail)	1.30 (Lead), 1.86 (Tail)	4384	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 17523' MD, 7423' TVD (BHL) & 7505' TVD (Deepest Point Drilled) Loggers TD (ft) 17473' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6973'

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- 017 - 06228 Farm name Walter V. Davidson & Leonard J. Davidson Well number Rikk Unit 1H

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								

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API 47- 017 - 06228 Farm name Walter V. Davidson & Leonard J. Davidson Well number Rikk Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>7421' (TOP)</u>	<u>TVD</u>	<u>7559' (TOP)</u> <u>MD</u>
_____	_____	_____	_____
_____	_____	_____	_____

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 5147 mcfpd Oil --- bpd NGL --- bpd Water 230 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



EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	7/24/2014	17432	17262	60	Marcellus
2	4/9/2017	17231	17061	60	Marcellus
3	4/9/2017	17030	16860	60	Marcellus
4	4/9/2017	16828	16659	60	Marcellus
5	4/10/2017	16627	16457	60	Marcellus
6	4/10/2017	16426	16256	60	Marcellus
7	4/10/2017	16225	16055	60	Marcellus
8	4/11/2017	16023	15854	60	Marcellus
9	4/11/2017	15822	15652	60	Marcellus
10	4/11/2017	15621	15451	60	Marcellus
11	4/11/2017	15419	15250	60	Marcellus
12	4/11/2017	15218	15048	60	Marcellus
13	4/12/2017	15017	14847	60	Marcellus
14	4/12/2017	14816	14646	60	Marcellus
15	4/12/2017	14614	14445	60	Marcellus
16	4/12/2017	14413	14243	60	Marcellus
17	4/13/2017	14212	14042	60	Marcellus
18	4/14/2017	14011	13841	60	Marcellus
19	4/14/2017	13809	13640	60	Marcellus
20	4/16/2017	13608	13438	60	Marcellus
21	4/16/2017	13407	13237	60	Marcellus
22	4/17/2017	13206	13036	60	Marcellus
23	4/17/2017	13004	12835	60	Marcellus
24	4/17/2017	12803	12633	60	Marcellus
25	4/17/2017	12602	12432	60	Marcellus
26	4/20/2017	12401	12231	60	Marcellus
27	4/20/2017	12199	12030	60	Marcellus
28	4/20/2017	11998	11828	60	Marcellus
29	4/21/2017	11797	11627	60	Marcellus
30	4/21/2017	11595	11426	60	Marcellus
31	4/21/2017	11394	11224	60	Marcellus
32	4/21/2017	11193	11023	60	Marcellus
33	4/21/2017	10992	10822	60	Marcellus
34	4/22/2017	10790	10621	60	Marcellus
35	4/22/2017	10589	10419	60	Marcellus
36	4/22/2017	10388	10218	60	Marcellus
37	4/23/2017	10187	10017	60	Marcellus
38	4/23/2017	9985	9816	60	Marcellus
39	4/23/2017	9784	9614	60	Marcellus
40	4/23/2017	9583	9413	60	Marcellus
41	4/23/2017	9382	9212	60	Marcellus
42	4/24/2017	9180	9011	60	Marcellus
43	4/24/2017	8979	8809	60	Marcellus
44	4/24/2017	8778	8608	60	Marcellus
45	4/24/2017	8576	8407	60	Marcellus
46	4/25/2017	8375	8205	60	Marcellus
47	4/25/2017	8174	8004	60	Marcellus
48	4/25/2017	7973	7803	60	Marcellus
49	4/25/2017	7771	7602	60	Marcellus

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API 47-017-06228 Farm Name Walter V. Davidson & Leonard J. Davidson Well Number Rikk Unit 1H

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	4/9/2017	72.1	8448	8470	4517	408400	7703	N/A
2	4/9/2017	70.9	8397	6176	4714	408100	7876	N/A
3	4/9/2017	76.6	8257	6455	5057	408500	7840	N/A
4	4/9/2017	77.1	8319	6659	4992	407900	7754	N/A
5	4/10/2017	75.5	8281	6505	5125	407900	7744	N/A
6	4/10/2017	78.0	8422	286	5114	409300	7801	N/A
7	4/10/2017	76.8	8262	6634	5014	408800	7808	N/A
8	4/11/2017	74.0	8169	6158	5089	407600	7720	N/A
9	4/11/2017	74.6	8278	6448	5257	407500	7710	N/A
10	4/11/2017	78.5	8231	6176	5350	407800	7675	N/A
11	4/11/2017	79.6	8176	5915	5089	408500	8548	N/A
12	4/11/2017	78.9	8108	6702	5039	408400	7603	N/A
13	4/12/2017	78.6	8063	5851	5193	407700	7581	N/A
14	4/12/2017	78.8	8180	5810	4721	409400	7658	N/A
15	4/12/2017	69.9	8339	6154	4267	409500	10298	N/A
16	4/12/2017	79.8	8374	6148	4714	409000	7103	N/A
17	4/13/2017	71.9	8340	6716	4599	409500	7374	N/A
18	4/14/2017	79.7	8196	6487	4889	409500	7102	N/A
19	4/14/2017	76.7	8189	5822	4925	409200	7111	N/A
20	4/16/2017	81.9	8251	6130	4942	409700	7119	N/A
21	4/16/2017	80.7	8114	6208	4982	409200	7069	N/A
22	4/17/2017	80.9	8152	6545	5043	408800	7036	N/A
23	4/17/2017	79.9	8178	6341	5668	402200	7088	N/A
24	4/17/2017	80.8	8075	5604	5157	409000	7084	N/A
25	4/17/2017	81.9	8037	5486	5103	408900	7065	N/A
26	4/20/2017	80.2	7828	7056	5497	408700	7015	N/A
27	4/20/2017	79.4	7715	5715	5246	408800	6986	N/A
28	4/20/2017	79.6	7510	6505	4910	408600	7012	N/A
29	4/21/2017	80.1	7619	6294	5028	408800	6979	N/A
30	4/21/2017	79.8	7748	6226	5314	408900	6983	N/A
31	4/21/2017	80.4	7832	5885	5125	409200	7602	N/A
32	4/21/2017	79.6	7926	6491	5075	409700	6944	N/A
33	4/21/2017	79.7	8047	7267	5178	409700	6957	N/A
34	4/22/2017	79.8	7862	6620	5679	409500	6924	N/A
35	4/22/2017	79.3	8061	6523	5733	410200	6945	N/A
36	4/22/2017	80.1	8022	7299	5318	410000	6934	N/A
37	4/23/2017	80.4	7694	6520	5668	408200	6936	N/A
38	4/23/2017	80.5	7786	6355	5314	409200	6912	N/A
39	4/23/2017	80.5	7875	6827	4928	409200	6922	N/A
40	4/23/2017	80.4	7650	5769	5565	409400	6893	N/A
41	4/23/2017	80.4	7795	7063	5518	408200	6879	N/A
42	4/24/2017	80.6	7639	6216	4689	409700	7974	N/A
43	4/24/2017	81.1	7252	5865	5357	407400	6848	N/A
44	4/24/2017	81.3	7350	6377	5214	404000	6773	N/A
45	4/24/2017	80.2	7663	6527	5547	407000	6845	N/A
46	4/25/2017	79.9	7927	6777	5229	404100	7561	N/A
47	4/25/2017	80.5	7739	7020	5947	408600	6850	N/A
48	4/25/2017	80.3	7703	6870	4874	406700	6806	N/A
49	4/25/2017	79.6	7510	7024	5579	407200	6795	N/A
AVG=		78.7	7992	6306	5145	20,011,300	358,745	TOTAL

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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	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	2391
Big Lime	2398	2506	2391	2499
Big Injun	2506	2836	2499	2826
Gantz Sand	2836	2969	2826	2952
Fifty Foot Sandstone	2969	3128	2952	3122
Gordon	3128	3398	3122	3389
Fifth Sandstone	3398	3473	3389	3464
Bayard	3473	3742	3464	3732
Warren	3742	3978	3732	3971
Speechley	3978	4294	3971	4293
Baltown	4294	4752	4293	4739
Bradford	4752	5357	4739	5350
Benson	5357	5606	5350	5600
Alexander	5606	5836	5600	5828
Elk	5836	6396	5828	6383
Rhinestreet	6396	6896	6383	6864
Sycamore	6873	7106	6841	7113
Middlesex	7106	7251	7113	7280
Burkett	7251	7284	7280	7323
Tully	7284	7421	7323	7559
Marcellus	7421	NA	7559	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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Rikk Unit 1H
Doddridge County WV
Northing: 14258782.29
Easting: 1754594.81
As Drilled



Azimuths to Grid North
 True North: -0.25°
 Magnetic North: -8.83°
 Magnetic Field
 Strength: 52319.38nT
 Dip Angle: 66.82°
 Date: 12/17/2013
 Model: IGRF2010

To convert Magnetic North to Grid, Subtract 8.83°
 To convert True North to Grid, Subtract 0.25°

WELL DETAILS Rikk Unit 1H

Ground Level:	1318.0	Longitude	80° 35' 47.747" W
Northing	14258782.29	Latitude	35° 55' 03.6" N
+N/-S	0.0	+E/-W	0.0
	0.0		0.0

PROJECT DETAILS Doddridge County WV

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

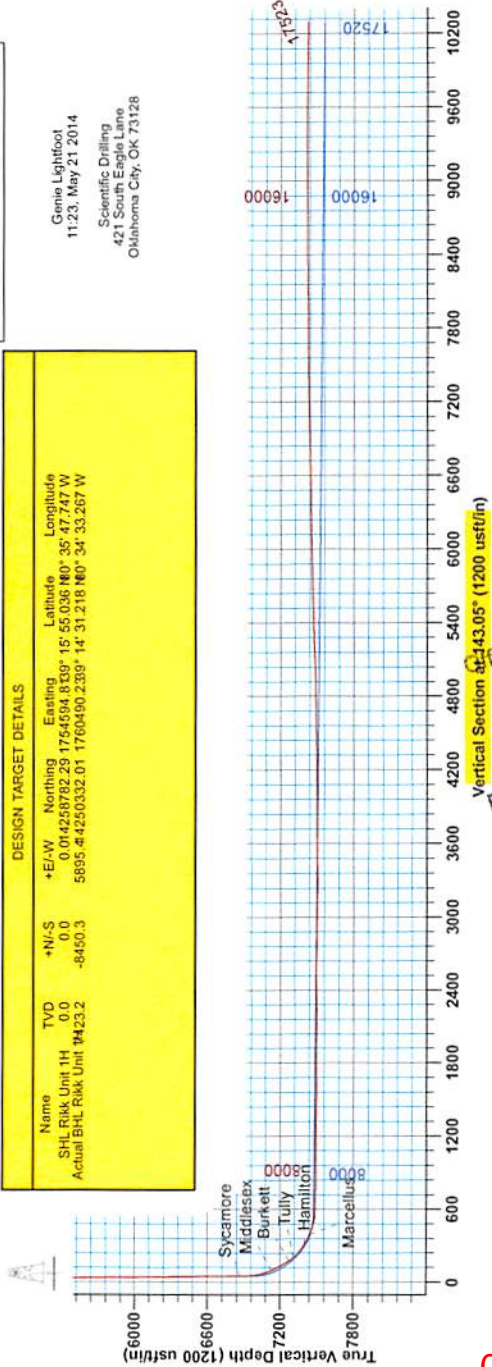
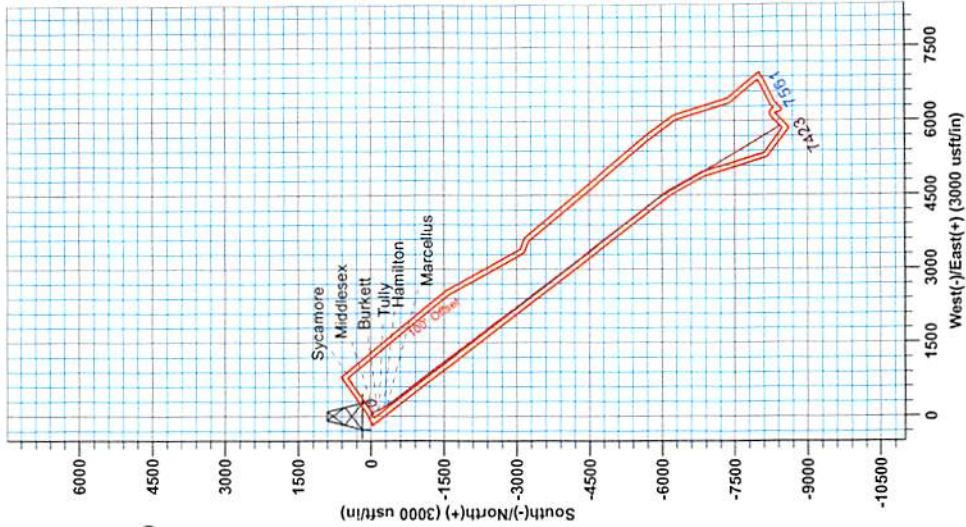
SITE DETAILS: Rikk/Pratt/Blackwood/Irons

Site Center Rikk Unit 1H
 Site Centre Northing: 14258782.29
 Easting: 1754594.81
 Positional Uncertainty: 2.8
 Convergence: 0.26
 Local North: Grid

DESIGN TARGET DETAILS

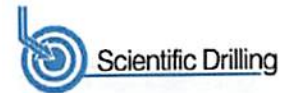
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Rikk Unit 1H	0.0	0.0	0.0	14258782.29	1754594.81	35° 55' 03.6" N	80° 35' 47.747" W
Actual BHL Rikk Unit 1H	1423.2	-8450.3	5895.4	4259332.01	1760490.239	31° 31' 21.8" N	84° 33' 25.7" W

PATT 317, Rikk 1H 1318 GL + 22.5 OL @ 1340.5, uft
 Gr. 1318.0



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Company:	Antero Resources	Local Co-ordinate Reference:	Well Rikk Unit 1H
Project:	Doddridge County WV	TVD Reference:	PATT 317: Rikk 1H 1318 GL + 22.5 GL @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	MD Reference:	PATT 317: Rikk 1H 1318 GL + 22.5 GL @ 1340.5
Well:	Rikk Unit 1H	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	Rikk Unit 1H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,258,782.29 usft	Latitude:	39° 15' 55.036 N
	+E/-W	0.0 usft	Easting:	1,754,594.81 usft	Longitude:	80° 35' 47.747 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	12/17/2013	-8.58	66.82	52,319

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

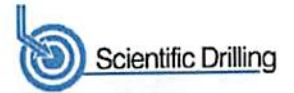
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	143.05

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Survey Program	Date 5/21/2014				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
109.5	6,861.0	Survey #1 Final Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
6,911.0	17,523.0	Survey #2 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1	

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	0.11	228.35	109.5	-0.1	-0.1	0.0	0.10
209.5	0.17	189.86	209.5	-0.3	-0.2	0.1	0.11
309.5	0.26	161.32	309.5	-0.6	-0.1	0.4	0.14
409.5	0.07	217.55	409.5	-0.9	-0.1	0.7	0.23
509.5	0.12	176.86	509.5	-1.1	-0.1	0.8	0.08
609.5	0.14	185.35	609.5	-1.3	-0.1	0.9	0.03
709.5	0.21	182.06	709.5	-1.6	-0.1	1.2	0.07
809.5	0.23	172.98	809.5	-2.0	-0.1	1.5	0.04
909.5	0.33	164.54	909.5	-2.4	0.0	1.9	0.11
1,009.5	0.34	143.73	1,009.5	-3.0	0.2	2.5	0.12



Company:	Antero Resources	Local Co-ordinate Reference:	Well Rikk Unit 1H
Project:	Doddridge County WV	TVD Reference:	PATT 317: Rikk 1H 1318 GL + 22.5 GL @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	MD Reference:	PATT 317: Rikk 1H 1318 GL + 22.5 GL @ 1340.5
Well:	Rikk Unit 1H	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	0.30	125.68	1,109.5	-3.4	0.6	3.0	0.11	
1,209.5	0.07	183.07	1,209.5	-3.6	0.8	3.3	0.27	
1,309.5	0.19	179.29	1,309.5	-3.8	0.8	3.5	0.12	
1,409.5	0.23	167.42	1,409.5	-4.2	0.9	3.8	0.06	
1,509.5	0.34	178.28	1,509.5	-4.7	0.9	4.3	0.12	
1,609.5	0.38	157.11	1,609.5	-5.3	1.1	4.8	0.14	
1,709.5	0.21	165.99	1,709.5	-5.7	1.2	5.3	0.18	
1,809.5	0.23	141.73	1,809.5	-6.1	1.4	5.7	0.09	
1,909.5	0.39	177.89	1,909.5	-6.6	1.5	6.2	0.25	
2,009.5	0.20	143.08	2,009.5	-7.0	1.7	6.6	0.25	
2,109.5	0.39	171.14	2,109.5	-7.5	1.8	7.1	0.23	
2,209.5	0.44	165.68	2,209.5	-8.2	2.0	7.8	0.06	
2,309.5	0.48	157.07	2,309.5	-9.0	2.2	8.5	0.08	
2,409.5	0.31	127.24	2,409.5	-9.5	2.6	9.2	0.26	
2,509.5	0.35	137.49	2,509.5	-9.9	3.0	9.7	0.07	
2,609.5	0.64	162.60	2,609.5	-10.7	3.4	10.6	0.36	
2,709.5	0.67	158.08	2,709.5	-11.8	3.8	11.7	0.06	
2,809.5	0.68	140.83	2,809.5	-12.8	4.4	12.8	0.20	
2,909.5	0.41	135.55	2,909.5	-13.5	5.0	13.8	0.27	
3,009.5	0.34	127.14	3,009.4	-13.9	5.5	14.4	0.09	
3,109.5	0.37	128.17	3,109.4	-14.3	6.0	15.0	0.03	
3,209.5	0.58	148.32	3,209.4	-14.9	6.5	15.8	0.27	
3,309.5	0.26	106.03	3,309.4	-15.4	7.0	16.5	0.43	
3,409.5	0.14	165.92	3,409.4	-15.6	7.2	16.8	0.23	
3,509.5	0.07	69.39	3,509.4	-15.7	7.3	16.9	0.16	
3,609.5	0.19	23.73	3,609.4	-15.5	7.4	16.9	0.15	
3,709.5	0.13	106.73	3,709.4	-15.4	7.6	16.9	0.22	
3,809.5	0.26	110.75	3,809.4	-15.5	7.9	17.2	0.13	
3,909.5	0.36	85.84	3,909.4	-15.6	8.5	17.5	0.17	
4,009.5	0.29	84.14	4,009.4	-15.5	9.0	17.8	0.07	
4,109.5	0.48	111.77	4,109.4	-15.7	9.7	18.3	0.26	
4,209.5	0.44	131.16	4,209.4	-16.1	10.3	19.1	0.16	
4,309.5	0.35	135.11	4,309.4	-16.5	10.8	19.7	0.09	
4,409.5	0.25	109.71	4,409.4	-16.8	11.3	20.2	0.16	
4,509.5	0.47	82.96	4,509.4	-16.8	11.9	20.6	0.27	
4,609.5	0.80	75.21	4,609.4	-16.6	13.0	21.1	0.34	
4,709.5	1.00	86.26	4,709.4	-16.4	14.5	21.8	0.26	
4,809.5	0.95	90.11	4,809.4	-16.3	16.2	22.8	0.08	
4,909.5	1.21	84.94	4,909.4	-16.2	18.1	23.8	0.28	
5,009.5	1.05	91.56	5,009.4	-16.2	20.1	25.0	0.21	
5,109.5	1.36	99.20	5,109.3	-16.4	22.1	26.4	0.35	
5,209.5	1.30	97.87	5,209.3	-16.7	24.4	28.1	0.07	
5,309.5	1.37	106.00	5,309.3	-17.2	26.7	29.8	0.20	
5,409.5	1.44	102.96	5,409.2	-17.8	29.1	31.7	0.10	

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Company:	Antero Resources	Local Co-ordinate Reference:	Well Rikk Unit 1H
Project:	Doddridge County WV	TVD Reference:	PATT 317: Rikk 1H 1318 GL + 22.5 GL @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	MD Reference:	PATT 317: Rikk 1H 1318 GL + 22.5 GL @ 1340.5
Well:	Rikk Unit 1H	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	1.39	99.95	5,509.2	-18.3	31.5	33.6	0.09
5,609.5	1.24	94.37	5,609.2	-18.6	33.8	35.2	0.20
5,709.5	1.17	90.94	5,709.2	-18.7	35.9	36.5	0.10
5,809.5	1.17	89.35	5,809.1	-18.7	37.9	37.7	0.03
5,909.5	1.16	88.54	5,909.1	-18.7	39.9	38.9	0.02
6,009.5	1.06	89.42	6,009.1	-18.6	41.9	40.1	0.10
6,109.5	0.86	94.78	6,109.1	-18.7	43.6	41.1	0.22
6,209.5	0.81	104.43	6,209.1	-18.9	45.0	42.2	0.15
6,309.5	0.84	110.34	6,309.1	-19.4	46.4	43.3	0.09
6,409.5	0.77	108.26	6,409.1	-19.8	47.7	44.5	0.08
6,509.5	0.71	124.70	6,509.1	-20.4	48.8	45.6	0.22
6,609.5	0.66	108.33	6,609.0	-20.9	49.9	46.7	0.20
6,709.5	0.83	127.74	6,709.0	-21.5	51.0	47.9	0.30
6,809.5	0.67	125.57	6,809.0	-22.3	52.1	49.1	0.16
6,861.0	0.77	118.72	6,860.5	-22.7	52.6	49.7	0.26
6,864.0	0.76	118.37	6,863.5	-22.7	52.6	49.8	0.33
Sycamore							
6,911.0	0.63	111.68	6,910.5	-22.9	53.2	50.3	0.33
6,973.0	6.17	126.80	6,972.4	-25.1	56.1	53.8	8.97
7,005.0	10.46	128.09	7,004.0	-27.9	59.8	58.2	13.42
7,036.0	14.13	135.68	7,034.3	-32.3	64.7	64.7	12.91
7,068.0	16.53	145.14	7,065.2	-38.9	70.0	73.1	10.81
7,099.0	18.47	149.10	7,094.8	-46.7	75.0	82.4	7.34
7,131.0	20.93	151.56	7,124.9	-56.1	80.4	93.1	8.11
7,136.0	21.49	152.14	7,129.5	-57.7	81.2	94.9	11.91
Middlesex							
7,163.0	24.53	154.81	7,154.4	-67.1	85.9	105.3	11.91
7,194.0	27.26	156.22	7,182.3	-79.4	91.5	118.5	9.03
7,226.0	29.90	156.92	7,210.4	-93.5	97.6	133.4	8.32
7,257.0	33.59	157.19	7,236.7	-108.5	104.0	149.2	11.91
7,289.0	36.40	156.92	7,263.0	-125.4	111.1	167.0	8.79
7,303.0	37.52	156.64	7,274.1	-133.1	114.4	175.2	8.05
Burkett							
7,321.0	38.95	156.31	7,288.3	-143.3	118.9	186.0	8.05
7,346.0	41.65	156.02	7,307.3	-158.1	125.4	201.8	10.83
Tully							
7,352.0	42.30	155.95	7,311.8	-161.8	127.1	205.7	10.83
7,384.0	45.64	156.22	7,334.8	-182.1	136.1	227.3	10.45
7,415.0	48.54	155.60	7,355.9	-202.8	145.3	249.4	9.47
7,447.0	52.14	153.14	7,376.4	-225.0	156.0	273.6	12.71
7,479.0	56.45	151.82	7,395.0	-248.1	168.0	299.2	13.88
7,488.0	57.24	151.60	7,399.9	-254.7	171.6	306.7	9.03
Hamilton							
7,510.0	59.18	151.09	7,411.5	-271.1	180.5	325.2	9.03
7,542.0	62.28	150.89	7,427.2	-295.5	180.5	352.8	9.70

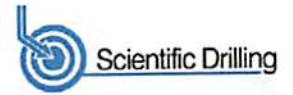
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Company:	Antero Resources	Local Co-ordinate Reference:	Well Rikk Unit 1H
Project:	Doddridge County WV	TVD Reference:	PATT 317: Rikk 1H 1318 GL + 22.5 GL @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	MD Reference:	PATT 317: Rikk 1H 1318 GL + 22.5 GL @ 1340.5
Well:	Rikk Unit 1H	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)	
7,574.0	66.30	150.77	7,441.1	-320.7	208.1	381.4	12.57	
7,582.0	66.89	150.36	7,444.2	-327.1	211.7	388.7	8.76	
Marcellus								
7,605.0	68.59	149.19	7,453.0	-345.5	222.4	409.8	8.76	
7,637.0	71.40	148.75	7,463.9	-371.2	237.9	439.7	8.88	
7,668.0	75.71	148.57	7,472.7	-396.6	253.4	469.3	13.91	
7,700.0	80.50	147.52	7,479.3	-423.2	270.0	500.5	15.31	
7,759.0	86.00	142.24	7,486.2	-471.1	303.7	559.0	12.88	
7,791.0	86.17	141.37	7,488.4	-496.1	323.4	590.9	2.76	
7,886.0	89.63	141.38	7,491.9	-570.3	382.7	685.8	3.64	
7,981.0	89.34	141.54	7,492.7	-644.6	441.9	780.8	0.35	
8,075.0	88.90	140.93	7,494.2	-717.9	500.7	874.7	0.80	
8,171.0	90.57	141.89	7,494.6	-792.9	560.6	970.6	2.01	
8,265.0	89.69	141.19	7,494.4	-866.5	619.0	1,064.6	1.20	
8,360.0	90.13	142.33	7,494.5	-941.1	677.8	1,159.6	1.29	
8,455.0	90.57	143.83	7,494.0	-1,017.1	734.9	1,254.6	1.65	
8,550.0	89.08	142.33	7,494.3	-1,093.0	792.0	1,349.6	2.23	
8,645.0	88.46	141.63	7,496.3	-1,167.9	850.5	1,444.5	0.98	
8,740.0	89.34	140.93	7,498.1	-1,242.0	909.9	1,539.5	1.18	
8,835.0	90.48	141.54	7,498.3	-1,316.0	969.4	1,634.4	1.36	
8,930.0	91.71	142.77	7,496.5	-1,391.0	1,027.6	1,729.4	1.83	
9,024.0	90.92	143.83	7,494.3	-1,466.4	1,083.8	1,823.4	1.41	
9,119.0	89.06	143.95	7,494.3	-1,543.1	1,139.8	1,918.3	1.96	
9,214.0	88.46	142.60	7,496.4	-1,619.3	1,196.6	2,013.3	1.55	
9,309.0	89.25	142.07	7,498.3	-1,694.4	1,254.6	2,108.3	1.00	
9,404.0	90.84	145.50	7,498.2	-1,771.1	1,310.7	2,203.3	3.98	
9,499.0	90.87	145.43	7,496.8	-1,849.3	1,364.6	2,298.2	0.08	
9,593.0	90.31	144.53	7,495.8	-1,926.3	1,418.5	2,392.1	1.13	
9,688.0	90.22	144.79	7,495.4	-2,003.8	1,473.5	2,487.1	0.29	
9,783.0	90.22	143.91	7,495.0	-2,081.0	1,528.8	2,582.1	0.93	
9,878.0	88.55	142.77	7,496.0	-2,157.2	1,585.5	2,677.0	2.13	
9,973.0	88.55	142.77	7,498.4	-2,232.8	1,643.0	2,772.0	0.00	
10,067.0	88.46	142.16	7,500.9	-2,307.3	1,700.3	2,866.0	0.66	
10,162.0	88.90	141.19	7,503.1	-2,381.8	1,759.2	2,960.9	1.12	
10,257.0	89.87	141.63	7,504.1	-2,456.1	1,818.4	3,055.9	1.12	
10,352.0	90.40	142.95	7,503.9	-2,531.2	1,876.5	3,150.9	1.50	
10,447.0	89.34	142.68	7,504.1	-2,606.9	1,933.9	3,245.9	1.15	
10,542.0	90.04	144.53	7,504.6	-2,683.4	1,990.3	3,340.8	2.08	
10,637.0	90.22	144.70	7,504.4	-2,760.8	2,045.3	3,435.8	0.26	
10,731.0	91.45	146.46	7,503.0	-2,838.4	2,098.4	3,529.7	2.28	
10,826.0	90.92	145.50	7,501.0	-2,917.1	2,151.6	3,624.6	1.15	
10,922.0	89.96	144.09	7,500.3	-2,995.5	2,206.9	3,720.5	1.78	
11,016.0	88.64	141.98	7,501.5	-3,070.6	2,263.4	3,814.5	2.65	
11,107.0	91.45	142.51	7,501.4	-3,142.5	2,319.5	3,905.5	3.14	
11,199.0	89.96	141.98	7,500.2	-3,215.3	2,375.5	3,997.5	1.72	

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Company:	Antero Resources	Local Co-ordinate Reference:	Well Rikk Unit 1H
Project:	Doddridge County WV	TVD Reference:	PATT 317: Rikk 1H 1318 GL + 22.5 GL @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	MD Reference:	PATT 317: Rikk 1H 1318 GL + 22.5 GL @ 1340.5
Well:	Rikk Unit 1H	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)
11,290.0	90.57	142.33	7,499.8	-3,287.1	2,431.3	4,088.4	0.77
11,381.0	91.45	145.41	7,498.2	-3,360.6	2,484.9	4,179.4	3.52
11,472.0	90.57	143.74	7,496.6	-3,434.8	2,537.7	4,270.4	2.07
11,563.0	90.22	143.74	7,496.0	-3,508.1	2,591.5	4,361.3	0.38
11,655.0	91.28	142.51	7,494.8	-3,581.7	2,646.7	4,453.3	1.76
11,746.0	91.36	142.68	7,492.7	-3,654.0	2,701.9	4,544.3	0.21
11,837.0	90.40	141.54	7,491.3	-3,725.8	2,757.8	4,635.3	1.64
11,929.0	91.10	142.16	7,490.1	-3,798.1	2,814.7	4,727.3	1.02
12,021.0	91.54	143.56	7,488.0	-3,871.4	2,870.2	4,819.2	1.59
12,111.0	90.84	142.24	7,486.1	-3,943.2	2,924.5	4,909.2	1.66
12,206.0	91.01	141.63	7,484.6	-4,018.0	2,983.0	5,004.2	0.67
12,301.0	93.65	143.65	7,480.7	-4,093.4	3,040.6	5,099.1	3.50
12,396.0	92.15	144.09	7,475.9	-4,170.1	3,096.6	5,193.9	1.65
12,491.0	90.59	140.49	7,473.6	-4,245.2	3,154.6	5,288.9	4.13
12,586.0	92.24	142.07	7,471.3	-4,319.3	3,214.0	5,383.8	2.40
12,680.0	91.80	140.84	7,468.0	-4,392.7	3,272.6	5,477.7	1.39
12,775.0	91.28	139.52	7,465.4	-4,465.7	3,333.4	5,572.6	1.49
12,870.0	91.45	140.22	7,463.2	-4,538.3	3,394.6	5,667.4	0.76
12,964.0	92.59	142.33	7,459.8	-4,611.6	3,453.4	5,761.3	2.55
13,059.0	92.59	144.79	7,455.5	-4,687.9	3,509.7	5,856.2	2.59
13,154.0	92.42	145.41	7,451.4	-4,765.8	3,564.0	5,951.0	0.68
13,249.0	90.13	142.95	7,449.3	-4,842.8	3,619.6	6,046.0	3.54
13,344.0	90.31	143.56	7,448.9	-4,918.9	3,676.4	6,141.0	0.67
13,438.0	90.48	143.56	7,448.3	-4,994.5	3,732.3	6,235.0	0.18
13,533.0	90.04	141.98	7,447.8	-5,070.1	3,789.8	6,329.9	1.73
13,628.0	91.28	143.83	7,446.7	-5,145.9	3,847.0	6,424.9	2.34
13,723.0	91.80	144.09	7,444.2	-5,222.7	3,902.9	6,519.9	0.61
13,818.0	91.28	143.74	7,441.6	-5,299.4	3,958.8	6,614.8	0.66
13,913.0	91.01	143.03	7,439.7	-5,375.7	4,015.5	6,709.8	0.80
14,008.0	90.66	143.74	7,438.4	-5,451.9	4,072.2	6,804.8	0.83
14,103.0	91.63	143.47	7,436.5	-5,528.4	4,128.5	6,899.8	1.06
14,198.0	90.92	143.47	7,434.3	-5,604.7	4,185.0	6,994.8	0.75
14,293.0	90.40	141.89	7,433.2	-5,680.2	4,242.6	7,089.7	1.75
14,388.0	90.75	140.22	7,432.3	-5,754.1	4,302.3	7,184.7	1.80
14,483.0	91.17	140.34	7,430.7	-5,827.2	4,363.0	7,279.6	0.46
14,578.0	92.95	144.70	7,427.3	-5,902.5	4,420.8	7,374.5	4.95
14,673.0	90.84	147.17	7,424.1	-5,981.1	4,474.0	7,469.3	3.42
14,768.0	90.48	148.84	7,423.0	-6,061.7	4,524.3	7,563.9	1.80
14,863.0	89.96	151.21	7,422.7	-6,144.0	4,571.8	7,658.2	2.55
14,958.0	89.87	151.38	7,422.8	-6,227.3	4,617.4	7,752.2	0.20
15,053.0	89.34	150.07	7,423.5	-6,310.2	4,663.8	7,846.4	1.49
15,148.0	90.13	151.47	7,423.9	-6,393.1	4,710.2	7,940.5	1.69
15,243.0	90.48	151.56	7,423.4	-6,476.6	4,755.5	8,034.5	0.28
15,337.0	91.24	152.39	7,422.0	-6,559.5	4,799.7	8,127.3	0.20

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Company:	Antero Resources	Local Co-ordinate Reference:	Well Rikk Unit 1H
Project:	Doddridge County WV	TVD Reference:	PATT 317: Rikk 1H 1318 GL + 22.5 GL @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	MD Reference:	PATT 317: Rikk 1H 1318 GL + 22.5 GL @ 1340.5
Well:	Rikk Unit 1H	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)
15,432.0	90.04	150.86	7,420.9	-6,643.1	4,844.8	8,221.2	2.05
15,527.0	90.13	150.15	7,420.8	-6,725.8	4,891.6	8,315.4	0.75
15,622.0	90.66	152.00	7,420.1	-6,809.0	4,937.6	8,409.5	2.03
15,717.0	90.04	148.04	7,419.6	-6,891.2	4,985.0	8,503.8	4.22
15,812.0	90.31	147.87	7,419.3	-6,971.7	5,035.4	8,598.4	0.34
15,907.0	90.92	149.45	7,418.3	-7,052.9	5,084.8	8,693.0	1.78
16,002.0	89.87	148.04	7,417.6	-7,134.1	5,134.1	8,787.5	1.85
16,096.0	90.13	148.40	7,417.6	-7,214.0	5,183.6	8,881.1	0.47
16,191.0	90.74	149.63	7,416.9	-7,295.4	5,232.5	8,975.6	1.45
16,286.0	89.25	149.63	7,416.9	-7,377.4	5,280.6	9,070.0	1.57
16,381.0	90.40	151.21	7,417.2	-7,460.0	5,327.5	9,164.2	2.06
16,476.0	90.48	151.74	7,416.4	-7,543.5	5,372.8	9,258.1	0.56
16,571.0	89.43	150.95	7,416.5	-7,626.8	5,418.4	9,352.1	1.38
16,666.0	90.22	152.18	7,416.8	-7,710.4	5,463.6	9,446.1	1.54
16,761.0	89.69	149.71	7,416.9	-7,793.4	5,509.7	9,540.2	2.66
16,856.0	89.52	149.54	7,417.5	-7,875.4	5,557.8	9,634.6	0.25
16,950.0	89.70	149.49	7,418.2	-7,956.4	5,605.5	9,728.0	0.20
17,045.0	89.80	152.19	7,418.6	-8,039.3	5,651.7	9,822.1	2.84
17,140.0	90.40	151.47	7,418.4	-8,123.1	5,696.6	9,916.0	0.99
17,234.0	87.76	149.01	7,419.9	-8,204.6	5,743.2	10,009.2	3.84
17,329.0	89.43	147.63	7,422.3	-8,285.5	5,793.1	10,103.8	2.28
17,424.0	89.60	147.96	7,423.1	-8,365.8	5,843.7	10,198.4	0.39
17,464.0	90.04	148.48	7,423.2	-8,399.8	5,864.8	10,238.3	1.70
17,523.0	90.00	149.00	7,423.2	-8,450.3	5,895.4	10,297.0	0.88

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,864.0	6,863.5	-22.7	52.6	Sycamore
7,136.0	7,129.5	-57.7	81.2	Middlesex
7,303.0	7,274.1	-133.1	114.4	Burkett
7,346.0	7,307.3	-158.1	125.4	Tully
7,488.0	7,399.9	-254.7	171.6	Hamilton
7,582.0	7,444.2	-327.1	211.7	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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01/05/2018

Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date:	4/8/2017
Job End Date:	4/25/2017
State:	West Virginia
County:	Doddridge
API Number:	47-017-06228-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Rikk 1H
Latitude:	39.26528889
Longitude:	-80.59659722
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,505
Total Base Water Volume (gal):	15,680,822
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	86.40581	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	13.22554	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.40000	0.25018	
			Hydrogen Chloride	7647-01-0	17.50000	0.05817	
WFRA-500	U.S. Well Services, LLC	Friction Reducer	2-Propenoic acid, polymer with 2 propenamide	9003-06-9	30.00000	0.01513	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01218	
LGC-15	U.S. Well Services, LLC	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.01171	
			Petroleum Distillates	64742-47-8	60.00000	0.01109	
			Suspending agent (solid)	14808-60-7	3.00000	0.00179	
			Surfactant	68439-51-0	3.00000	0.00070	

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Bioclear 2000	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00404	
			Deionized Water	7732-18-5	28.00000	0.00231	
SI-1200s	U.S. Well Services, LLC	Scale Inhibitor					
			Alkyl Phosphonic Acid	Proprietary	5.00000	0.00062	
			Ammonia	7664-41-7	0.50000	0.00010	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00045	
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	

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.

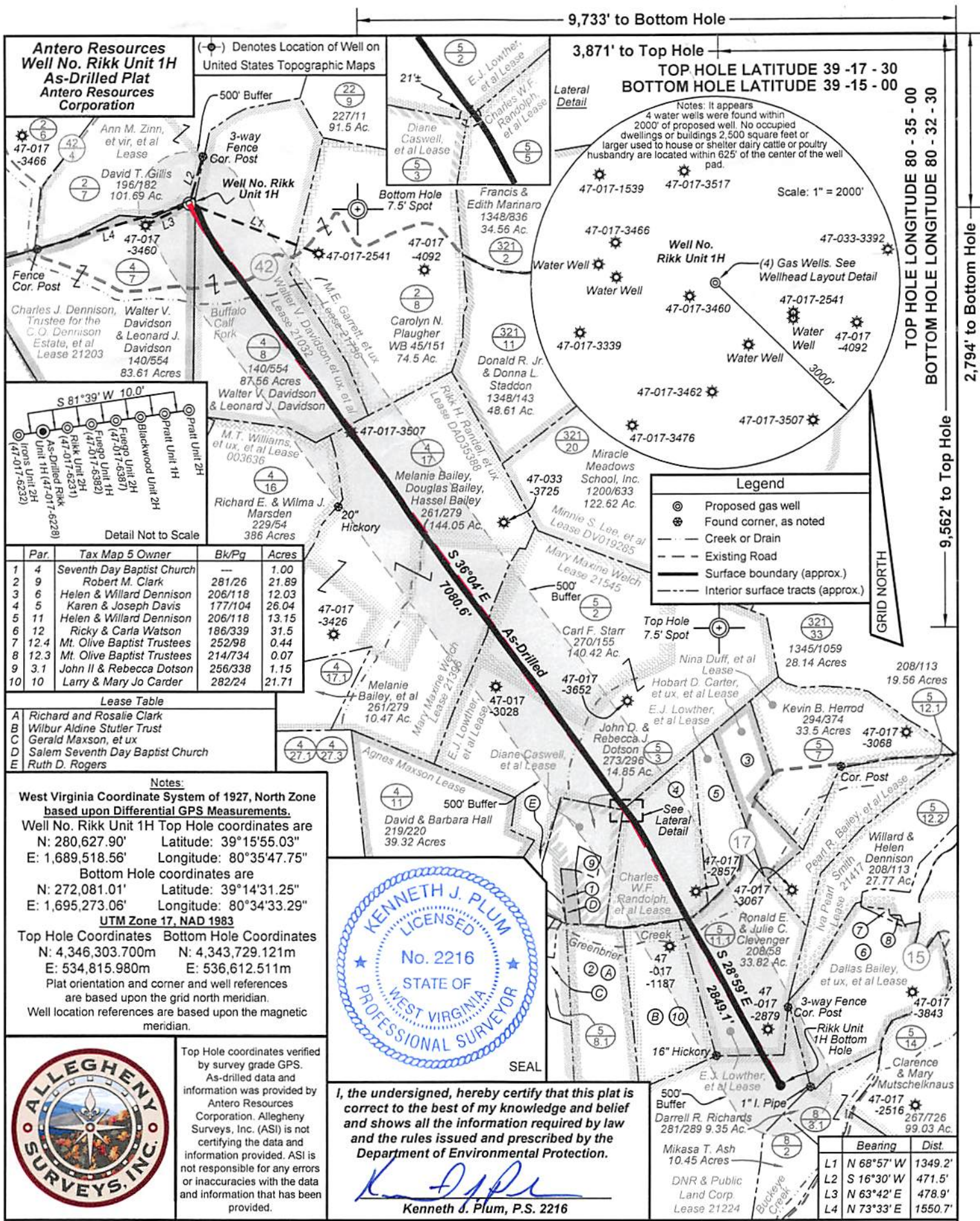
* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** 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)

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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	6 Helen & Willard Dennison	206/118	12.03
4	5 Karen & Joseph Davis	177/104	26.04
5	11 Helen & Willard Dennison	206/118	13.15
6	12 Ricky & Carla Watson	186/339	31.5
7	12.4 Mt. Olive Baptist Trustees	252/98	0.44
8	12.3 Mt. Olive Baptist Trustees	214/734	0.07
9	3.1 John II & Rebecca Dotson	256/338	1.15
10	10 Larry & Mary Jo Carder	282/24	21.71

Lease Table	
A	Richard and Rosalie Clark
B	Wilbur Aldine Stutler Trust
C	Gerald Maxson, et ux
D	Salem Seventh Day Baptist Church
E	Ruth D. Rogers

Notes:
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Rikk Unit 1H Top Hole coordinates are
 N: 280,627.90' Latitude: 39°15'55.03"
 E: 1,689,518.56' Longitude: 80°35'47.75"
 Bottom Hole coordinates are
 N: 272,081.01' Latitude: 39°14'31.25"
 E: 1,695,273.06' Longitude: 80°34'33.29"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,346,303.700m N: 4,343,729.121m
 E: 534,815.980m E: 536,612.511m
 Plat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.



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.



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

FILE NO: 41-30-GR-13
 DRAWING NO: Rikk 1H Well Plat As-Drilled
 SCALE: 1" = 1200'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

DATE: July 13 2017
 OPERATOR'S WELL NO. Rikk Unit 1H
 API WELL NO
 47 - 017 - 06228
 COUNTY PERMIT

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 COUNTY: Doddridge
 SURFACE OWNER: Walter V. Davidson & Leonard J. Davidson ACREAGE: 83.61 92; 27; 47
 ROYALTY OWNER: Charles J. Dennison, Trustee for the C.O. Dennison Estate, et al LEASE NO: DAD35388; 21545; 21224 ACREAGE: 84; 87; 90; 127; 65
 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 DEPTH: 7,423' TVD 17,523' MD
 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

WELL OPERATOR: Antero Resources Corporation
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 DENVER, CO 80202

DESIGNATED AGENT: Dianna Stamper - CT Corporation System
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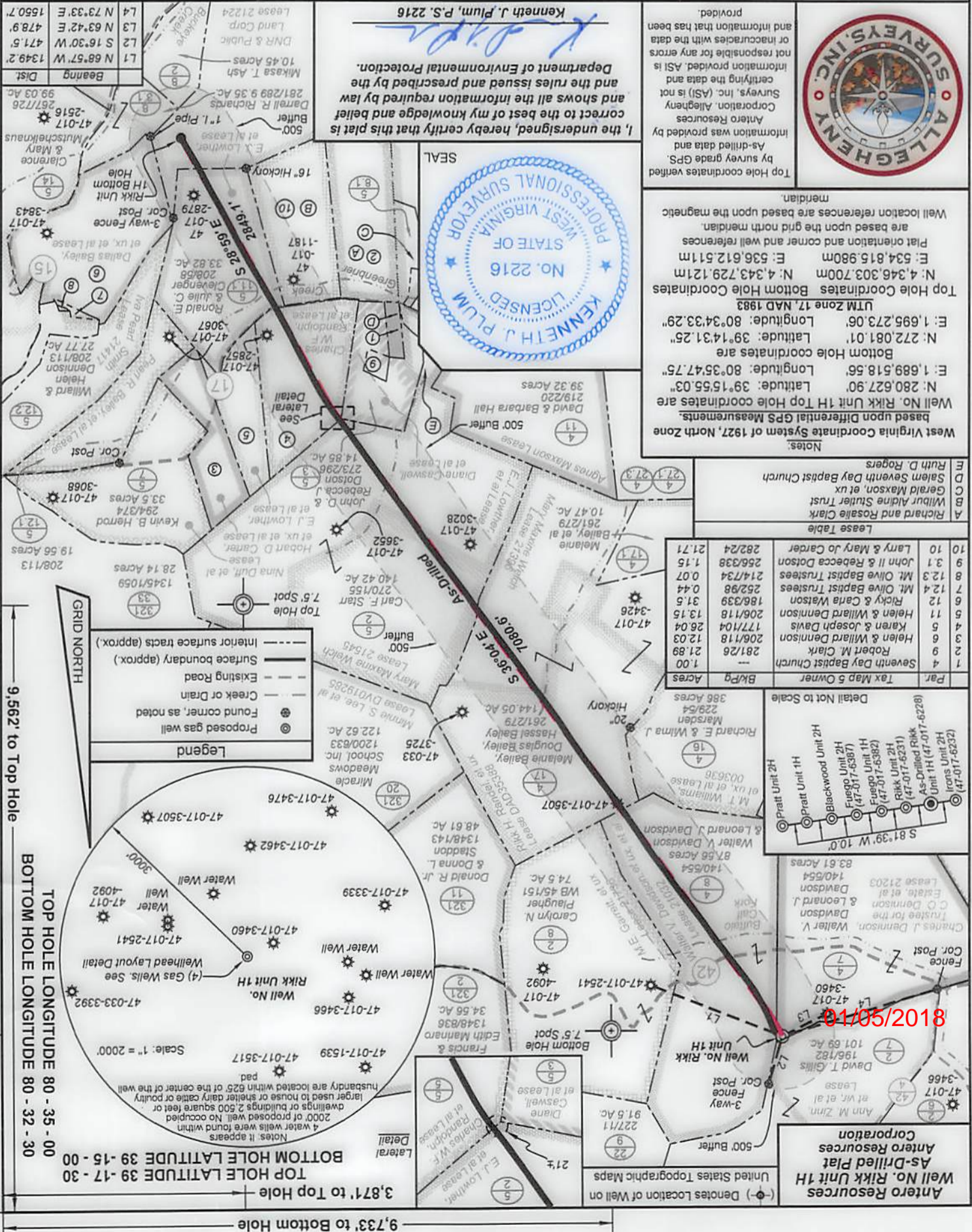
WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW

LOCATION: ELEVATION: 1320' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: Salem & Big Isaac
 DISTRICT: Greenbrier
 SURFACE OWNER: Leonard J. Davidson & Mary Maxine Welch (2); E.J. Lowther, et al (2);
 Royalty Owner: Charles J. Dennison, Trustee for the C.O. Dennison Estate, et al LEASE NO: DAD33388; 21545; 21224 ACRES: 84.87; 90.127; 65.45.75
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORM NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) PLUG AND ABANDON CLEAN OUT AND REPLUG
 TARGET FORMATION: Marcellus Shale DEPTH: 7,423' TVD

FILE NO: 41-30-GR-13
 DRAWING NO: Rikk 1H 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
 OPERATORS WELL NO. Rikk Unit 1H
 API WELL NO. 47 - 017 - 06228



ALLEGHENY SURVEYS, INC.

Top Hole coordinates verified by survey grade GPS. As-dilled data and information was provided by Antero Resources Corporation. Allgheny 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.

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8	Mt. Olive Baptist Trustees	256/338	1.15
9	John II & Rebecca Dodson	282/24	21.71
10	Larry & Mary Jo Carter		

Well No. Rikk Unit 1H As-Drilled Plat
 Antero Resources Corporation

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

01/05/2018