

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

API 47-017-06811 County Doddrige District West Union
Quad West Union 7.5' Pad Name Addie Pad Field/Pool Name -----
Farm name Antero Resources Corporation Well Number Michels 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 4353811m Easting 516750m
Landing Point of Curve Northing 4353288m Easting 517182m
Bottom Hole Northing 4350385m Easting 518391m

Elevation (ft) 891' 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

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Date permit issued 5/11/2017 Date drilling commenced 7/6/2017 Date drilling ceased 10/24/2017
Date completion activities began 2/9/2018 Date completion activities ceased 7/7/2018
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 370' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1495', 1535' Void(s) encountered (Y/N) depths No
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by: _____

WR-35
Rev. 8/23/13

API 47-017 - 06811 Farm name Antero Resources Corporation Well number Michels 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"	95'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	489'	New	54#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2603'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	19040'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6748'		4.7#, L-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	204 sx	15.6	1.18	241	0'	8 Hrs.
Surface	Class A	427 sx	15.6	1.19	508	0'	8 Hrs.
Coal							
Intermediate 1	Class A	900 sx	15.6	1.18	1062	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	740sx (Lead) 1658sx (Tail)	13.5(Lead), 15.2 (Tail)	1.53 (Lead), 1.83 (Tail)	4352	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 19040' MD, 6582' TVD (BHL), 6603' (Deepest Point Drilled) Loggers TD (ft) 19040' MD RECEIVED

Deepest formation penetrated Marcellus Plug back to (ft) N/A Office of Oil and Gas

Plug back procedure N/A NOV 14 2018

Kick off depth (ft) 5825' WV Department of Environmental Protection

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

API 47-017-06811 Farm Nama Antero Resources Corp Well Number Michels Unit 1H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2/9/2018	18754	18839	48	Marcellus
2	3/15/2018	18556	18639	48	Marcellus
3	3/15/2018	18357	18441	48	Marcellus
4	3/16/2018	18158	18242	48	Marcellus
5	3/16/2018	17960	18044	48	Marcellus
6	3/16/2018	17761	17845	48	Marcellus
7	3/17/2018	17563	17646	48	Marcellus
8	3/17/2018	17364	17448	48	Marcellus
9	3/17/2018	17165	17249	48	Marcellus
10	3/18/2018	16967	17051	48	Marcellus
11	3/18/2018	16768	16852	48	Marcellus
12	3/18/2018	16570	16653	48	Marcellus
13	3/19/2018	16371	16455	48	Marcellus
14	3/19/2018	16172	16256	48	Marcellus
15	3/19/2018	15974	16058	48	Marcellus
16	3/19/2018	15775	15859	48	Marcellus
17	3/20/2018	15577	15660	48	Marcellus
18	3/20/2018	15378	15462	48	Marcellus
19	3/21/2018	15179	15263	48	Marcellus
20	3/21/2018	14981	15065	48	Marcellus
21	3/22/2018	14782	14866	48	Marcellus
22	3/22/2018	14584	14667	48	Marcellus
23	3/23/2018	14385	14469	48	Marcellus
24	3/23/2018	14186	14270	48	Marcellus
25	3/23/2018	13988	14072	48	Marcellus
26	3/24/2018	13789	13873	48	Marcellus
27	3/24/2018	13591	13674	48	Marcellus
28	3/25/2018	13392	13476	48	Marcellus
29	3/25/2018	13193	13277	48	Marcellus
30	3/26/2018	12995	13079	48	Marcellus
31	3/26/2018	12796	12880	48	Marcellus
32	3/27/2018	12598	12681	48	Marcellus
33	3/27/2018	12399	12483	48	Marcellus
34	3/28/2018	12200	12284	48	Marcellus
35	3/29/2018	12002	12086	48	Marcellus
36	3/29/2018	11803	11887	48	Marcellus
37	3/30/2018	11605	11688	48	Marcellus
38	3/31/2018	11406	11490	48	Marcellus
39	3/31/2018	11207	11291	48	Marcellus
40	4/1/2018	11009	11093	48	Marcellus
41	4/1/2018	10810	10894	48	Marcellus
42	4/2/2018	10612	10695	48	Marcellus
43	4/2/2018	10413	10497	48	Marcellus
44	4/2/2018	10214	10298	48	Marcellus
45	4/3/2018	10016	10100	48	Marcellus
46	4/5/2018	9817	9901	48	Marcellus
47	4/5/2018	9619	9702	48	Marcellus
48	4/6/2018	9420	9504	48	Marcellus
49	4/7/2018	9221	9305	48	Marcellus
50	4/7/2018	9023	9107	48	Marcellus
51	4/8/2018	8824	8908	48	Marcellus
52	4/8/2018	8626	8709	48	Marcellus
53	4/9/2018	8427	8511	48	Marcellus
54	4/9/2018	8228	8312	48	Marcellus
55	4/10/2018	8030	8114	48	Marcellus
56	4/11/2018	7831	7915	48	Marcellus
57	4/11/2018	7633	7716	48	Marcellus
58	4/12/2018	7434	7518	48	Marcellus
59	4/12/2018	7235	7319	48	Marcellus
60	4/13/2018	7037	7121	48	Marcellus
61	4/14/2018	6838	6922	48	Marcellus

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API 47-017-06811 Farm Name Antero Resources Corp Well Number Michels 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	2/9/2018	64.1	7660	5230	4581	404900	8528	N/A
2	3/15/2018	68.4	8014	5599	4717	396670	8702	N/A
3	3/15/2018	64.6	7672	6067	4257	405000	8664	N/A
4	3/16/2018	66.6	8054	6195	4916	404000	8764	N/A
5	3/16/2018	67.7	8192	6087	3972	402730	8501	N/A
6	3/16/2018	69.3	8106	6581	5633	409000	8689	N/A
7	3/17/2018	68.6	7705	5199	5509	404370	8591	N/A
8	3/17/2018	69.8	7926	5300	5171	403210	8853	N/A
9	3/17/2018	73.9	7998	6018	4141	406000	8463	N/A
10	3/18/2018	76.1	7973	5430	4385	408000	8753	N/A
11	3/18/2018	69.5	7823	5401	4492	404330	8741	N/A
12	3/18/2018	77.5	7913	5495	5041	402000	9698	N/A
13	3/19/2018	75.3	7714	5236	4265	405000	9090	N/A
14	3/19/2018	74.7	7988	5442	3791	403470	8762	N/A
15	3/19/2018	77.4	8006	5507	4398	404000	8456	N/A
16	3/19/2018	77.8	7894	5521	4287	403000	8581	N/A
17	3/20/2018	73.3	7699	5212	3415	403130	8706	N/A
18	3/20/2018	76.5	7777	5437	4230	403300	8677	N/A
19	3/21/2018	74.8	7586	5434	3835	403080	8670	N/A
20	3/21/2018	80.2	7629	5089	5373	402810	8770	N/A
21	3/22/2018	80.1	7568	5309	3882	404443	8556	N/A
22	3/22/2018	77.6	7380	5339	3949	403270	8565	N/A
23	3/23/2018	77.7	7299	5196	5090	402750	8913	N/A
24	3/23/2018	77.2	7412	5639	4197	402780	8536	N/A
25	3/23/2018	80	7433	5525	4242	411412	8561	N/A
26	3/24/2018	76.7	7212	5165	4285	402700	8527	N/A
27	3/24/2018	79	7402	4994	3959	402818	8520	N/A
28	3/25/2018	76.9	7033	5446	3772	403400	8479	N/A
29	3/25/2018	80	7429	5505	3985	402757	8480	N/A
30	3/26/2018	76.7	7466	5418	5171	403600	8446	N/A
31	3/26/2018	74.3	7171	5234	4113	405708	8938	N/A
32	3/27/2018	77	7489	5373	3704	403100	8704	N/A
33	3/27/2018	76.3	7408	5472	4017	402950	8295	N/A
34	3/28/2018	78.5	7276	5554	5141	407791	10220	N/A
35	3/29/2018	78.1	7374	5464	5044	407000	8477	N/A
36	3/29/2018	78.7	7112	5284	5378	412182	8418	N/A
37	3/30/2018	78.2	6933	5354	5387	405000	8577	N/A
38	3/31/2018	76.3	7018	5443	5467	402700	8441	N/A
39	3/31/2018	75.4	7492	5997	5289	410295	8512	N/A
40	4/1/2018	76.4	7059	5580	4802	407000	8431	N/A
41	4/1/2018	80	7009	5633	4778	405474	8375	N/A
42	4/2/2018	78.5	7018	6136	5022	413418	8460	N/A
43	4/2/2018	77.9	6799	4965	3895	402000	8301	N/A
44	4/2/2018	79.3	6915	5641	4133	412914	8194	N/A
45	4/3/2018	80	7020	5719	4089	408134	8342	N/A
46	4/5/2018	79.6	6989	5267	3800	403550	8121	N/A
47	4/5/2018	79.7	6851	4985	5394	404000	8276	N/A
48	4/6/2018	79.7	6730	5428	3969	406000	8223	N/A
49	4/7/2018	81.5	6717	5175	5500	403250	8206	N/A
50	4/7/2018	80	6872	5738	4731	402950	8209	N/A
51	4/8/2018	79.2	6987	5715	3597	402000	8583	N/A
52	4/8/2018	80.1	7103	5415	4674	403650	8443	N/A
53	4/9/2018	79.3	6805	5673	4512	402000	8728	N/A
54	4/9/2018	80.9	6703	5291	4207	403100	8376	N/A
55	4/10/2018	78.7	6636	5121	4956	406000	8183	N/A
56	4/11/2018	78.8	6716	5332	4836	403440	8181	N/A
57	4/11/2018	79	6488	5683	3804	402700	8414	N/A
58	4/12/2018	79	6768	5242	3988	403296	8202	N/A
59	4/12/2018	77.8	6657	5540	3981	402880	8062	N/A
60	4/13/2018	80	7007	5172	4921	402700	8172	N/A
61	4/14/2018	78.9	6606	5989	3818	403120	8033	N/A
	AVG=	76	7,323	5,486	4,490	24,678,232	521,339	TOTAL

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API 47-017-06811 Farm Name Antero Resources Corp Well Number Michels Unit 1H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Shale	0	197	0	197
Sandy shale	197	357	197	357
Sandstone	357	417	357	417
Sandstone tr coal	417	437	417	437
Sandy shale	437	537	437	537
Shale	537	737	537	737
Silty sandstone	737	817	737	817
Silty shale	817	997	817	997
Sandstone	997	1,017	997	1,017
Silty shale	1,017	1,277	1,017	1,277
Sandstone	1,277	1,417	1,277	1,417
Sandy shale	1,417	1,677	1,417	1,677
Silty shale	1,677	1,738	1,677	1,738
Big Lime	1,738	2,300	1,738	2,300
Fifty Foot Sandstone	2,300	2,507	2,300	2,507
Gordon	2,507	2,707	2,507	2,707
Fifth Sandstone	2,707	2,774	2,707	2,774
Bayard	2,774	3,557	2,774	3,564
Speechley	3,557	3,746	3,564	3,759
Balltown	3,746	4,367	3,759	4,401
Bradford	4,367	4,789	4,401	4,839
Benson	4,789	5,085	4,839	5,145
Alexander	5,085	6,040	5,145	6,141
Sycamore	6,040	6,219	6,141	6,357
Middlesex	6,219	6,352	6,357	6,582
Burkett	6,352	6,382	6,582	6,654
Tully	6,382	6,424	6,654	6,793
Marcellus	6,424	NA	6,793	NA

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

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	3/14/2018
Job End Date:	4/14/2018
State:	West Virginia
County:	Doddridge
API Number:	47-017-06811-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Michels 1H
Latitude:	39.33348056
Longitude:	-80.80583333
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,803
Total Base Water Volume (gal):	22,845,354
Total Base Non Water Volume:	



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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	Ascent	Carrier/Base Fluid	Water	7732-18-5	100.00000	88.20455	None
Sand (Proppant)	Keane	Proppant	Crystalline silica: Quartz (SiO2)	14808-60-7	100.00000	11.41776	None
KFR-16FW	Keane	Friction Reducer	Water	7732-18-5	60.00000	0.03925	None
			Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.01308	None
			ammonium chloride	12125-02-9	1.50000	0.00098	None
			oleic acid diethanolamide	93-83-4	1.50000	0.00098	None
			alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00065	None
Hydrochloric Acid (15%)	Keane	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.03872	None
KWG-111LS	Keane	Gel	Guar gum	9000-30-0	55.00000	0.01612	None
			Distillates (petroleum), hydrotreated light	64742-47-8	55.00000	0.01612	None
MBC-516W	Keane	Biocide					

			Water	7732-18-5	56.70000	0.00504	None
			Glutaral	111-30-8	26.70000	0.00237	None
			didecyldimethylammonium chloride	7173-51-5	8.00000	0.00071	None
			quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	5.30000	0.00047	None
			ethonal	64-17-5	2.80000	0.00025	None
KSI-19	Keane	Scale Inhibitor					
			Methanol	67-56-1	30.00000	0.00394	None
KWBO-2	Keane	Breaker					
			Sodium persulfate	7775-27-1	99.00000	0.00067	None
KAI-12	Keane	Acid Inhibitor					
			Ethylene glycol	107-21-1	40.00000	0.00022	None
			dipropylene glycol, monomethyl ether	34590-94-8	20.00000	0.00011	None
			Cinnamaldehyde	104-55-2	10.00000	0.00006	None
			Ethoxylated alcohol	68131-39-5	10.00000	0.00006	None
			Tar bases, quinoline derivs., benzyl chloride-quaternized	72480-70-7	10.00000	0.00006	None
			formic acid	64-18-6	10.00000	0.00006	None
			isoproyl alcohol	67-63-0	5.00000	0.00003	None
KFEAC-30	Keane	Iron Control					
			Citric acid	77-92-9	30.00000	0.00047	None
			Acetic acid	64-19-7	5.00000	0.00008	None

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.

Other Chemical(s)	Listed Above	See Trade Name(s) List					
			Distillates (petroleum), hydrotreated light	64742-47-8	55.00000	0.01612	
			Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.01308	
			Glutaral	111-30-8	26.70000	0.00237	
			ammonium chloride	12125-02-9	1.50000	0.00098	
			oleic acid diethanolamide	93-83-4	1.50000	0.00098	
			didecyldimethylammonium chloride	7173-51-5	8.00000	0.00071	
			alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00065	
			Citric acid	77-92-9	30.00000	0.00047	
			quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	5.30000	0.00047	
			ethonal	64-17-5	2.80000	0.00025	
			dipropylene glycol, monomethyl ether	34590-94-8	20.00000	0.00011	
			Ethoxylated alcohol	68131-39-5	10.00000	0.00006	
			Tar bases, quinoline derivs., benzyl chloride-quaternized	72480-70-7	10.00000	0.00006	
			Cinnamaldehyde	104-55-2	10.00000	0.00006	
			formic acid	64-18-6	10.00000	0.00006	

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10,589' to Bottom Hole

4,218' to Top Hole

TOP HOLE LATITUDE 39 - 22 - 30
BTM HOLE LATITUDE 39 - 20 - 00

TOP HOLE LONGITUDE 80 - 47 - 30
BTM HOLE LONGITUDE 80 - 45 - 00

15,063' to Top Hole

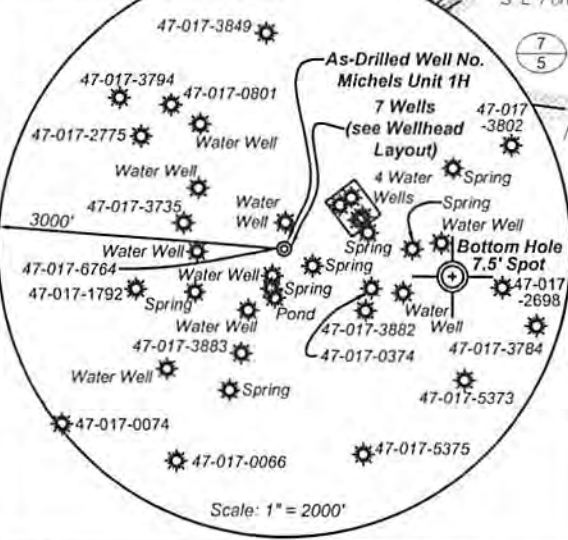
GRID NORTH

11,056' to Bottom Hole

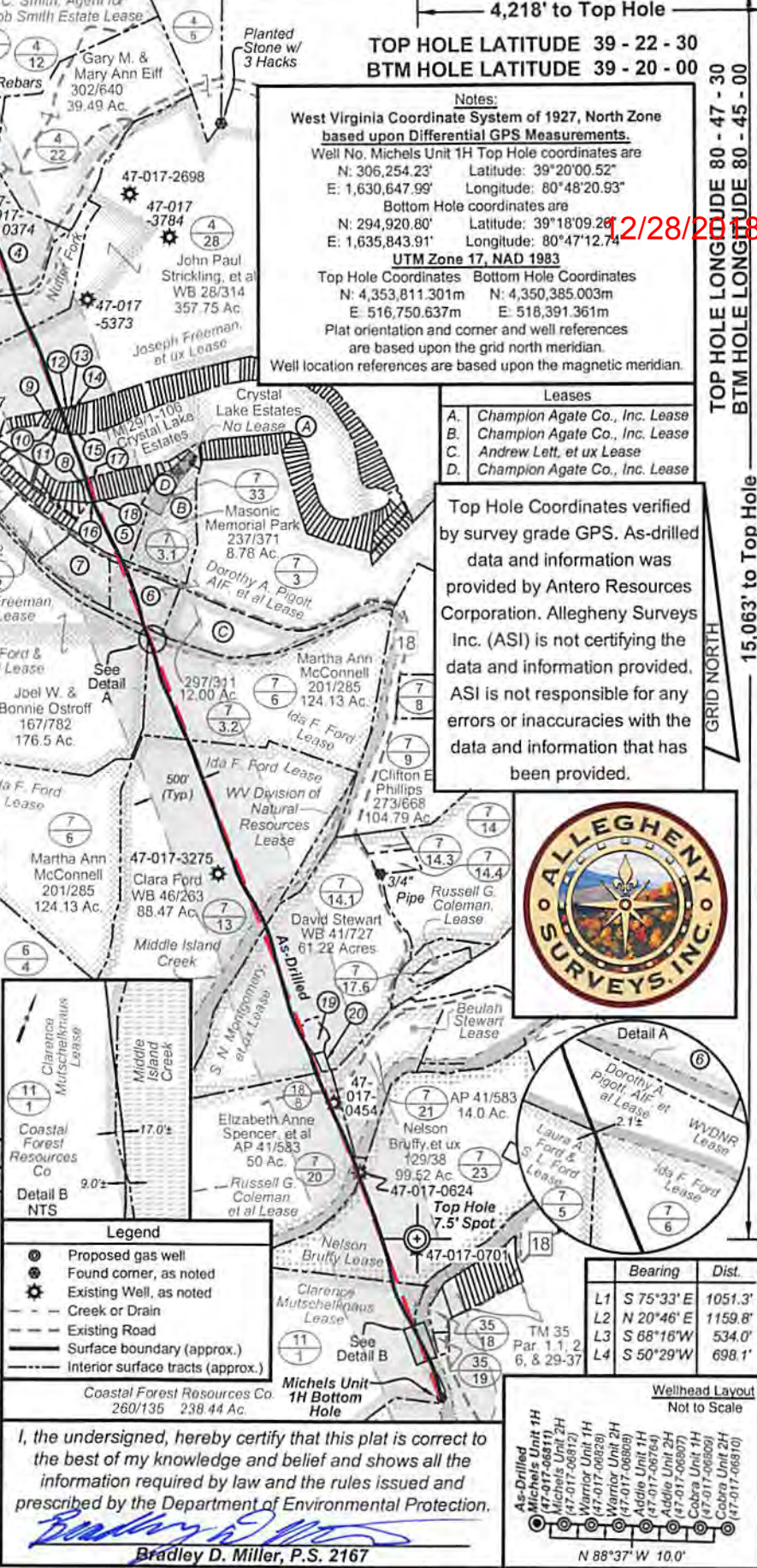
Antero Resources
Well No. Michels Unit 1H
As-Drilled Plat
Antero Resources Corporation



Note: It appears 13 water wells, 7 springs and a pond were found within 2000' of proposed well. No occupied dwellings and no buildings 2,500 square feet or larger used to house or shelter dairy cattle or poultry husbandry are located within 625' of the center of the well pad. See well location references for details.



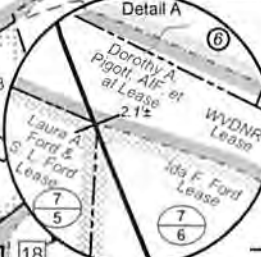
TM/Par	Owner	Bk/Pg	Acres
1 3/17	Antero Resources Corp.	349/553	25.90
2 3/17.1	Antero Resources Corp.	358/562	9.90
3 3/21.1	Charles & Carol Cottrill	256/479	3.00
4 3/21	Addie Marie Leadmon	250/84	19.84
5 7/1	Mason Memorial Park	96/487	6.55
6 7/4	Robert P. Holden & Sherri M. Bailey	301/464	6.14
7 7/4.1	Robert P. Holden & Sherri M. Bailey	301/466	5.49
8 29/56	Lucia P. Anderson	267/687	Lot 11
9 29/4	Michael C. & Mildred R. Sheets	358/75	Lot 199
10 29/5	Jon, Sandra, Jared Bonnell	254/703	Lot 198
11 29/6	Richard David Williams	250/79	Lot 197
12 29/7	Sandra Sue Pristas	262/362	Lot 196
13 29/8	Sandra Sue Pristas	262/362	Lot 195
14 29/9	Jeffrey T. Harvey	287/338	Lot 194
15 29/10	Mark W. & Lisa D. Ball	355/648	Lot 193
16 29/57	Lucia P. Anderson	267/687	Lot 12
17 29/58	Ronald M. & Karen M. Owens	330/488	Lot 13
18 29/59	Ronald M. & Karen M. Owens	297/241	Lot 14
19 7/14.2	Elizabeth Anne Spencer, et al	AP 41/583	1.43
20 7/14.5	Elizabeth Anne Spencer, et al	AP 41/583	0.35



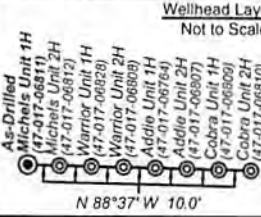
Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Michels Unit 1H Top Hole coordinates are
N: 306,254.23' Longitude: 39°20'00.52"
E: 1,630,647.99' Longitude: 80°48'20.93"
Bottom Hole coordinates are
N: 294,920.80' Longitude: 39°18'09.28"
E: 1,635,843.91' Longitude: 80°47'12.74"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,353,811.301m N: 4,350,385.003m
E 516,750.637m E 518,391.361m
Plat orientation and corner and well references are based upon the grid north meridian.
Well location references are based upon the magnetic meridian.

- Leases**
- A. Champion Agate Co., Inc. Lease
 - B. Champion Agate Co., Inc. Lease
 - C. Andrew Lett, et ux Lease
 - D. Champion Agate Co., Inc. Lease

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.



Bearing	Dist.
L1 S 75°33' E	1051.3'
L2 N 20°46' E	1159.8'
L3 S 68°16' W	534.0'
L4 S 50°29' W	698.1'



FILE NO: 53-30-WU-15
DRAWING NO: Michels 1H As-Drilled Well Plat
SCALE: 1" = 1500'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

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

DATE: October 5 20 18
OPERATOR'S WELL NO. Michels Unit 1H
API WELL NO
47 - 017 - 06811
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
LOCATION: ELEVATION: 891' As-Drilled WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union
DISTRICT: West Union COUNTY: Doddridge
SURFACE OWNER: Antero Resources Corp. ACREAGE: 25.9
ROYALTY OWNER: J.C. Smith, Agent for Jacob Smith Estate; Ida F. Ford (2); Joseph Freeman, et ux LEASE NO: ACREAGE: 600; 58.70; 82.21
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 19,040' 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

12/28/2018



[Faint handwritten signature]

[Faint handwritten text, possibly a date or location]

10,589' to Bottom Hole

4,218' to Top Hole

TOP HOLE LATITUDE 39 - 22 - 30
BTM HOLE LATITUDE 39 - 20 - 00

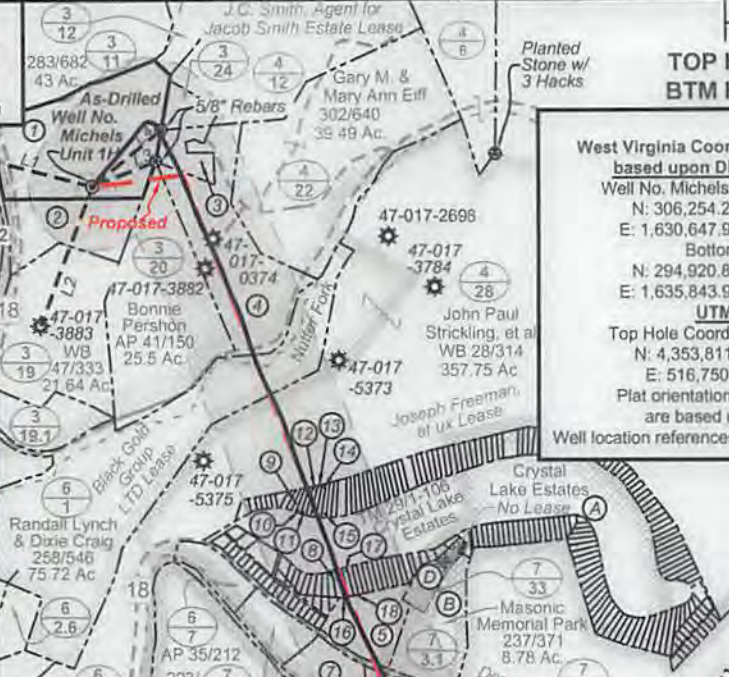
TOP HOLE LONGITUDE 80 - 47 - 30
BTM HOLE LONGITUDE 80 - 45 - 00

11,056' to Bottom Hole

GRID NORTH
15,063' to Top Hole

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

BRADLEY D. MILLER
LICENSED
No 2167
STATE OF
WEST VIRGINIA
PROFESSIONAL SURVEYOR
SEAL



Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Michels Unit 1H Top Hole coordinates are
N: 306,254.23' Latitude: 39°20'00.52"
E: 1,630,647.99' Longitude: 80°48'20.93"
Bottom Hole coordinates are
N: 294,920.80' Latitude: 39°18'09.26"
E: 1,635,843.91' Longitude: 80°47'12.7"
UTM Zone 17, NAD 1983
Top Hole Coordinates: Bottom Hole Coordinates
N: 4,353,811.301m N: 4,350,385.003m
E: 516,750.637m E: 518,391.361m
Plat orientation and corner and well references are based upon the grid north meridian.
Well location references are based upon the magnetic meridian.

Leases

A	Champion Agate Co., Inc. Lease
B	Champion Agate Co., Inc. Lease
C	Andrew Lett, et ux Lease
D	Champion Agate Co., Inc. Lease

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.

Note: It appears 13 water wells, 7 springs and a pond were found within 2000' of proposed well. No occupied dwellings and no buildings 2,500 square feet or larger used to house or shelter dairy cattle or poultry husbandry are located within 625' of the center of the well pad. See well location references for details.



Scale: 1" = 2000'

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

TM/Par	Owner	Bk/Pg	Acres
1 3/17	Antero Resources Corp.	349/553	25.90
2 3/17.1	Antero Resources Corp.	358/562	9.90
3 3/21.1	Charles & Carol Coltrill	256/479	3.00
4 3/21	Addie Marie Leadmon	250/84	19.84
5 7/1	Mason Memorial Park	96/487	6.55
6 7/4	Robert P. Holden & Sherri M. Bailey	301/464	6.14
7 7/4.1	Robert P. Holden & Sherri M. Bailey	301/466	5.49
8 29/56	Lucia P. Anderson	267/687	Lot 11
9 29/4	Michael C. & Mildred R. Sheets	358/75	Lot 199
10 29/5	Jon, Sandra, Jared Bonnell	254/703	Lot 198
11 29/6	Richard David Williams	250/79	Lot 197
12 29/7	Saundra Sue Pristas	262/362	Lot 196
13 29/8	Saundra Sue Pristas	262/362	Lot 195
14 29/9	Jeffrey T. Harvey	287/338	Lot 194
15 29/10	Mark W. & Lisa D. Ball	355/648	Lot 193
16 29/57	Lucia P. Anderson	267/687	Lot 12
17 29/58	Ronald M. & Karen M. Owens	330/488	Lot 13
18 29/59	Ronald M. & Karen M. Owens	297/241	Lot 14
19 7/14.2	Elizabeth Anne Spencer, et al	AP 41/583	1.43
20 7/14.5	Elizabeth Anne Spencer, et al	AP 41/583	0.35



Scale: 1" = 2000'

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

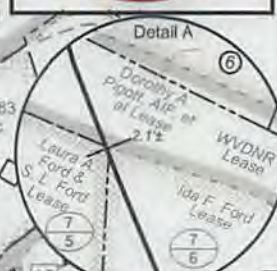
TM/Par	Owner	Bk/Pg	Acres
1 3/17	Antero Resources Corp.	349/553	25.90
2 3/17.1	Antero Resources Corp.	358/562	9.90
3 3/21.1	Charles & Carol Coltrill	256/479	3.00
4 3/21	Addie Marie Leadmon	250/84	19.84
5 7/1	Mason Memorial Park	96/487	6.55
6 7/4	Robert P. Holden & Sherri M. Bailey	301/464	6.14
7 7/4.1	Robert P. Holden & Sherri M. Bailey	301/466	5.49
8 29/56	Lucia P. Anderson	267/687	Lot 11
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11 29/6	Richard David Williams	250/79	Lot 197
12 29/7	Saundra Sue Pristas	262/362	Lot 196
13 29/8	Saundra Sue Pristas	262/362	Lot 195
14 29/9	Jeffrey T. Harvey	287/338	Lot 194
15 29/10	Mark W. & Lisa D. Ball	355/648	Lot 193
16 29/57	Lucia P. Anderson	267/687	Lot 12
17 29/58	Ronald M. & Karen M. Owens	330/488	Lot 13
18 29/59	Ronald M. & Karen M. Owens	297/241	Lot 14
19 7/14.2	Elizabeth Anne Spencer, et al	AP 41/583	1.43
20 7/14.5	Elizabeth Anne Spencer, et al	AP 41/583	0.35

Legend

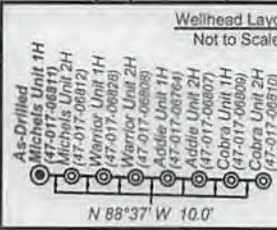
- Proposed gas well
- Found corner, as noted
- Existing Well, as noted
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)

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.

Bradley D. Miller
Bradley D. Miller, P.S. 2167



Bearing	Dist.
L1	S 75°33' E 1051.3'
L2	N 20°46' E 1159.8'
L3	S 68°16' W 534.0'
L4	S 50°29' W 698.1'



FILE NO: 53-30-WU-15
DRAWING NO: Michels 1H As-Drilled Well Plat
SCALE: 1" = 1500'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

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

DATE: October 5 20 18
OPERATOR'S WELL NO. Michels Unit 1H
API WELL NO
47 - 017 - 06811
STATE COUNTY PERMIT

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

LOCATION: ELEVATION: 891' As-Drilled WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union
DISTRICT: West Union COUNTY: Doddridge

SURFACE OWNER: Antero Resources Corp. ACREAGE: 25.9
S. N. Montgomery, et ux; Black Gold Group, LTD; Dorothy A. Pigott, AIF, et al; 180; 56.07
ROYALTY OWNER: J.C. Smith, Agent for Jacob Smith Estate; Ida F. Ford (2); Joseph Freeman, et ux LEASE NO: ACREAGE: 600; 58.70; 82.21
290; 124; 50; 90
112; 100; 102.85

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 19,040' MD
6,582' TVD

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

FILE NO. 53-30-WU-15
 DRAWING NO. Michels 1H As-Drilled Well Plat
 SCALE: 1" = 1500'
 MINIMUM DEGREE OF ACCURACY:
 Submeter
 PROVEN SOURCE OF ELEVATION
 WVDOT, Hamville, WV

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

STATE COUNTY PERMIT
 47 - 017 - 06811
 API WELL NO
 OPERATORS WELL NO. Michels Unit 1H
 DATE: October 5, 2018

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

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 19,040.00 MD @ 582' TVD

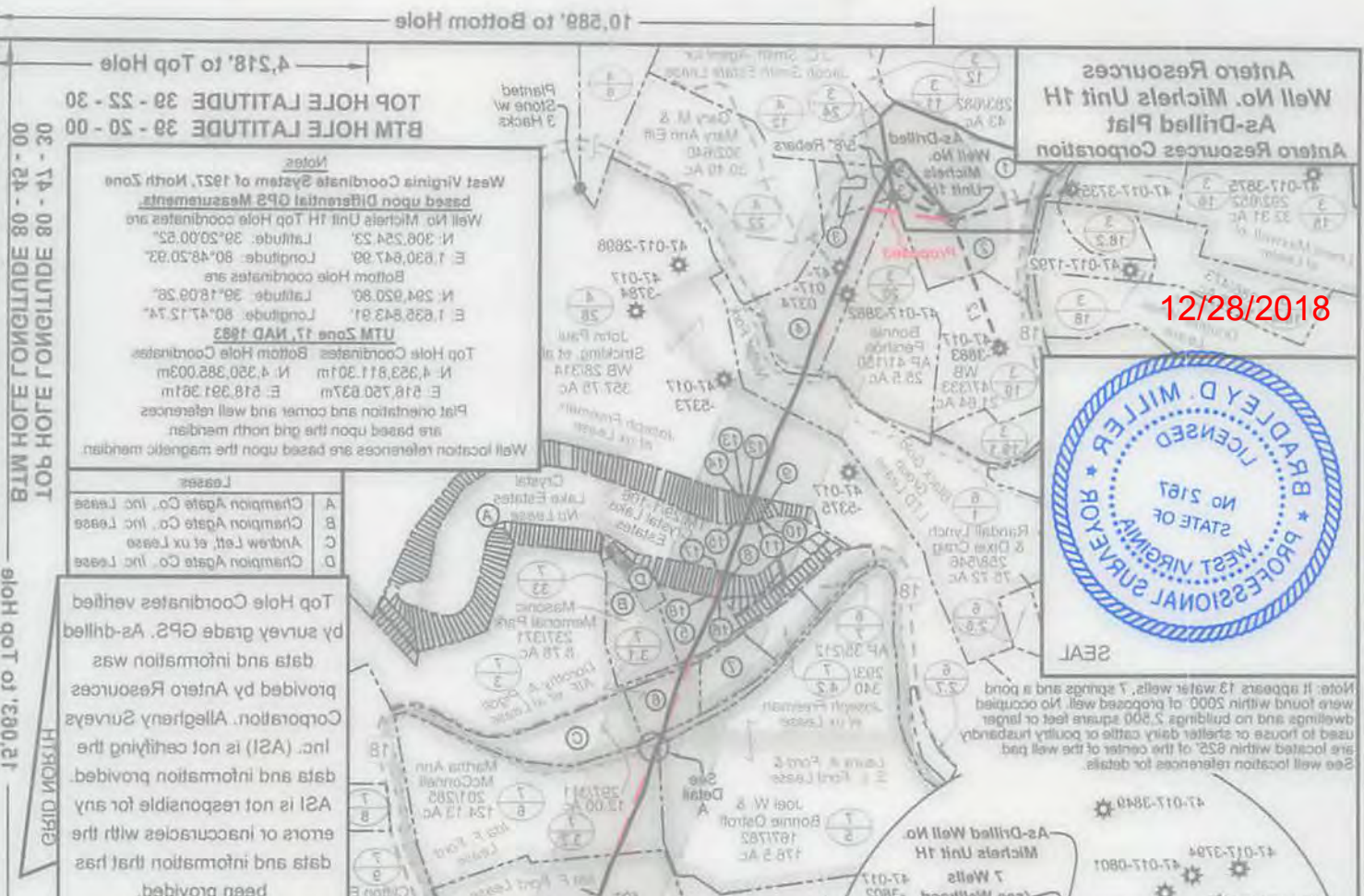
DESIGNATED AGENT: Diana Stampler - CT Corporation System
 ADDRESS: 1615 Wynkoop Street, Denver, CO 80202
 ADDRESS: 5400 D Big Tyler Road, Charleston, WV 25313

ROYALTY OWNER: L.G. Smith, Agent for Jacob Smith Estate, lba F. Ford (S), Joseph Freeman et ux
 LEASE NO: 297241
 SURFACE OWNER: Antero Resources Corp. Clarence Mutchlikman; Nelson Bruffy, Laura A. Ford & S.L. Ford
 ACREAGE: 2.8
 DISTRICT: West Union
 LOCATION: ELEVATION: 891' As-Drilled WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union

TRMP#	Owner	Acres	BV/P	NTS
1	Antero Resources Corp	348.823	25.90	Detail B
2	Antero Resources Corp	358.823	8.90	NTS
3	Charles & Carol Cottrell	258.470	3.00	
4	Abbie Marie Leadson	250.84	19.84	
5	Mason Memorial Park	364.87	8.22	
6	Robert P. Holden & Sheri M. Bailey	301.864	6.14	
7	Robert P. Holden & Sheri M. Bailey	301.488	8.49	
8	Lucia P. Anderson	287.887	1.01	
9	Michael C. & Mildred R. Streets	358.78	1.01	
10	Jon Sandra Jared Bonnell	254.703	1.01	
11	Richard David Williams	257.07	1.01	
12	Sandra Sue Pritas	262.982	1.01	
13	Sandra Sue Pritas	262.982	1.01	
14	Jeffrey T. Harvey	287.238	1.01	
15	Mark W. & Lisa D. Ball	358.48	1.01	
16	Lucia P. Anderson	287.887	1.01	
17	Ronald M. & Karen M. Owens	330.488	1.01	
18	Ronald M. & Karen M. Owens	297.24	1.01	
19	Elizabeth Anne Spencer, et al	AP 415.83	1.43	
20	Elizabeth Anne Spencer, et al	AP 415.83	0.32	



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.



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

UTM Zone 17 NAD 1983
 Top Hole Coordinates: Bottom Hole Coordinates:
 N: 4,323,811.301m N: 4,320,388.003m
 E: 618,750.837m E: 618,991.987m

Bottom Hole Coordinates are:
 N: 294,920.80 Latitude: 39°18'09.28"
 E: 1,832,842.91 Longitude: 80°47'12.74"

Well No. Michels Unit 1H Top Hole coordinates are based upon Differential GPS Measurements
 N: 308,224.23 Latitude: 39°20'00.52"
 E: 1,830,842.99 Longitude: 80°48'50.92"

West Virginia Coordinate System of 1927, North Zone



12/28/2018