

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

4709502423

API 47 - 085 - 02423 County Tyler District Meade
Quad Middlebourne 7.5' (TH), Pennsboro 7.5' (BH) Pad Name McKim Pad Field/Pool Name -----
Farm name Jarret W. Shepherd et al Well Number Haga 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 5359568m Easting 504202m
Landing Point of Curve Northing 4359461m Easting 503991m
Bottom Hole Northing 4355827m Easting 505411m

Elevation (ft) 1172' 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 4/4/2017 Date drilling commenced 6/29/2017 Date drilling ceased 12/17/2017
Date completion activities began 7/18/2018 Date completion activities ceased 12/11/2018
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 None Identified Open mine(s) (Y/N) depths No
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths No
Coal depth(s) ft 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 47-085 - 02423 Farm name Jarret W. Shepherd et al Well number Haga 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"	112'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	551'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2582'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	19834'	New	23#, HCP-110	N/A	Y
Tubing		2-3/8"	6884'		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	284 sx	15.6	1.21	344	0'	8 Hrs.
Surface	Class A	620 sx	15.6	1.21	750	0'	8 Hrs.
Coal							
Intermediate 1	Class A	860 sx	15.6	1.22	1049	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	705 sx (Lead) 1915 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.45 (Lead), 1.94 (Tail)	4737	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 19834' MD, 6526' TVD (BHL), 6525' (Deepest Point Drilled) Loggers TD (ft) 19834' MD

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6150'

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- 085 - 02423 Farm name Jarret W. Shepherd et al Well number Haga 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								

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6430' (TOP) TVD	6746' (TOP) MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3000 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 10718 mcfpd Oil 245 bpd NGL --- bpd Water 0 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Frontier Drilling LLC
Address 562 Spring Run Road City Pennsboro State WV Zip 26415

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

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

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

Please insert additional pages as applicable.

Completed by Karin Cox Telephone 303-357-7310
Signature  Title Permitting Agent Date 4/17/2019

API 47-095-02423 Farm Name Jarret W. Shepherd et al Well Number Haga Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	7/18/2018	19634	19732	60	Marcellus
2	7/19/2018	19433.45	19602.575	60	Marcellus
3	7/20/2018	19232.9	19402.025	60	Marcellus
4	8/21/2018	19032.35	19201.475	60	Marcellus
5	8/21/2018	18831.8	19000.925	60	Marcellus
6	8/22/2018	18631.25	18800.375	60	Marcellus
7	8/22/2018	18430.7	18599.825	60	Marcellus
8	8/22/2018	18230.15	18399.275	60	Marcellus
9	8/22/2018	18029.6	18198.725	60	Marcellus
10	8/23/2018	17829.05	17998.175	60	Marcellus
11	8/23/2018	17628.5	17797.625	60	Marcellus
12	8/25/2018	17427.95	17597.075	60	Marcellus
13	8/25/2018	17227.4	17396.525	60	Marcellus
14	8/25/2018	17026.85	17195.975	60	Marcellus
15	8/26/2018	16826.3	16995.425	60	Marcellus
16	8/26/2018	16625.75	16794.875	60	Marcellus
17	8/26/2018	16425.2	16594.325	60	Marcellus
18	8/26/2018	16224.65	16393.775	60	Marcellus
19	8/27/2018	16024.1	16193.225	60	Marcellus
20	8/27/2018	15823.55	15992.675	60	Marcellus
21	8/30/2018	15623	15792.125	60	Marcellus
22	8/30/2018	15422.45	15591.575	60	Marcellus
23	8/30/2018	15221.9	15391.025	60	Marcellus
24	8/31/2018	15021.35	15190.475	60	Marcellus
25	8/31/2018	14820.8	14989.925	60	Marcellus
26	8/31/2018	14620.25	14789.375	60	Marcellus
27	9/1/2018	14419.7	14588.825	60	Marcellus
28	9/1/2018	14219.15	14388.275	60	Marcellus
29	9/1/2018	14018.6	14187.725	60	Marcellus
30	9/2/2018	13818.05	13987.175	60	Marcellus
31	9/2/2018	13617.5	13786.625	60	Marcellus
32	9/2/2018	13416.95	13586.075	60	Marcellus
33	9/2/2018	13216.4	13385.525	60	Marcellus
34	9/3/2018	13015.85	13184.975	60	Marcellus
35	9/3/2018	12815.3	12984.425	60	Marcellus
36	9/4/2018	12614.75	12783.875	60	Marcellus
37	9/5/2018	12414.2	12583.325	60	Marcellus
38	9/5/2018	12213.65	12382.775	60	Marcellus
39	9/5/2018	12013.1	12182.225	60	Marcellus
40	9/6/2018	11812.55	11981.675	60	Marcellus
41	9/7/2018	11612	11781.125	60	Marcellus
42	9/7/2018	11411.45	11580.575	60	Marcellus
43	9/7/2018	11210.9	11380.025	60	Marcellus
44	9/7/2018	11010.35	11179.475	60	Marcellus
45	9/7/2018	10809.8	10978.925	60	Marcellus
46	9/8/2018	10609.25	10778.375	60	Marcellus
47	9/8/2018	10408.7	10577.825	60	Marcellus
48	9/9/2018	10208.15	10377.275	60	Marcellus
49	9/9/2018	10007.6	10176.725	60	Marcellus
50	9/9/2018	9807.05	9976.175	60	Marcellus
51	9/9/2018	9606.5	9775.625	60	Marcellus
52	9/10/2018	9405.95	9575.075	60	Marcellus
53	9/10/2018	9205.4	9374.525	60	Marcellus
54	9/10/2018	9004.85	9173.975	60	Marcellus
55	9/11/2018	8804.3	8973.425	60	Marcellus
56	9/11/2018	8603.75	8772.875	60	Marcellus
57	9/11/2018	8403.2	8572.325	60	Marcellus
58	9/12/2018	8202.65	8371.775	60	Marcellus
59	9/12/2018	8002.1	8171.225	60	Marcellus
60	9/12/2018	7801.55	7970.675	60	Marcellus
61	9/13/2018	7601	7770.125	60	Marcellus
62	9/13/2018	7400.45	7569.575	60	Marcellus
63	9/13/2018	7199.9	7369.025	60	Marcellus
64	9/13/2018	6999.35	7168.475	60	Marcellus
65	9/14/2018	6798.8	6967.925	60	Marcellus

API 47-095-02423 Farm Name Jarret W. Shepherd et al Well Number Haga 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	7/18/2018	64.6	7458	5596	3793	234680	7475	N/A
2	7/19/2018	65.7	7742	5771	3177	361280	10129	N/A
3	7/20/2018	73	7652	5766	2946	347840	8360	N/A
4	8/21/2018	66.8	7565	5789	3461	356180	12494	N/A
5	8/21/2018	66.4	7382	5824	3658	357980	13709	N/A
6	8/22/2018	66	7556	5647	5362	358020	9830	N/A
7	8/22/2018	70	7842	5525	4805	356780	10483	N/A
8	8/22/2018	66.6	7804	5551	4570	359260	8531	N/A
9	8/22/2018	78.4	7725	5631	3307	365580	7455	N/A
10	8/23/2018	78	7709	5477	3890	357160	7368	N/A
11	8/23/2018	72.9	7368	5663	3685	355920	7849	N/A
12	8/25/2018	73.8	7387	6260	3840	364859	9274	N/A
13	8/25/2018	67.4	7336	5674	3871	359300	8105	N/A
14	8/25/2018	70.7	7587	5451	3672	361260	7892	N/A
15	8/26/2018	68.4	7888	5839	3394	365700	8006	N/A
16	8/26/2018	67.3	7836	5570	3527	361120	7355	N/A
17	8/26/2018	64.4	7809	6014	3518	357340	9054	N/A
18	8/26/2018	69.9	8261	6143	3417	362520	7060	N/A
19	8/27/2018	74	8156	5675	3544	362200	7074	N/A
20	8/27/2018	67.7	7876	5298	3473	361120	7149	N/A
21	8/30/2018	72.5	7846	6048	3992	361400	7656	N/A
22	8/30/2018	70.3	7977	5382	3621	356380	7632	N/A
23	8/30/2018	73	7849	5681	3764	363080	7199	N/A
24	8/31/2018	72	7676	5602	3673	361340	7070	N/A
25	8/31/2018	75.5	7775	4941	3449	362220	7185	N/A
26	8/31/2018	74	7905	5310	3616	360840	7235	N/A
27	9/1/2018	73.7	7939	6032	3822	361860	8677	N/A
28	9/1/2018	73.6	7706	5721	3734	363620	7382	N/A
29	9/1/2018	73.5	7261	5580	3848	361300	7113	N/A
30	9/2/2018	75.8	7815	4862	3923	360880	7059	N/A
31	9/2/2018	77	7808	5992	3822	363260	7084	N/A
32	9/2/2018	76.8	7700	5619	3284	360400	6967	N/A
33	9/2/2018	75.7	7704	4954	3820	362420	7026	N/A
34	9/3/2018	75.2	7928	6252	3914	359860	6898	N/A
35	9/3/2018	74.9	7708	5938	3616	361900	6996	N/A
36	9/4/2018	74.7	7489	5518	3736	358520	8523	N/A
37	9/5/2018	75.3	7726	5589	3697	360760	7125	N/A
38	9/5/2018	71.9	7370	5229	3355	361700	7592	N/A
39	9/5/2018	76.6	7905	6139	3567	355840	7055	N/A
40	9/6/2018	73.8	7546	6299	3508	360600	6993	N/A
41	9/7/2018	74.4	7995	6168	3526	356860	7183	N/A
42	9/7/2018	77.4	7556	5908	3579	358180	6894	N/A
43	9/7/2018	73.4	7503	5460	3662	360920	7121	N/A
44	9/7/2018	76.7	7533	5372	3584	360240	7079	N/A
45	9/7/2018	76.2	7491	5941	3609	361300	6971	N/A
46	9/8/2018	76.5	7551	5957	3583	356940	6888	N/A
47	9/8/2018	78.1	7517	5820	3437	363100	6853	N/A
48	9/9/2018	77.3	7454	5958	3581	360840	7570	N/A
49	9/9/2018	75.9	7236	5450	3669	358700	7443	N/A
50	9/9/2018	76	7155	5361	3515	359240	7070	N/A
51	9/9/2018	77.7	7309	5969	3528	359480	7233	N/A
52	9/10/2018	78.1	7287	6240	3595	359740	6704	N/A
53	9/10/2018	78.5	7092	6081	3524	359820	7206	N/A
54	9/10/2018	77	7804	5798	3536	358860	6832	N/A
55	9/11/2018	77.8	7098	6395	3806	360700	6723	N/A
56	9/11/2018	75.6	6895	5562	3244	359540	6830	N/A
57	9/11/2018	77.5	6949	5711	3645	361240	6752	N/A
58	9/12/2018	76.9	6900	6098	3747	360940	6748	N/A
59	9/12/2018	77.6	7164	5921	3384	360220	6755	N/A
60	9/12/2018	72.8	7168	6041	3526	358430	6638	N/A
61	9/13/2018	74.7	7002	6111	3448	361040	6641	N/A
62	9/13/2018	79.5	7700	5923	3556	362040	6736	N/A
63	9/13/2018	79.5	7650	5886	3690	360320	6919	N/A
64	9/13/2018	77.8	6668	6040	5070	361300	6702	N/A
65	9/14/2018	78.8	7029	5495	4535	360380	6690	N/A
	AVG=	74	7,558	5,746	3,696	23,284,649	494,300	TOTAL

API 47-095-024232 Farm Name Jarret W. Shepherd et al Well Number Haga Unit 1H

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Silty Sandstone	0	227	0	227
Sandy siltstone	est 227	667	est 227	667
Sandstone	est 667	887	est 667	887
Silty Sandstone	est 887	997	est 887	997
limey siltstone	est 997	1,147	est 997	1,147
silty sandstone, tr. coal	est 1147	1,287	est 1147	1,287
silty sandstone	est 1287	1,367	est 1287	1,367
silty shale	est 1367	1,587	est 1367	1,587
sandstone, tr coal	est 1587	1,647	est 1587	1,647
silty sandstone	est 1647	1,667	est 1647	1,667
sandstone	est 1667	1,807	est 1667	1,807
sandy shale	est 1807	1,887	est 1807	1,887
shaly sand	est 1887	2,029	est 1887	2,032
Big Lime	2,029	2,293	2,032	2,297
Big Injun	2,293	2,639	2,297	2,642
Gantz Sand	2,639	2,812	2,642	2,815
Fifty Foot Sandstone	2,812	2,968	2,815	2,972
Gordon	2,968	3,082	2,972	3,087
Fifth Sandstone	3,082	3,478	3,087	3,492
Bayard	3,478	3,642	3,492	3,663
Warren	3,642	4,061	3,663	4,100
Speechley	4,061	4,305	4,100	4,354
Balltown	4,305	4,752	4,354	4,823
Bradford	4,752	5,127	4,823	5,213
Benson	5,127	5,360	5,213	5,458
Alexander	5,360	5,873	5,458	5,993
Rhinestreet	5,873	6,213	5,993	6,359
Sycamore	6,213	6,304	6,359	6,482
Middlesex	6,304	6,395	6,482	6,647
Burkett	6,395	6,420	6,647	6,712
Tully	6,420	6,430	6,712	6,746
Marcellus	6,430	NA	6,746	NA

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

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/18/2018
Job End Date:	9/14/2018
State:	West Virginia
County:	Tyler
API Number:	47-095-02423-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Haga Unit 1H
Latitude:	39.38550800
Longitude:	-80.95138100
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,516
Total Base Water Volume (gal):	21,766,912
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	88.45294	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.12608	

EXCELERATE PS-2	Halliburton	Friction Reducer											
SP BREAKER	Halliburton	Breaker			Listed Below								
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor			Listed Below								
SAND-COMMON WHITE - 100 MESH, 3307 LB BAG	Halliburton	Proppant			Listed Below								
MC B-8614	Halliburton	Biocide			Listed Below								
HYDROCHLORIC ACID	Halliburton	Solvent			Listed Below								
WG-36 GELLING AGENT	Halliburton	Gelling Agent			Listed Below								
SCALECHEK LP-70	Halliburton	Scale Inhibitor			Listed Below								
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.													
										Crystalline silica, quartz	14808-60-7	100.00000	11.35895

				Guar gum	9000-30-0	100.00000	0.02947	
				Acrylamide acrylate polymer	Proprietary	30.00000	0.01849	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
				Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01849	
				Inorganic salt	Proprietary	30.00000	0.01849	
				Hydrochloric acid	7647-01-0	15.00000	0.01107	
				Ethylene glycol	107-21-1	60.00000	0.00818	
				Glutaraldehyde	111-30-8	30.00000	0.00258	
				Telmer	Proprietary	10.00000	0.00136	
				Sodium persulfate	7775-27-1	100.00000	0.00084	
				Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00043	
				Sodium polyacrylate	9003-04-7	1.00000	0.00014	
				Methanol	67-56-1	60.00000	0.00009	
				Ethanol	64-17-5	1.00000	0.00009	
				Modified thiourea polymer	Proprietary	30.00000	0.00004	
				Fatty acids, tall oil	Proprietary	30.00000	0.00004	
				Ethoxylated alcohols	Proprietary	30.00000	0.00004	
				Olefins	Proprietary	5.00000	0.00002	
				Propargyl alcohol	107-19-7	10.00000	0.00001	
				Phosphoric acid	7664-38-2	0.10000	0.00001	
				Acrylic acid	79-10-7	0.01000	0.00000	
				Sodium sulfate	7757-82-6	0.10000	0.00000	

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

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

LATITUDE 39°25'00"

9,812'

LATITUDE 39°22'30"

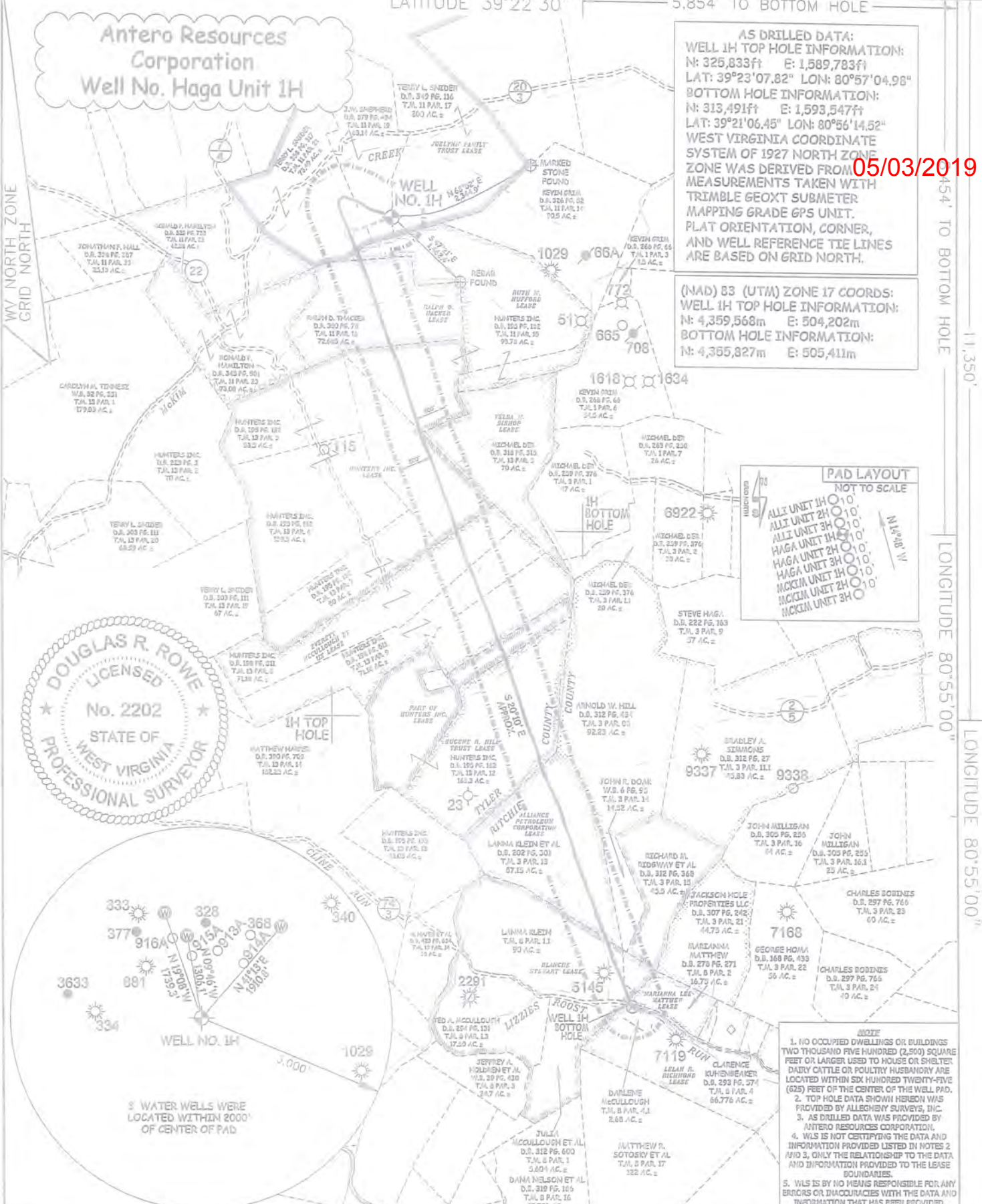
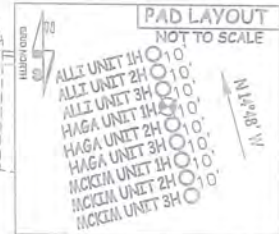
5,854' TO BOTTOM HOLE

Antero Resources Corporation Well No. Haga Unit 1H

AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
 N: 325,833ft E: 1,589,783ft
 LAT: 39°23'07.82" LON: 80°57'04.98"
BOTTOM HOLE INFORMATION:
 N: 313,491ft E: 1,593,547ft
 LAT: 39°21'06.45" LON: 80°56'14.52"
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE
 ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

05/03/2019

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
 N: 4,359,568m E: 504,202m
BOTTOM HOLE INFORMATION:
 N: 4,365,827m E: 505,411m



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

JOB # 16-062WA
 DRAWING # HAGAIHAD
 SCALE 1" = 2000'
 MINIMUM DEGREE OF ACCURACY SUBMETER
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
 STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



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

LEGEND
 Surface Owner Boundary Lines +/-
 Interior Surface Tracts +/-
 Proposed Well Path
 As Drilled Well Path
 DOUGLAS R. ROWE P.S. 2202
 DATE 02/13/19
 OPERATOR'S WELL # HAGA UNIT 1H

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
 LOCATION: ELEVATION 1,172' - AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK
 QUADRANGLE MIDDLEBOURNE 7.5' (TH) PENNSBORO 7.5' (BH) DISTRICT MEADE COUNTY TYLER
 SURFACE OWNER JARRET W. SHEPHERD ET AL ACREAGE 83.14 ACRES +/-
 OIL & GAS ROYALTY OWNER JOE LYNN FAMILY TRUST; RUTH M. HUFFORD; RALPH D. HACKER; HUNTERS INC.; LEASE ACREAGE 431.53 AC; 93.78 AC; 64.61 AC; 471.20 AC;
 EVERETT MCCULLOUGH ET UX; EUGENE R. HILL TRUST; ALLIANCE PETROLEUM CORP.; BLANCHE STEWART; MARIANNA LEE MATTHEW; LELAH B. RICHMOND 188.72 AC; 104.3 AC; 87.15 AC; 195 AC; 16.75 AC; 78 AC;
 PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___
 PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) AS DRILLED
 TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,526' TVD 19,834' MD
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
 ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD
 DENVER, CO 80202 CHARLESTON, WV 25313

COUNTY NAME PERMIT