

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

API 47 - 095 - 02690 County Tyler District Ellsworth  
Quad Shirley & Porter Falls Pad Name Blizzard Field/Pool Name -----  
Farm name Roger D Blizzard & Ruth E Spencer Well Number Richmond 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 4372167m Easting 512864m  
Landing Point of Curve Northing 4372348.90m Easting 512842.68m  
Bottom Hole Northing 4376883m Easting 511257m

Elevation (ft) 1004' 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  Gas  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 3/20/2020 Date drilling commenced 6/2/2020 Date drilling ceased 7/4/2020  
Date completion activities began 8/29/2020 Date completion activities ceased 11/9/2020  
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 16' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft 1430', 1813' 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

APPROVED

Reviewed by: [Signature]  
3/19/23

API 47-095 - 02690 Farm name Roger D Blizzard & Ruth E Spencer Well number Richmond 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"	80'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	507'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2584'	New	36#, K-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	22669'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6652'		4.7#, P-110		
Packer type and depth set		N/A					

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	204 sx	15.6	1.18	241	0'	8 Hrs.
Surface	Class A	565 sx	15.6	1.20	635	0'	8 Hrs.
Coal							
Intermediate 1	Class A	880 sx	15.6	1.19	1082	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	792 sx (Lead) 3532 sx (Tail)	13.5 (Lead), 15.2(Tail)	1.4 (Lead), 1.6 (Tail)	3003	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 22714' MD, 6407' TVD (BHL), 6512' (Deepest Point Drilled) Loggers TD (ft) 22714' MD  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A  
 Plug back procedure N/A

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Kick off depth (ft) 5771'

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

*SMY*  
*3/19/13*

API 47- 095 - 02690 Farm name Roger D Blizzard & Ruth E Spencer Well number Richmond 1H

PERFORATION RECORD

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

Please insert additional pages as applicable.

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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 (bbbs)	Amount of Nitrogen/other (units)
<b>*PLEASE SEE ATTACHED EXHIBIT 2</b>								

Please insert additional pages as applicable.

JMT  
 2/9/23

API 47- 095 - 02690 Farm name Roger D Blizzard & Ruth E Spencer Well number Richmond 1H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6460' (TOP) TVD	6697' (TOP) MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 1069 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 15032 mcfpd Oil 565 bpd NGL --- bpd Water 1043 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 <sub>2</sub> 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 H & P Drilling  
Address 912 N Eagle Valley Rd City Howard State PA Zip 16841

Logging Company KLX Energy  
Address 1415 Louisiana St, Suite 2900 City Houston State TX Zip 77002

Cementing Company Schlumberger Oilfield Services  
Address 300 Schlumberger Dr City Sugarland State TX Zip 77478

Stimulating Company Halliburton  
Address 3000 W. Sam Houston Pkwy City Houston State TX Zip 76114

Please insert additional pages as applicable.

Completed by Carly Marvel Telephone 303-357-7373  
Signature *Carly Marvel* Title Permitting Agent Date 2/6/2023

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

*Smiley  
3/9/23*

API 47-095-02690 Farm Name Roger D. Blizard & Ruth E. Spencer, Well Number Richmond Unit 1H

**Exhibit 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD Ft.	Number of Perforations	Formations
1	8/29/2020	22596.7	22553.5	60	Marcellus
2	8/30/2020	22514.52799	22347.6679	60	Marcellus
3	8/31/2020	22311.89594	22145.0359	60	Marcellus
4	8/31/2020	22109.26389	21942.4038	60	Marcellus
5	9/1/2020	21906.63184	21739.7718	60	Marcellus
6	9/2/2020	21703.99979	21537.1397	60	Marcellus
7	9/2/2020	21501.36774	21334.5077	60	Marcellus
8	9/2/2020	21298.73568	21131.8756	60	Marcellus
9	9/3/2020	21096.10363	20929.2436	60	Marcellus
10	9/3/2020	20893.47158	20726.6115	60	Marcellus
11	9/4/2020	20690.83953	20523.9795	60	Marcellus
12	9/4/2020	20488.20748	20321.3474	60	Marcellus
13	9/5/2020	20285.57543	20118.7154	60	Marcellus
14	9/5/2020	20082.94338	19916.0833	60	Marcellus
15	9/6/2020	19880.31132	19713.4513	60	Marcellus
16	9/6/2020	19677.67927	19510.8192	60	Marcellus
17	9/6/2020	19475.04722	19308.1872	60	Marcellus
18	9/7/2020	19272.41517	19105.5551	60	Marcellus
19	9/7/2020	19069.78312	18902.9231	60	Marcellus
20	9/8/2020	18867.15107	18700.291	60	Marcellus
21	9/8/2020	18664.51902	18497.659	60	Marcellus
22	9/9/2020	18461.88697	18295.0269	60	Marcellus
23	9/9/2020	18259.25491	18092.3949	60	Marcellus
24	9/9/2020	18056.62286	17889.7628	60	Marcellus
25	9/10/2020	17853.99081	17687.1308	60	Marcellus
26	9/10/2020	17651.35876	17484.4987	60	Marcellus
27	9/11/2020	17448.72671	17281.8667	60	Marcellus
28	9/11/2020	17246.09466	17079.2346	60	Marcellus
29	9/12/2020	17043.46261	16876.6026	60	Marcellus
30	9/12/2020	16840.83056	16673.9705	60	Marcellus
31	9/13/2020	16638.1985	16471.3385	60	Marcellus
32	9/13/2020	16435.56645	16268.7064	60	Marcellus
33	9/13/2020	16232.9344	16066.0744	60	Marcellus
34	9/14/2020	16030.30235	15863.4423	60	Marcellus
35	9/14/2020	15827.6703	15660.8103	60	Marcellus
36	9/14/2020	15625.03825	15458.1782	60	Marcellus
37	9/15/2020	15422.4062	15255.5462	60	Marcellus
38	9/15/2020	15219.77415	15052.9141	60	Marcellus
39	9/16/2020	15017.14209	14850.2821	60	Marcellus
40	9/16/2020	14814.51004	14647.65	60	Marcellus
41	9/17/2020	14611.87799	14445.0179	60	Marcellus
42	9/17/2020	14409.24594	14242.3859	60	Marcellus
43	9/17/2020	14206.61389	14039.7538	60	Marcellus
44	9/17/2020	14003.98184	13837.1218	60	Marcellus
45	9/17/2020	13801.34979	13634.4897	60	Marcellus
46	9/18/2020	13598.71774	13431.8577	60	Marcellus
47	9/18/2020	13396.08568	13229.2256	60	Marcellus
48	9/18/2020	13193.45363	13026.5936	60	Marcellus
49	9/18/2020	12990.82158	12823.9615	60	Marcellus
50	9/19/2020	12788.18953	12621.3295	60	Marcellus
51	9/19/2020	12585.55748	12418.6974	60	Marcellus
52	9/19/2020	12382.92543	12216.0654	60	Marcellus
53	9/19/2020	12180.29338	12013.4333	60	Marcellus
54	9/20/2020	11977.66132	11810.8013	60	Marcellus
55	9/20/2020	11775.02927	11608.1692	60	Marcellus
56	9/20/2020	11572.39722	11405.5372	60	Marcellus
57	9/20/2020	11369.76517	11202.9051	60	Marcellus
58	9/20/2020	11167.13312	11000.2731	60	Marcellus
59	9/20/2020	10964.50107	10797.641	60	Marcellus
60	9/21/2020	10761.86902	10595.009	60	Marcellus
61	9/21/2020	10559.23697	10392.3769	60	Marcellus
62	9/21/2020	10356.60491	10189.7449	60	Marcellus
63	9/21/2020	10153.97286	9987.11282	60	Marcellus
64	9/21/2020	9951.340812	9784.48077	60	Marcellus
65	9/22/2020	9748.708761	9581.84872	60	Marcellus
66	9/22/2020	9546.076709	9379.21667	60	Marcellus
67	9/22/2020	9343.444658	9176.58462	60	Marcellus
68	9/22/2020	9140.812607	8973.95256	60	Marcellus
69	9/22/2020	8938.180556	8771.32051	60	Marcellus
70	9/23/2020	8735.548504	8568.68846	60	Marcellus
71	9/23/2020	8532.916453	8366.05641	60	Marcellus
72	9/23/2020	8330.284402	8163.42436	60	Marcellus
73	9/23/2020	8127.65235	7960.79231	60	Marcellus
74	9/23/2020	7925.020299	7758.16026	60	Marcellus
75	9/23/2020	7722.388248	7555.52821	60	Marcellus
76	9/24/2020	7519.756197	7352.89615	60	Marcellus
77	9/24/2020	7317.124145	7150.2641	60	Marcellus
78	9/24/2020	7114.492094	6947.63205	60	Marcellus
79	9/24/2020	6911.860043	6745	60	Marcellus

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**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	8/29/2020	76.08	9402	7553	3921	175327	5219.6	N/A
2	8/30/2020	78.01	9813.45	6357	4064.47	406560	8014.64	N/A
3	8/31/2020	86.98	10089	5483	4591	404310	8022.69	N/A
4	8/31/2020	84.38	9734	5159	4064	402180	8137.26	N/A
5	9/1/2020	89.66	10028	5335	4398	404540	7741.05	N/A
6	9/2/2020	89.59	9884	5082	4326	401750	8001.21	N/A
7	9/2/2020	89.6	9988	6003	4134	403780	7815.48	N/A
8	9/2/2020	94.97	10050	5325	4574	407410	7883.57	N/A
9	9/3/2020	93.23	10032	4941	4230	406960	7925.24	N/A
10	9/3/2020	83.82	9652.16	5389	3763.63	413560	7830.14	N/A
11	9/4/2020	90.81	9602	5684	3913	404770	7890.29	N/A
12	9/4/2020	93.24	9999	5605	4221	400280	7651.05	N/A
13	9/5/2020	89.75	9854	4904	3822	402880	7650.19	N/A
14	9/5/2020	91.37	10040	5410	3929	404350	7711.45	N/A
15	9/6/2020	91.29	10009	5565	3681	403120	7516.55	N/A
16	9/6/2020	91.46	9876	7855	4524	401110	7550.81	N/A
17	9/6/2020	92.28	9985	5818	4363	405450	7658.19	N/A
18	9/7/2020	81.84	9863	5413	3999	402560	7430.79	N/A
19	9/7/2020	92.4	9969	5427	4134	402690	7563.4	N/A
20	9/8/2020	93.6	9885	5321	3971	411270	7514.45	N/A
21	9/8/2020	93.96	9657	5446	3763	403460	7547.9	N/A
22	9/9/2020	92.94	9965	5648	4205	405740	7461.69	N/A
23	9/9/2020	92.13	10035	4585	4235	407350	7747.19	N/A
24	9/9/2020	93.07	9809	5283	4113	404090	7423.86	N/A
25	9/10/2020	89.63	9510	4410	3974	403050	7459.33	N/A
26	9/10/2020	93.2	9927	5263	4075	408940	7384.81	N/A
27	9/11/2020	94.58	9575	4695	4099.64	404820	7485.83	N/A
28	9/11/2020	96.37	9700	5322	3853	404370	7430.88	N/A
29	9/12/2020	95.02	9792	5429	4164	408180	7238.1	N/A
30	9/12/2020	90.55	9459	4403	4147	403730	7226	N/A
31	9/13/2020	94.72	9848	4642	4159	402640	7170.21	N/A
32	9/13/2020	95.15	9637	5284	4172	409760	7306.71	N/A
33	9/13/2020	95.67	9811	5446	3966	403420	7052.36	N/A
34	9/14/2020	96.72	9754	5301	3972	408180	7259.4	N/A
35	9/14/2020	96.8	9214	5435	3979	400340	7120.17	N/A
36	9/14/2020	95.61	9095	5404	4147	402230	7159.71	N/A
37	9/15/2020	96.43	9758	5375	4193	397410	7133.74	N/A
38	9/15/2020	95.31	9398	4682	4147	405740	6977.83	N/A
39	9/16/2020	92.38	9038	5717	4083	406850	7987.69	N/A
40	9/16/2020	94.78	9079	4513	4064	405420	7152.02	N/A
41	9/17/2020	96.12	9099	5552	4073	406250	7392.93	N/A
42	9/17/2020	94.56	9004	5216	4374	403790	7045.95	N/A
43	9/17/2020	95.79	9042	4514	4317	403270	7011.5	N/A
44	9/17/2020	96.39	8812	5369	4119	402350	6991.86	N/A
45	9/17/2020	79.5	8840	4194	4458	401840	9974.5	N/A
46	9/18/2020	95.61	8707	5553	4152	402010	6975.21	N/A
47	9/18/2020	93.46	9002	5826	4269	401370	6819.29	N/A
48	9/18/2020	95.84	8823	4644	4011	403200	7075.6	N/A
49	9/18/2020	96.33	8786	5283	4415	401440	7000.48	N/A
50	9/19/2020	85.52	8310	5190	4362	400880	7501.74	N/A
51	9/19/2020	91.77	9023	5477	3775	402850	6829	N/A
52	9/19/2020	95.84	8089	5741	4025	402240	6870.26	N/A
53	9/19/2020	95.75	8828	5559	4379	401070	6983.48	N/A
54	9/20/2020	96.39	8886	5592	3998	403050	7016.4	N/A
55	9/20/2020	89.17	8901	5621	3715	402350	6810.05	N/A
56	9/20/2020	89.91	8357	5500	4027	401870	6788.76	N/A
57	9/20/2020	93.19	8292	5221	3669	405760	6703.48	N/A
58	9/20/2020	94.41	8572	5201	4116	401460	6802.67	N/A
59	9/20/2020	96.29	7966	4906	3903	401650	6731.29	N/A
60	9/21/2020	95.82	8141	4304	3842	404090	6764.74	N/A
61	9/21/2020	91.32	8332	5825	4232	404210	8386.33	N/A
62	9/21/2020	94.62	8079	5664	4091	403730	6801.64	N/A
63	9/21/2020	97.25	8439	5618	3946	402310	6710.5	N/A
64	9/21/2020	96.21	8478	5760	3841	402260	6951.07	N/A
65	9/22/2020	97.19	8396	5413	3356	406960	6789.05	N/A
66	9/22/2020	97.56	8487	5641	3460	408380	6721.57	N/A
67	9/22/2020	97.78	8284	5318	4078	402000	6800.48	N/A
68	9/22/2020	96.89	8344	5700	4191	404840	6813.45	N/A
69	9/22/2020	96.69	8054	5357	4124	402970	6787.74	N/A
70	9/23/2020	97.57	7980	5459	4095	407750	6780.9	N/A
71	9/23/2020	97.07	8169	5968	4225	407820	6853.45	N/A
72	9/23/2020	97.06	7829	4811	4242	403980	6622.95	N/A
73	9/23/2020	96.93	8057	6079	3708	404950	6606.02	N/A
74	9/23/2020	98.3	8381	7604	4109	405730	6672.36	N/A
75	9/23/2020	98.21	7937	5296	4689	404680	6718.67	N/A
76	9/24/2020	97.98	7890	6114	3981	400510	6671.31	N/A
77	9/24/2020	97.47	7860	6292	4323	404440	6633.43	N/A
78	9/24/2020	97.14	7662	5995	4008	403700	6596.48	N/A
79	9/24/2020	97.31	7706	6209	3893.44	401540	6568.33	N/A
	AVG=	93	9,084	5,449	4,085	401,890	571,028	TOTAL

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**EXHIBIT 3**

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Shaley Sandstone	74	214	74	214
Sandy Shale	214	364	214	364
Shaley Sandstone	364	514	364	514
Limestone, Tr Shale	514	544	514	544
Sandstone	544	664	544	664
Limestone, Tr Coal	664	694	664	694
Shaley Sandstone, Tr Coal	694	784	694	784
Shale, Tr Sandstone	784	1,204	784	1,204
Sandy Shale, Limestone, Tr Coal	1,204	1,354	1,204	1,354
Sandy Shale	1,354	1,504	1,354	1,504
Sandstone, Tr Shale, Tr Coal	1,504	1,624	1,504	1,624
Sandy Shale	1,624	1,834	1,624	1,834
Shaly Sandstone, Tr coal	1,834	1,874	1,834	1,882
Big Lime	1,900	2,606	1,908	2,614
Fifty Foot Sandstone	2,606	2,706	2,614	2,715
Gordon	2,706	3,010	2,715	3,019
Fifth Sandstone	3,010	3,082	3,019	3,090
Bayard	3,082	3,883	3,090	3,892
Speechley	3,883	4,181	3,892	4,190
Balltown	4,181	4,552	4,190	4,561
Bradford	4,552	4,966	4,561	4,975
Benson	4,966	5,190	4,975	5,199
Alexander	5,190	6,318	5,199	6,373
Sycamore	6,177	6,292	6,206	6,347
Middlesex	6,292	6,385	6,347	6,492
Burkett	6,385	6,408	6,492	6,538
Tully	6,408	6,460	6,538	6,697
Marcellus	6,460	NA	6,697	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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Office Of Oil & Gas

FEB 0 8

WV Department of  
Environmental Protection

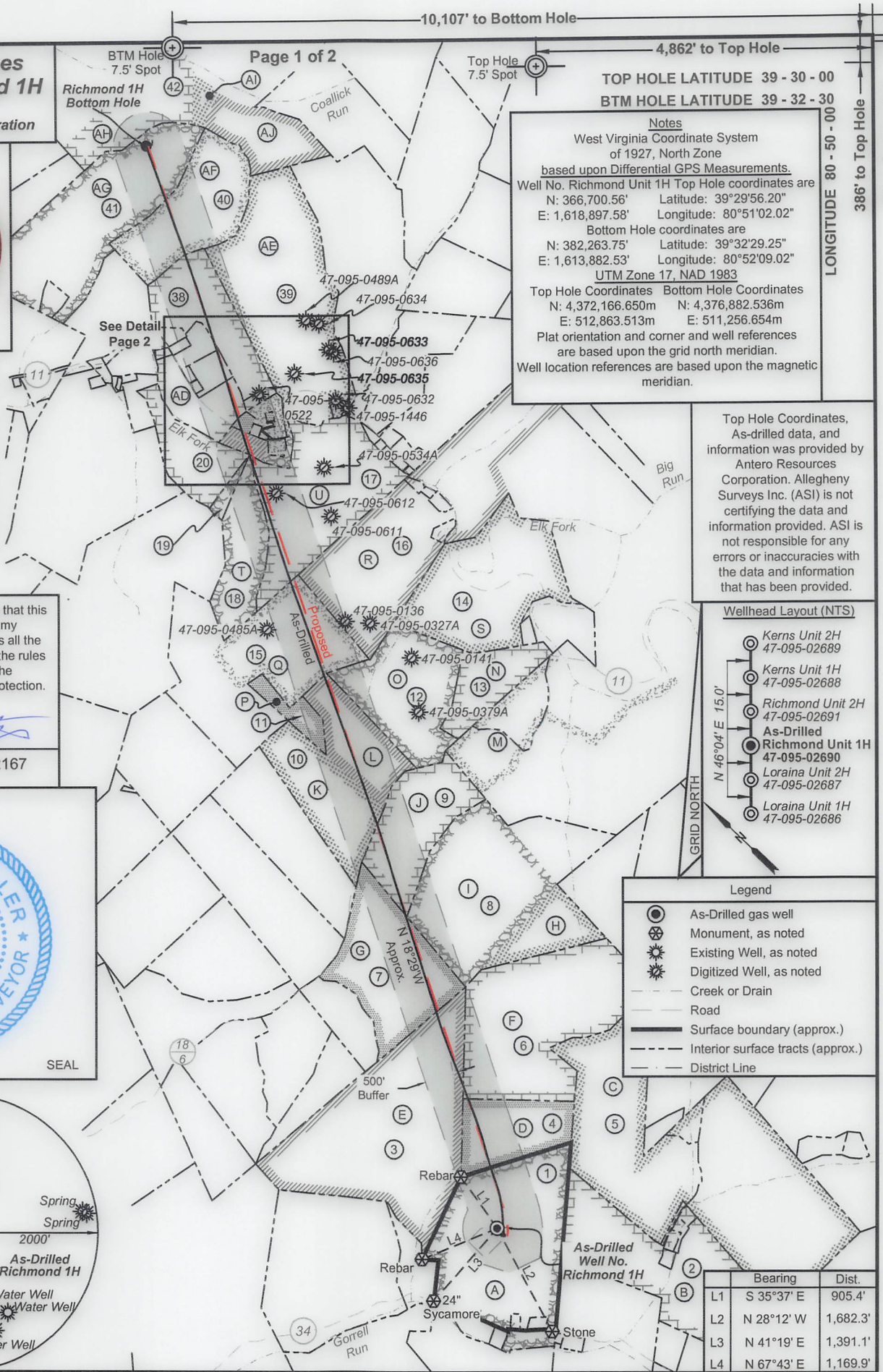
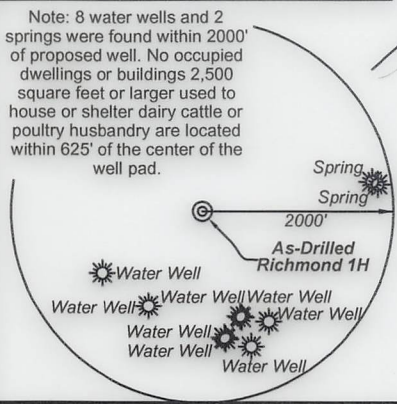
**Antero Resources**  
**Well No. Richmond 1H**  
 As-Drilled  
 Antero Resources Corporation



Richmond Unit 1H  
 POE Coordinates  
 West Virginia  
 Coordinate System  
 of 1927, North Zone  
 N: 367,327.63'  
 E: 1,618,888.17'  
 Latitude: 39°30'02.39"  
 Longitude: 80°51'02.26"  
 UTM Zone 17, NAD 1983  
 N: 4,372,357.644m  
 E: 512,857.459m

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.

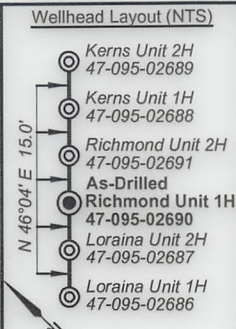
*Bradley D. Miller*  
 Bradley D. Miller, P.S. 2167



**TOP HOLE LATITUDE 39 - 30 - 00**  
**BTM HOLE LATITUDE 39 - 32 - 30**

**Notes**  
 West Virginia Coordinate System of 1927, North Zone  
 based upon Differential GPS Measurements.  
 Well No. Richmond Unit 1H Top Hole coordinates are  
 N: 366,700.56' Latitude: 39°29'56.20"  
 E: 1,618,897.58' Longitude: 80°51'02.02"  
 Bottom Hole coordinates are  
 N: 382,263.75' Latitude: 39°32'29.25"  
 E: 1,613,882.53' Longitude: 80°52'09.02"  
 UTM Zone 17, NAD 1983  
 Top Hole Coordinates Bottom Hole Coordinates  
 N: 4,372,166.650m N: 4,376,882.536m  
 E: 512,863.513m E: 511,256.654m  
 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, As-drilled data, and information was provided by Antero Resources Corporation. Allegheeny 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**

- As-Drilled gas well
- Monument, as noted
- Existing Well, as noted
- Digitized Well, as noted
- Creek or Drain
- Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)
- District Line

	Bearing	Dist.
L1	S 35°37' E	905.4'
L2	N 28°12' W	1,682.3'
L3	N 41°19' E	1,391.1'
L4	N 67°43' E	1,169.9'

FILE NO: 49-54-E-19  
 DRAWING NO: Richmond 1H As-Drilled  
 SCALE: 1" = 2000'  
 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: December 28 2020  
 OPERATOR'S WELL NO. Richmond 1H  
 API WELL NO  
 47 - 095 - 02690  
 STATE COUNTY PERMIT

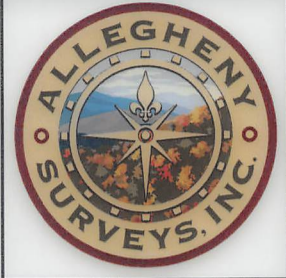
WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION: As-Built 1,004' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Porter Falls 90.168; 25; 119.578; 101.38; 68.5; 44.85; 39; 20; 50.13542; 30.7625; 100; 4.3075; 1.36; 100;  
 DISTRICT: Ellsworth SURFACE OWNER: Roger D. Blizzard Ridgewood Development, LLC; Nina & Phillip Whitefield; Patricia Ann Heintzman; & Ruth E. Spencer A. DeWayne Matthews; Kevin S. Goff, et ux (2); Susan Ertel; Kenneth L. VanCamp, et ux; ACREAGE: 102.62  
 SURFACE OWNER: Roger D. Blizzard; Reita Jane Hall; Dale E. Pipes; Sandra E. Merrigan; David E. Bowyer; ROYALTY OWNER: Heritage Resources Marcellus Minerals, LLC; Jerry R. Brown; B. Fred Hill, Jr.; LEASE NO: ACREAGE: 53.75; 76.25

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: 6,407' TVD 22,714' MD

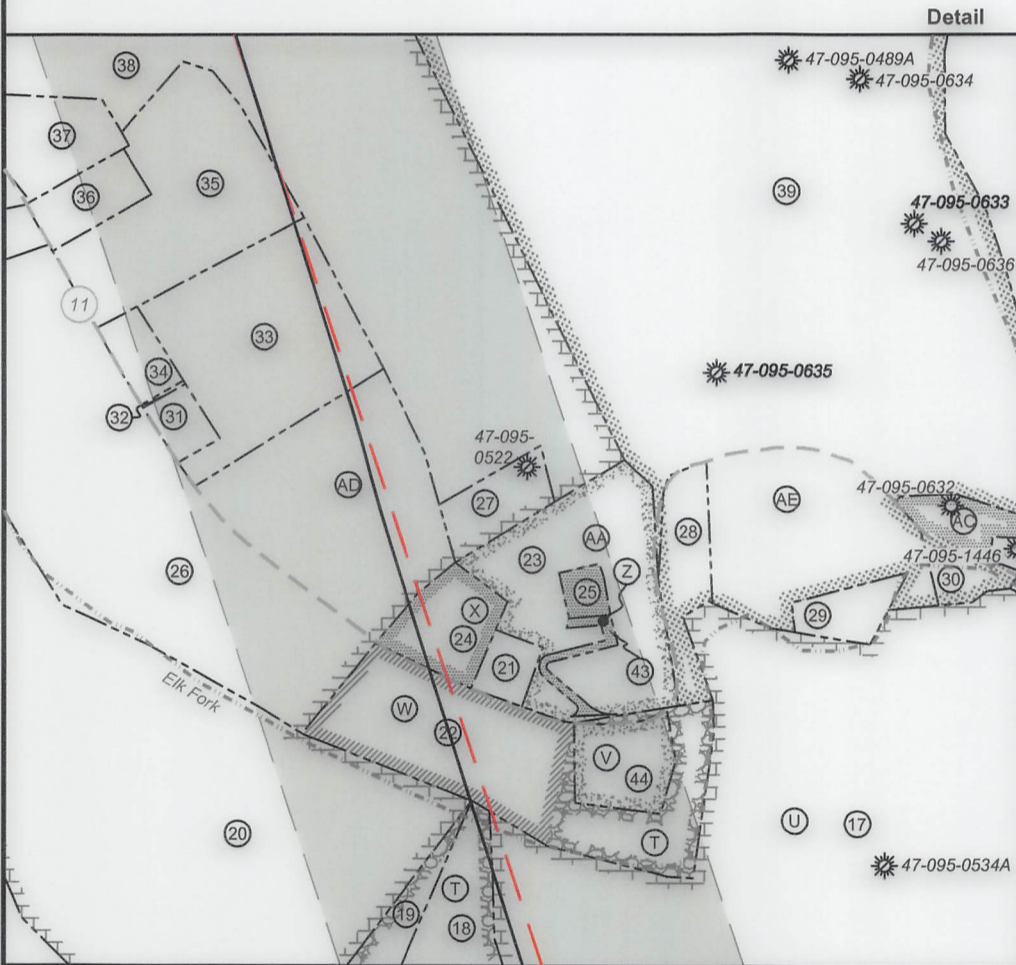
WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
 Denver, CO 80202 Charleston, WV 25313





ID	TM/Par	Owner	Bk/Pg	Acres
1	15-33	Roger D. Blizzard, et al	340/170	102.62
2	15-32	William S. & Opal Marie Nash	335/188	78.58
3	15-30	Thomas C. Grinage, et al	458/73	124.08
4	15-31	Roger D. Blizzard, et al	342/782	25
5	15-38	Rodney A. & Candis L. Nash	351/701	85.48
6	15-30.1	Roger D. Blizzard, et al	343/427	101.38
7	15-12	Roger Matthess	319/22	61
8	15-11	Roger Matthess	318/137	115.47
9	15-7	Roger Matthess	319/22	41.72
10	15-6	James F. & Connie L. Billiter, et al	288/325	59.5
11	10-59	Goldie A. Matthews	115/485	10.08
12	10-58	Jeffery A. & Cheryl L. Ferrell	325/334	52
13	10-56	Mary K Neff	413/731	22.06
14	10-57	Charles E. & Laura L. Friend	334/836	84.39
15	10-60	J.S. & Goldie A. Matthews	129/58	17.67
16	10-46	Opal Carol Tallman	282/382	114
17	10-43	Kevin S. & Melinda S. Goff	431/799	100
18	10-42	Kevin S. & Melinda S. Goff	431/799	25.5
19	10-41	Kevin S. & Melinda S. Goff	431/799	2.66
20	10-36	Randy Lee & Mary Lou Michael	230/499	24.65
21	10-37.3	H.H. Snider	158/151	0.50
22	10-37.4	Kevin S. & Melinda S. Goff	425/830	7.50

ID	TM/Par	Owner	Bk/Pg	Acres
23	10-37.1	Wayne H. & Violet L. Mercer	226/473	5.05
24	10-37.2	Kenneth L. & Gladys L. Vancamp	431/194	1.36
25	10-39	Elk Fork Cemetery Association	143/308	0.32
26	10-15	Kevin S. Goff & Melinda S. Goff	423/695	18.50
27	10-15.9	Becky S. & Everett E. Neff, II	322/751	1.03
28	10-40	Avril Dewayne Matthews	421/565	1.43
29	10-14.1	Triad Energy Corp. of WV Inc.	329/604	1
30	10-14.3	Elk Fork Church	299/126	1.495
31	10-16	Ruby M. Watson	256/45	0.488
32	10-15.5	Ruby M. Watson	289/359	0.0292
33	10-15.7	Frank W., Jr. & Ruby M. Watson	317/383	5.226
34	10-15.4	Frank W., Jr. & Ruby M. Watson	343/309	0.65
35	10-15.8	Frank & Ruby Watson	427/47	5.229
36	10-17	Sandra K. Metz	342/153	0.89
37	10-18	Wendy S. Gustavich	331/365	1.9
38	10-15.6	Wayne H. & Violet Mercer	317/378	35.82
39	10-14	Kevin S. & Melinda S. Goff	597/808	97.065
40	10-3	Kevin S. & Melinda S. Goff	597/808	53.75
41	10-2	Patricia Ann Heintzman	W13/384	73.26
42	6-36	Dennis & Clista Heintzman	297/640	417.6
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44	10-37	Sandra Fanti	425/827	1.31



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H	Samuel Rogers
I	Linda Lou Moore
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R	Allen Smith
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V	Sandra Fanti
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AF	Nina & Phillip Whitefield
AG	Patricia Ann Heintzman
AH	Norma Smith
AI	BRC Appalachian Minerals I, LLC
AJ	Nina A. Whitefield

FILE NO: 49-54-E-19  
 DRAWING NO: Richmond 1H As-Drilled  
 SCALE: 1" = 2000'  
 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: December 28 2020  
 OPERATOR'S WELL NO. Richmond 1H  
 API WELL NO  
 47 - 095 - 02690  
 STATE COUNTY PERMIT

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

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22,714' MD

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 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
Denver, CO 80202 Charleston, WV 25313

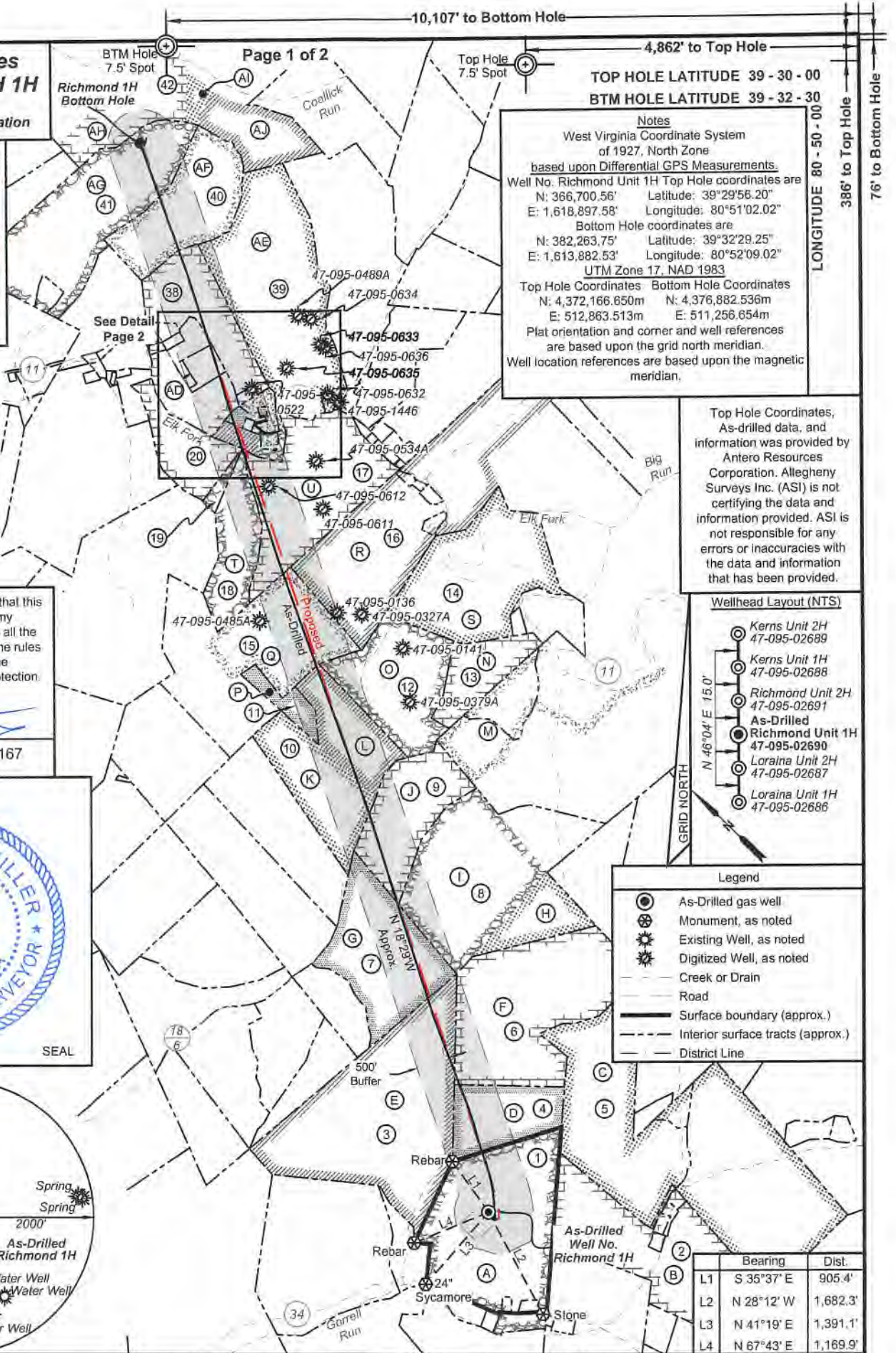
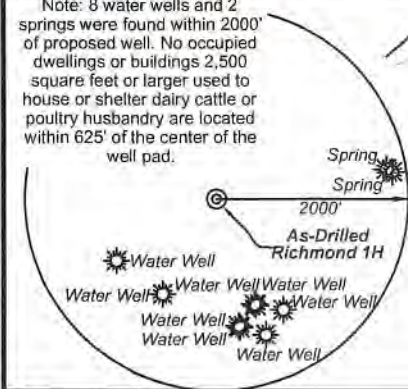
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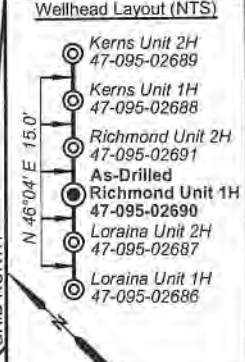
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*Bradley D. Miller*  
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 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**OIL AND GAS DIVISION**

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 API WELL NO  
 47 - 095 - 02690  
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 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
 Denver, CO 80202 Charleston, WV 25313

*Handwritten signature/initials*

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/29/2020
Job End Date:	9/24/2020
State:	West Virginia
County:	Tyler
API Number:	47-095-02690-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	RICHMOND 1H
Latitude:	39.49894400
Longitude:	-80.85056100
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,512
Total Base Water Volume (gal):	934,241
Total Base Non Water Volume:	0

WV Department of Environmental Protection  
 RECEIVED  
 Office Of Oil And Gas  
 FEB 08 2023



## 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
Produced Water	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	86.34646	Density = 8.50
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.16401	

*JK*

Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
FLUID Enviro-Syn HCR-7000-WL	Fluid Energy Group	Acid Replacement					
				Listed Below			
Sand-Premium White-40/70	Halliburton	Proppant					
				Listed Below			
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			
HAI-501	Halliburton	Acid Corrosion Inhibitor					
				Listed Below			

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 Office Of Oil and Gas  
 WV Department of Environmental Protection  
 FEB 08 2009

Exceletrate LX-15	Halliburton	Friction Reducer					
				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	13.45279	
			Hydrochloric acid	7647-01-0	30.00000	0.03607	
			Complex Amine Compound	Proprietary	60.00000	0.03531	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01765	
			Guar gum	9000-30-0	100.00000	0.00508	
			Surfactant	Proprietary	5.00000	0.00294	
			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00294	
			Glutaraldehyde	111-30-8	30.00000	0.00254	
			Proprietary	Proprietary	20.00000	0.00156	
			Proprietary	Proprietary	10.00000	0.00078	
			Ethoxylated alcohols	Proprietary	5.00000	0.00060	
			Alkoxyated polyhydric alcohol	Proprietary	1.00000	0.00059	
			Organic chloride compound	Proprietary	1.00000	0.00059	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00042	
			Methanol	67-56-1	100.00000	0.00031	
			Ammonium persulfate	7727-54-0	100.00000	0.00011	
			Ethanol	64-17-5	1.00000	0.00008	
			Modified thiourea polymer	Proprietary	30.00000	0.00007	
			Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00007	
			Oxylated phenolic resin	Proprietary	30.00000	0.00003	

			Propargyl alcohol	107-19-7	5.00000	0.00001	
			Hexadecene	629-73-2	5.00000	0.00001	
			Phosphoric acid	7664-38-2	0.10000	0.00001	
			Organic salt #2	Proprietary	0.01000	0.00001	
			Nitrated acetate salt	Proprietary	0.01000	0.00001	
			Formaldehyde	50-00-0	0.01000	0.00001	
			Sodium glycolate	2836-32-0	0.01000	0.00001	
			Acrylamide	79-06-1	0.01000	0.00001	
			Sodium hydroxide	1310-73-2	0.01000	0.00001	
			Organic salt #1	Proprietary	0.01000	0.00001	
			C.I. pigment Orange 5	3468-63-1	1.00000	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)

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