

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

API 47-095-02688 County Tyler District Ellsworth
Quad Shirley & Porter Falls Pad Name Blizzard Field/Pool Name -----
Farm name Roger D Blizzard & Ruth E Spencer Well Number Kerns 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 4372173m Easting 512870m
Landing Point of Curve Northing 4372605.15m Easting 513292.31m
Bottom Hole Northing 4377049m Easting 511768m

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 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 3/20/2020 Date drilling commenced 3/23/2020 Date drilling ceased 7/23/2020
Date completion activities began 9/25/2020 Date completion activities ceased 11/1/2020
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

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2/17/23

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API 47-095 - 02688 Farm name Roger D Blizzard & Ruth E Spencer Well number Kerns 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	26"	20"	114'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	577'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2698'	New	40#, HCP-110	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	22923'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6528'		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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	204 sx	15.6	1.20	241	0'	8 Hrs.
Surface	Class A	414 sx	15.6	1.19	635	0'	8 Hrs.
Coal							
Intermediate 1	Class A	906 sx	15.6	1.19	1082	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	792 sx (Lead) 3530 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) 22923' MD, 6425' TVD (BHL), 6525' (Deepest Point Drilled) Loggers TD (ft) 22923' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

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Kick off depth (ft) 6051'

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- 095 - 02688 Farm name Roger D Blizzard & Ruth E Spencer Well number Kerns 1H

PRODUCING FORMATION(S)	DEPTHS		
<u>Marcellus</u>	<u>6480' (TOP)</u>	<u>TVD</u>	<u>7057' (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 1048 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 16564 mcfpd Oil 641 bpd NGL --- bpd Water 1137 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 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

*SMK
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API 47-095-02688 Farm Name Roger D Blizzard & Ruth E Spencer, Well Number Kerns Unit 1H

Exhibit 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	9/25/2020	22806.2	22763.1	60	Marcellus
2	9/26/2020	22724.01494	22556.5896	60	Marcellus
3	9/26/2020	22520.70455	22353.2792	60	Marcellus
4	9/26/2020	22317.39416	22149.9688	60	Marcellus
5	9/27/2020	22114.08377	21946.6584	60	Marcellus
6	9/27/2020	21910.77338	21743.3481	60	Marcellus
7	9/27/2020	21707.46299	21540.0377	60	Marcellus
8	9/28/2020	21504.1526	21336.7273	60	Marcellus
9	9/28/2020	21300.84221	21133.4169	60	Marcellus
10	9/28/2020	21097.53182	20930.1065	60	Marcellus
11	9/29/2020	20894.22143	20726.7961	60	Marcellus
12	9/29/2020	20690.91104	20523.4857	60	Marcellus
13	9/29/2020	20487.60065	20320.1753	60	Marcellus
14	9/29/2020	20284.29026	20116.8649	60	Marcellus
15	9/30/2020	20080.97987	19913.5545	60	Marcellus
16	9/30/2020	19877.66948	19710.2442	60	Marcellus
17	9/30/2020	19674.35909	19506.9338	60	Marcellus
18	9/30/2020	19471.0487	19303.6234	60	Marcellus
19	10/1/2020	19267.73831	19100.313	60	Marcellus
20	10/1/2020	19064.42792	18897.0026	60	Marcellus
21	10/1/2020	18861.11753	18693.6922	60	Marcellus
22	10/1/2020	18657.80714	18490.3818	60	Marcellus
23	10/1/2020	18454.49675	18287.0714	60	Marcellus
24	10/1/2020	18251.18636	18083.761	60	Marcellus
25	10/2/2020	18047.87597	17880.4506	60	Marcellus
26	10/2/2020	17844.56558	17677.1403	60	Marcellus
27	10/2/2020	17641.25519	17473.8299	60	Marcellus
28	10/2/2020	17437.94481	17270.5195	60	Marcellus
29	10/3/2020	17234.63442	17067.2091	60	Marcellus
30	10/3/2020	17031.32403	16863.8987	60	Marcellus
31	10/3/2020	16828.01364	16660.5883	60	Marcellus
32	10/3/2020	16624.70325	16457.2779	60	Marcellus
33	10/3/2020	16421.39286	16253.9675	60	Marcellus
34	10/4/2020	16218.08247	16050.6571	60	Marcellus
35	10/4/2020	16014.77208	15847.3468	60	Marcellus
36	10/4/2020	15811.46169	15644.0364	60	Marcellus
37	10/4/2020	15608.1513	15440.726	60	Marcellus
38	10/4/2020	15404.84091	15237.4156	60	Marcellus
39	10/5/2020	15201.53052	15034.1052	60	Marcellus
40	10/5/2020	14998.22013	14830.7948	60	Marcellus
41	10/5/2020	14794.90974	14627.4844	60	Marcellus
42	10/5/2020	14591.59935	14424.174	60	Marcellus
43	10/5/2020	14388.28896	14220.8636	60	Marcellus
44	10/5/2020	14184.97857	14017.5532	60	Marcellus
45	10/6/2020	13981.66818	13814.2429	60	Marcellus
46	10/6/2020	13778.35779	13610.9325	60	Marcellus
47	10/6/2020	13575.0474	13407.6221	60	Marcellus
48	10/6/2020	13371.73701	13204.3117	60	Marcellus
49	10/6/2020	13168.42662	13001.0013	60	Marcellus
50	10/7/2020	12965.11623	12797.6909	60	Marcellus
51	10/7/2020	12761.80584	12594.3805	60	Marcellus
52	10/7/2020	12558.49545	12391.0701	60	Marcellus
53	10/7/2020	12355.18506	12187.7597	60	Marcellus
54	10/7/2020	12151.87468	11984.4494	60	Marcellus
55	10/8/2020	11948.56429	11781.139	60	Marcellus
56	10/8/2020	11745.2539	11577.8286	60	Marcellus
57	10/8/2020	11541.94351	11374.5182	60	Marcellus
58	10/8/2020	11338.63312	11171.2078	60	Marcellus
59	10/9/2020	11135.32273	10967.8974	60	Marcellus
60	10/9/2020	10932.01234	10764.587	60	Marcellus
61	10/9/2020	10728.70195	10561.2766	60	Marcellus
62	10/9/2020	10525.39156	10357.9662	60	Marcellus
63	10/9/2020	10322.08117	10154.6558	60	Marcellus
64	10/10/2020	10118.77078	9951.34545	60	Marcellus
65	10/10/2020	9915.46039	9748.03506	60	Marcellus
66	10/10/2020	9712.15	9544.72468	60	Marcellus
67	10/10/2020	9508.83961	9341.41429	60	Marcellus
68	10/10/2020	9305.529221	9138.1039	60	Marcellus
69	10/10/2020	9102.218831	8934.79351	60	Marcellus
70	10/11/2020	8898.908442	8731.48312	60	Marcellus
71	10/11/2020	8695.598052	8528.17273	60	Marcellus
72	10/11/2020	8492.287662	8324.86234	60	Marcellus
73	10/11/2020	8288.977273	8121.55195	60	Marcellus
74	10/11/2020	8085.666883	7918.24156	60	Marcellus
75	10/12/2020	7882.356494	7714.93117	60	Marcellus
76	10/12/2020	7679.046104	7511.62078	60	Marcellus
77	10/12/2020	7475.735714	7308.31039	60	Marcellus
78	10/12/2020	7272.425325	7105	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 (bbbls)	Amount of Nitrogen/other (units)
1	9/25/2020	83.69	10290	7501	3488	174620	5054.1667	N/A
2	9/26/2020	87.78	10039	6137	3911	402960	7382.1667	N/A
3	9/26/2020	86.55	9810	7806	4300	403110	7314.0476	N/A
4	9/26/2020	88.6	9956	5708	3865	402860	7329.9762	N/A
5	9/27/2020	88.78	9859	3854	4183	408350	7461.6905	N/A
6	9/27/2020	87.34	10068	6007	4243	402740	7327.5714	N/A
7	9/27/2020	86	10018	7355	4000	413860	7333.8333	N/A
8	9/28/2020	89.13	9826	3770	4381	410340	7436.0952	N/A
9	9/28/2020	95.49	10064	7580	4313	407960	7272.2857	N/A
10	9/28/2020	92.85	10028	5627	4111	406990	7291.2143	N/A
11	9/29/2020	93.09	9770	5508	4531	417560	7314.7857	N/A
12	9/29/2020	96.88	9954	7462	4574	416490	7289.6667	N/A
13	9/29/2020	91.39	9852	5805	4378	420650	7274.2857	N/A
14	9/29/2020	86.27	9231	4428	4366	414110	7276.0476	N/A
15	9/30/2020	91.82	9852	5450	4531	419190	7285.8333	N/A
16	9/30/2020	92.38	9905	5574	3916	415790	7278.7381	N/A
17	9/30/2020	91.85	9782	5900	4219	414620	7237.8571	N/A
18	9/30/2020	93.64	9517	5263	4149	412250	7173.5	N/A
19	10/1/2020	92.61	9569	5290	4141	416660	7148.8333	N/A
20	10/1/2020	93.91	9470	4186	4391	413770	7107.0476	N/A
21	10/1/2020	95.73	9719	5201	4347	416300	7267.5952	N/A
22	10/1/2020	95.64	9777	5458	4283	418840	7181.119	N/A
23	10/1/2020	95.55	9975	5525	4117	414290	7104.381	N/A
24	10/1/2020	94.73	9391	4794	4497	413530	7082.7143	N/A
25	10/2/2020	94.04	9789	5356	4030	414080	7108.7381	N/A
26	10/2/2020	92.22	8657	5468	4351	420580	7057.7381	N/A
27	10/2/2020	97.51	9905	5194	4058	414190	7035.5	N/A
28	10/2/2020	96.5	9609	7088	4180	418490	7350.5	N/A
29	10/3/2020	94.5	9121	4248	4105	406350	6972.286	N/A
30	10/3/2020	95.56	9319	5773	3863	416020	7004.095	N/A
31	10/3/2020	96.61	9514	5539	4176	417050	7110.524	N/A
32	10/3/2020	96.77	9493	9221	3869	418670	7028.524	N/A
33	10/3/2020	95.26	9525	5335	3866	420680	6999.976	N/A
34	10/4/2020	95.44	9603	5055	3815	416210	6940	N/A
35	10/4/2020	94.06	9092	4308	4429	419920	6930.167	N/A
36	10/4/2020	96.39	9843	5541	4323	419990	6942.429	N/A
37	10/4/2020	97.23	9522	5446	3790	417940	6982.881	N/A
38	10/4/2020	95.98	8627	4597	3913	419850	6996.643	N/A
39	10/5/2020	95.97	9023	4330	4019	418140	6914.952	N/A
40	10/5/2020	97.3	9271	5725	4259	420080	6923.643	N/A
41	10/5/2020	97.72	9108	5574	3961	419570	7032.238	N/A
42	10/5/2020	97.36	8918	6637	4455	418990	6938.405	N/A
43	10/5/2020	97.68	8717	6640	4176	412500	6915.357	N/A
44	10/5/2020	95.27	9024	3911	3721	407980	6753.357	N/A
45	10/6/2020	95.83	8661	4941	4145	409160	6822.31	N/A
46	10/6/2020	93.25	8383	6485	4116	407910	6797.357	N/A
47	10/6/2020	97.31	8615	6259	3685	409590	7019.048	N/A
48	10/6/2020	93.27	8734	4990	3757	416490	7044.357	N/A
49	10/6/2020	95.33	8774	5261	3659	415440	6861.619	N/A
50	10/7/2020	96.25	8556	5634	4474	413130	6834.048	N/A
51	10/7/2020	95.68	8481	5682	4336	410340	6790.643	N/A
52	10/7/2020	96.5	8479	6326	4419	412450	7055.643	N/A
53	10/7/2020	95.71	8620	5493	3491	412900	6832.595	N/A
54	10/7/2020	96.39	8727	5621	3620	416290	6830.31	N/A
55	10/8/2020	96.07	8606	5721	3744	415550	6790.69	N/A
56	10/8/2020	97.28	8207	4092	4016	412500	6977.762	N/A
57	10/8/2020	96.96	8515	5177	2816	414680	6954.119	N/A
58	10/8/2020	94.81	8049	6038	3652	416450	6850.976	N/A
59	10/9/2020	94.42	8227	6191	3706	413260	6781.429	N/A
60	10/9/2020	95.76	8036	4607	3354	411710	6791.19	N/A
61	10/9/2020	95.26	8276	5680	3577	416630	6910.571	N/A
62	10/9/2020	96.22	8356	5291	3601	416880	6901.976	N/A
63	10/9/2020	95.92	8209	6082	3711	409540	6710.405	N/A
64	10/10/2020	96.93	8150	6795	3929	410840	6692.095	N/A
65	10/10/2020	95.25	7597	4845	4045	415400	6738.024	N/A
66	10/10/2020	97.93	7659	5862	3894	416000	6787.81	N/A
67	10/10/2020	97.84	7537	5817	4134	412740	6698.286	N/A
68	10/10/2020	95.53	7688	6315	3600	417530	6740.452	N/A
69	10/10/2020	95.34	7408	5520	4084	418330	6675.857	N/A
70	10/11/2020	95.33	7586	6462	4022	417520	6716	N/A
71	10/11/2020	98.4	7726	5698	3752	413270	6655.452	N/A
72	10/11/2020	96.62	7899	5346	3986	415360	6710.976	N/A
73	10/11/2020	98.47	7514	6255	4608	415650	6720.5	N/A
74	10/11/2020	95.29	7590	6925	3833	421490	6666.905	N/A
75	10/12/2020	96.51	7383	5924	4061	415780	6714.905	N/A
76	10/12/2020	95.67	7122	5253	4094	413810	6599.667	N/A
77	10/12/2020	97.66	7237	5520	4572	413950	6619.357	N/A
78	10/12/2020	94.99	7081.56	4289	4437.63	412220	6574.214	N/A
	AVG=	95	8,924	5,648	4,045	32,075,910	543,031	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	1,853	1,834	1,893
Big Lime	1,879	2,578	1,919	2,659
Fifty Foot Sandstone	2,578	2,692	2,659	2,780
Gordon	2,692	2,997	2,780	3,101
Fifth Sandstone	2,997	3,062	3,101	3,169
Bayard	3,062	3,850	3,169	4,004
Speechley	3,850	4,147	4,004	4,318
Balltown	4,147	4,532	4,318	4,725
Bradford	4,532	4,947	4,725	5,162
Benson	4,947	5,182	5,162	5,410
Alexander	5,182	6,336	5,410	6,685
Sycamore	6,195	6,310	6,502	6,659
Middlesex	6,310	6,406	6,659	6,834
Burkett	6,406	6,429	6,834	6,889
Tully	6,429	6,480	6,889	7,057
Marcellus	6,480	NA	7,057	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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8,428' to Bottom Hole

4,840' to Top Hole

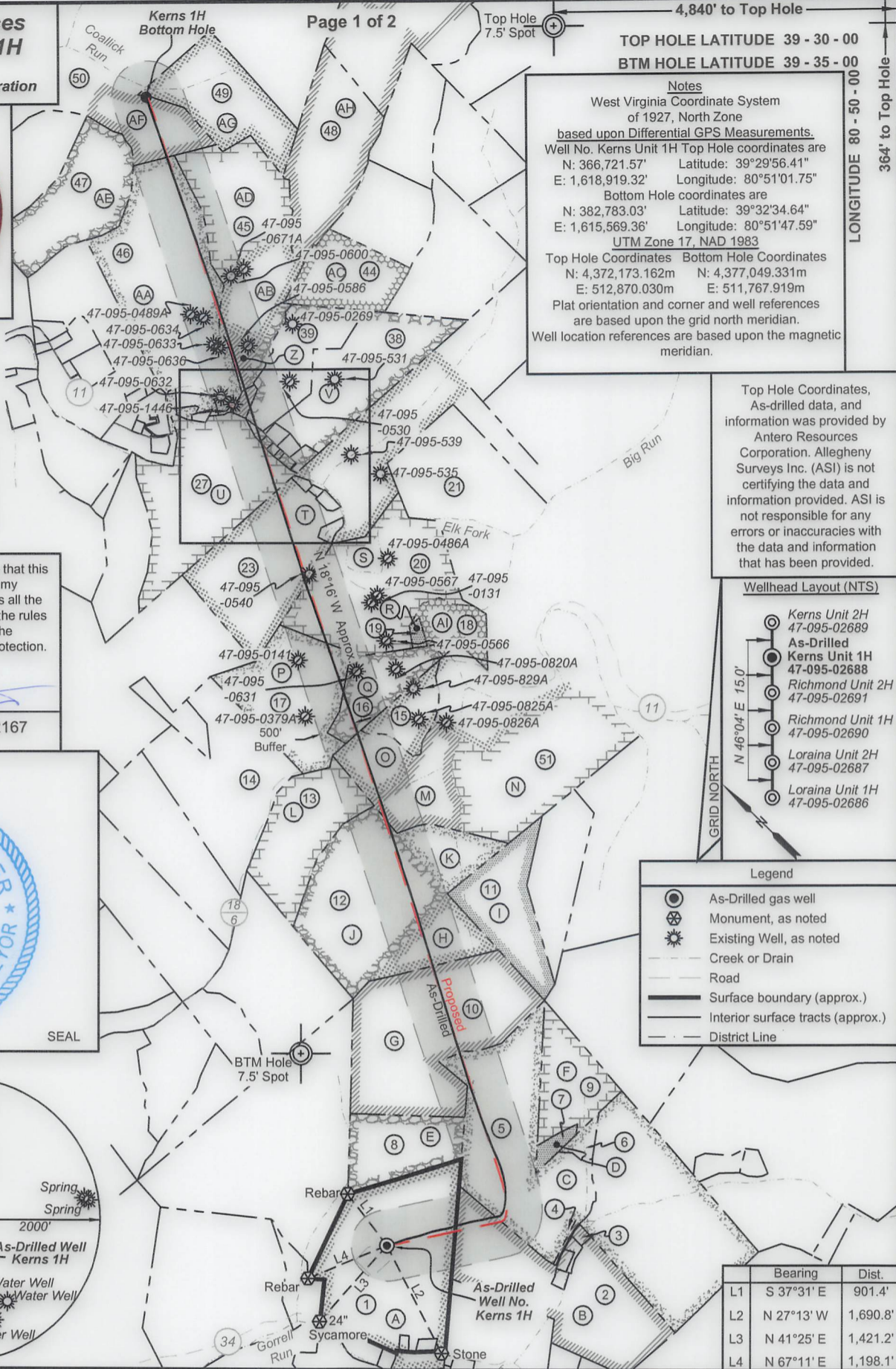
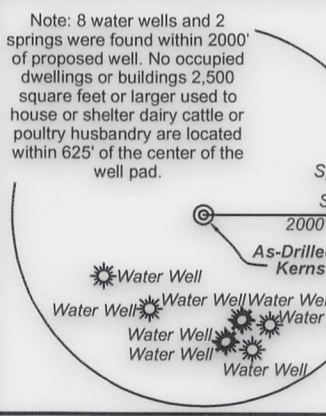
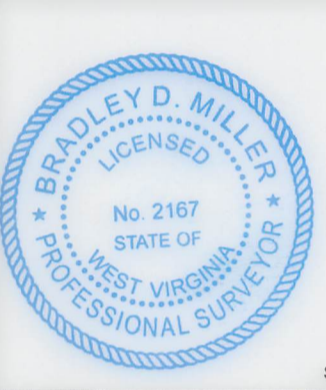
Antero Resources
Well No. Kerns 1H
 As-Drilled
 Antero Resources Corporation



Kerns Unit 1H
 POE Coordinates
 West Virginia
 Coordinate System
 of 1927, North Zone
 N: 367,880.65'
 E: 1,620,491.77'
 Latitude: 39°30'08.10"
 Longitude: 80°50'41.91"
 UTM Zone 17, NAD 1983
 N: 4,372,534.294m
 E: 513,343.197m

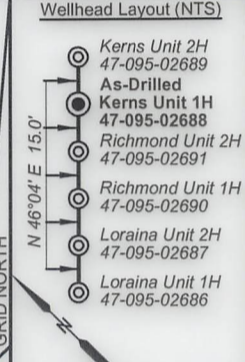
I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

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



Notes
 West Virginia Coordinate System of 1927, North Zone
 based upon Differential GPS Measurements.
 Well No. Kerns Unit 1H Top Hole coordinates are
 N: 366,721.57' Latitude: 39°29'56.41"
 E: 1,618,919.32' Longitude: 80°51'01.75"
 Bottom Hole coordinates are
 N: 382,783.03' Latitude: 39°32'34.64"
 E: 1,615,569.36' Longitude: 80°51'47.59"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,372,173.162m N: 4,377,049.331m
 E: 512,870.030m E: 511,767.919m
 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. Allegheny Surveys Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.



Legend

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

	Bearing	Dist.
L1	S 37°31' E	901.4'
L2	N 27°13' W	1,690.8'
L3	N 41°25' E	1,421.2'
L4	N 67°11' E	1,198.1'

FILE NO: 46-54-E-19
 DRAWING NO: Kerns 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. Kerns 1H
 API WELL NO
 47 - 095 - 02688
 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; 79.919; 177; 101.38; 20;
 DISTRICT: Ellsworth BRC Appalachian Minerals I, LLC; Nina A. Whitefield; J&N Management Enterprises, LLC COUNTY: Tyler 75.47; 29.1151; 70; 66.65;
 SURFACE OWNER: & Ruth E. Spencer Roger D. Blizzard Charles Eugene Friend, et ux; Allen Smith; Susan Ertel; B&C Oil and Gas Company; ACREAGE: 90.17 22.1188; 68.86;
 ROYALTY OWNER: Heritage Resources-Marcellus Minerals, LLC; William S. Nash, et al; Helen E. Boggs; Dennis M. Strode LEASE NO: ACREAGE: 29.13; 100; 30
 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: 22,923' MD 6,425' 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

14,707' to Bottom Hole

LONGITUDE 80 - 50 - 00

364' to Top Hole



ID	TM/Par	Owner	Bk/Pg	Acres
1	15-33	Roger D. Blizzard, et al	340/170	90.17
2	15-32	William S. & Opal Marie Nash	335/187	76.92
3	16-54	David M. & Amanda B. Trimble	447/110	1.00
4	16-60	Rodney & Candis Nash	378/815	0.56
5	15-38	Rodney A. & Candis L. Nash	351/701	85.48
6	16-44.1	Carl Straight	543/598	3.70
7	16-23.1	Bruce Winkelmann	334/234	3.30
8	15-31	Roger D. Blizzard, et al	342/782	25.00
9	16-23	Joseph L. & Karen Sitko	314/462	29.70
10	15-30.1	Roger D. Blizzard, et al	343/427	101.38
11	15-10	Darrell J. Sole	617/739	34.13
12	15-11	Roger Matthes, et al	528/764	115.47
13	15-7	Roger Matthes, et al	528/764	41.72
14	15-6	Eric D. Wykert, et al	632/832	59.50
15	15-8	William A. & Joyce L. Caputo	245/485	14.00
16	10-56	Mary K. Neff	413/731	22.06
17	10-58	Jeffery A. & Cheryl A. Ferrell	325/334	66.66
18	10-54	Michael W. & Brenda S. Schmidt	244/409	14.06
19	10-55	Shirley E. Neff	218/46	1.47
20	10-57	Charles E. & Laura L. Friend	334/836	68.86
21	10-49	Charles E. & Laura Lynn Friend	334/839	71.52
22	10-48	Charles E. & Laura Lynn Friend	334/839	1.40
23	10-46	Opal Carol Tallman	282/383	115.52
24	10-46.1	Opal Carol Tallman	282/383	1.36
25	10-46.2	William F. Ferrell	W47/233	0.50

ID	TM/Par	Owner	Bk/Pg	Acres
26	10-47	William F. Ferrell	W47/233	0.72
27	10-43	Kevin S. & Melinda S. Goff	431/799	100.00
28	10-45.3	Patricia Spencer	345/134	0.04
29	10-45.1	Richard S. & Clara Sue Baker	345/134	0.65
30	10-43.1	Patricia Spencer	345/134	1.76
31	10-45	Richard S. & Clara Sue Baker	342/536	0.25
32	10-45.2	Michael E. & Mary B. Neff	532/812	0.71
33	10-44	James R. Dawson	AR48/228	0.40
34	10-10.3	Paul Richard Baker	612/603	1.32
35	10-10.1	William F. & Paula S. Ferrell	312/454	1.23
36	10-44.1	Nile Dean Harris	290/234	0.71
37	10-10.2	Sandra K. Metz	376/458	0.15
38	10-10	Ronald D. & Sandra Sue Martin	344/279	58.36
39	10-12	Sandra K. Metz	376/458	30.50
40	10-13.1	Brian E. & Barbara J. Courtney	377/792	1.90
41	10-14.1	Triad Energy Corp. of WV Inc.	329/604	1.00
42	10-14.3	Elk Fork Church	299/126	1.49
43	10-14.2	Triad Energy Corp. of WV Inc.	329/604	0.17
44	10-11	J.R. Schamp	318/543	30.00
45	10-13	Kevin S. & Melinda S. Goff	597/808	87.19
46	10-14	Kevin S. & Melinda S. Goff	597/808	96.84
47	10-3	Kevin S. & Melinda S. Goff	597/808	53.75
48	10-4	Stefan L. & Alberta B. Smolski	356/467	56.08
49	6-49	Dennis & Clista A. Heintzman	297/637	45.00
50	6-36	Dennis & Clista Heintzman	297/640	417.6
51	15-9	Antero Midstream LLC	586/544	153.90



Leases	
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B	William S. Nash, et al
C	Helen E. Boggs
D	Bruce Winkelmann
E	Jerry R. Brown
F	Joseph L. Silko, et ux
G	Roger D. Blizzard
H	Samuel Rogers
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K	James Matthes
L	Dale E. Pipes
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T	Allen Smith
U	Susan Ertel
V	B&C Oil and Gas Company
Y	Elk Fork Church of Christ
Z	Will E. Morris Heirs
AA	Dennis M. Strode
AB	BRC Appalachian Minerals I, LLC
AC	Sharon Rose Faini
AD	Bounty Minerals, LLC
AE	Nina & Phillip Whitefield
AF	Nina Whitefield
AG	Dennis R. & Clista Heintzman
AH	Rose Enterprises, LLC
AI	Michael W. Schmidt, et ux

FILE NO: 46-54-E-19
 DRAWING NO: Kerns 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. Kerns 1H
 API WELL NO
 47 - 095 - 02688
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
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 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION ACREAGE: 90.17 22.1188; 68.86;
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled LEASE NO: _____ ACREAGE: 119; 100; 100; 9.0;
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 6,425' TVD 29.13; 100; 30
22,923' 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

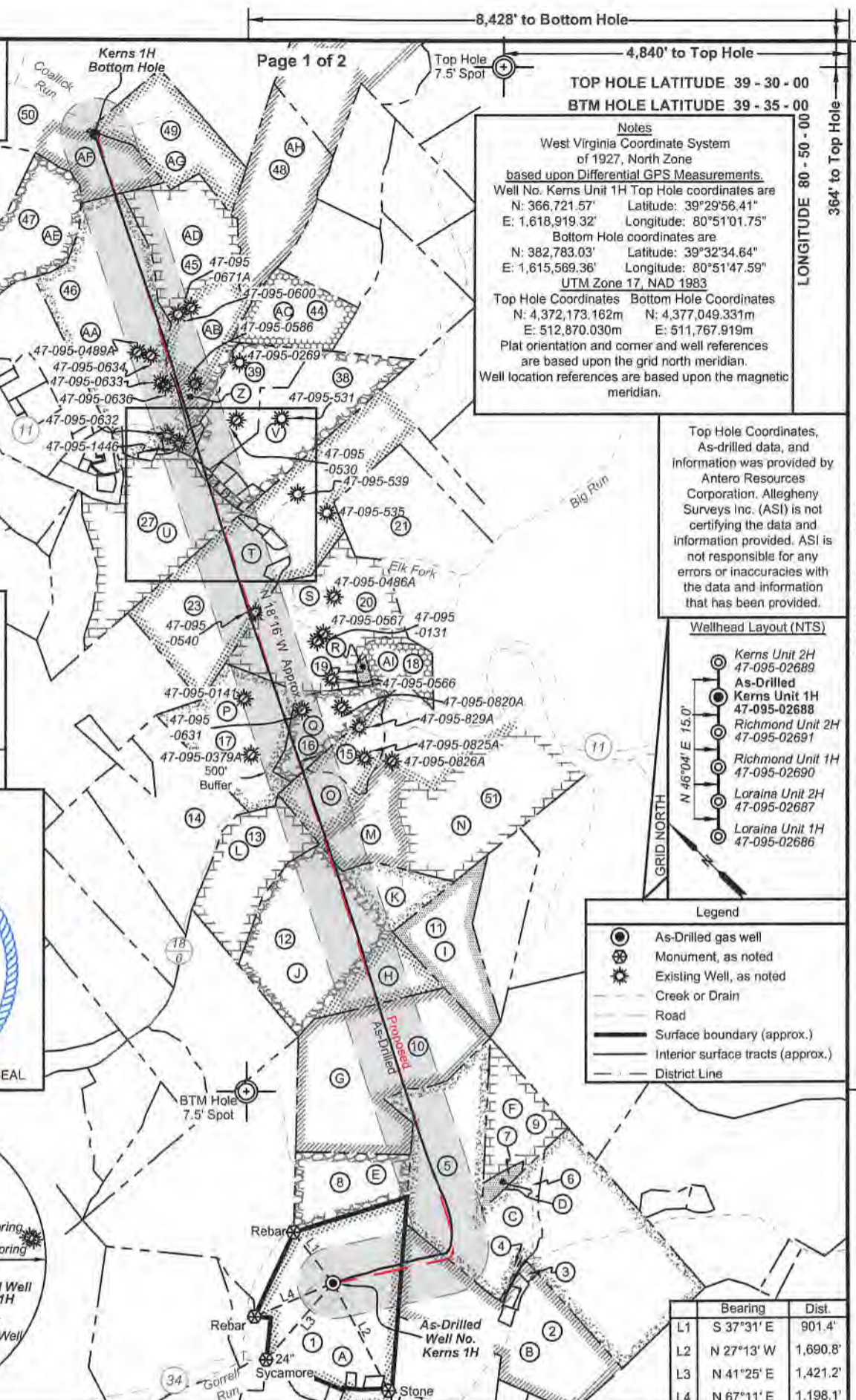
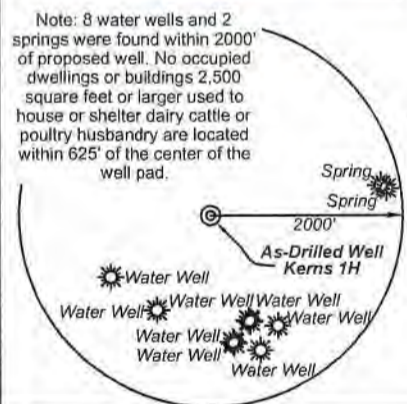
Antero Resources
Well No. Kerns 1H
 As-Drilled
 Antero Resources Corporation



Kerns Unit 1H
POE Coordinates
 West Virginia
 Coordinate System
 of 1927, North Zone
 N: 367,880.65'
 E: 1,620,491.77'
 Latitude: 39°30'08.10"
 Longitude: 80°50'41.91"
 UTM Zone 17, NAD 1983
 N: 4,372,534.294m
 E: 513,343.197m

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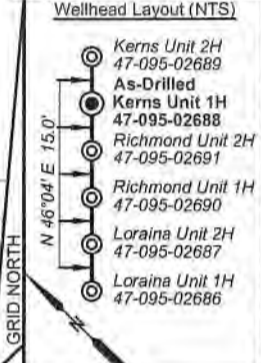
Bradley D. Miller
 Bradley D. Miller, P.S. 2167



8,428' to Bottom Hole
 4,840' to Top Hole
TOP HOLE LATITUDE 39 - 30 - 00
BTM HOLE LATITUDE 39 - 35 - 00
LONGITUDE 80 - 50 - 00
364' to Top Hole
14,707' to Bottom Hole

Notes
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- Legend**
- As-Drilled gas well
 - ⊙ Monument, as noted
 - ☼ Existing Well, as noted
 - Creek or Drain
 - Road
 - Surface boundary (approx.)
 - Interior surface tracts (approx.)
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 Submeter
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STATE OF WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION

DATE: December 28 2020
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 API WELL NO
 47 - 095 - 02688
 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; 79.919; 177; 101.38; 20; 75.47; 29.11151; 70; 66.65;
 DISTRICT: Ellsworth COUNTY: Tyler
 SURFACE OWNER: Roger D. Blizzard & Ruth E. Spencer Charles Eugene Friend, et ux; Allen Smith; Susan Ertel; B&C Oil and Gas Company; Trustees of the James L. Newson Revocable Trust Agreement; Kenneth R. Barker; ACREAGE: 90.17 22.1188; 68.86; 119; 100; 100; 9.0;
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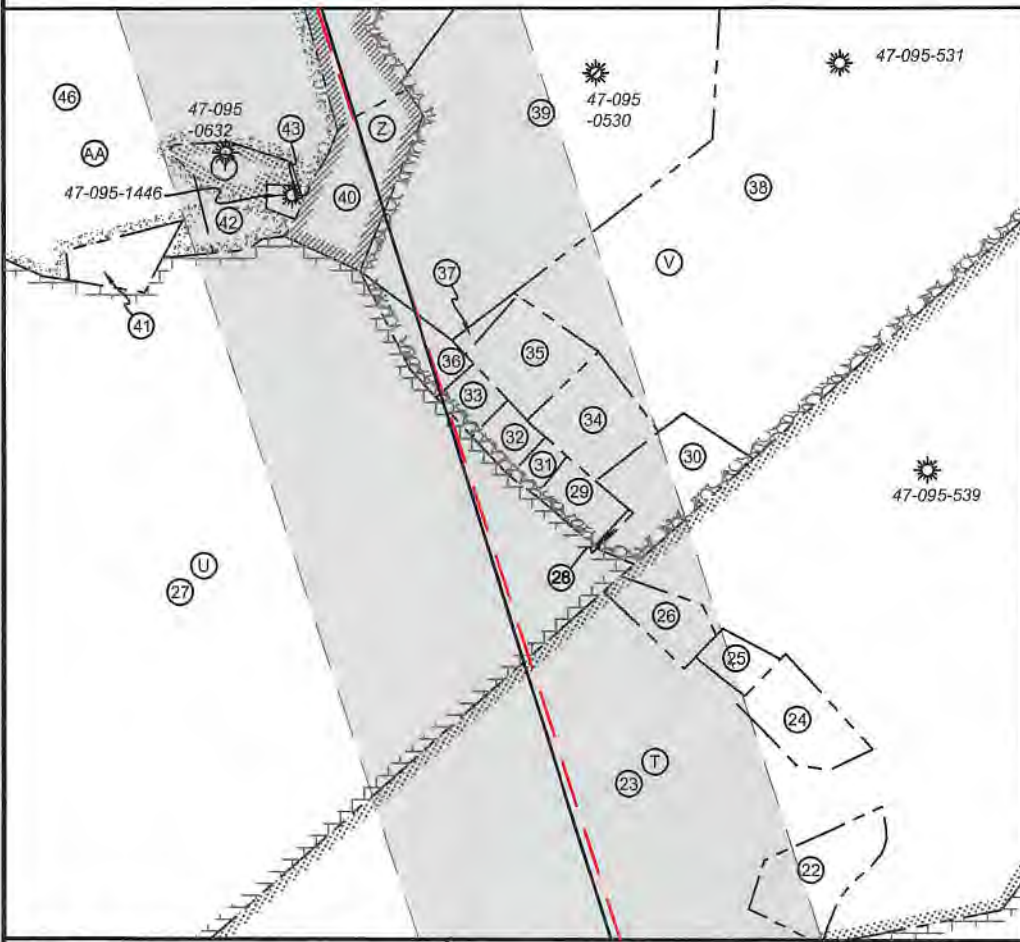
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 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
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L	Dale E. Pipes
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 Submeter
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 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
 Denver, CO 80202 Charleston, WV 25313

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	9/25/2020
Job End Date:	10/12/2020
State:	West Virginia
County:	Tyler
API Number:	47-095-02688-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Kerns 1H
Latitude:	39.49900000
Longitude:	-80.85049000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,525
Total Base Water Volume (gal):	23,931,866
Total Base Non Water Volume:	0

WV Department of
 Environmental Protection
 RECEIVED
 OFFICE OF OIL AND GAS
 FEB 08 11:23 AM '23



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	86.21506	Density = 8.50
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.16614	

SH

Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
HYDROCHLORI C ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			
HAI-501	Halliburton	Acid Corrosion Inhibitor					
				Listed Below			
Excelerate LX-15	Halliburton	Friction Reducer					
				Listed Below			
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
Sand-Premium White-40/70	Halliburton	Proppant					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			

Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.

SM

		Crystalline silica, quartz	14808-60-7	100.00000	13.59462
		Hydrochloric acid	7647-01-0	30.00000	0.03844
		Complex Amine Compound	Proprietary	60.00000	0.02975
		Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01487
		Guar gum	9000-30-0	100.00000	0.00402
		Surfactant	Proprietary	5.00000	0.00248
		Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00248
		Glutaraldehyde	111-30-8	30.00000	0.00248
		Ethoxylated alcohols	Proprietary	5.00000	0.00051
		Alkoxylated polyhydric alcohol	Proprietary	1.00000	0.00050
		Organic chloride compound	Proprietary	1.00000	0.00050
		Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00041
		Methanol	67-56-1	100.00000	0.00032
		Ammonium persulfate	7727-54-0	100.00000	0.00010
		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 #1	Proprietary	0.01000	0.00000
		Formaldehyde	50-00-0	0.01000	0.00000
		Organic salt #2	Proprietary	0.01000	0.00000

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			Acrylamide	79-06-1	0.01000	0.00000	
			Sodium glycolate	2836-32-0	0.01000	0.00000	
			Sodium hydroxide	1310-73-2	0.01000	0.00000	
			Nitrated acetate salt	Proprietary	0.01000	0.00000	
			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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