

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

API 47 - 085 - 10380 County Ritchie District Clay
Quad Pennsboro 7.5' Pad Name Lynn Camp Pad Field/Pool Name -----
Farm name Terry Lee Richards Well Number Buzzard Run Unit 2H
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 4340517m Easting 504736m
Landing Point of Curve Northing 4340745.36m Easting 505234.65m
Bottom Hole Northing 4343921m Easting 504146m

Elevation (ft) 1149' 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

RECEIVED
Office of Oil and Gas
AUG 31 2020

WV Department of
Environmental Protection

Date permit issued 2/1/2019 Date drilling commenced 2/20/2019 Date drilling ceased 5/13/2019
Date completion activities began 12/26/2019 Date completion activities ceased 3/24/2020
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 222', 459' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1221', 1247' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 210', 784' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:
DmH
12-7-20

API 47-085 - 10380 Farm name Terry Lee Richards Well number Buzzard Run Unit 2H

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"	581'	New	54#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2660'	New	36#, H-40	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	18145'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6870'		4.7#, N-80		
Packer type and depth set		N/A					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	204 sx	15.6	1.18	244	0'	8 Hrs.
Surface	Class A	495 sx	15.6	1.19	402	0'	8 Hrs.
Coal							
Intermediate 1	Class A	895 sx	15.6	1.18	1047	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	798sx (Lead) 2773 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.53 (Lead), 1.83 (Tail)	2819	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 18164' MD, 6417' TVD (BHL), 6419' (Deepest Point Drilled) Loggers TD (ft) 18164' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

RECEIVED
Office of Oil and Gas

AUG 31 2020

Kick off depth (ft) 5900'

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- 085 - 10380

Farm name Terry Lee Richards

Well number Buzzard Run Unit 2H

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.

RECEIVED
Office of Oil and Gas

AUG 31 2020

WV Department of
Environmental Protection

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.

API 47- 085 - 10380 Farm name Terry Lee Richards Well number Buzzard Run Unit 2H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6372' (TOP) TVD	6948' (TOP) MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 2800 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 7744 mcfpd Oil 106 bpd NGL --- bpd Water 545 bpd GAS MEASURED BY Estimated Orifice Pilot

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

***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 Nine Energy Services
Address 125 Museum Road City Washington State PA Zip 15301

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

Stimulating Company Baker Hughes
Address 837 Philippi Pike City Clarksburg State WV Zip 26301

Please insert additional pages as applicable.

Completed by Megan Griffith Telephone 303-357-7223
Signature  Title Permitting Agent Date 6.26.20

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

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2/22/2020	18040	17997	60	Marcellus
2	2/22/2020	17959.66667	17795	60	Marcellus
3	2/23/2020	17759.66667	17595	60	Marcellus
4	2/23/2020	17559.66667	17395	60	Marcellus
5	2/24/2020	17359.66667	17195	60	Marcellus
6	2/24/2020	17159.66667	16995	60	Marcellus
7	2/24/2020	16959.66667	16795	60	Marcellus
8	2/25/2020	16759.66667	16595	60	Marcellus
9	2/25/2020	16559.66667	16395	60	Marcellus
10	2/26/2020	16359.66667	16195	60	Marcellus
11	2/26/2020	16159.66667	15995	60	Marcellus
12	2/27/2020	15959.66667	15795	60	Marcellus
13	2/27/2020	15759.66667	15595	60	Marcellus
14	2/28/2020	15559.66667	15395	60	Marcellus
15	2/28/2020	15359.66667	15195	60	Marcellus
16	2/29/2020	15159.66667	14995	60	Marcellus
17	2/29/2020	14959.66667	14795	60	Marcellus
18	2/29/2020	14759.66667	14595	60	Marcellus
19	3/1/2020	14559.66667	14395	60	Marcellus
20	3/1/2020	14359.66667	14195	60	Marcellus
21	3/2/2020	14159.66667	13995	60	Marcellus
22	3/2/2020	13959.66667	13795	60	Marcellus
23	3/3/2020	13759.66667	13595	60	Marcellus
24	3/3/2020	13559.66667	13395	60	Marcellus
25	3/3/2020	13359.66667	13195	60	Marcellus
26	3/4/2020	13159.66667	12995	60	Marcellus
27	3/4/2020	12959.66667	12795	60	Marcellus
28	3/5/2020	12759.66667	12595	60	Marcellus
29	3/5/2020	12559.66667	12395	60	Marcellus
30	3/5/2020	12359.66667	12195	60	Marcellus
31	3/6/2020	12159.66667	11995	60	Marcellus
32	3/6/2020	11959.66667	11795	60	Marcellus
33	3/6/2020	11759.66667	11595	60	Marcellus
34	3/7/2020	11559.66667	11395	60	Marcellus
35	3/7/2020	11359.66667	11195	60	Marcellus
36	3/7/2020	11159.66667	10995	60	Marcellus
37	3/8/2020	10959.66667	10795	60	Marcellus
38	3/8/2020	10759.66667	10595	60	Marcellus
39	3/8/2020	10559.66667	10395	60	Marcellus
40	3/9/2020	10359.66667	10195	60	Marcellus
41	3/9/2020	10159.66667	9995	60	Marcellus
42	3/9/2020	9959.66667	9795	60	Marcellus
43	3/10/2020	9759.66667	9595	60	Marcellus
44	3/10/2020	9559.66667	9395	60	Marcellus
45	3/10/2020	9359.66667	9195	60	Marcellus
46	3/11/2020	9159.66667	8995	60	Marcellus
47	3/11/2020	8959.66667	8795	60	Marcellus
48	3/11/2020	8759.66667	8595	60	Marcellus
49	3/11/2020	8559.66667	8395	60	Marcellus
50	3/12/2020	8359.66667	8195	60	Marcellus
51	3/12/2020	8159.66667	7995	60	Marcellus
52	3/12/2020	7959.66667	7795	60	Marcellus
53	3/12/2020	7759.66667	7595	60	Marcellus
54	3/13/2020	7559.66667	7395	60	Marcellus
55	3/13/2020	7359.66667	7195	60	Marcellus
56	3/13/2020	7159.66667	6995	60	Marcellus

RECEIVED
Office of Oil and Gas

AUG 31 2020

WV Department of
Environmental Protection

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	2/22/2020	85.4	7964.736	6558	3635	163540	4614.286	N/A
2	2/22/2020	83.9	8090.157	5243	4018	400960	7864.226	N/A
3	2/23/2020	84.5	8234.543	5328	3939	396700	7501.33	N/A
4	2/23/2020	84.5	8186.698	5907	3239	402260	7319.41	N/A
5	2/24/2020	84.3	8425.267	6605	3355	402060	7243.73	N/A
6	2/24/2020	85.3	8436.173	5901	3613	401180	7215.84	N/A
7	2/24/2020	84.9	8254.803	6558	3579	406580	7258.74	N/A
8	2/25/2020	84.6	8349.748	6403	3820	403640	7373.35	N/A
9	2/25/2020	84.5	8082.74	6077	3651	408000	7312.5	N/A
10	2/26/2020	83	8125.091	6285	3502	404460	7190.79	N/A
11	2/26/2020	85.6	8441.196	6425	3550	406060	7270.58	N/A
12	2/27/2020	76.6	8426.952	6586	3793	403820	9239.35	N/A
13	2/27/2020	83	8291.589	6050	3581	400600	7228.2	N/A
14	2/28/2020	81.1	8638.913	6268	4037	404320	7145.86	N/A
15	2/28/2020	85.1	8202.527	6828	3669	400400	7142.46	N/A
16	2/29/2020	84.8	8252.568	6036	3416	402200	7172.42	N/A
17	2/29/2020	84.5	8243.092	6322	3278	408580	7211.81	N/A
18	2/29/2020	84.2	8239	6455	3331	407300	7232.45	N/A
19	3/1/2020	85.4	8117.028	6139	3274	406440	7144.76	N/A
20	3/1/2020	82.4	8337.302	6395	3370	403520	7402.606	N/A
21	3/2/2020	84.9	7832.288	5751	3536	403780	7328.926	N/A
22	3/2/2020	84.5	8131.926	6426	3312	402180	7129.706	N/A
23	3/3/2020	84.1	7978.423	5761	3511	398600	7052.456	N/A
24	3/3/2020	85.7	8083.793	5576	3607	399820	7080.356	N/A
25	3/3/2020	84	7936.768	6331	3481	395240	6952.116	N/A
26	3/4/2020	84.8	7985.906	6273	3357	401860	7000.706	N/A
27	3/4/2020	84.8	7711.672	6021	3432	404480	7047.736	N/A
28	3/5/2020	84.8	7973.207	7019	3534	401260	6951.486	N/A
29	3/5/2020	85.2	7757.809	6070	3675	400760	6960.37	N/A
30	3/5/2020	84.6	8037.039	6288	3689	409920	6989.54	N/A
31	3/6/2020	84.8	7935.551	6597	3556	401520	7073.21	N/A
32	3/6/2020	85.4	8022.421	7433	3711	400140	7031.68	N/A
33	3/6/2020	85.3	7992.241	6878	3674	406240	6944.25	N/A
34	3/7/2020	85.4	7693.014	6132	3457	396940	6975.59	N/A
35	3/7/2020	85.2	7551.872	6130	3391	401620	6923.59	N/A
36	3/7/2020	85.4	7391.915	6038	3570	404900	6948.59	N/A
37	3/8/2020	85	7493.684	5874	3288	403540	6890.68	N/A
38	3/8/2020	85.6	6995.062	5723	3440	399140	7510.92	N/A
39	3/8/2020	84.8	7318.108	6076	3547	400580	6919.52	N/A
40	3/9/2020	85.4	7375.838	5887	3477	406500	6932.61	N/A
41	3/9/2020	85.2	7344.609	5841	3534	409320	6934.33	N/A
42	3/9/2020	84.9	7388.678	6332	3643	402840	6865.94	N/A
43	3/10/2020	84.7	7243.551	5937	3714	402340	6857.82	N/A
44	3/10/2020	84.6	7277.241	6118	3480	400220	6838.93	N/A
45	3/10/2020	85.5	7248.793	9477	3383	401780	6862.79	N/A
46	3/11/2020	84.8	7037.677	5150	3375	402100	6880.25	N/A
47	3/11/2020	85.3	7132.84	6297	3478	408360	6913.36	N/A
48	3/11/2020	85.5	6990.069	5985	3537	407280	7077.07	N/A
49	3/11/2020	85.9	7053.74	6309	3659	406240	6849.14	N/A
50	3/12/2020	85.2	7063.347	5841	3641	407600	6907.94	N/A
51	3/12/2020	85.5	7131.729	5483	3624	399500	6791.38	N/A
52	3/12/2020	85.8	7072.666	5787	3539	407820	6840.71	N/A
53	3/12/2020	85	6968.908	5580	3624	406100	6852.15	N/A
54	3/13/2020	85.4	6919.085	5300	3467	409600	6846.3	N/A
55	3/13/2020	84.8	6772.535	6169	3671	407960	6781.982	N/A
56	3/13/2020	84.6	6793.875	6061	3439	407160	6992.292	N/A
	AVG=	84.5	7,997	6,207	3,547	16,280,960	292,663	TOTAL

RECEIVED
Office of Oil and Gas

AUG 31 2020

WV Department of
Environmental Protection

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Black/Gray Shale	85	145	85	145
Sandy Shale	145	655	145	655
Silty Sandstone	655	865	655	865
Silty Shale	865	1,085	865	1,085
Sandy Siltstone	1,085	1,175	1,085	1,175
Silty Shale	1,175	1,365	1,175	1,365
Sandstone	1,365	1,295	1,365	1,295
Sandstone	1,295	1,645	1,295	1,645
Shale	1,645	1,745	1,645	1,745
Sandstone	1,745	1,805	1,745	1,805
Silty Sandstone	1,805	1,795	1,805	1,795
Sandstone	1,795	1,835	1,795	1,835
Sandstone	1,835	1,859	1,835	1,904
Big Lime	1,874	2,599	1,879	2,678
Fifty Foot Sandstone	2,599	2,733	2,653	2,820
Gordon	2,733	3,255	2,795	3,385
Fifth Sandstone	3,255	3,363	3,360	3,501
Bayard	3,363	3,883	3,476	4,052
Speechley	3,883	4,278	4,027	4,474
Balltown	4,278	4,613	4,449	4,831
Bradford	4,613	4,938	4,806	5,178
Benson	4,938	5,183	5,153	5,440
Alexander	5,183	6,246	5,415	6,623
Sycamore	6,075	6,221	6,401	6,598
Middlesex	6,221	6,323	6,598	6,794
Burkett	6,323	6,353	6,794	6,876
Tully	6,353	6,372	6,876	6,948
Marcellus	6,372	NA	6,948	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.

RECEIVED
Office of Oil and Gas
AUG 31 2020
WV Department of
Environmental Protection

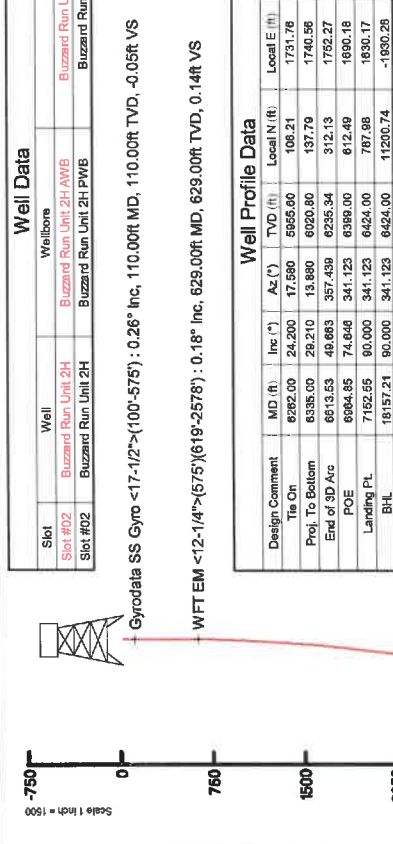
ANTERO RESOURCES CORPORATION

Location: Ritchie County, WV
 Facility: Lynn Camp Pad
 Slot: Slot #02
 Well: Buzzard Run Unit 2H
 Wellbore: Buzzard Run Unit 2H PWB

Grid System: NAD27 UTM Zone 17 North, US feet
 Plot reference wellpath is Buzzard Run Unit 2H PWP Rev-A.0
 True vertical depths are referenced to Patterson 342 (RKB)
 Measured depths are referenced to Patterson 342 (RKB)
 Patterson 342 (RKB) to Mean Sea Level: 1174 feet
 Mean Sea Level to Ground level (At Slot: Slot #02): -1149 feet
 Coordinates are in feet referenced to Slot

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Lynn Camp Pad	1655024.222	14239826.049	80°56'42.000"W
Slot #02	-25.30	-16.73	80°56'43.100"W
Patterson 342 (RKB) to Ground level (At Slot: Slot #02)	1655008.502	14239600.756	26R
Mean Sea Level to Ground level (At Slot: Slot #02)			-1149R
Patterson 342 (RKB) to Mean Sea Level			1174R

Well Data			
Slot	Well	Wellbore	Wellpath
Slot #02	Buzzard Run Unit 2H	Buzzard Run Unit 2H AWB	Buzzard Run Unit 2H AWB Proj: 18164'
Slot #02	Buzzard Run Unit 2H	Buzzard Run Unit 2H PWB	Buzzard Run Unit 2H PWP Rev-A.0



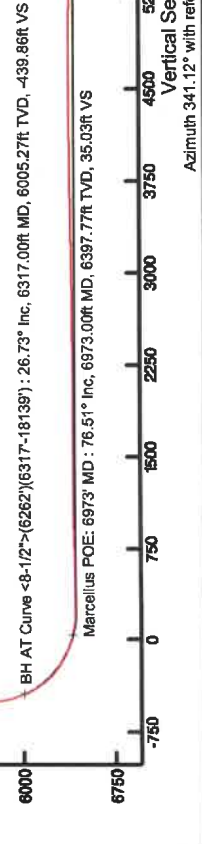
Projected MD at TD: 18164' : 6416.50R TVD, 11172.00R N, 14336.81R W
 Marcellus POE: 6973' MD : 6397.77R TVD, 624.20R N, 1716.99R E
 BH AT Curve <8-1/2>(6262)(6317-18139) : 6005.27R TVD, 129.19R N, 11277.07R E
 Slot #02
 WFT EM <8-3/4>(2578)(2682-6252) : 2611.96R TVD, 15.65R N, 521.88R E
 WFT EM <12-1/4>(575)(619-2578) : 629.00R TVD, 0.69R N, 1.56R E
 Gyrodatta SS Gyro <17-1/2>(100-575) : 110.00R TVD, 0.02R N, 0.19R E

Well Profile Data								
Design Comment	MD (ft)	Inc (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (*/100ft)	VS (ft)
Tie On	6282.00	24.200	17.580	5955.00	106.21	1731.76	7.90	-459.88
Prof. To Bottom	6335.00	29.210	13.880	6020.80	137.79	1740.56	7.23	-432.85
End of 3D Arc	6613.53	49.653	357.459	6235.34	312.13	1752.27	6.19	-271.68
POE	6964.85	74.549	341.123	6399.00	612.49	1690.18	8.18	32.02
Landing PL	7152.55	90.000	341.123	6424.00	787.88	1630.17	8.18	218.05
BHL	18157.21	90.000	341.123	6424.00	11200.74	-1930.28	0.00	11222.74



User specified (HDGM) Dip: 66.21° Field: 51678 NT
 Magnetic North is 7.76 degrees West of True North (at 5/3/2019)
 To correct azimuth from True to Grid subtract 0.03 degrees
 To correct azimuth from Magnetic to Grid subtract 7.79 degrees

WFT EM <8-3/4>(2578)(2682-6252) : 18.07° inc, 2692.00R MD, 2611.96R TVD, -154.07R VS
 Gyrodatta SS Gyro <17-1/2>(100-575) : 0.26° inc, 110.00R MD, 110.00R TVD, -0.05R VS
 WFT EM <12-1/4>(575)(619-2578) : 0.18° inc, 629.00R MD, 629.00R TVD, 0.14R VS
 BH AT Curve <8-1/2>(6262)(6317-18139) : 26.73° inc, 6317.00R MD, 6005.27R TVD, -439.56R VS
 Marcellus POE: 6973' MD : 76.51° inc, 6873.00R MD, 6397.77R TVD, 35.03R VS



Projected MD at TD: 18164' : 89.66° inc, 18164.00R MD, 6416.50R TVD, 11197.66R VS
 Scale 1 inch = 1500
 Vertical Section (ft)
 Azimuth 341.12° with reference 0.00 N, 0.00 E

RECEIVED
 Office of Oil and Gas
 AUG 31 2020
 WV Department of
 Environmental Protection



API: 47-085-10380-0000
 BHI Job #: 109803256
 Rig: Patterson 342
 Duration: 05/07/2019-05/11/2019

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/22/2020
Job End Date:	3/13/2020
State:	West Virginia
County:	Ritchie
API Number:	47-085-10380-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Buzzard Run Unit 2H
Latitude:	39.21383890
Longitude:	-80.94530550
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,398
Total Base Water Volume (gal):	17,372,238
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Supplied by Operator	Base Fluid					
			Water	7732-18-5	100.00000	86.30253	
DWP-641	CWS	Friction Reducer					
				Listed Below			

RECEIVED
Office of Oil and Gas
AUG 31 2020
WV Department of
Environmental Protection

					64742-46-7	60.00000	0.01409	
			Distillates (petroleum), hydrotreated middle					
			Distillates (petroleum), hydrotreated light		64742-47-8	30.00000	0.01373	
			Goethite		1310-14-1	0.10000	0.01331	
			Apatite		64476-38-6	0.10000	0.01331	
			Ilmenite		98072-94-7	0.10000	0.01331	
			Biotite		1302-27-8	0.10000	0.01331	
			Ammonium chloride		12125-02-9	11.00000	0.00503	
			Sorbitan monooleate		1338-43-8	4.00000	0.00183	
			Glutaraldehyde		111-30-8	14.00000	0.00180	
			Polyethylene glycol monooleate		9004-96-0	3.00000	0.00137	
			Quaternary ammonium compounds, bis (hydrogenated tallow alkyl)dimethyl, salts with bentonite		68953-58-2	5.00000	0.00117	
			Sorbitol tetraoleate		61723-83-9	2.00000	0.00092	
			Amines, tallow alkyl, ethoxylated		61791-26-2	1.00000	0.00046	
			Alkyl dimethyl benzyl ammonium chloride		68424-85-1	3.00000	0.00039	
			Didecyl dimethyl ammonium chloride		7173-51-5	3.00000	0.00039	
			Ethanol		64-17-5	3.00000	0.00039	
			Ammonium Persulfate		7727-54-0	100.00000	0.00036	
			Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether		37251-67-5	1.50000	0.00035	
			Alkylloxypolyethyleneoxy ethanol		84133-50-6	0.50000	0.00023	
			Vinylidene chloride-methyl acrylate copolymer		25038-72-6	20.00000	0.00007	
			Ethylene Glycol		107-21-1	40.00000	0.00007	
			Acrylamide		79-06-1	0.10000	0.00005	

RECEIVED
Office of Oil and Gas
AUG 31 2020
WV Department of
Environmental Protection

				Diethylene glycol, monomethyl ether	34590-94-8	20.00000	0.00003
				Cinnamaldehyde	104-55-2	10.00000	0.00002
				Formic acid	64-18-6	10.00000	0.00002
				Tar bases, quinolone derivs, benzyl chloride- quaternized	72480-70-7	10.00000	0.00002
				Ethoxylated Alcohols	68131-39-5	10.00000	0.00002
				Isopropyl alcohol	67-63-0	5.00000	0.00001

* 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)

RECEIVED
Office of Oil and Gas
AUG 31 2020
WV Department of
Environmental Protection

LATITUDE 39°15'00"

8,115'

LATITUDE 39°15'00"

10,041' TO BOTTOM HOLE

LONGITUDE 80°55'00"

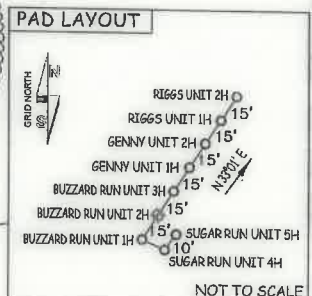
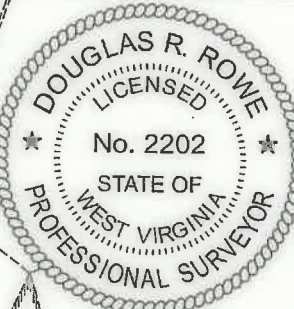
13,171'

LONGITUDE 80°55'00"

Antero Resources Corporation
Well No. Buzzard Run Unit 2H

2H BOTTOM HOLE

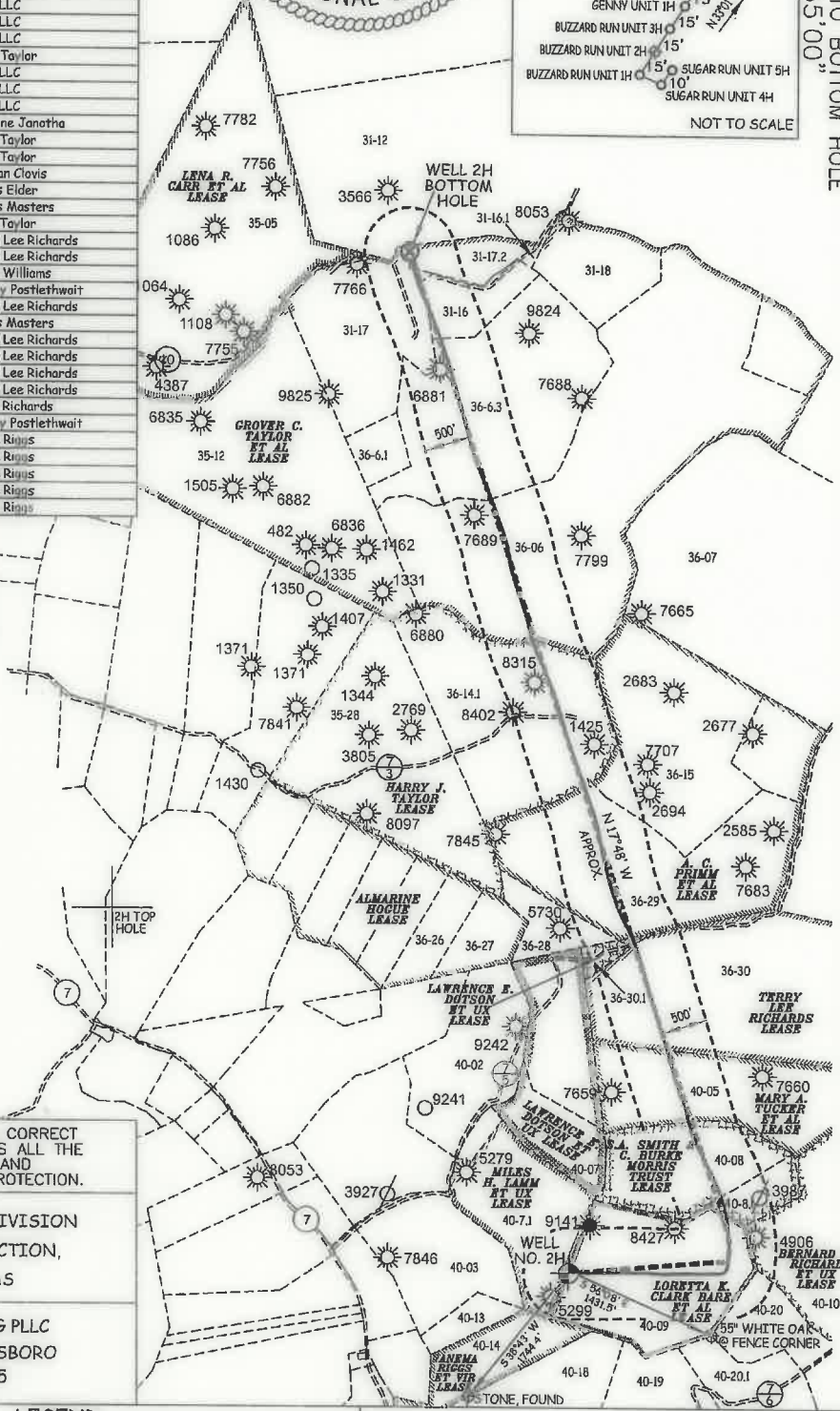
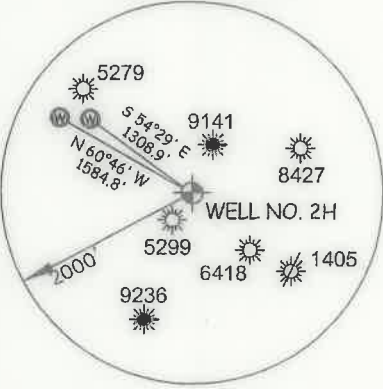
Clay District - Ritchie County	
31-12	Steven Stanley
31-16	Austin Jones
31-16.1	Jason Flanigan
31-17	E L F LLC
31-17.2	Austin Jones
31-18	E L F LLC
35-05	E L F LLC
35-12	E L F LLC
35-28	Brian Taylor
36-06	E L F LLC
36-6.1	E L F LLC
36-6.3	E L F LLC
36-07	Suzanne Janotha
36-14.1	Brian Taylor
36-15	Brian Taylor
36-26	Meshan Clovis
36-27	James Elder
36-28	James Masters
36-29	Brian Taylor
36-30	Terry Lee Richards
36-30.1	Terry Lee Richards
40-02	Scott Williams
40-03	Tommy Postlethwait
40-05	Terry Lee Richards
40-07	James Masters
40-7.1	Terry Lee Richards
40-08	Terry Lee Richards
40-8.1	Terry Lee Richards
40-09	Terry Lee Richards
40-10	Roger Richards
40-13	Tommy Postlethwait
40-14	Duane Riggs
40-18	Duane Riggs
40-19	Duane Riggs
40-20	Duane Riggs
40-20.1	Duane Riggs



AS DRILLED DATA:
WELL 2H TOP HOLE INFORMATION:
N: 263,289ft E: 1,590,495ft
LAT: 39°12'49.82" LON: 80°56'43.10"
BOTTOM HOLE INFORMATION:
N: 274,491ft E: 1,588,745ft
LAT: 39°14'40.25" LON: 80°57'07.63"
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.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 2H TOP HOLE INFORMATION:
N: 4,340,517m E: 504,736m
BOTTOM HOLE INFORMATION:
N: 4,343,921m E: 504,146m

NOTE:
2 WATER WELLS WERE LOCATED WITHIN 2000' OF THE CENTER OF PAD



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

JOB # 18-025WA
DRAWING # BUZZARDRUN2HAD
SCALE 1" = 2000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

LEGEND
----- Surface Owner Boundary Lines +/-
----- Interior Surface Tracts +/-
O----- Proposed Well Path
As Drilled Well Path

DATE 06/04/20
OPERATOR'S WELL# BUZZARD RUN UNIT #2H

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 ANTERO RESOURCES CORPORATION.
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.

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ 47 ___ 085 ___ 10380
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X STATE COUNTY PERMIT
LOCATION: ELEVATION 1,149' AS BUILT WATERSHED NORTH FORK HUGHES RIVER QUADRANGLE PULLMAN 7.5' (SHL) PENNSBORO 7.5' (BHL)
SURFACE OWNER TERRY LEE RICHARDS ACREAGE 60 ACRES +/- DISTRICT CLAY COUNTY RITCHIE
OIL & GAS ROYALTY OWNER LORETTA K. CLARK BARE ET AL; S. A. SMITH & C. BURKE MORRIS TRUST; LEASE ACREAGE 60 AC±; 46.48 AC±; MARY A. TUCKER ET AL; TERRY LEE RICHARDS; A. C. PRIMM ET AL 50 AC±; 121.5 AC±; 174 AC±; HARRY J. TAYLOR; GROVER C. TAYLOR ET AL 155 AC±; 577 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 PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,417' TVD 18,164' 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

LATITUDE 39°15'00"

8,115'

LATITUDE 39°15'00"

Antero Resources Corporation
Well No. Buzzard Run Unit 2H

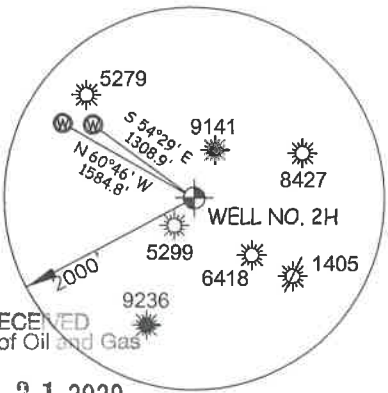
2H BOTTOM HOLE

Clay District - Ritchie County	
31-12	Steven Stanley
31-16	Austin Jones
31-16.1	Jason Flanigan
31-17	E L F LLC
31-17.2	Austin Jones
31-18	E L F LLC
35-05	E L F LLC
35-12	E L F LLC
35-28	Brian Taylor
36-06	E L F LLC
36-6.1	E L F LLC
36-6.3	E L F LLC
36-07	Suzanne Janotha
36-14.1	Brian Taylor
36-15	Brian Taylor
36-26	Meghan Clovis
36-27	James Elder
36-28	James Masters
36-29	Brian Taylor
36-30	Terry Lee Richards
36-30.1	Terry Lee Richards
40-02	Scott Williams
40-03	Tommy Postlethwait
40-05	Terry Lee Richards
40-07	James Masters
40-7.1	Terry Lee Richards
40-08	Terry Lee Richards
40-8.1	Terry Lee Richards
40-09	Terry Lee Richards
40-10	Roger Richards
40-13	Tommy Postlethwait
40-14	Duane Riggs
40-18	Duane Riggs
40-19	Duane Riggs
40-20	Duane Riggs
40-20.1	Duane Riggs

AS DRILLED DATA:
WELL 2H TOP HOLE INFORMATION:
N: 263,289ft E: 1,590,495ft
LAT: 39°12'49.82" LON: 80°56'43.10"
BOTTOM HOLE INFORMATION:
N: 274,491ft E: 1,588,745ft
LAT: 39°14'40.25" LON: 80°57'07.63"
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.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 2H TOP HOLE INFORMATION:
N: 4,340,517m E: 504,736m
BOTTOM HOLE INFORMATION:
N: 4,343,921m E: 504,146m

NOTE:
2 WATER WELLS WERE LOCATED WITHIN 2000' OF THE CENTER OF PAD



AUG 31 2020

WV Department of Environmental Protection

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

JOB # 18-025WA
DRAWING # BUZZARDRUN2HAD
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

LEGEND

- Surface Owner Boundary Lines +/-
- Interior Surface Tracts +/-
- Proposed Well Path
- As Drilled Well Path

DOUGLAS R. ROWE P.S. 2202

DATE 06/04/20

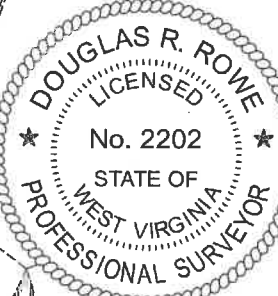
OPERATOR'S WELL# BUZZARD RUN UNIT #2H

- NOTE
- 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.
 - TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
 - AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
 - 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.
 - WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

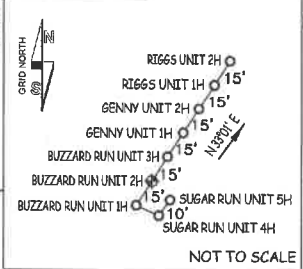
WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL 47 - 085 - 10380
(IF "GAS") PRODUCTION STORAGE DEEP SHALLOW
LOCATION: ELEVATION 1,149' AS BUILT WATERSHED NORTH FORK HUGHES RIVER QUADRANGLE PULLMAN 7.5' (SHL) PENNSBORO 7.5' (BHL) STATE COUNTY PERMIT
SURFACE OWNER TERRY LEE RICHARDS ACREAGE 60 ACRES +/- DISTRICT CLAY COUNTY RITCHIE
OIL & GAS ROYALTY OWNER LORETTA K. CLARK BARE ET AL; S. A. SMITH & C. BURKE MORRIS TRUST; LEASE ACREAGE 60 AC +/- 46.48 AC +/-
MARY A. TUCKER ET AL; TERRY LEE RICHARDS; A. C. PRIMM ET AL 50 AC +/- 121.5 AC +/- 174 AC +/-
HARRY J. TAYLOR; GROVER C. TAYLOR ET AL 155 AC +/- 577 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 PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,417' TVD 18,164' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

WV NORTH ZONE GRID NORTH

10,041' TO BOTTOM HOLE



PAD LAYOUT



LONGITUDE 80°55'00"

1,998' TO BOTTOM HOLE

13,171'

LONGITUDE 80°55'00"