

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

API 47 - 095 - 02802 County Tyler District Ellsworth
Quad Porter Falls 7.5' Pad Name Furbee Field/Pool Name -----
Farm name Antero Midstream LLC Well Number Emmons 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 4375465m Easting 518719m
Landing Point of Curve Northing 4375524.93m Easting 519513.91m
Bottom Hole Northing 4378790m Easting 518422m

Elevation (ft) 1223' 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

Office of Oil and Gas
JUN 23 2023
WV Department of
Environmental Protection

Date permit issued 7/26/2022 Date drilling commenced 9/30/2022 Date drilling ceased 12/11/2022
Date completion activities began 2/1/2023 Date completion activities ceased 4/1/2023
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 880' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 959' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 431' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by: Smiley
APPROVED
09/22/2023

API 47-095 - 02802 Farm name Antero Midstream LLC Well number Emmons 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	28"	20"	125.5'	New	78.67#, X-60	N/A	Y
Surface	17-1/2"	13-3/8"	996'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	3635'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" /8-1/2"	5-1/2"	19919'	New	20#, P-110	N/A	Y
Tubing		2-3/8"	7770'		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	198 sx	15.6	1.18	233	0'	8 Hrs.
Surface	Class A	768 sx	15.6	1.20	921	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1221 sx	15.6	1.20	1465	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	2972 sx (Tail)	13.5 (Lead), 15.2(Tail)	1.26 (Tail)	3744	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 19919' MD, 6902' TVD (BHL), 6919' TVD (Deepest Point Drilled) Loggers TD (ft) 19919' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A

RECEIVED
Office of Oil and Gas
JUN 23 2023

Kick off depth (ft) 6780'

WV Department of Environmental Protection

Check all wireline logs run caliper density deviated/directional induction neutron resistivity gamma ray temperature sonic

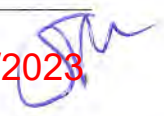
Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

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

09/22/2023 

LATITUDE 39°32'30"

9130'

LATITUDE 39°35'00"

10,074'

Antero Resources Corporation Well No. Emmons Unit 2H

AS DRILLED DATA: WELL 2H TOP HOLE INFORMATION: N: 377,202ft E: 1,638,293ft LAT: 39°31'42.79" LON: 80°46'56.52" BOTTOM HOLE INFORMATION: N: 388,129ft E: 1,637,501ft LAT: 39°33'30.67" LON: 80°47'08.63" WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT TAKEMETER 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: 4,375,465m E: 518,719m BOTTOM HOLE INFORMATION: N: 4,378,790m E: 518,422m

(NAD) 27 (UTM) ZONE 17 COORDS: WELL 2H TOP HOLE INFORMATION: N: 14,354,456ft E: 1,701,784ft POINT OF ENTRY INFORMATION: N: 14,354,131ft E: 1,704,648ft BOTTOM HOLE INFORMATION: N: 14,365,364ft E: 1,700,809ft

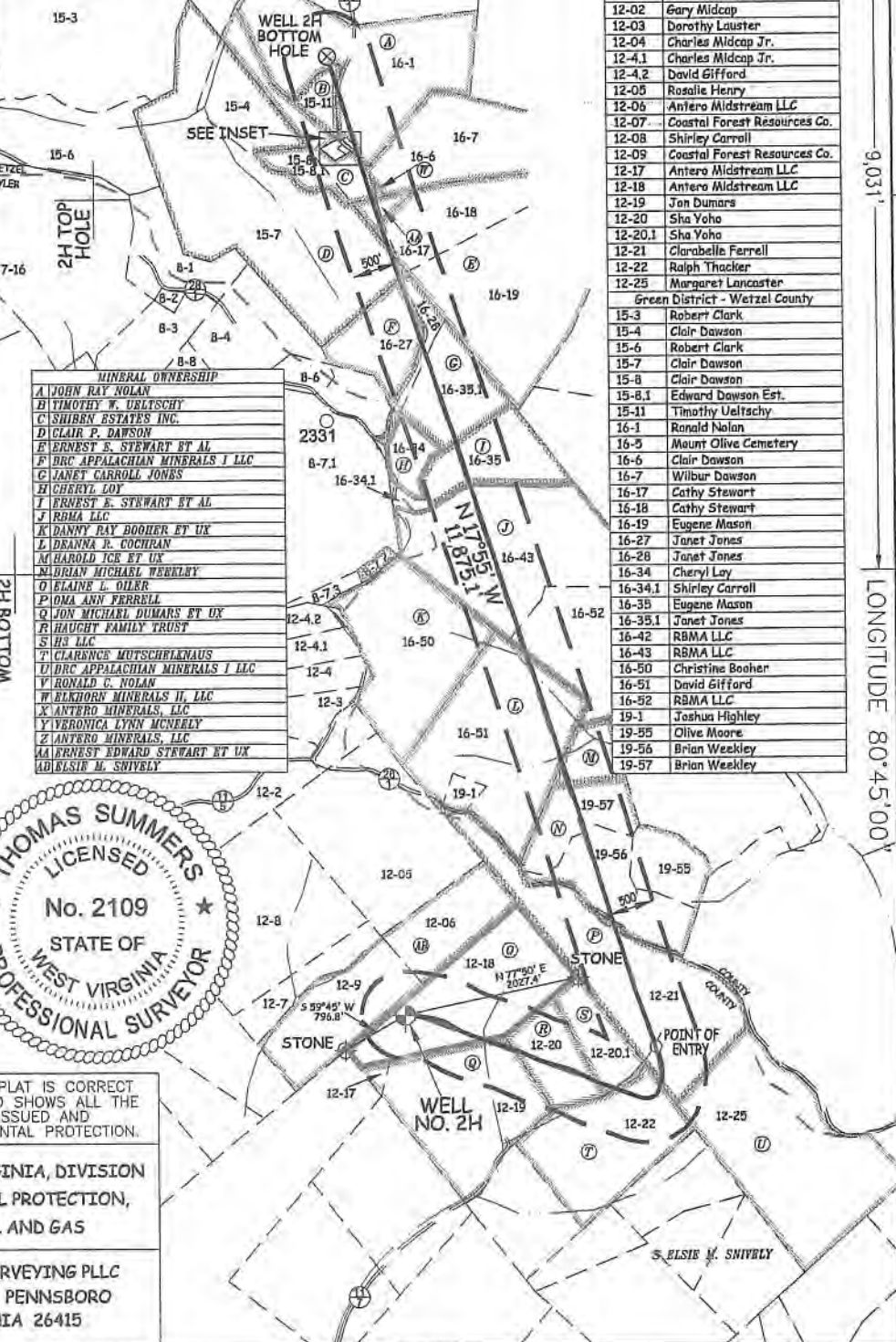
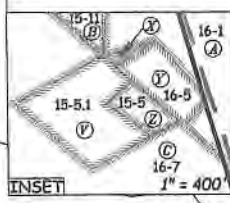


Table listing mineral ownership for Ellsworth District - Tyler County and Green District - Wetzel County, including names and well numbers.

Table listing mineral ownership for various individuals and companies, including names and well numbers.

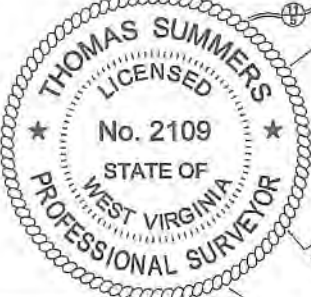
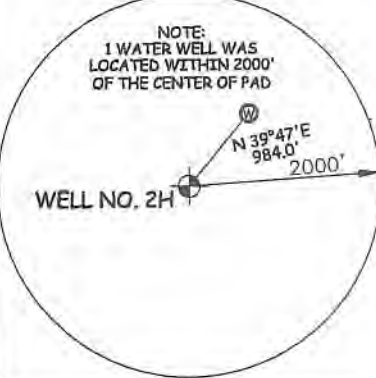
WV NORTH ZONE GRID NORTH

4,777'

9,031'

LONGITUDE 80°45'00"

LONGITUDE 80°45'00"



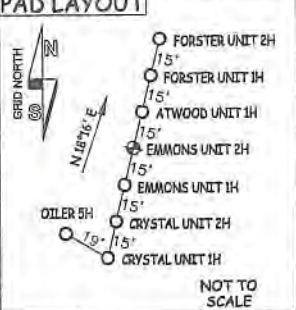
I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



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 # 20-014WA DRAWING # EMMONS2HAD SCALE 1" = 2000' MINIMUM DEGREE OF ACCURACY SUBMETER PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

LEGEND: Surface Owner Boundary Lines +/-, Interior Surface Tracts +/-, Proposed Well Path, As Drilled Well Path. THOMAS SUMMERS P.S. 2109 DATE 05/11/23 OPERATOR'S WELL# EMMONS 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 - 095 - 02802 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT LOCATION: ELEVATION 1,223' -AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK QUADRANGLE PORTER FALLS 7.5' DISTRICT ELLSWORTH COUNTY TYLER SURFACE OWNER ANTERO MIDSTREAM LLC ACREAGE 50 ACRES +/- OIL & GAS ROYALTY OWNER ELAINE L. OILER; JON MICHAEL DUMARS ET UX; LEASE ACREAGE 50 AC.±; 47.5 AC.±; HAUGHT FAMILY TRUST; H3 LLC; CLARENCE MUTSCHELKNAUS; OMA ANN FERRELL; BRIAN MICHAEL WEEKLEY 16.25 AC.±; 14 AC.±; 45 AC.±; 67 AC.±; 45 AC.±; HAROLD ICE ET UX; DEANNA R. COCHRAN; RBMA LLC; ERNEST E. STEWART ET AL.; JANET CARROLL JONES; BRC APPALACHIAN MINERALS I LLC 10 AC.±; 67 AC.±; 119.75 AC.±; 26 AC.±; 26.5 AC.±; 15 AC.±; CLAIR P. DAWSON; ERNEST E. STEWART ET AL.; ERNEST E. STEWART ET AL.; SHIBEN ESTATES INC.; VERONICA LYNN MCNEELY; TIMOTHY W. UELTSCHY; JOHN RAY NOLAN 120.5 AC.±; 93.15 AC.±; 3 AC.±; 54.5 AC.±; 0.3 AC.±; 60.72 AC.±; 5.2 AC.± PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL OTHER 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 6,902' TVD 19,919' MD WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT KEVIN ELLIS ADDRESS 1815 WYNKOOP ST. ADDRESS 535 WHITE OAKS BLVD DENVER, CO 80202 BRIDGEPORT, WV 26330

COUNTY NAME

PERMIT

09/22/2023

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2/1/2023	19791.9	19747.6	60	Marcellus
2	2/2/2023	19708.62759	19542.7655	60	Marcellus
3	2/2/2023	19507.1931	19341.331	60	Marcellus
4	2/3/2023	19305.75862	19139.8966	60	Marcellus
5	2/3/2023	19104.32414	18938.4621	60	Marcellus
6	2/3/2023	18902.88966	18737.0276	60	Marcellus
7	2/3/2023	18701.45517	18535.5931	60	Marcellus
8	2/3/2023	18500.02069	18334.1586	60	Marcellus
9	2/4/2023	18298.58621	18132.7241	60	Marcellus
10	2/4/2023	18097.15172	17931.2897	60	Marcellus
11	2/4/2023	17895.71724	17729.8552	60	Marcellus
12	2/5/2023	17694.28276	17528.4207	60	Marcellus
13	2/5/2023	17492.84828	17326.9862	60	Marcellus
14	2/5/2023	17291.41379	17125.5517	60	Marcellus
15	2/5/2023	17089.97931	16924.1172	60	Marcellus
16	2/6/2023	16888.54483	16722.6828	60	Marcellus
17	2/6/2023	16687.11034	16521.2483	60	Marcellus
18	2/6/2023	16485.67586	16319.8138	60	Marcellus
19	2/7/2023	16284.24138	16118.3793	60	Marcellus
20	2/7/2023	16082.8069	15916.9448	60	Marcellus
21	2/7/2023	15881.37241	15715.5103	60	Marcellus
22	2/7/2023	15679.93793	15514.0759	60	Marcellus
23	2/8/2023	15478.50345	15312.6414	60	Marcellus
24	2/8/2023	15277.06897	15111.2069	60	Marcellus
25	2/8/2023	15075.63448	14909.7724	60	Marcellus
26	2/8/2023	14874.2	14708.3379	60	Marcellus
27	2/9/2023	14672.76552	14506.9034	60	Marcellus
28	2/9/2023	14471.33103	14305.469	60	Marcellus
29	2/9/2023	14269.89655	14104.0345	60	Marcellus
30	2/10/2023	14068.46207	13902.6	60	Marcellus
31	2/10/2023	13867.02759	13701.1655	60	Marcellus
32	2/10/2023	13665.5931	13499.731	60	Marcellus
33	2/10/2023	13464.15862	13298.2966	60	Marcellus
34	2/11/2023	13262.72414	13096.8621	60	Marcellus
35	2/11/2023	13061.28966	12895.4276	60	Marcellus
36	2/11/2023	12859.85517	12693.9931	60	Marcellus
37	2/11/2023	12658.42069	12492.5586	60	Marcellus
38	2/12/2023	12456.98621	12291.1241	60	Marcellus
39	2/12/2023	12255.55172	12089.6897	60	Marcellus
40	2/12/2023	12054.11724	11888.2552	60	Marcellus
41	2/12/2023	11852.68276	11686.8207	60	Marcellus
42	2/12/2023	11651.24828	11485.3862	60	Marcellus
43	2/13/2023	11449.81379	11283.9517	60	Marcellus
44	2/13/2023	11248.37931	11082.5172	60	Marcellus
45	2/14/2023	11046.94483	10881.0828	60	Marcellus
46	2/14/2023	10845.51034	10679.6483	60	Marcellus
47	2/14/2023	10644.07586	10478.2138	60	Marcellus
48	2/15/2023	10442.64138	10276.7793	60	Marcellus
49	2/15/2023	10241.2069	10075.3448	60	Marcellus
50	2/15/2023	10039.77241	9873.91034	60	Marcellus
51	2/16/2023	9838.337931	9672.47586	60	Marcellus
52	2/16/2023	9636.903448	9471.04138	60	Marcellus
53	2/16/2023	9435.468966	9269.6069	60	Marcellus
54	2/17/2023	9234.034483	9068.17241	60	Marcellus
55	2/17/2023	9032.6	8866.73793	60	Marcellus
56	2/17/2023	8831.165517	8665.30345	60	Marcellus
57	2/18/2023	8629.731034	8463.86897	60	Marcellus
58	2/18/2023	8428.296552	8262.43448	60	Marcellus
59	2/18/2023	8226.862069	8061	60	Marcellus

RECEIVED
Office of Oil and Gas

JUN 23 2023

WV Department of
Environmental Protection

09/22/2023

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	2/1/2023	73.65	8230	6726	3777	112110	184447	N/A
2	2/2/2023	83.34	8579	6539	3911	397620	390872	N/A
3	2/2/2023	84.22	8831	5257	4151	397260	308887	N/A
4	2/3/2023	79.82	8640	6122	3638	398578	298824	N/A
5	2/3/2023	80.97	8424	5599	4624	415320	314455	N/A
6	2/3/2023	80.54048	8313.42	4895.42	4009.718	412550	312374	N/A
7	2/3/2023	80.6	8705	6831	4087	407320	294427	N/A
8	2/3/2023	79.49	8565	5373	3920	417300	290791	N/A
9	2/4/2023	85.16	8515	6150	3636	415260	297094	N/A
10	2/4/2023	87.78	8711	5660	3929	398560	290053	N/A
11	2/4/2023	84.06	8572	8173	3871	407880	287165	N/A
12	2/5/2023	83.88	8609	8337	3889	409230	287840	N/A
13	2/5/2023	89.44	8675	5146	3936	410000	295596	N/A
14	2/5/2023	88.37	8649	4898	3836	415310	288696	N/A
15	2/5/2023	89.39	8695	6009	3563	397030	281215	N/A
16	2/6/2023	90.93	8666	6260	4155	415240	298509	N/A
17	2/6/2023	89.36	8627	5128	3949	414760	292226	N/A
18	2/6/2023	88.83	8464	5258	3864	418520	284972	N/A
19	2/7/2023	92.98255	8724.806	6757.36	3830.972	406580	288651	N/A
20	2/7/2023	90.71	8455	4949	4480	416300	297565	N/A
21	2/7/2023	91.68	8634	5797	4311	417680	290229	N/A
22	2/7/2023	92.76	8527	5859	4040	414270	290031	N/A
23	2/8/2023	90.42	8748	6684	4126	414537	289339	N/A
24	2/8/2023	87.27	8739	6363	3906	414930	283778	N/A
25	2/8/2023	95	8756	4818	3636	413660	295548	N/A
26	2/8/2023	91.57	8673	5985	3683	414130	289768	N/A
27	2/9/2023	95.59	8626	5925	3713	407310	283666	N/A
28	2/9/2023	97.14	8693	5980	3628	411210	291987	N/A
29	2/9/2023	90.68	8556	5553	3288	410670	288877	N/A
30	2/10/2023	96.46	8623	5927	3580	414450	298288	N/A
31	2/10/2023	96.39	8463	5363	3674	417260	309790	N/A
32	2/10/2023	95.25	8626	5759	3551	416070	300827	N/A
33	2/10/2023	92.08	8668	6166	4017	414070	304348	N/A
34	2/11/2023	97.12	8518	4972	4297	412770	306151	N/A
35	2/11/2023	96.69	8600	6077	4305	417460	304595	N/A
36	2/11/2023	96.33	8607	6503	3946	414270	312395	N/A
37	2/11/2023	97.04	8444	5850	4141	400280	305560	N/A
38	2/12/2023	97.51	8332	6321	4210	413170	297987	N/A
39	2/12/2023	97.95	8688	8381	3877	411780	302520	N/A
40	2/12/2023	98.54	8472	5926	3973	406460	302291	N/A
41	2/12/2023	99.47	8418	6638	4058	412350	308206	N/A
42	2/12/2023	98.95	8228	6492	4108	392488	288945	N/A
43	2/13/2023	98.84	8340	7118	3903	416390	305862	N/A
44	2/13/2023	99.09	8307	6723	3917	411437	304698	N/A
45	2/14/2023	98.45	8405	6877	3906	404990	300310	N/A
46	2/14/2023	98.63	8556	6447	4023	415230	308699	N/A
47	2/14/2023	98.85	8419	6145	3961	414840	300282	N/A
48	2/15/2023	97.2	8012	3455	3812	399890	298420	N/A
49	2/15/2023	99.16	8356	6298	4039	416848	293566	N/A
50	2/15/2023	97.14334	8158.899	3703.36	3642.097	416370	291056	N/A
51	2/16/2023	97.35	8306	3982	4018	396750	294215	N/A
52	2/16/2023	94.42	8315	6696	4015	422450	319731	N/A
53	2/16/2023	97.24	7908	4091	4261	417960	300032	N/A
54	2/17/2023	98.43	7928	4447	3991	409760	289103	N/A
55	2/17/2023	99.43	7828	6064	3987	405836	281278	N/A
56	2/17/2023	98.27	7761	6288	3995	408870	286837	N/A
57	2/18/2023	98.63	7767	3429	4452	406080	286947	N/A
58	2/18/2023	99.24	7830	6756	4096	418580	293211	N/A
59	2/18/2023	99.27	7641	6688	3986	412370	294126	N/A
AVERAGE		92.6	8,443	6,909	3,951	23,938,654	17,478,158	0

RECEIVED
Office of Oil and Gas

JUN 23 2023

WV Department of
Environmental Protection

09/22/2023

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Shaly Siltstone, tr LS	90	274	90	274
Sandy Siltstone, Coal	274	334	274	334
Silty Sandstone	334	424	334	424
Shaly Siltstone, occ LS	424	634	424	634
Sandy Siltstone, occ LS	634	964	634	964
Shaly Siltstone, occ SS	964	1,024	964	1,024
Shaly Siltstone	1,024	1,434	1,024	1,434
Sandy Siltstone, occ Shale	1,434	1,524	1,434	1,524
Silty Sandstone, tr coal	1,524	1,614	1,524	1,614
Silty Sandstone, coal, tr shale	1,614	1,734	1,614	1,734
Silty Sandstone, occ shale	1,734	1,884	1,734	1,884
Shaly Sandstone, coal, occ slst	1,884	2,124	1,884	2,124
Silty Sandstone, coal, occ Shale	2,124	2,086	2,124	2,145
Big Lime	2,112	2,776	2,145	2,974
Fifty Foot Sandstone	2,776	2,994	2,948	3,231
Gordon	2,994	3,205	3,205	3,482
Fifth Sandstone	3,205	3,447	3,456	3,769
Bayard	3,447	3,887	3,743	4,310
Speechley	3,887	4,106	4,284	4,576
Balltown	4,106	4,510	4,550	5,041
Bradford	4,510	5,079	5,015	5,715
Benson	5,079	5,540	5,689	6,272
Alexander	5,540	6,684	6,246	7,625
Sycamore	6,542	6,658	7,451	7,599
Middlesex	6,658	6,756	7,599	7,748
Burkett	6,756	6,791	7,748	7,821
Tully	6,791	6,857	7,821	8,013
Marcellus	6,857	NA	8,013	NA

RECEIVED
Office of Oil and Gas

JUN 23 2023

WV Department of
Environmental Protection

09/22/2023

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/1/2023
Job End Date:	2/18/2023
State:	West Virginia
County:	Tyler
API Number:	47-095-02802-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Beech Run Emmons Unit 2H
Latitude:	39.52855000
Longitude:	-80.78238000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,919
Total Base Water Volume (gal):	18,482,623
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
Produced Water Mixture	Halliburton	Base Fluid	Water				
				7732-18-5	100.00000	86.37789	Density = 8.34
Ingredients	Listed Above	Listed Above	Water				
				7732-18-5	100.00000	0.13721	

DM

RECEIVED
 Office of Oil and Gas
 JUN 23 2023
 WV Department of
 Environmental Protection

OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
Chemstream StimSTREAM FR 2800	Chemstream, Inc.	Friction Reducer					
				Listed Below			
HYDROCHLORI C ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
MC B-8614A	MultiChem	Biocide					
				Listed Below			
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
HAI-501	Halliburton	Acid Corrosion 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	13.41446	
			Hydrochloric acid	7647-01-0	30.00000	0.03856	

RECEIVED
 Office of Oil and Gas
 JUN 23 2023
 WV Department of
 Environmental Protection

			Distillates, (petroleum), hydrotreated light	64742-47-8	25.00000	0.01610	
			Guar gum	9000-30-0	100.00000	0.00566	
			Alcohols, C11-14-iso, C-13-rich, ethoxylated	78330-21-9	5.00000	0.00322	
			Glutaraldehyde	111-30-8	30.00000	0.00260	
			Alkyl (C12-16) dimethylbenzyl ammonium chloride	68424-85-1	5.00000	0.00043	
			Methanol	67-56-1	100.00000	0.00024	
			Ammonium persulfate	7727-54-0	100.00000	0.00016	
			Ethanol	64-17-5	1.00000	0.00009	
			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	0.00005	
			Ethoxylated alcohols	Proprietary	5.00000	0.00001	
			Hexadecene	629-73-2	5.00000	0.00001	
			Propargyl alcohol	107-19-7	5.00000	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)

RECEIVED
Office of Oil and Gas
JUN 23 2023
WV Department of
Environmental Protection