

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

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JAN 14 2020

WV Department of
Environmental Protection

API 47 - 095 - 02546 County Tyler District McElroy
Quad Shirley 7.5' Pad Name Alta Pad Field/Pool Name -----
Farm name Stephen Grimm Well Number Braden 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 4360574m Easting 521818m
Landing Point of Curve Northing 4360622.98m Easting 521636.83m
Bottom Hole Northing 4363959m Easting 520566m

Elevation (ft) 827' 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 3/1/2019 Date drilling commenced 12/2/2018 Date drilling ceased 4/21/2019
Date completion activities began 6/12/2019 Date completion activities ceased 8/13/2019
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 29, 66, 369 Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1093, 1159, 1260 Void(s) encountered (Y/N) depths No
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed JEB
2/20/2020

API 47- 095 - 02546 Farm name Stephen Grimm Well number Braden 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"	98'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	506'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2615'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	18795'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6787'		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	294 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	425 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	890 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	835 sx (Lead) 2641 sx (Tail)	14.0 (Lead), 15.2 (Tail)	1.47 (Lead), 1.83 (Tail)		-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 18812' MD, 6586' TVD (BHL), 6673' (Deepest Point Drilled)

Loggers TD (ft) 18812' MD

Deepest formation penetrated Marcellus

Plug back to (ft) N/A

Plug back procedure N/A

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Kick off depth (ft) 6415'

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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- 095 - 02546 Farm name Stephen Grimm Well number Braden 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.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
*PLEASE SEE ATTACHED EXHIBIT 2								

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)

DEPTHS

<u>Marcellus</u>	<u>6580' (TOP)</u> TVD	<u>6868' (TOP)</u> 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 Oil NGL Water GAS MEASURED BY

3448 mcfpd 29 bpd --- bpd 7 bpd 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)
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***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

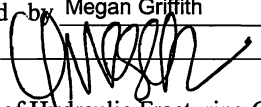
Drilling Contractor Patterson UTI Drilling Company LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company KLX Energy Services
Address 3040 Post Oak Boulevard City Houston State TX Zip 77056

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 1/13/2020

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

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API 47-095-02546 Farm Name Stephen Grimm Well Number Braden Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	6/12/2019	18647		60	Marcellus
2	6/13/2019	18444.77	18615.295	60	Marcellus
3	6/13/2019	18242.54	18413.065	60	Marcellus
4	6/14/2019	18040.31	18210.835	60	Marcellus
5	6/14/2019	17838.08	18008.605	60	Marcellus
6	6/15/2019	17635.85	17806.375	60	Marcellus
7	6/15/2019	17433.62	17604.145	60	Marcellus
8	6/15/2019	17231.39	17401.915	60	Marcellus
9	6/16/2019	17029.16	17199.685	60	Marcellus
10	6/16/2019	16826.93	16997.455	60	Marcellus
11	6/17/2019	16624.7	16795.225	60	Marcellus
12	6/17/2019	16422.47	16592.995	60	Marcellus
13	6/18/2019	16220.24	16390.765	60	Marcellus
14	6/18/2019	16018.01	16188.535	60	Marcellus
15	6/19/2019	15815.78	15986.305	60	Marcellus
16	6/19/2019	15613.55	15784.075	60	Marcellus
17	6/19/2019	15411.32	15581.845	60	Marcellus
18	6/20/2019	15209.09	15379.615	60	Marcellus
19	6/20/2019	15006.86	15177.385	60	Marcellus
20	6/21/2019	14804.63	14975.155	60	Marcellus
21	6/21/2019	14602.4	14772.925	60	Marcellus
22	6/22/2019	14400.17	14570.695	60	Marcellus
23	6/22/2019	14197.94	14368.465	60	Marcellus
24	6/23/2019	13995.71	14166.235	60	Marcellus
25	6/23/2019	13793.48	13964.005	60	Marcellus
26	6/24/2019	13591.25	13761.775	60	Marcellus
27	6/24/2019	13389.02	13559.545	60	Marcellus
28	6/25/2019	13186.79	13357.315	60	Marcellus
29	6/25/2019	12984.56	13155.085	60	Marcellus
30	6/25/2019	12782.33	12952.855	60	Marcellus
31	6/26/2019	12580.1	12750.625	60	Marcellus
32	6/26/2019	12377.87	12548.395	60	Marcellus
33	6/27/2019	12175.64	12346.165	60	Marcellus
34	6/27/2019	11973.41	12143.935	60	Marcellus
35	6/27/2019	11771.18	11941.705	60	Marcellus
36	6/28/2019	11568.95	11739.475	60	Marcellus
37	6/29/2019	11366.72	11537.245	60	Marcellus
38	6/29/2019	11164.49	11335.015	60	Marcellus
39	6/30/2019	10962.26	11132.785	60	Marcellus
40	6/30/2019	10760.03	10930.555	60	Marcellus
41	7/1/2019	10557.8	10728.325	60	Marcellus
42	7/1/2019	10355.57	10526.095	60	Marcellus
43	7/2/2019	10153.34	10323.865	60	Marcellus
44	7/2/2019	9951.11	10121.635	60	Marcellus
45	7/2/2019	9748.88	9919.405	60	Marcellus
46	7/3/2019	9546.65	9717.175	60	Marcellus
47	7/3/2019	9344.42	9514.945	60	Marcellus
48	7/4/2019	9142.19	9312.715	60	Marcellus
49	7/4/2019	8939.96	9110.485	60	Marcellus
50	7/4/2019	8737.73	8908.255	60	Marcellus
51	7/5/2019	8535.5	8706.025	60	Marcellus
52	7/5/2019	8333.27	8503.795	60	Marcellus
53	7/6/2019	8131.04	8301.565	60	Marcellus
54	7/6/2019	7928.81	8099.335	60	Marcellus
55	7/8/2019	7726.58	7897.105	60	Marcellus
56	7/9/2019	7524.35	7694.875	60	Marcellus
57	7/9/2019	7322.12	7492.645	60	Marcellus
58	7/10/2019	7119.89	7290.415	60	Marcellus
59	7/10/2019	6917.66	7088.185	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	6/12/2019	64.1497	7819.722	6978	4586	174800	4975.466	N/A
2	6/13/2019	69.4458	7858.34	5378	4535	402400	7620.326	N/A
3	6/13/2019	69.31607	8009.124	5364	5186	400750	7146.18	N/A
4	6/14/2019	67.66883	8098.232	5888	4644	402900	7128.87	N/A
5	6/14/2019	75.76444	8612.972	5934	4191	403200	6951.573	N/A
6	6/15/2019	75.52988	8630.489	5976	4258	402700	7086.253	N/A
7	6/15/2019	73.12341	8758.622	6694	4576	404350	7167.315	N/A
8	6/15/2019	69.51547	8415.44	6287	5112	403200	7115.785	N/A
9	6/16/2019	73.54313	8485.804	6268	4494	402950	7020.925	N/A
10	6/16/2019	76.28359	8662.156	6450	4962	403350	7161.545	N/A
11	6/17/2019	70.89049	8683.398	5842	4462	402900	7012.815	N/A
12	6/17/2019	75.23198	8636.516	5736	4768	402550	7172.655	N/A
13	6/18/2019	71.90581	8604.057	5875	4810	402830	7001.545	N/A
14	6/18/2019	76.5438	8547.587	6188	4685	403850	7049.685	N/A
15	6/19/2019	73.18286	8667.281	5975	4474	402750	7018.295	N/A
16	6/19/2019	79.50389	8520.093	6039	4470	402800	7092.575	N/A
17	6/19/2019	74.53233	8466.56	6225	4647	403060	6995.385	N/A
18	6/20/2019	75.29986	8376.532	6432	4537	404600	6993.745	N/A
19	6/20/2019	81.64601	8563.242	6300	4254	402800	7091.095	N/A
20	6/21/2019	79.34585	8598.923	6278	4585	402850	7057.225	N/A
21	6/21/2019	72.79249	8575.319	6313	4621	402900	7163.575	N/A
22	6/22/2019	77.87767	8622.526	6297	4773	402850	7163.605	N/A
23	6/22/2019	76.33469	8183.153	6324	4646	403100	7061.555	N/A
24	6/23/2019	76.62485	8682.213	6158	5235	403030	6919.215	N/A
25	6/23/2019	76.8225	8243.653	6315	4321	403120	7039.085	N/A
26	6/24/2019	75.96263	8603.246	6293	4475	402850	6902.465	N/A
27	6/24/2019	78.0543	8479.354	6193	4604	403050	7018.475	N/A
28	6/25/2019	78.88963	8626.242	6434	4828	402700	6877.525	N/A
29	6/25/2019	76.34239	8458.405	6108	4535	402650	7074.405	N/A
30	6/25/2019	82.74052	8118.961	5893	5273	403320	6946.445	N/A
31	6/26/2019	75.92377	8408.128	6534	5082	403200	6988.625	N/A
32	6/26/2019	73.93021	8526.14	6602	4306	403200	6967.655	N/A
33	6/27/2019	80.52545	8492.128	5549	5083	402900	6937.805	N/A
34	6/27/2019	77.34038	7670.484	5822	5285	402760	6851.705	N/A
35	6/27/2019	81.75584	8099.606	6028	5060	402400	6996.375	N/A
36	6/28/2019	76.35546	7892.904	5950	5331	403050	6861.145	N/A
37	6/29/2019	72.04172	8285.812	6398	4972	402600	10331.97	N/A
38	6/29/2019	74.76181	8010.729	6492	5270	402500	9189.095	N/A
39	6/30/2019	75.76585	7982.444	6438	4604	402350	7861.125	N/A
40	6/30/2019	62.6187	8246.204	6455	5147	402650	12455.19	N/A
41	7/1/2019	76.84733	7275.471	6111	4857	402600	6903.155	N/A
42	7/1/2019	78.499	7527.849	6320	4150	402500	7599.915	N/A
43	7/2/2019	78.26789	7711.588	6540	4487	403450	6959.63	N/A
44	7/2/2019	78.16498	7687.159	6413	4758	402550	6902.04	N/A
45	7/2/2019	81.06679	7818.462	6900	4959	402450	6786.58	N/A
46	7/3/2019	80.24176	7860.375	6386	4909	403550	7456.52	N/A
47	7/3/2019	80.98563	7786.881	6670	4637	402500	6827.64	N/A
48	7/4/2019	82.5658	7778.616	6550	5651	402930	6822.12	N/A
49	7/4/2019	80.4625	7591.248	6564	5067	403100	6734.92	N/A
50	7/4/2019	84.5956	7840.702	6100	4781	403550	7018.45	N/A
51	7/5/2019	85.44826	7858.873	6706	4576	403300	6767.34	N/A
52	7/5/2019	84.0053	7807.395	6317	5205	402950	6748.02	N/A
53	7/6/2019	80.6423	7910.32	6637	5317	408750	6691.33	N/A
54	7/6/2019	80.28846	7951.322	7010	5056	403400	6639.53	N/A
55	7/8/2019	81.10318	7871.046	6888	5047	402600	6651.14	N/A
56	7/9/2019	83.52117	7681.265	6335	4549	403400	6731.2	N/A
57	7/9/2019	82.3338	7346.831	6195	4694	403350	7015.52	N/A
58	7/10/2019	78.89718	7124.539	5884	5172	403300	6756.02	N/A
59	7/10/2019	82.18232	7104.424	6556	3977	402850	6661.2	N/A
	AVG	75.3	8,294	6,200	4,731	17,902,320	326,618	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
Shaly Sandstone	0	155	-25	155
Sandy Shale	155	215	155	215
Shaly Sandstone	215	255	215	255
Sandstone	255	395	255	395
Shaly Sandstone	395	505	395	505
Sandstone	505	575	505	575
Carbonaceous shale	575	615	575	615
Sandstone	615	765	615	765
Shaly sandstone tr coal	765	1,025	765	1,025
Shaly Siltstone	1,025	1,305	1,025	1,305
Sandstone	1,305	1,455	1,305	1,455
Sandy siltstone	1,455	1,685	1,455	1,685
Sandstone	1,685	1,745	1,685	1,745
Big Lime	1,770	2,654	1,745	2,654
Fifty Foot Sandstone	2,654	2,717	2,629	2,717
Gordon	2,717	3,031	2,692	3,032
Fifth Sandstone	3,031	3,096	3,007	3,098
Bayard	3,096	3,618	3,073	3,632
Speechley	3,618	3,920	3,607	3,941
Balltown	3,920	4,472	3,916	4,510
Bradford	4,472	4,911	4,485	4,962
Benson	4,911	5,176	4,937	5,237
Alexander	5,176	6,396	5,212	6,518
Sycamore	6,198	6,366	6,295	6,488
Middlesex	6,366	6,497	6,493	6,683
Burkett	6,497	6,526	6,688	6,737
Tully	6,526	6,580	6,742	6,868
Marcellus	6,580	NA	6,868	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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LATITUDE 39°25'00"

10,872'

LATITUDE 39°27'30" 3,171' TO BOTTOM HOLE

LONGITUDE 80°45'00"

8,146'

LONGITUDE 80°42'30"

12,201' TO BOTTOM HOLE

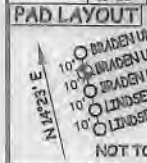
Antero Resources Corporation Well No. Braden Unit 2H

Table with 4 columns: TM-Par, Surface Owner, Book/Pg, Acres. Lists various land parcels and owners.

AS DRILLED DATA: WELL 2H TOP HOLE INFORMATION: N: 328,168ft E: 1,647,646ft LAT: 39°23'39.49" LON: 80°44'48.49" BOTTOM HOLE INFORMATION: N: 339,345ft E: 1,643,725ft LAT: 39°25'29.41" LON: 80°45'40.42" 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.

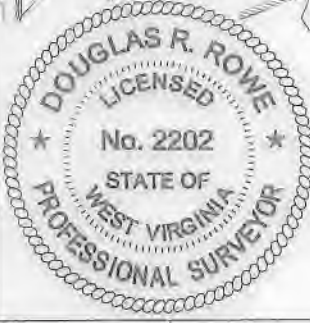
(NAD) 83 (UTM) ZONE 17 COORDS: WELL 2H TOP HOLE INFORMATION: N: 4,360,574m E: 521,818m BOTTOM HOLE INFORMATION: N: 4,363,959m E: 520,566m

WV NORTH ZONE GRID NORTH



NOTE: 6 WATER WELLS WERE LOCATED WITHIN 2000' OF CENTER OF PAD

Table with 3 columns: LINE, BEARING, DISTANCE. Lists well locations W1 through W6.



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 # 18-002WA, DRAWING # BRADEN2HAD, 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. Signature of Douglas R. Rowe, DATE 11/19/19, OPERATOR'S WELL# BRADEN UNIT #2H

- 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
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.

WR-35 As Drilled

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 095 02546 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT LOCATION: ELEVATION 827' AS BUILT WATERSHED McELROY DISTRICT McELROY COUNTY TYLER QUADRANGLE TH-CENTERPOINT 7.5' BH-SHIRLEY 7.5' SURFACE OWNER STEPHEN GRIMM ACREAGE 44.38 ACRES +/- OIL & GAS ROYALTY OWNER M. V. B. GEORGE; MARY JO FOSTER LIVING TRUST; DONNA FOGUS; RANDI MICHAEL; ELIZA UNDERWOOD ET AL; BAYARD SWEENEY JR. ET UX LEASE ACREAGE 300 AC±; 94 AC±; 60.91 AC±; 320.94 AC±; 216 AC±; 111.11 AC±; BRC APPALACHIAN MINERALS 1, LLC; LIFE & ABEY, LLC; TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,586' TVD 18,812' MD WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

LATITUDE 39°25'00"

10,872'

LATITUDE 39°27'30" 3,171' TO BOTTOM HOLE

LONGITUDE 80°45'00"

8,146'

LONGITUDE 80°42'30"

12,201' TO BOTTOM HOLE

Antero Resources Corporation Well No. Braden Unit 2H

Table with 4 columns: TM-Par, Surface Owner, Book/Pg, Acres. Lists various land parcels and owners.

AS DRILLED DATA: WELL 2H TOP HOLE INFORMATION: N: 328,168ft E: 1,647,646ft LAT: 39°23'39.49" LON: 80°44'48.49" BOTTOM HOLE INFORMATION: N: 339,345ft E: 1,643,725ft LAT: 39°25'29.41" LON: 80°45'40.42" 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: 4,360,574m E: 521,818m BOTTOM HOLE INFORMATION: N: 4,363,959m E: 520,566m

WV NORTH ZONE GRID NORTH

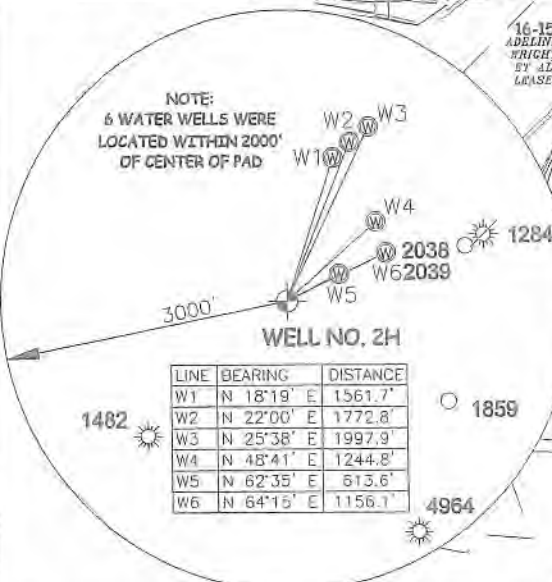
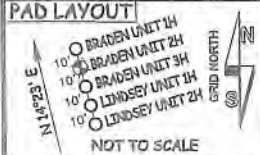


Table with 3 columns: LINE, BEARING, DISTANCE. Lists well path details.

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



Table with 4 columns: TM-Par, Surface Owner, Book/Pg, Acres. Lists various land parcels and owners.

JOB # 18-002WA DRAWING # BRADEN2HAD 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 11/19/19 OPERATOR'S WELL # BRADEN UNIT #2H

- 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 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.

WR-35 'As-Drilled'

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 095 02546 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT LOCATION: ELEVATION 827' AS BUILT WATERSHED McELROY CREEK QUADRANGLE TH-CENTERPOINT 7.5' BH-SHIRLEY 7.5' DISTRICT McELROY COUNTY TYLER SURFACE OWNER STEPHEN GRIMM ACREAGE 44.38 ACRES +/- OIL & GAS ROYALTY OWNER M. V. B. GEORGE; MARY JO FOSTER LIVING TRUST; LEASE ACREAGE 300 AC±; 94 AC±; DONNA FOGUS; RANDI MICHAEL; ELIZA UNDERWOOD ET AL; BAYARD SWEENEY JR. ET UX 60.91 AC±; 320.94 AC±; 216 AC±; 111.11 AC±; BRC APPALACHIAN MINERALS 1, LLC; LIFE & ABEY, LLC; 29.5 AC±; 33 AC±; 35 AC±; PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL CLEAN OUT & REPLUG (SPECIFY) AS DRILLED PLUG & ABANDON TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,596' TVD 18,812' MD WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313 DENVER, CO 80202

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/12/2019
Job End Date:	7/10/2019
State:	West Virginia
County:	Tyler
API Number:	47-095-02546-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Braden 2H
Latitude:	39.39430280
Longitude:	-80.74680270
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,586
Total Base Water Volume (gal):	18,510,352
Total Base Non Water Volume:	0



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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	86.46489	
DWP-641	CWS	Friction Reducer					
				Listed Below			

DAP-103	CWS	Iron Control					
				Listed Below			
SaniFrac 8844	CWS	Biocide					
				Listed Below			
Sand (Proppant)	CWS	Propping Agent					
				Listed Below			
Hydrochloric Acid	CWS	Clean Perforations					
				Listed Below			
CalGel 4000	CWS	Gel Slurry					
				Listed Below			
DAP-902	CWS	Scale Inhibitor					
				Listed Below			
Calbreak 5501	CWS	Breaker					
				Listed Below			
CI-9100G	CWS	Corrosion Inhibitor					
				Listed Below			
Other Chemical (s)	Listed Above	See Trade Name (s) List					

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				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	13.18457	
			Illite	12173-60-3	1.00000	0.13183	
			Hydrochloric acid	7647-01-0	37.00000	0.07708	
			Polymer	26100-47-0	45.00000	0.02155	
			Guar gum	9000-30-0	60.00000	0.01532	
			Distillates (petroleum), hydrotreated middle	64742-46-7	60.00000	0.01532	
			Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.01437	
			Goethite	1310-14-1	0.10000	0.01318	
			Apatite	64476-38-6	0.10000	0.01318	
			Biotite	1302-27-8	0.10000	0.01318	
			Ilmenite	98072-94-7	0.10000	0.01318	
			Polyethylene glycol mixture	25322-68-3	54.50000	0.00606	
			Ammonium chloride	12125-02-9	11.00000	0.00527	
			2,2-Dibromo-3-Nitrilopropionamide	10222-01-2	20.00000	0.00222	
			Sorbitan monooleate	1338-43-8	4.00000	0.00192	
			Polyethylene glycol monooleate	9004-96-0	3.00000	0.00144	
			Quaternary ammonium compounds, bis (hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	5.00000	0.00128	
			Sorbitol tetraoleate	61723-83-9	2.00000	0.00096	
			Citric acid	77-92-9	60.00000	0.00070	
			Amines, tallow alkyl, ethoxylated	61791-26-2	1.00000	0.00048	
			Sodium bromide	7647-15-6	4.00000	0.00044	
			Ammonium Persulfate	7727-54-0	100.00000	0.00039	

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			Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether	37251-67-5	1.50000	0.00038	
			Dibromoacetonitrile	3252-43-5	3.00000	0.00033	
			Alkyloxypolyethyleneoxy ethanol	84133-50-6	0.50000	0.00024	
			Vinylidene chloride-methyl acrylate copolymer	25038-72-6	20.00000	0.00008	
			Acrylamide	79-06-1	0.10000	0.00005	
			Ethylene Glycol	107-21-1	40.00000	0.00004	
			Diethylene glycol, monomethyl ether	34590-94-8	20.00000	0.00002	
			Isopropyl alcohol	67-63-0	5.00000	0.00001	
			Ethoxylated Alcohols	68131-39-5	10.00000	0.00001	
			Formic acid	64-18-6	10.00000	0.00001	
			Cinnamaldehyde	104-55-2	10.00000	0.00001	
			Tar bases, quinolone derivs, benzyl chloride- quatenized	72480-70-7	10.00000	0.00001	
			Organic Acid Salts	9003-04-7			Proprietary Additive Concentration
			Glycol	57-55-6			Proprietary Additive Concentration

* 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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