

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

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AN 14 2020

WV Department of
Environmental Protection

API 47 - 095 - 02503 County Tyler District McElroy
Quad Shirley 7.5' Pad Name Alta Pad Field/Pool Name -----
Farm name Stephen Grimm Well Number Braden Unit 3H
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 4360571m Easting 521818m
Landing Point of Curve Northing 4360533.59m Easting 521881.34m
Bottom Hole Northing 4364105m Easting 520732m

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

Reviewed by:

JOB
2/20/2020

API 47-095 - 02503 Farm name Stephen Grimm Well number Braden Unit 3H

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"	113'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	507'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2638'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	19571'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6922'		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 sks	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	420 sks	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	900 sks	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	625 sks (Lead) 2641 sks (Tail)	14.0 (Lead), 15.2 (Tail)	1.47 (Lead), 1.83 (Tail)		>500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 19591' MD, 6594' TVD (BHL), 6660' (Deepest Point Drilled) Loggers TD (ft) 19591' MD

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6509'

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 - 1

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 - 02503 Farm name Stephen Grimm Well number Braden Unit 3H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
Marcellus	6603' (TOP) TVD	6981' (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 3863 mcfpd Oil 31 bpd NGL --- bpd Water 2 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**

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Please insert additional pages as applicable.

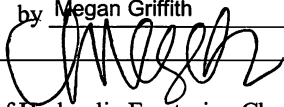
Drilling Contractor Patterson UTI Drilling Company LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

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

API 47-095-02503 Farm Name Stephen Grimm Well Number Braden Unit 3H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	6/11/2019	19422		60	Marcellus
2	6/11/2019	19213.26	19389.21	60	Marcellus
3	6/12/2019	19004.52	19180.47	60	Marcellus
4	6/12/2019	18795.78	18971.73	60	Marcellus
5	6/13/2019	18587.04	18762.99	60	Marcellus
6	6/13/2019	18378.3	18554.25	60	Marcellus
7	6/14/2019	18169.56	18345.51	60	Marcellus
8	6/14/2019	17960.82	18136.77	60	Marcellus
9	6/14/2019	17752.08	17928.03	60	Marcellus
10	6/15/2019	17543.34	17719.29	60	Marcellus
11	6/15/2019	17334.6	17510.55	60	Marcellus
12	6/16/2019	17125.86	17301.81	60	Marcellus
13	6/16/2019	16917.12	17093.07	60	Marcellus
14	6/17/2019	16583	16766	60	Marcellus
15	6/17/2019	16384	16567	60	Marcellus
16	6/17/2019	16185	16368	60	Marcellus
17	6/18/2019	15986	16169	60	Marcellus
18	6/18/2019	15787	15970	60	Marcellus
19	6/19/2019	15588	15771	60	Marcellus
20	6/19/2019	15389	15572	60	Marcellus
21	6/20/2019	15190	15373	60	Marcellus
22	6/20/2019	14991	15174	60	Marcellus
23	6/21/2019	14792	14975	60	Marcellus
24	6/21/2019	14593	14776	60	Marcellus
25	6/22/2019	14394	14577	60	Marcellus
26	6/22/2019	14195	14378	60	Marcellus
27	6/22/2019	13996	14179	60	Marcellus
28	6/23/2019	13797	13980	60	Marcellus
29	6/24/2019	13598	13781	60	Marcellus
30	6/24/2019	13399	13582	60	Marcellus
31	6/24/2019	13200	13383	60	Marcellus
32	6/25/2019	13001	13184	60	Marcellus
33	6/25/2019	12802	12985	60	Marcellus
34	6/26/2019	12603	12786	60	Marcellus
35	6/26/2019	12404	12587	60	Marcellus
36	6/26/2019	12205	12388	60	Marcellus
37	6/27/2019	12006	12189	60	Marcellus
38	6/27/2019	11807	11990	60	Marcellus
39	6/28/2019	11608	11791	60	Marcellus
40	6/28/2019	11409	11592	60	Marcellus
41	6/29/2019	11210	11393	60	Marcellus
42	6/30/2019	11011	11194	60	Marcellus
43	6/30/2019	10812	10995	60	Marcellus
44	7/1/2019	10613	10796	60	Marcellus
45	7/1/2019	10414	10597	60	Marcellus
46	7/2/2019	10215	10398	60	Marcellus
47	7/2/2019	10016	10199	60	Marcellus
48	7/2/2019	9817	10000	60	Marcellus
49	7/3/2019	9618	9801	60	Marcellus
50	7/3/2019	9419	9602	60	Marcellus
51	7/4/2019	9220	9403	60	Marcellus
52	7/4/2019	9021	9204	60	Marcellus
53	7/4/2019	8822	9005	60	Marcellus
54	7/5/2019	8623	8806	60	Marcellus
55	7/5/2019	8424	8607	60	Marcellus
56	7/6/2019	8225	8408	60	Marcellus
57	7/6/2019	8026	8209	60	Marcellus
58	7/8/2019	7827	8010	60	Marcellus
59	7/9/2019	7628	7811	60	Marcellus
60	7/12/2019	7429	7612	60	Marcellus
61	7/12/2019	7230	7413	60	Marcellus
62	7/12/2019	7031	7214	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	6/11/2019	64.31749	8033.835	5968	4881	174250	5978.7	N/A
2	6/11/2019	66.48071	8014.221	5567	4960	405050	8989.72	N/A
3	6/12/2019	66.71519	7907.601	5562	4983	404650	8969.51	N/A
4	6/12/2019	69.20708	8074.281	5753	4638	404800	8886.76	N/A
5	6/13/2019	68.80369	7995.555	5625	4923	405100	8904.91	N/A
6	6/13/2019	68.51667	8225.845	5516	4711	435300	9306.75	N/A
7	6/14/2019	67.59035	7847.599	5752	4969	410226	8838.44	N/A
8	6/14/2019	67.68909	8139.891	6698	4820	404500	8891.47	N/A
9	6/14/2019	72.68194	8582.34	6496	4634	411961	8844.05	N/A
10	6/15/2019	73.99805	8734.749	6630	4573	405800	8677.38	N/A
11	6/15/2019	78.62228	8769.545	6380	4695	405410	8704.26	N/A
12	6/16/2019	74.0181	8440.308	5996	4976	404950	8873.23	N/A
13	6/16/2019	78.73082	8480.332	6149	4416	404800	8880.11	N/A
14	6/17/2019	77.60191	8643.285	6173	4804	404800	8772.6	N/A
15	6/17/2019	77.93162	8508.848	5967	4659	404700	8769.27	N/A
16	6/17/2019	78.6048	8492.062	6061	4905	404890	8788.51	N/A
17	6/18/2019	74.98917	8016.638	5904	5084	404500	10464.94	N/A
18	6/18/2019	74.84346	8273.165	6081	4813	404600	9329.67	N/A
19	6/19/2019	79.00743	8296.523	6219	4869	404850	8766.46	N/A
20	6/19/2019	76.11792	8430.195	5952	4671	404800	8771.64	N/A
21	6/20/2019	76.45854	8324.796	5966	4464	404550	8720.48	N/A
22	6/20/2019	77.77848	8178.682	6067	4642	404500	8685.07	N/A
23	6/21/2019	76.88507	8626.899	6492	4715	404810	8662.13	N/A
24	6/21/2019	75.16533	8470.304	6105	4563	404150	8680.42	N/A
25	6/22/2019	75.2276	8657.438	6243	4835	404700	8626.75	N/A
26	6/22/2019	73.73338	8475.174	6518	5271	407280	8689.35	N/A
27	6/22/2019	78.94161	8619.465	6470	5065	404370	8716.52	N/A
28	6/23/2019	75.48373	8309.421	6548	4795	405000	8644.81	N/A
29	6/24/2019	76.33138	8634.459	6309	4647	404260	8698.91	N/A
30	6/24/2019	77.97287	8466.304	6109	4808	405100	8687.71	N/A
31	6/24/2019	76.95518	8675.219	6109	4598	404450	8541.89	N/A
32	6/25/2019	79.29492	8188.201	6288	4977	405200	8644.58	N/A
33	6/25/2019	75.75802	8428.22	6130	5045	404900	8838.99	N/A
34	6/26/2019	78.69742	8208.473	6726	5407	405210	9630.77	N/A
35	6/26/2019	76.84389	8463.812	6634	5109	405100	8756.35	N/A
36	6/26/2019	82.50409	8552.603	6510	5422	404450	8710.05	N/A
37	6/27/2019	76.11104	8158.307	5745	5156	404750	8566.05	N/A
38	6/27/2019	77.2	7897	6176	4291	404450	8525.9	N/A
39	6/28/2019	67.48871	8311.4	6394	4786	404650	13619.55	N/A
40	6/28/2019	79.19232	8285.293	6178	4810	404600	8690.23	N/A
41	6/29/2019	74.46613	7940.614	6568	4891	404750	9035	N/A
42	6/30/2019	81.30836	7941.302	6792	5000	404400	8704.78	N/A
43	6/30/2019	68.83627	8325.994	6659	4410	404570	14495.35	N/A
44	7/1/2019	80.01498	7954.354	6600	4644	404850	8562.654	N/A
45	7/1/2019	78.9002	7547.395	6742	5060	404400	8509.78	N/A
46	7/2/2019	80.85703	7857.041	6282	5396	404770	8678.57	N/A
47	7/2/2019	78.89961	7612.954	6651	4538	404770	8636.36	N/A
48	7/2/2019	78.75259	7736.706	6420	4749	404700	8794.55	N/A
49	7/3/2019	82.82451	8168.215	6964	5034	404550	8640.34	N/A
50	7/3/2019	79.97206	7922.77	6748	4499	404650	8371.53	N/A
51	7/4/2019	80.81159	7998.681	6943	4716	404700	8592.99	N/A
52	7/4/2019	79.45084	7947.413	7161	4922	404550	8499.11	N/A
53	7/4/2019	76.60453	8003.365	6950	5241	405200	8410.64	N/A
54	7/5/2019	85.99651	7894.171	6711	4976	405200	8456.23	N/A
55	7/5/2019	84.54515	7837.994	6279	4604	404750	8375.83	N/A
56	7/6/2019	82.82127	7650.846	5972	5023	405350	8464.48	N/A
57	7/6/2019	83.59392	7516.361	6071	4830	404850	8335.53	N/A
58	7/8/2019	84.70178	7004.352	5307	5238	405050	8472.77	N/A
59	7/9/2019	84.05878	6937.803	5640	4953	404650	8466.86	N/A
60	7/12/2019	78.22543	6972.146	6027	5084	406450	9834.52	N/A
61	7/12/2019	83.98529	7019.429	5628	4530	405450	8401.84	N/A
62	7/12/2019	85.35935	6860.097	5705	4816	404900	8424.08	N/A
	AVG	75.0	8,301	6,212	4,831	18,029,387	405,052	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	0	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	1,748
Big Lime	1,770	2,647	1,748	2,651
Fifty Foot Sandstone	2,647	2,716	2,626	2,720
Gordon	2,716	3,055	2,695	3,061
Fifth Sandstone	3,055	3,122	3,036	3,129
Bayard	3,122	3,619	3,104	3,637
Speechley	3,619	3,919	3,612	3,952
Balltown	3,919	4,476	3,927	4,541
Bradford	4,476	4,916	4,516	5,015
Benson	4,916	5,184	4,990	5,298
Alexander	5,184	6,415	5,273	6,596
Sycamore	6,209	6,385	6,363	6,566
Middlesex	6,385	6,516	6,571	6,769
Burkett	6,516	6,547	6,774	6,831
Tully	6,547	6,603	6,836	6,981
Marcellus	6,603	NA	6,981	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"

10,869'

LATITUDE 39°27'30" 2,631' TO BOTTOM HOLE

LONGITUDE 80°45'00"

8,156'

LONGITUDE 80°42'30"

11,678' TO BOTTOM HOLE

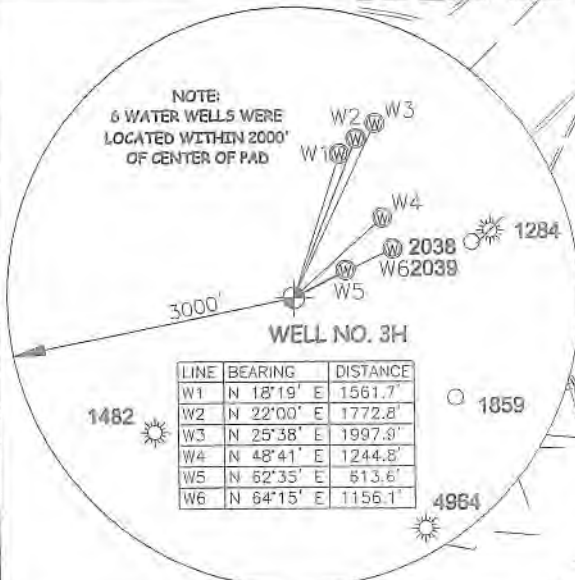
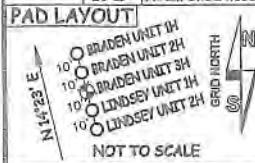
Antero Resources Corporation Well No. Braden Unit 3H

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

AS DRILLED DATA: WELL 3H TOP HOLE INFORMATION: N: 328,158ft E: 1,647,648ft... BOTTOM HOLE INFORMATION: N: 339,814ft E: 1,644,278ft...

(NAD) 83 (UTM) ZONE 17 COORDS: WELL 3H TOP HOLE INFORMATION: N: 4,360,571m E: 521,818m... BOTTOM HOLE INFORMATION: N: 4,364,105m E: 520,732m

WV NORTH ZONE GRID NORTH



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.

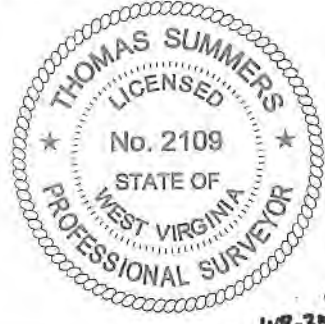


STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS. WILLOW LAND SURVEYING PLLC, 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

- 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.

JOB # 18-002WA
DRAWING # BRADEN3HAD
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
THOMAS SUMMERS P.S. 2109
DATE 11/21/19
OPERATOR'S WELL# BRADEN UNIT 3H



WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 095 02503
(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; C.B. MORRIS & S.A. SMITH IRREVOCABLE TRUST; LEASE ACREAGE 300 AC±; 50 AC±;
DONNA FOGUS; ELIZA UNDERWOOD ET AL; BRC APPALACHIAN MINERALS 1, LLC; LIFE & ABEY, LLC; 60.91 AC±; 216 AC±; 29.5 AC±; 33 AC±;
LIFE & ABEY, LLC; BAYARD SWEENEY JR. ET UX 35 AC±; 111.11 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 6,594' TVD 19,591' 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

As-Drilled

LATITUDE 39°25'00"

10,869'

LATITUDE 39°27'30" 2,631' TO BOTTOM HOLE

LONGITUDE 80°45'00"

8,156'

LONGITUDE 80°42'30"

11,678' TO BOTTOM HOLE

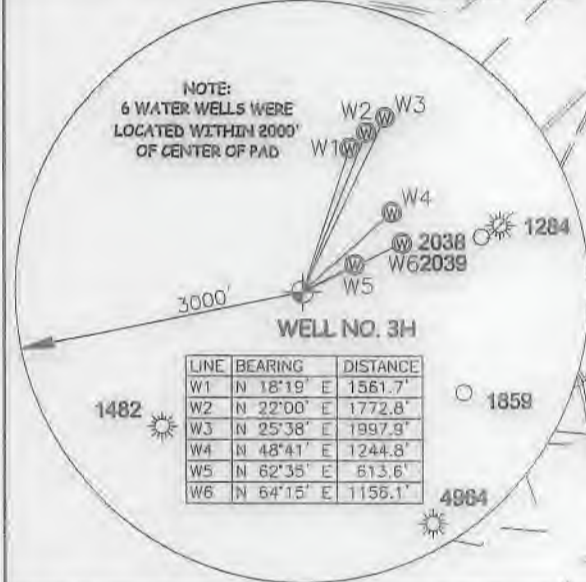
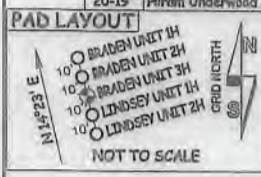
Antero Resources Corporation Well No. Braden Unit 3H

TM-Par	Surface Owner	Book/Pg	Acres
11-40	Hunter Real Estate LLC	379/806	106.87 AC
16-4	KES Investments 4 LLC	351/516	332.6 AC
16-4.1	Howard Pratt	329/706	77.75 AC
16-5	KES Investments 4 LLC	351/513	16 AC
16-6	KES Investments 4 LLC	351/513	33.75 AC
16-12	Boyd Nichols Est.	180/166	25 AC
16-13	Boyd Nichols Est.	180/166	25 AC
16-21	Maxine Volyni	329/499	85 AC
16-22	Albert Ricci Jr.	346/625	104 AC
17-9	Myra Parker	366/478	176 AC
17-17	Anthony Clark	334/201	31.48 AC
17-18	Gary Milley	311/195	13.51 AC
17-18.1	Myra Parker	366/478	6 AC
17-18.2	Gary Milley	300/72	10.96 AC
17-18.3	Gary Milley	331/12	6.53 AC
17-19	Cliffon Weasley	268/266	11.1 AC
17-20	Brandy Gresswalt	354/448	30 AC
19-23	John Shepherd	330/115	18 AC
20-1	Eloise Bailey	320/567	24.73 AC
20-1.1	Judy Weasley	247/238	0.37 AC
20-1.2	Charles Baird	345/468	18.54 AC
20-1.3	Charles Baird	345/468	9.07 AC
20-1.4	Mark Harris	371/286	2.147 AC
20-4	Lillian Corvell	351/131	1.13 AC
20-5	Lloyd Pitts	320/426	3.00 AC
20-5.1	Jeffrey Ranshaw	335/779	2.636 AC
20-14	Forest Moore Jr.	253/83	0.81 AC
20-15	Gary Hamilton	363/209	30 AC
20-16	Larry Frazee	344/777	94 AC
20-17	Stephen Grimm	363/331	44.38 AC
20-17.1	Ralph Sweeney	301/2	12.466 AC
20-17.2	Mary Lemasters	WB34/23	8.919 AC
20-18	Mary Lemasters	WB34/23	26.75 AC
20-19	Hiram Underwood Jr.	251/110	0.7 AC

AS DRILLED DATA:
 WELL 3H TOP HOLE INFORMATION:
 N: 328,158ft E: 1,647,648ft
 LAT: 39°23'39.39" LON: 80°44'48.45"
 BOTTOM HOLE INFORMATION:
 N: 339,814ft E: 1,644,278ft
 LAT: 39°25'34.12" LON: 80°45'33.46"
 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 3H TOP HOLE INFORMATION:
 N: 4,360,571m E: 521,818m
 BOTTOM HOLE INFORMATION:
 N: 4,364,105m E: 520,732m

WV NORTH ZONE GRID NORTH



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

- 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
 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.

JOB # 18-002WA
 DRAWING # BRADEN3HAD
 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

THOMAS SUMMERS P.S. 2109
 DATE 11/21/18
 OPERATOR'S WELL# BRADEN UNIT #3H



WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 - 095 - 02503
 (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; C.B. MORRIS & S.A. SMITH IRREVOCABLE TRUST; LEASE ACREAGE 300 AC +/- 50 AC +/-
 DONNA FOGUS; ELIZA UNDERWOOD ET AL; BRC APPALACHIAN MINERALS 1, LLC; LIFE & ABEY, LLC; 60.91 AC +/- 216 AC +/- 29.5 AC +/- 33 AC +/-
 LIFE & ABEY, LLC; BAYARD SWEENEY JR. ET UX 35 AC +/- 111.11 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 6,594' TVD 19,591' 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

COUNTY NAME PERMIT

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/11/2019
Job End Date:	7/12/2019
State:	West Virginia
County:	Tyler
API Number:	47-095-02503-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Braden 3H
Latitude:	39.39427500
Longitude:	-80.74679160
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,595
Total Base Water Volume (gal):	24,076,108
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	99.80391	
DWP-641	CWS	Friction Reducer					
				Listed Below			

Calbreak 5501	CWS	Breaker					
				Listed Below			
DAP-902	CWS	Scale Inhibitor					
				Listed Below			
CalGel 4000	CWS	Gel Slurry					
				Listed Below			
CI-9100G	CWS	Corrosion Inhibitor					
				Listed Below			
SaniFrac 8844	CWS	Biocide					
				Listed Below			
Sand (Proppant)	CWS	Propping Agent					
				Listed Below			
Hydrochloric Acid	CWS	Clean Perforations					
				Listed Below			
DAP-103	CWS	Iron Control					
				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.							
			Hydrochloric acid	7647-01-0	37.00000	0.08077	
			Polymer	26100-47-0	45.00000	0.02551	
			Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.01701	
			Distillates (petroleum), hydrotreated middle	64742-46-7	60.00000	0.01648	
			Guar gum	9000-30-0	60.00000	0.01648	
			Apatite	64476-38-6	0.10000	0.01237	
			Polyethylene glycol mixture	25322-68-3	54.50000	0.00718	
			Ammonium chloride	12125-02-9	11.00000	0.00624	
			2,2-Dibromo-3-Nitrilopropionamide	10222-01-2	20.00000	0.00263	
			Sorbitan monooleate	1338-43-8	4.00000	0.00227	
			Polyethylene glycol monooleate	9004-96-0	3.00000	0.00170	
			Quaternary ammonium compounds, bis (hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	5.00000	0.00137	
			Crystalline silica (Quartz)	14808-60-7	5.00000	0.00137	
			Sorbitol tetraoleate	61723-83-9	2.00000	0.00113	
			Citric acid	77-92-9	60.00000	0.00073	
			Amines, tallow alkyl, ethoxylated	61791-26-2	1.00000	0.00057	
			Sodium bromide	7647-15-6	4.00000	0.00053	
			Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether	37251-67-5	1.50000	0.00041	
			Ammonium Persulfate	7727-54-0	100.00000	0.00041	
			Dibromoacetonitrile	3252-43-5	3.00000	0.00039	
			Alkyloxypolyethyleneoxy ethanol	84133-50-6	0.50000	0.00028	

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			Vinylidene chloride-methyl acrylate copolymer	25038-72-6	20.00000	0.00008	
			Acrylamide	79-06-1	0.10000	0.00006	
			Ethylene Glycol	107-21-1	40.00000	0.00004	
			Diethylene glycol, monomethyl ether	34590-94-8	20.00000	0.00002	
			Formic acid	64-18-6	10.00000	0.00001	
			Isopropyl alcohol	67-63-0	5.00000	0.00001	
			Cinnamaldehyde	104-55-2	10.00000	0.00001	
			Tar bases, quinolone derivs, benzyl chloride- quatenized	72480-70-7	10.00000	0.00001	
			Ethoxylated Alcohols	68131-39-5	10.00000	0.00001	
			Glycol	57-55-6			Proprietary Additive Concentration
			Organic Acid Salts	9003-04-7			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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