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

API 47 - 017 - 06878 County Doddridge District West Union
Quad Smithburg 7.5' Pad Name Deets Pad Field/Pool Name -----
Farm name Mary E. Deets and/or Paul A. Smith Well Number Mondeo 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 4351729m Easting 523686m
Landing Point of Curve Northing 4351693.22m Easting 523926.01m
Bottom Hole Northing 4347341m Easting 525404m

Elevation (ft) 1376' 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 12/21/2018 Date drilling commenced 6/23/2019 Date drilling ceased 9/17/2019
Date completion activities began 11/8/2019 Date completion activities ceased 1/13/2020
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 196', 221' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1381', 1843', 1966' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 583', 891' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:
6/5/2020

API 47- 017 - 06878 Farm name Mary E. Deets and/or Paul A. Smith Well number Mondeo 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"	106'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	388'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2589'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	22809'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	7385'		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	120	0'	8 Hrs.
Surface	Class A	400 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1080 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	730 sx (Lead) 3496 sx (Tail)	14.5 (Lead), 15.2 (Tail)	1.40 (Lead), 1.26 (Tail)		~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 22829' MD, 7053' TVD (BHL), 7056' (Deepest Point Drilled) Loggers TD (ft) 22829' MD

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

Plug back procedure N/A

Kick off depth (ft) 6600'

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- 017 - 06878 Farm name Mary E. Deets and/or Paul A. Smith Well number Mondeo Unit 3H

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.

WR-35
Rev. 8/23/13

API 47- 017 - 06878 Farm name Mary E. Deets and/or Paul A. Smith Well number Mondeo Unit 3H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	7075' (TOP) TVD	7417' (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	Oil	NGL	Water	GAS MEASURED BY
	3050 mcfpd	18 bpd	--- bpd	278 bpd	□ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT 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_2S, ETC)

***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 _____

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

API 47-017-06878 Farm Nam Mary E. Deets and/or Paul A. Smith Well Number Mondeo Unit 3H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	11/10/2019	22701.2	22658.1	60	Marcellus
2	11/10/2019	22620.595	22456.07	60	Marcellus
3	11/11/2019	22420.765	22256.24	60	Marcellus
4	11/11/2019	22220.935	22056.41	60	Marcellus
5	11/11/2019	22021.105	21856.58	60	Marcellus
6	11/12/2019	21821.275	21656.75	60	Marcellus
7	11/12/2019	21621.445	21456.92	60	Marcellus
8	11/12/2019	21421.615	21257.09	60	Marcellus
9	11/13/2019	21221.785	21057.26	60	Marcellus
10	11/13/2019	21021.955	20857.43	60	Marcellus
11	11/13/2019	20822.125	20657.6	60	Marcellus
12	11/14/2019	20622.295	20457.77	60	Marcellus
13	11/14/2019	20422.465	20257.94	60	Marcellus
14	11/14/2019	20222.635	20058.11	60	Marcellus
15	11/14/2019	20022.805	19858.28	60	Marcellus
16	11/15/2019	19822.975	19658.45	60	Marcellus
17	11/15/2019	19623.145	19458.62	60	Marcellus
18	11/15/2019	19423.315	19258.79	60	Marcellus
19	11/15/2019	19223.485	19058.96	60	Marcellus
20	11/16/2019	19023.655	18859.13	60	Marcellus
21	11/16/2019	18823.825	18659.3	60	Marcellus
22	11/16/2019	18623.995	18459.47	60	Marcellus
23	11/16/2019	18424.165	18259.64	60	Marcellus
24	11/17/2019	18224.335	18059.81	60	Marcellus
25	11/17/2019	18024.505	17859.98	60	Marcellus
26	11/18/2019	17824.675	17660.15	60	Marcellus
27	11/18/2019	17624.845	17460.32	60	Marcellus
28	11/18/2019	17425.015	17260.49	60	Marcellus
29	11/18/2019	17225.185	17060.66	60	Marcellus
30	11/18/2019	17025.355	16860.83	60	Marcellus
31	11/19/2019	16825.525	16661	60	Marcellus
32	11/19/2019	16625.695	16461.17	60	Marcellus
33	11/19/2019	16425.865	16261.34	60	Marcellus
34	11/19/2019	16226.035	16061.51	60	Marcellus
35	11/19/2019	16026.205	15861.68	60	Marcellus
36	11/20/2019	15826.375	15661.85	60	Marcellus
37	11/20/2019	15626.545	15462.02	60	Marcellus
38	11/21/2019	15426.715	15262.19	60	Marcellus
39	11/21/2019	15226.885	15062.36	60	Marcellus
40	11/21/2019	15027.055	14862.53	60	Marcellus
41	11/21/2019	14827.225	14662.7	60	Marcellus
42	11/21/2019	14627.395	14462.87	60	Marcellus
43	11/22/2019	14427.565	14263.04	60	Marcellus
44	11/22/2019	14227.735	14063.21	60	Marcellus
45	11/22/2019	14027.905	13863.38	60	Marcellus
46	11/22/2019	13828.075	13663.55	60	Marcellus
47	11/23/2019	13628.245	13463.72	60	Marcellus
48	11/23/2019	13428.415	13263.89	60	Marcellus
49	11/23/2019	13228.585	13064.06	60	Marcellus
50	11/23/2019	13028.755	12864.23	60	Marcellus
51	11/23/2019	12828.925	12664.4	60	Marcellus
52	11/24/2019	12629.095	12464.57	60	Marcellus
53	11/24/2019	12429.265	12264.74	60	Marcellus
54	11/24/2019	12229.435	12064.91	60	Marcellus
55	11/24/2019	12029.605	11865.08	60	Marcellus
56	11/24/2019	11829.775	11665.25	60	Marcellus
57	11/25/2019	11629.945	11465.42	60	Marcellus
58	11/25/2019	11430.115	11265.59	60	Marcellus
59	11/25/2019	11230.285	11065.76	60	Marcellus
60	11/26/2019	11030.455	10865.93	60	Marcellus
61	11/26/2019	10830.625	10666.1	60	Marcellus
62	11/26/2019	10630.795	10466.27	60	Marcellus
63	11/27/2019	10430.965	10266.44	60	Marcellus
64	11/27/2019	10231.135	10066.61	60	Marcellus
65	11/27/2019	10031.305	9866.78	60	Marcellus
66	11/28/2019	9831.475	9666.95	60	Marcellus
67	11/28/2019	9631.645	9467.12	60	Marcellus
68	11/28/2019	9431.815	9267.29	60	Marcellus
69	11/29/2019	9231.985	9067.46	60	Marcellus
70	11/29/2019	9032.155	8867.63	60	Marcellus
71	11/29/2019	8832.325	8667.8	60	Marcellus
72	11/29/2019	8632.495	8467.97	60	Marcellus
73	11/30/2019	8432.665	8268.14	60	Marcellus
74	11/30/2019	8232.835	8068.31	60	Marcellus
75	11/30/2019	8033.005	7868.48	60	Marcellus
76	12/1/2019	7833.175	7668.65	60	Marcellus
77	12/1/2019	7633.345	7468.82	60	Marcellus

API 47-017-06878 Farm Name Mary E. Deets and/or Paul A. Smith Well Number Mondeo Unit 3H

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	11/10/2019	77.81	8805	6079	4883	161460	5244.333	N/A
2	11/10/2019	83.92	9620	5703	5117	400100	7445.548	N/A
3	11/11/2019	80.98	9523	5552	5119	402380	7388.19	N/A
4	11/11/2019	89.9	9805	5724	4892	400140	7422.31	N/A
5	11/11/2019	91.16	9633	5623	4978	402240	7485.19	N/A
6	11/12/2019	90.52	9837	5393	4401	403800	7912.881	N/A
7	11/12/2019	93.76	9507	5367	4863	401680	7430.167	N/A
8	11/12/2019	93.03	10061	5466	4906	404120	7620.738	N/A
9	11/13/2019	93.92	9472	4655	4631	402100	8168.905	N/A
10	11/13/2019	91.56	10060	6169	4978	404540	7552.595	N/A
11	11/13/2019	90.46	9369	6129	4882	402560	7918.857	N/A
12	11/14/2019	90.9	10077	5301	5789	408425	7501.071	N/A
13	11/14/2019	95.09	9793	5350	4643	412180	7470.357	N/A
14	11/14/2019	94.33	10078	5328	4914	406140	7380.452	N/A
15	11/14/2019	94.43	9734	5686	4861	409420	7404.5	N/A
16	11/15/2019	93.42	10075	5618	4758	406270	7397.571	N/A
17	11/15/2019	94.49	10070	5366	4708	408300	7459.238	N/A
18	11/15/2019	95.3	9455	5509	4936	403500	7418.81	N/A
19	11/15/2019	94.55	9716	5336	4171	403860	7386.262	N/A
20	11/16/2019	94.48	9835	5402	4955	399520	7331.881	N/A
21	11/16/2019	95.05	9895	5355	4795	408340	7311.381	N/A
22	11/16/2019	95.54	10029	5338	4338	404360	7422.048	N/A
23	11/16/2019	94.93	9664	5282	4509	413260	7398.857	N/A
24	11/17/2019	94.73	9996	5137	4686	402360	7233.571	N/A
25	11/17/2019	87.92	9056	5845	4512	402240	10092.29	N/A
26	11/18/2019	93.92	9947	5492	4798	409740	7301.786	N/A
27	11/18/2019	95.08	9809	5595	4415	402440	7225.429	N/A
28	11/18/2019	94.85	10061	5477	4908	399380	7169.762	N/A
29	11/18/2019	95.87	9774	5700	4686	406660	7168.262	N/A
30	11/18/2019	94.65	9710	5236	4593	405260	7198.381	N/A
31	11/19/2019	94.9	9482	5347	4546	404020	7115.69	N/A
32	11/19/2019	92.95	9887	4489	4944	404580	7160.357	N/A
33	11/19/2019	94.86	9694	5072	4353	404980	7170.095	N/A
34	11/19/2019	95.38	10077	5708	4691	403300	7081.024	N/A
35	11/19/2019	92.92	8726	5957	4580	399020	7092.024	N/A
36	11/20/2019	93.62	9672	5832	4769	402020	7107.357	N/A
37	11/20/2019	91.94	8900	5409	4779	401760	7206.643	N/A
38	11/21/2019	89.49	9095	4508	4164	405020	7158.214	N/A
39	11/21/2019	86.43	8872	5481	4450	403140	7162.929	N/A
40	11/21/2019	93.6	9075	5344	3875	404420	7577.357	N/A
41	11/21/2019	92.33	9029	5347	3922	402160	7091.857	N/A
42	11/21/2019	93.55	9081	5390	3769	413580	7313.19	N/A
43	11/22/2019	94.07	9063	5437	4073	401300	7227.167	N/A
44	11/22/2019	95.64	9037	5119	4627	408800	7243.571	N/A
45	11/22/2019	94.44	9077	5656	4774	402000	7159.381	N/A
46	11/22/2019	93.69	8847	5073	4575	402760	7219.143	N/A
47	11/23/2019	94.53	8980	4924	4401	397960	7036.238	N/A
48	11/23/2019	93.19	8876	5527	4622	410180	7122.333	N/A
49	11/23/2019	94.69	9010	5471	4155	402860	7074.238	N/A
50	11/23/2019	92.81	8905	5598	4545	398240	6997.452	N/A
51	11/23/2019	95.83	9052	5468	4045	398260	7024.738	N/A
52	11/24/2019	95.57	9065	5363	3945	404500	7084.786	N/A
53	11/24/2019	95.77	8827	5182	3974	400600	6967.714	N/A
54	11/24/2019	94.83	8674	5144	3823	399940	6947.357	N/A
55	11/24/2019	95.45	8915	5076	3716	407100	6992.762	N/A
56	11/24/2019	95.73	8478	5031	3772	399530	7009.976	N/A
57	11/25/2019	95.6	8890	5391	3887	405820	7097	N/A
58	11/25/2019	95.3	8340	5236	3676	403540	6971.952	N/A
59	11/25/2019	95.69	8926	5592	4290	399000	6908.357	N/A
60	11/26/2019	95.18	8869	5234	3765	400940	6962.071	N/A
61	11/26/2019	95.67	8807	4949	3713	397220	6934.19	N/A
62	11/26/2019	94.37	8898	5570	4286	400760	6838.262	N/A
63	11/27/2019	93.72	8956	5351	3988	399460	6874.833	N/A
64	11/27/2019	89.55	8246	5198	3920	398720	6863.786	N/A
65	11/27/2019	95.4	9063	5155	4409	399120	6874.69	N/A
66	11/28/2019	94.36	8837	5133	3669	400660	7190.19	N/A
67	11/28/2019	96.12	8733	5266	3851	398260	6865.5	N/A
68	11/28/2019	84.88	7927	4976	3663	398460	6796.81	N/A
69	11/29/2019	85.01	8018	5045	3552	398200	6829.548	N/A
70	11/29/2019	84.13	8097	5465	3736	397440	6815.857	N/A
71	11/29/2019	85.23	8035	5104	3566	398520	6788.857	N/A
72	11/29/2019	85.04	8056	5303	4106	399140	6757.048	N/A
73	11/30/2019	85.32	7780	5004	3676	399060	6820.286	N/A
74	11/30/2019	84.94	7801	5094	3084	399500	6759.286	N/A
75	11/30/2019	85.07	7912	5342	3429	398000	6748.571	N/A
76	12/1/2019	84.7	8060	5667	3579	398420	6721.381	N/A
77	12/1/2019	85.11	7642	5153	3008	399820	6617.548	N/A
	AVG	**92.5**	**9,594**	**5,447**	**4,663**	**17,554,875**	**324,569**	TOTAL

API 47-017-06878 Farm Name Mary E. Deets and/or Paul A. Smith Well Number Mondeo Unit 3H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	**TOP DEPTH (TVD) From Surface**	**BOTTOM DEPTH (TVD) From Surface**	**TOP DEPTH (MD) From Surface**	**BOTTOM DEPTH (MD) From Surface**
Shaly Sandstone	75	135	75	135
Sandy Shale	135	195	135	195
Shaly Sandstone	195	275	195	275
Sandstone	275	315	275	315
Shaly Sandstone	315	455	315	455
Sandstone	455	535	455	535
Carbonaceous shale	535	655	535	655
Sandstone	655	875	655	875
Shaly sandstone tr coal	875	1,055	875	1,055
Shaly Siltstone	1,055	1,255	1,055	1,255
Sandstone	1,255	1,455	1,255	1,455
Sandy siltstone	1,455	1,535	1,455	1,535
Sandstone	1,535	2,147	1,535	N/A
Big Lime	2,172	2,876	2,151	2,883
Fifty Foot Sandstone	2,876	2,956	2,858	2,963
Gordon	2,956	3,239	2,938	3,246
Fifth Sandstone	3,239	3,576	3,221	3,586
Bayard	3,576	4,017	3,561	4,038
Speechley	4,017	4,418	4,013	4,452
Balltown	4,418	4,820	4,427	4,869
Bradford	4,820	5,352	4,844	5,422
Benson	5,352	5,543	5,397	5,620
Alexander	5,543	6,861	5,595	7,010
Sycamore	6,610	6,831	6,737	6,980
Middlesex	6,831	6,978	6,985	7,194
Burkett	6,978	7,007	7,199	7,249
Tully	7,007	7,075	7,254	7,417
Marcellus	7,075	NA	7,417	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.

ANTERO RESOURCES CORPORATION

Location: Doddridge Co., WV
Field: Doddridge
Facility: Deets Pad
Slot: Slot #03
Well: Mondeo Unit 3H
Wellbore: Mondeo Unit 3H PWB

Plot reference wellpath is Mondeo Unit 3H PWP Rev-B.0	Grid System: NAD27 / UTM Zone 17 North, US feet
True vertical depths are referenced to H&P 317 (RKB)	North Reference: Grid north
Measured depths are referenced to H&P 317 (RKB)	Scale: True distance
H&P 317 (RKB) to Mean Sea Level: 1401.5 feet	Depths are in feet
Mean Sea Level to Ground level (At Slot: Slot #03): -1376 feet	Created by: delaset on 2019-09-14
Coordinates are in feet referenced to Slot	Database: WA_MPL_EasternUS_Defn

Location Information

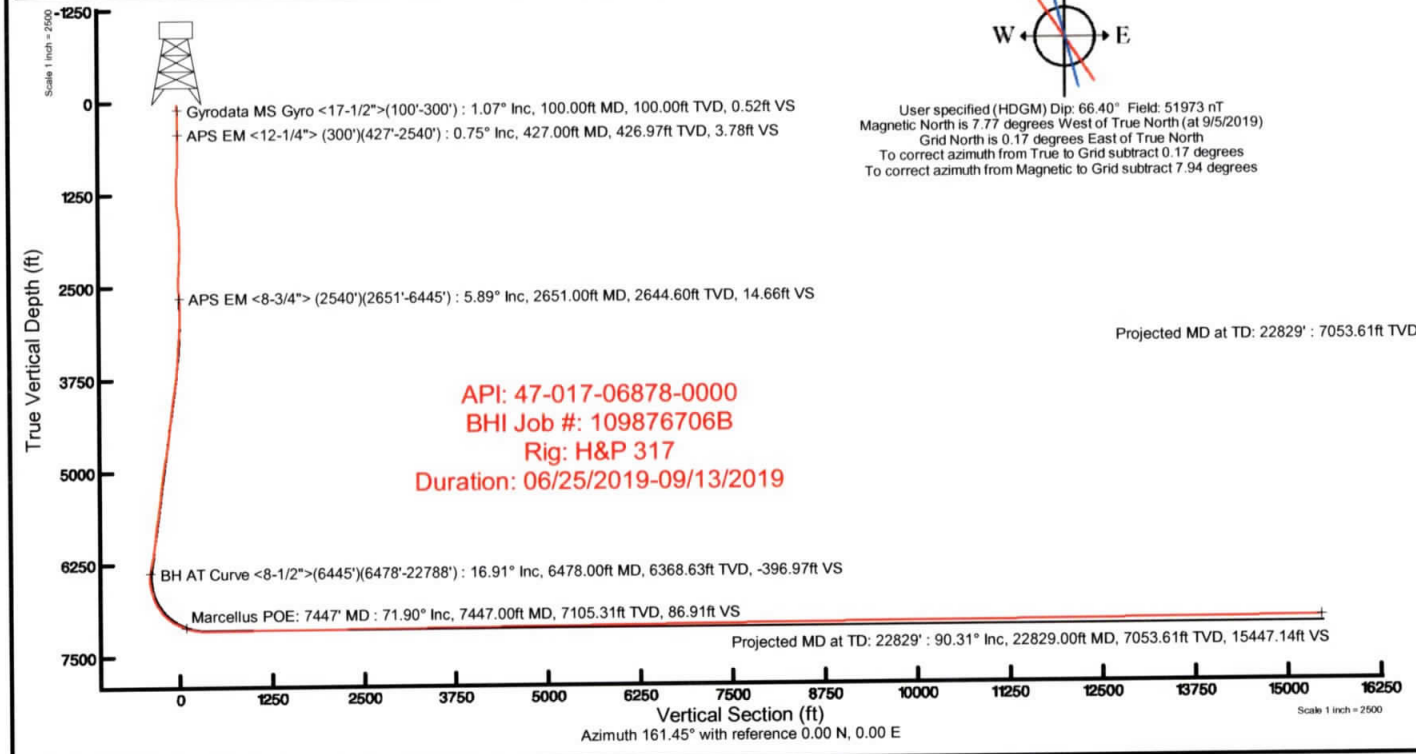
Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Deets Pad			1718082.640	14276561.990	39°18'52.186"N	80°43'31.460"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot #03	19.53	-4.42	1718078.220	14276581.510	39°18'52.379"N	80°43'31.515"W
H&P 317 (RKB) to Ground level (At Slot: Slot #03)					25.5ft	
Mean Sea Level to Ground level (At Slot: Slot #03)					-1376ft	
H&P 317 (RKB) to Mean Sea Level					1401.5ft	

Well Profile Data

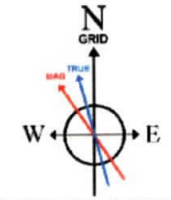
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	2540.00	6.340	231.820	2534.21	-11.57	-8.14	1.59	8.38
Proj. To Bottom	2606.00	6.340	231.820	2599.81	-16.08	-13.87	0.00	10.83
Drill Out Csg	2706.00	6.340	231.820	2699.20	-22.90	-22.55	0.00	14.54
Hold Tangent	3766.60	14.945	41.509	3750.65	44.08	22.57	2.00	-34.61
Curve KOP	6445.08	14.945	41.509	6338.54	561.34	480.36	0.00	-379.36
POE	7432.66	71.128	161.454	7100.00	145.68	758.98	8.00	103.35
Landing Pt.	7702.26	90.000	161.454	7144.00	-105.33	843.19	7.00	368.10
BHL	22808.63	90.000	161.454	7144.00	-14427.21	5648.01	0.00	15474.47

Well Data

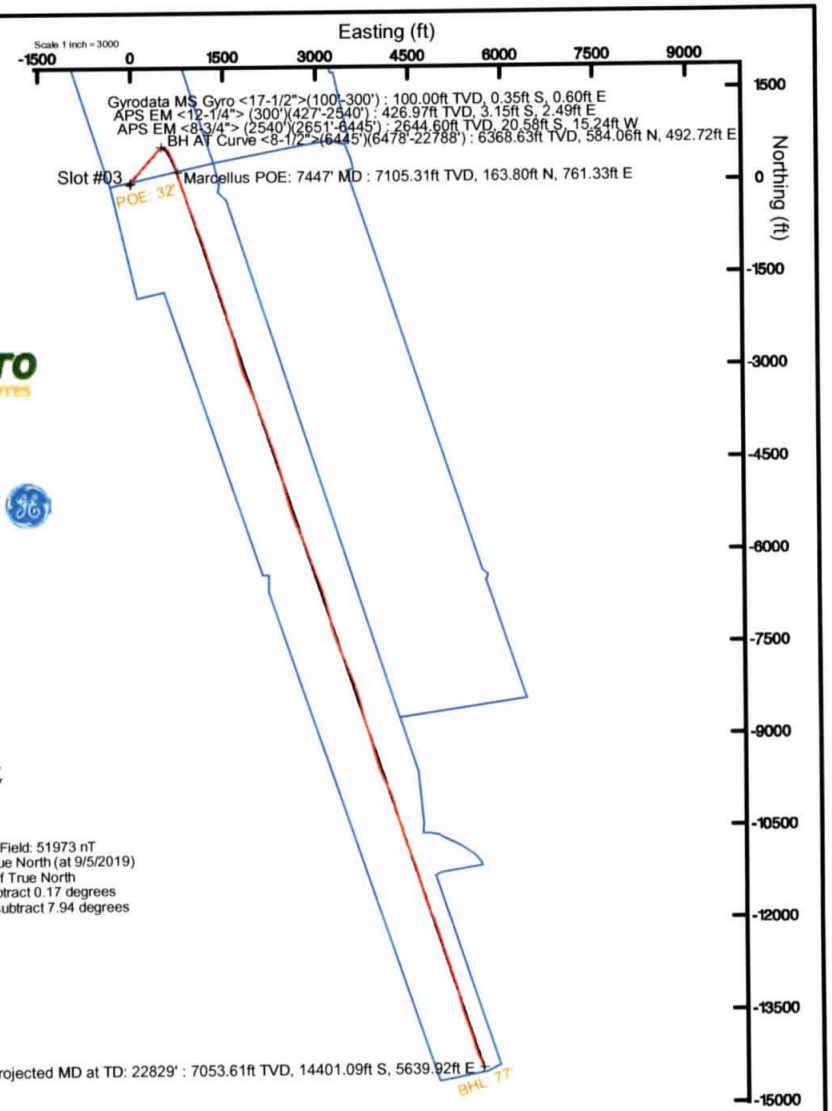
Slot	Well	Wellbore	Wellpath
Slot #03	Mondeo Unit 3H	Mondeo Unit 3H AWB	Mondeo Unit 3H AWP Proj: 22829'
Slot #03	Mondeo Unit 3H	Mondeo Unit 3H PWB	Mondeo Unit 3H PWP Rev-B.0



API: 47-017-06878-0000
BHI Job #: 109876706B
Rig: H&P 317
Duration: 06/25/2019-09/13/2019



User specified (HDGM) Dip: 66.40° Field: 51973 nT
Magnetic North is 7.77 degrees West of True North (at 9/5/2019)
Grid North is 0.17 degrees East of True North
To correct azimuth from True to Grid subtract 0.17 degrees
To correct azimuth from Magnetic to Grid subtract 7.94 degrees



Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/10/2019
Job End Date:	12/1/2019
State:	West Virginia
County:	Doddridge
API Number:	47-017-06878-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Mondeo 3H
Latitude:	39.31455000
Longitude:	-80.72538900
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,148
Total Base Water Volume (gal):	23,236,132
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
Fresh Water	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	55.63433	Density = 8.34
Produced Water	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	30.53166	Density = 8.50

Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.15139	
MC B-8614	Halliburton	Biocide					
				Listed Below			
FORSA SCW4037W SCALE INHIBITOR	Baker Hughes	Scale Inhibitor					
				Listed Below			
CalFrac CalBreak 5501	Calfrac Well Services Corp.	Oxidizer					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
Legend LD-2990	MultiChem	Friction Reducer					
				Listed Below			

Enviro-Syn HCR-7000-WL	Fluid Energy Group	Acid					
				Listed Below			
LD-2950	MultiChem	Friction Reducer					
				Listed Below			
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
FDP-S1296-17	Halliburton	Acid Corrosion Inhibitor					
				Listed Below			
Legend LD-2555	MultiChem	Additive					
				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	13.58974	
			Hydrochloric acid	7647-01-0	30.00000	0.03405	
			Complex Amine Compound	Proprietary	60.00000	0.02305	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01470	
			Proprietary	Proprietary	15.00000	0.00774	
			Complex Amine Compound	Proprietary	60.00000	0.00634	
			Alkanolamine phosphate	Trade Secret	30.00000	0.00442	
			Proprietary	Proprietary	8.00000	0.00423	
			Guar gum	9000-30-0	100.00000	0.00414	
			Methanol	67-56-1	100.00000	0.00324	

			Glutaraldehyde	111-30-8	30.00000	0.00255	
			Polyethoxylated fatty amine salt	61791-26-2	30.00000	0.00075	
			Ethylene glycol	107-21-1	5.00000	0.00074	
			Surfactant	Proprietary	5.00000	0.00053	
			Sobitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00053	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00042	
			Poly(oxy-1,2-ethanediyl), alpha-tridecyl-omega-hydroxy-, branched	69011-36-5	1.00000	0.00038	
			Adipic acid	124-04-9	1.00000	0.00038	
			Ethoxylated alcohols	Proprietary	1.00000	0.00038	
			Alkoxylated polyhydric alcohol	Proprietary	1.00000	0.00011	
			Organic chlrodie compound	Proprietary	1.00000	0.00011	
			Ethoxylated alcohols	Proprietary	1.00000	0.00011	
			Ethanol	64-17-5	1.00000	0.00008	
			Peroxydisulfuric acid ([(HO)S(O)2]2O2), ammonium salt (1:2)	7727-54-0	100.00000	0.00008	
			Modified thiourea polymer	Proprietary	30.00000	0.00006	
			Mixture of dimer and trimer fatty acids of indefinite compostion derived from tall oil	61790-12-3	30.00000	0.00006	
			Ammonium persulfate	7727-54-0	100.00000	0.00005	
			2-Propenoic acid, methyl ester, polymer with 1,1-dichloroethene	25038-72-6	20.00000	0.00002	
			Oxylated phenolic resin	Proprietary	30.00000	0.00002	
			Acrylamide	79-06-1	0.10000	0.00001	
			Organic salt #1	Proprietary	0.10000	0.00001	

			Propargyl alcohol	107-19-7	5.00000	0.00001	
			Hexadecene	629-73-2	5.00000	0.00001	
			Ethoxylated alcohols	Proprietary	5.00000	0.00001	
			Phosphoric acid	7664-38-2	0.10000	0.00001	
			Sodium hydroxide	1310-73-2	0.01000	0.00000	
			Nitrated acetate salt	Proprietary	0.01000	0.00000	
			Organic salt #2	Proprietary	0.01000	0.00000	
			Formaldehyde	50-00-0	0.01000	0.00000	
			Organic salt #3	Proprietary	0.01000	0.00000	
			Sodium glycollate	2836-32-0	0.01000	0.00000	
			C.I. pigment Orange 5	3468-63-1	1.00000	0.00000	

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%
*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

WR-34
Page 1 of 3
Rev. 10-10

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Discharge Monitoring Report
Oil and Gas General Permit

Company Name: Antero Resources Corporation
API No: 47-017-06878 County: Doddridge
District: West Union Well No: Mondeo Unit 3H
Farm Name: Mary E. Deets and/or Paul A. Smith
Discharge Date/s From:(MMDDYY) 01/29/20 To: (MMDDYY) 02/28/20
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 1,009,337
Disposal Option(s) Utilized (write volumes in gallons):

(1) Land Application: 0 (Include a topographical map of the Area.)
(2) UIC: 0 Permit No.
(3) Offsite Disposal: 0 Site Location:
(4) Reuse: 1,009,337 Alternate Permit Number:
(5) Centralized Facility: 0 Permit No.
(6) Other method: 0 (Include an explanation)

Follow Instructions below to determine your treatment category:
Optional Pretreatment test: N/A Cl- mg/l N/A DO mg/l

1. Do you have permission to use expedited treatment from the Director or his representative? (Y/N) N/A If yes, who? _____ and place a four (4) on line 7. If not go to line 2
2. Was Frac Fluid or flowback put into the pit? (Y/N) N/A If yes, go to line 5. If not, go to line 3.
3. Do you have a chloride value pretreatment (see above)? (Y/N) N/A If yes, go to line 4 If not, go to line 5.
4. Is the Chloride level less than 5000 mg/l? (Y/N) N/A If yes, then enter a one (1) on line 7.
5. Do you have a pretreatment value for DO? (See above) (Y/N) N/A If yes, go to line 6 If not, enter a three (3) in line 7.
6. Is the DO level greater than 2.5 mg/l?(Y/N) N/A If yes, enter a two (2) on line 7. If not, enter a three (3) on line 7.
7. N/A is the category of your pit. Use the Appropriate section.
8. Comments on Pit condition: N/A No pit on-site.

Name of Principal Exec. Officer: Gretchen Kohler
Title of Officer: Sr. Environmental & Regulatory Manager
Date Completed: 05/05/2020

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Gretchen Kohler Digitally signed by Gretchen Kohler Date: 2020.05.05 16:51:06 -06'00'
Signature of a Principal Exec. Officer or Authorized agent.

Category 1
Sampling Results
API No : _____

Parameter	Predischarge Limits	Predischarge Reported	Discharge Limits	Discharge Reported	Units
pH	6-10	_____	6-10	_____	S.U
Settling Time	5	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl	5,000	_____	5,000	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**			Monitor	_____	mg/l
Oil and Grease			Monitor	_____	mg/l
Total Al***			Monitor	_____	mg/l
TSS			Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume			Monitor	_____	Gal
Flow			Monitor	_____	Gal/min
Disposal Area			Monitor	_____	Acres

*** Al is only reported if the pH is above 9.0

Category 2
Sampling Results
API No : _____

Parameter	Predischarge Limits	Predischarge Reported	Discharge Limits	Discharge Reported	Units
pH	6-10	_____	6-10	_____	S.U
Settling Time	10	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl*	12,500	_____	12,500	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**			Monitor	_____	mg/l
Oil and Grease			Monitor	_____	mg/l
Total Al***			Monitor	_____	mg/l
TSS			Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume			Monitor	_____	Gal
Flow			Monitor	_____	Gal/min
Disposal Area			Monitor	_____	Acres

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____ Date: _____

** Include a description of your aeration technique. Aeration Code: _____

*** Al is only reported if the pH is above 9.0

Category 3
Sampling Results
API No : _____

Parameter	Predischarge Limits	Predischarge Reported	Discharge Limits	Discharge Reported	Units
pH	6-10		6-10		S.U
Settling Time	20		N/A	N/A	Days
Fe	6		6		mg/l
D.O.	2.5		2.5		mg/l
Settleable Sol.	0.5		0.5		mg/l
Cl*	12,500		12,500		mg/l
Oil	Trace		Trace		Obs.
TOC**			Monitor		mg/l
Oil and Grease			Monitor		mg/l
Total Al***			Monitor		mg/l
TSS			Monitor		mg/l
Total Mn	Monitor		Monitor		mg/l
Volume			Monitor		Gal
Flow			Monitor		Gal/min
Disposal Area			Monitor		Acres

* Can be 25,000 with inspector's approval,

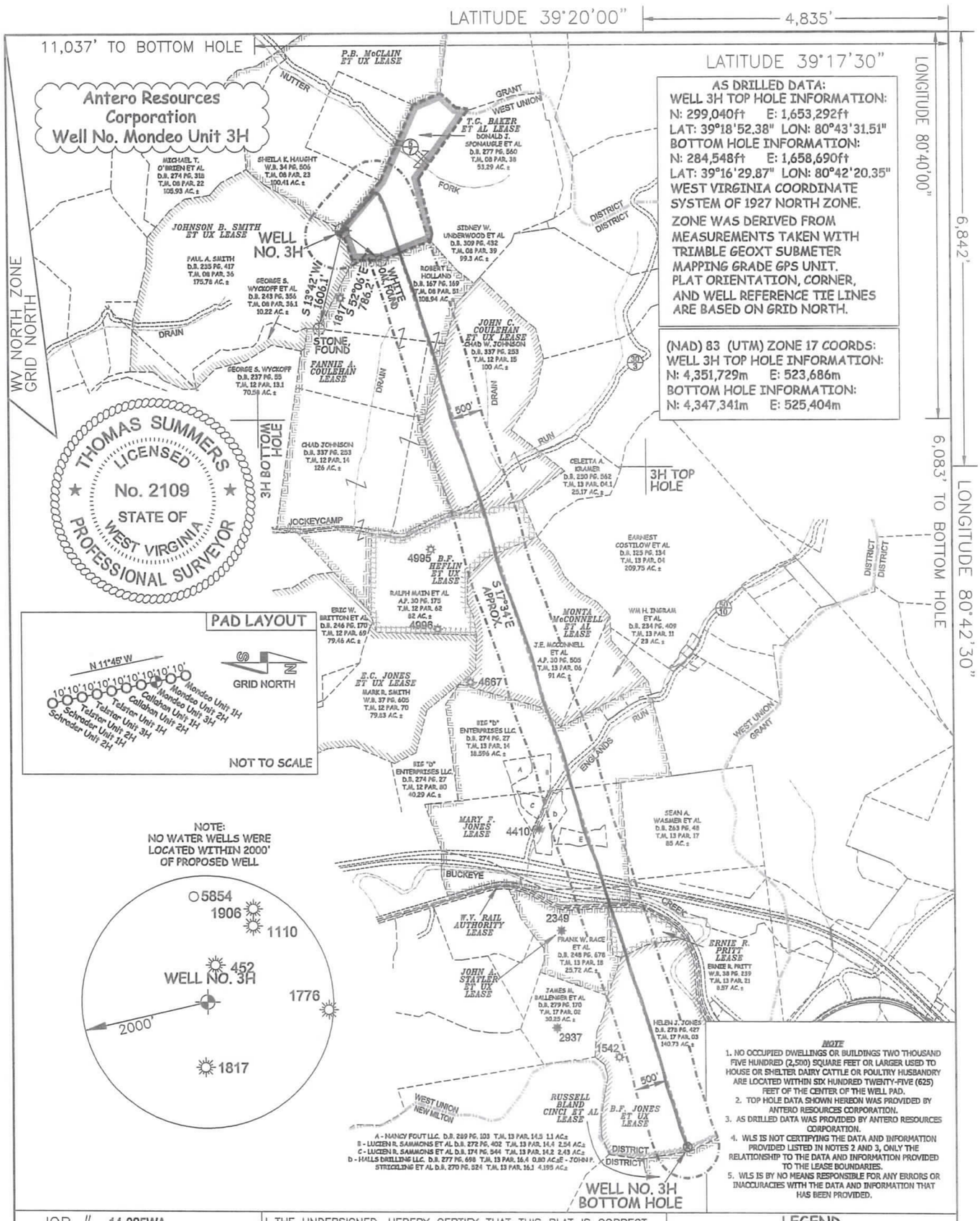
(Inspector's signature): _____ Date: _____
** Include a description of your aeration technique. Aeration Code: _____
*** Al is only reported if the pH is above 9.0.

Category 4
Sampling Results
API No: _____

Parameter	Predischarge Limits	Predischarge Reported	Discharge Limits	Discharge Reported	Units
pH	6-10		6-10		S.U
Settling Time	1		N/A	N/A	Days
Fe	Monitor		Monitor		mg/l
D.O.	Monitor		Monitor		mg/l
Settleable Sol.	Monitor		Monitor		mg/l
Cl*	12,500		12,500		mg/l
Oil	Trace		Trace		Obs.
TOC**			Monitor		mg/l
Oil and Grease			Monitor		mg/l
TSS			Monitor		mg/l
Total Mn	Monitor		Monitor		mg/l
Volume			Monitor		Gal
Flow			Monitor		Gal/min
Activated Carbon (0.175)			N/A	N/A	lb/Bl
Date Site Reclaimed	N/A	N/A			10 days from dis.
Disposal Area			Monitor		Acres

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____ Date: _____



JOB # 14-025WA
DRAWING # MONDEO3HAD
SCALE 1" = 2000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

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 DEPTARTMENT 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

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

THOMAS SUMMERS P.S. 2109

DATE 04/16/20
OPERATOR'S WELL# MONDEO UNIT #3H

STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY
DIVISION OF OIL AND GAS

API WELL # 47 – 017 – 06878
STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,376' -AS BUILT WATERSHED HEADWATERS MIDDLE ISLAND CREEK
QUADRANGLE SMITHBURG 7.5' DISTRICT WEST UNION COUNTY DODDRIDGE
SURFACE OWNER MARY E. DEETS AND/OR PAUL A. SMITH ACREAGE 53.29 ACRES +/- AND/OR 175.78 ACRES±
OIL & GAS ROYALTY OWNER JOHNSON B. SMITH ET UX; T.G. BAKER ET AL; P.B. MCLAIN ET UX; FANNIE A. COULEHAN; JOHN C. COULEHAN ET UX; B.F. HEFLIN ET UX; MONTA McCONNELL ET AL; MARY F. JONES; W.V. RAIL AUTHORITY; ERNIE R. PRITT; B.F. JONES ET UX LEASE ACREAGE 180 ACRES±; 53.46 ACRES±; 200 ACRES±; 250 ACRES±; 118 ACRES±; 82 ACRES±; 114 ACRES±; 194 ACRES±; 301.19 ACRES±; 8.57 ACRES±; 145 ACRES±
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 7,053' TVD 22,829' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPLER - CT CORPORATION SYSTEM
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
DENVER, CO 80202 CHARLESTON, WV 25313

COUNTY NAME
PERMIT

FORM WW-6