04/05/2019

Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315

April 12, 2019

West Virginia Department of Environmental Protection
Office of Oil and Gas
601 57th Street
Charleston, WV 25304

To Whom It May Concern:

Please find enclosed the Well Operator's Report of Well Work, Form WR-35 (including As-Drilled Survey Plat, Directional Survey and FracFocus report), Discharge Monitoring Report Form WR-34 and corresponding logs for the following wells:

- San Juan Unit 2H (API # 47-095-02381)—Vera Pad
- San Juan Unit 3H(API # 47-095-02382)—Vera Pad
- San Juan Unit 4H (API # 47-095-02383)—Vera Pad
- Ant Unit 1H (API # 47-095-02400)—Vera Pad
- Ant Unit 2H (API # 47-095-02401)—Vera Pad
- Ant Unit 3H (API # 47-095-02402)—Vera Pad
- Emerger Unit 1H (API # 47-095-02412)—Vera Pad

If you have any questions please feel free to contact me at (303) 357-7223.

Sincerely,

Megan Griffith
Permitting Agent
Antero Resources Corporation

Enclosures

WR-35
Rev. 8/23/13

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

API 47 - 095 - 02401 County Tyler District Centerville
Quad Middlebourne 7.5' Pad Name Vera Pad Field/Pool Name -----
Farm name Vera O. Thomas Well Number Ant 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 4363992m Easting 508271m
Landing Point of Curve Northing 4363877.07m Easting 508089.24m
Bottom Hole Northing 4361427m Easting 508981m

Elevation (ft) 1148.1' 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 1/24/2017 Date drilling commenced 3/22/2017 Date drilling ceased 9/201/2017
Date completion activities began 1/23/2018 Date completion activities ceased 6/30/2018
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 65', 215', 261', 399' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 620', 1614', 1974' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 620', 879' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:

WR-35
Rev. 8/23/13

API 47- 095 - 02401 Farm name Vera O. Thomas Well number Ant Unit 2H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	95'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	762'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2567'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15655'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6764'		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	n/a sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	645 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	950 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	775 sx (Lead) 1349 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.53 (Lead), 1.83 (Tail)		~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15655' MD, 6575' TVD (BHL), 6591' (Deepest Point Drilled) Loggers TD (ft) 15655' MD

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

Plug back procedure N/A

Kick off depth (ft) 5934'

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

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API 47- 095 - 02401 Farm name Vera O. Thomas Well number Ant 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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API 47- 095 - 02401 Farm name Vera O. Thomas Well number Ant Unit 2H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6557' (TOP) TVD	6807' (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 5674 mcfpd Oil 94 bpd NGL --- bpd Water 30 bpd GAS MEASURED BY □ 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 Frontier Drilling LLC
Address 562 Spring Run Road City Pennsboro State WV Zip 26415

Logging Company Schlumberger
Address 5599 San Felipe Street 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 [signature] Title Permitting Agent Date 4/12/2019

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

API 47-095-02401 **Farm Name** Vera O. Thomas **Well Number** Ant Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2/28/2018	15385	15553	60	Marcellus
2	3/1/2018	15186	15353	60	Marcellus
3	3/1/2018	14987	15154	60	Marcellus
4	3/1/2018	14788	14955	60	Marcellus
5	3/2/2018	14589	14756	60	Marcellus
6	3/2/2018	14390	14557	60	Marcellus
7	3/3/2018	14191	14358	60	Marcellus
8	3/4/2018	13992	14159	60	Marcellus
9	3/4/2018	13792	13960	60	Marcellus
10	3/5/2018	13593	13761	60	Marcellus
11	3/5/2018	13394	13562	60	Marcellus
12	3/6/2018	13195	13363	60	Marcellus
13	3/6/2018	12996	13164	60	Marcellus
14	3/7/2018	12797	12965	60	Marcellus
15	3/7/2018	12598	12766	60	Marcellus
16	3/8/2018	12399	12567	60	Marcellus
17	3/8/2018	12200	12368	60	Marcellus
18	3/9/2018	12001	12169	60	Marcellus
19	3/10/2018	11802	11970	60	Marcellus
20	3/10/2018	11603	11771	60	Marcellus
21	3/11/2018	11404	11572	60	Marcellus
22	3/11/2018	11205	11373	60	Marcellus
23	3/12/2018	11006	11174	60	Marcellus
24	3/13/2018	10807	10975	60	Marcellus
25	3/13/2018	10608	10776	60	Marcellus
26	3/14/2018	10409	10577	60	Marcellus
27	3/14/2018	10210	10378	60	Marcellus
28	3/15/2018	10011	10179	60	Marcellus
29	3/15/2018	9812	9980	60	Marcellus
30	3/16/2018	9613	9781	60	Marcellus
31	3/16/2018	9414	9582	60	Marcellus
32	3/17/2018	9215	9383	60	Marcellus
33	3/17/2018	9016	9184	60	Marcellus
34	3/18/2018	8817	8985	60	Marcellus
35	3/19/2018	8618	8786	60	Marcellus
36	3/20/2018	8419	8587	60	Marcellus
37	3/20/2018	8220	8388	60	Marcellus
38	3/21/2018	8021	8189	60	Marcellus
39	3/22/2018	7822	7990	60	Marcellus
40	3/22/2018	7623	7791	60	Marcellus
41	3/23/2018	7424	7592	60	Marcellus
42	3/23/2018	7225	7393	60	Marcellus
43	3/24/2018	7026	7194	60	Marcellus
44	3/24/2018	6827	6995	60	Marcellus

API 47-095-02401 **Farm Name** Vera O. Thomas **Well Number** Ant Unit 2H

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	2/28/2018	70.9	7354	5170	5040	482310	10911	N/A
2	3/1/2018	75.2	7468	5975	3595	502510	10912	N/A
3	3/1/2018	75.1	7662	5017	3432	503600	10110	N/A
4	3/1/2018	74.6	7402	5584	3229	494530	9742	N/A
5	3/2/2018	73.7	7343	4968	5189	509860	10167	N/A
6	3/2/2018	75.8	7477	5467	3846	510640	10243	N/A
7	3/3/2018	76.4	7596	5543	3366	510180	10404	N/A
8	3/4/2018	73.7	7585	4794	3895	492650	10075	N/A
9	3/4/2018	74.6	7165	5653	3460	502260	10134	N/A
10	3/5/2018	76.2	7612	5303	3725	506040	10044	N/A
11	3/5/2018	77.6	7369	5540	3361	506720	10323	N/A
12	3/6/2018	74.4	7090	4649	3477	502200	10164	N/A
13	3/6/2018	77.3	7314	5710	4781	500730	11824	N/A
14	3/7/2018	78	7477	5439	3765	514110	10092	N/A
15	3/7/2018	74.5	7591	5312	3800	503890	11704	N/A
16	3/8/2018	74.9	7405	5217	3834	518520	10075	N/A
17	3/8/2018	72.7	7215	5384	4571	465750	12945	N/A
18	3/9/2018	73.2	7186	5272	3472	507220	10620	N/A
19	3/10/2018	75.4	7178	4951	3637	514680	9994	N/A
20	3/10/2018	72.9	6697	5475	2948	507610	10036	N/A
21	3/11/2018	75.9	7047	5422	3743	513200	10015	N/A
22	3/11/2018	76.4	6762	5371	3507	502460	9810	N/A
23	3/12/2018	75.8	6769	4561	3620	505870	9916	N/A
24	3/13/2018	73.9	6510	4797	3155	504820	9961	N/A
25	3/13/2018	75.6	6866	5181	3629	494700	9782	N/A
26	3/14/2018	75.6	6752	5362	3429	498030	9919	N/A
27	3/14/2018	78	6968	5233	3017	491140	10008	N/A
28	3/15/2018	73.5	6773	5296	4027	503510	9777	N/A
29	3/15/2018	76.8	6521	7240	3412	500720	9832	N/A
30	3/16/2018	76.8	6594	5349	3751	497920	9759	N/A
31	3/16/2018	78.2	6632	5456	4297	501700	10003	N/A
32	3/17/2018	74.2	6605	5711	3630	500760	9969	N/A
33	3/17/2018	76.1	6644	5389	3504	494410	9457	N/A
34	3/18/2018	77.9	6785	7155	3439	501260	9651	N/A
35	3/19/2018	76.9	6801	7808	3594	505110	10082	N/A
36	3/20/2018	77.6	6457	5654	3358	514640	9853	N/A
37	3/20/2018	75.5	6523	5465	3592	499280	9578	N/A
38	3/21/2018	76.6	6359	5262	3768	514000	10077	N/A
39	3/22/2018	75.7	6514	5669	3867	501680	9833	N/A
40	3/22/2018	76.4	6540	5144	3675	501950	10088	N/A
41	3/23/2018	72	6193	5470	3342	501180	9645	N/A
42	3/23/2018	73.9	6950	5437	3692	512220	11491	N/A
43	3/24/2018	77.5	6488	5831	4462	504700	10052	N/A
44	3/24/2018	77.5	6216	5944	3760	509720	10075	N/A
		75.5	**6,965**	**5,492**	**3,720**	**22,130,990**	**449,152**	TOTAL

API 47-095-02401 Farm Name Vera O. Thomas Well Number Ant Unit 2H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	**TOP DEPTH (TVD) From Surface**	**BOTTOM DEPTH (TVD) From Surface**	**TOP DEPTH (MD) From Surface**	**BOTTOM DEPTH (MD) From Surface**
Sandstone	85	105	85	105
Sandy Siltstone	105	725	105	725
Sandy Shale	725	865	725	865
Calcareous Shale	865	905	865	905
Shaly Sandstone	905	1,005	905	1,005
Shaly Siltstone	1,005	1,165	1,005	1,165
Silty Shale	1,165	1,345	1,165	1,345
Sandstone	1,345	1,385	1,345	1,385
Sandy Shale	1,385	1,625	1,385	1,625
Shaly Sandstone	1,625	1,685	1,625	1,685
Silty Shale	1,685	1,765	1,685	1,765
Sandy Shale	1,765	1,905	1,765	1,905
Sandy Shale/Coal	1,905	1,991	1,905	2,100
Big Lime	2,006	2,204	2,115	2,273
Big Injun	2,204	2,686	2,273	2,742
Gantz Sand	2,686	2,827	2,742	2,883
Fifty Foot Sandstone	2,827	2,948	2,883	2,991
Gordon	2,948	3,112	2,991	3,181
Fifth Sandstone	3,112	3,393	3,181	3,450
Bayard	3,393	3,697	3,450	3,780
Warren	3,697	4,075	3,780	4,183
Speechley	4,075	4,717	4,183	4,884
Balltown	4,325	4,996	4,683	5,121
Bradford	4,717	4,996	4,884	5,121
Benson	4,996	5,402	5,121	5,502
Alexander	5,402	5,932	5,502	6,094
Rhinestreet	5,908	6,258	6,070	6,401
Sycamore	6,258	6,400	6,401	6,601
Middlesex	6,400	6,492	6,601	6,761
Burkett	6,492	6,518	6,761	6,826
Tully	6,518	6,547	6,826	6,911
Marcellus	6,547	NA	6,911	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.

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/28/2018
Job End Date:	3/31/2018
State:	West Virginia
County:	Tyler
API Number:	47-095-02401-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Ant 2H
Latitude:	39.42534444
Longitude:	-80.90407778
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,590
Total Base Water Volume (gal):	19,317,903
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	Operator	Base Fluid					
			Water	7732-18-5	100.00000	87.71228	Density = 8.340
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.19588	

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FR-76	Halliburton	Friction Reducer					
				Listed Below			
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
SCALECHEK LP-70	Halliburton	Scale Inhibitor					
				Listed Below			
HYDROCHLORIC ACID	Halliburton	Solvent					
				Listed Below			
SAND-PREMIUM WHITE-30/50, BULK	Halliburton	Proppant					
				Listed Below			
SAND-PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					

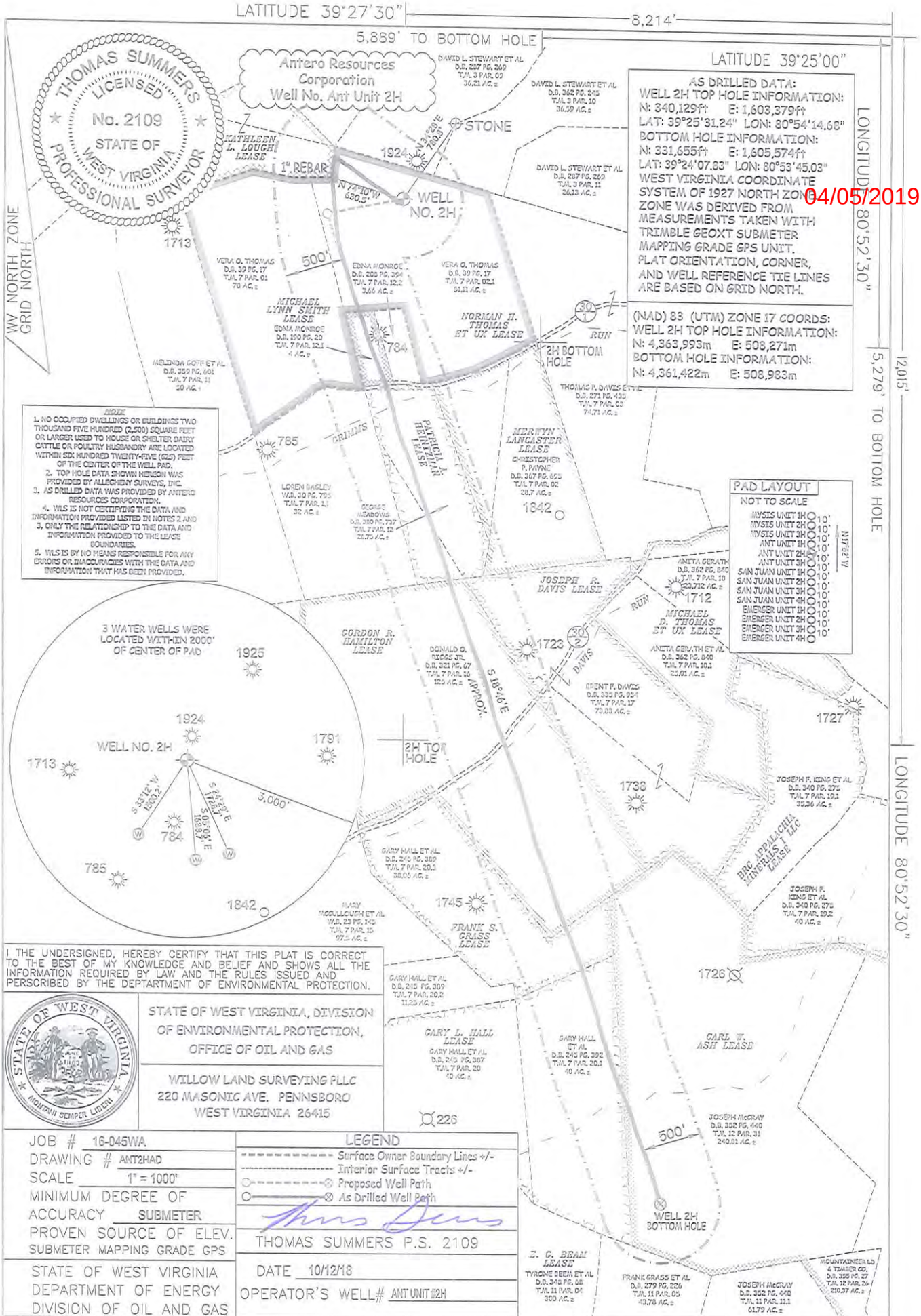
				Listed Below			
SP BREAKER	Halliburton	Breaker					
				Listed Below			
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Crystalline silica, quartz	14808-60-7	100.00000	12.03690	
			Guar gum	9000-30-0	100.00000	0.02337	
			Hydrochloric acid	7647-01-0	15.00000	0.02165	
			Acrylamide acrylate copolymer	Proprietary	30.00000	0.01795	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Inorganic salt	Proprietary	30.00000	0.01795	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01795	
			Ethylene glycol	107-21-1	60.00000	0.00846	
			Glutaraldehyde	111-30-8	30.00000	0.00259	
			Telmer	Proprietary	10.00000	0.00141	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00043	
			Sodium persulfate	7775-27-1	100.00000	0.00042	
			Sodium polyacrylate	9003-04-7	1.00000	0.00014	
			Ethanol	64-17-5	1.00000	0.00009	
			Methanol	67-56-1	60.00000	0.00008	
			Modified thiourea polymer	Proprietary	30.00000	0.00003	
			Fatty acids, tall oil	Proprietary	30.00000	0.00003	

			Ethoxylated alcohols	Proprietary	30.00000	0.00003	
			Olefins	Proprietary	5.00000	0.00001	
			Propargyl alcohol	107-19-7	10.00000	0.00001	
			Phosphoric acid	7664-38-2	0.10000	0.00001	
			Acrylic acid	79-10-7	0.01000	0.00000	
			Sodium sulfate	7757-82-6	0.10000	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)

04/05/2019



WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
47 — 095 — 02401
STATE COUNTY PERMIT
LOCATION: ELEVATION 1,148.1' - AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK
QUADRANGLE MIDDLEBOURNE 7.5' DISTRICT CENTERVILLE COUNTY TYLER
SURFACE OWNER VERA O. THOMAS ACREAGE 51.11 ACRES +/-
OIL & GAS ROYALTY OWNER NORMAN H. THOMAS ET UX; KATHLEEN L. LOUGH; MICHAEL LYNN SMITH; PATRICIA A. HEINTZMAN; GORDON R. HAMILTON; FRANK S. GRASS; GARY L. HALL; CARL W. ASH LEASE ACREAGE 125 AC.±; 40.27 AC.±; 3.66 AC.±; 36.59 AC.±; 125 AC.±; 38.06 AC.± ; 80 AC.±; 362.8 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 6,575' TVD 15,655' 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
FORM WW-6

COUNTY NAME PERMIT