

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

API 47-095-0237<sup>8</sup> County Tyler District Centerville  
Quad Middlebourne 7.5' Pad Name Vera Pad Field/Pool Name -----  
Farm name Vera O. Thomas Well Number Emerger 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 4363972m Easting 508278m  
Landing Point of Curve Northing 4364038.53m Easting 508649.70m  
Bottom Hole Northing 4361618m Easting 509547m

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 10/27/2016 Date drilling commenced 3/22/2017 Date drilling ceased 8/15/2017  
Date completion activities began 1/26/2018 Date completion activities ceased 6/27/2018  
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A RECEIVED  
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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug **FEB 13 2019**

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

Reviewed by:  
JEB  
1/21/2019

API 47-095 - 02376 Farm name Vera O. Thomas Well number Emerger 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"	713'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2479'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15610'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6877'		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 <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	200 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	685 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	928 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	740 sx (Lead) 1685 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.53 (Lead), 1.83 (Tail)		-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15610' MD, 6581' TVD (BHL), 6596' (Deepest Point Drilled) Loggers TD (ft) 15610' MD  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 5926'

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 \_\_\_\_\_

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WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

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WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED N/A

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API 47- 095 - 02376 Farm name Vera O. Thomas Well number Emerger Unit 2H

PRODUCING FORMATION(S)	DEPTHS	
	6565' (TOP) TVD	6939' (TOP) MD
Marcellus		

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 7495 mcfpd Oil 166 bpd NGL -- bpd Water 17 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 <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	

**\*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  Title Permitting Agent Date 2/8/2019

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

API 47-095-02378 Farm Name Vera O. Thomas Well Number Emerger Unit 2H

**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	4/20/2018	15340	15509	60	Marcellus
2	4/21/2018	15141	15309	60	Marcellus
3	4/21/2018	14941	15109	60	Marcellus
4	4/22/2018	14742	14910	60	Marcellus
5	4/23/2018	14542	14710	60	Marcellus
6	4/23/2018	14342	14511	60	Marcellus
7	4/24/2018	14143	14311	60	Marcellus
8	4/24/2018	13943	14112	60	Marcellus
9	4/25/2018	13744	13912	60	Marcellus
10	4/25/2018	13544	13712	60	Marcellus
11	4/26/2018	13345	13513	60	Marcellus
12	4/26/2018	13145	13313	60	Marcellus
13	4/27/2018	12945	13114	60	Marcellus
14	4/28/2018	12746	12914	60	Marcellus
15	4/28/2018	12546	12715	60	Marcellus
16	4/29/2018	12347	12515	60	Marcellus
17	4/29/2018	12147	12316	60	Marcellus
18	4/30/2018	11948	12116	60	Marcellus
19	4/30/2018	11748	11916	60	Marcellus
20	5/1/2018	11549	11717	60	Marcellus
21	5/1/2018	11349	11517	60	Marcellus
22	5/2/2018	11149	11318	60	Marcellus
23	5/2/2018	10950	11118	60	Marcellus
24	5/3/2018	10750	10919	60	Marcellus
25	5/3/2018	10551	10719	60	Marcellus
26	5/4/2018	10351	10520	60	Marcellus
27	5/4/2018	10152	10320	60	Marcellus
28	5/5/2018	9952	10120	60	Marcellus
29	5/5/2018	9753	9921	60	Marcellus
30	5/6/2018	9553	9721	60	Marcellus
31	5/6/2018	9353	9522	60	Marcellus
32	5/7/2018	9154	9322	60	Marcellus
33	5/7/2018	8954	9123	60	Marcellus
34	5/8/2018	8755	8923	60	Marcellus
35	5/8/2018	8555	8723	60	Marcellus
36	5/9/2018	8356	8524	60	Marcellus
37	5/9/2018	8156	8324	60	Marcellus
38	5/10/2018	7956	8125	60	Marcellus
39	5/10/2018	7757	7925	60	Marcellus
40	5/11/2018	7557	7726	60	Marcellus
41	5/11/2018	7358	7526	60	Marcellus
42	5/12/2018	7158	7327	60	Marcellus
43	5/12/2018	6959	7127	60	Marcellus

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API 47-095-02378 Farm Name Vera O. Thomas Well Number Emerger 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	4/20/2018	76	7450	5258	3645	16353	4568	N/A
2	4/21/2018	76.9	7482	5887	3728	17097	8251	N/A
3	4/21/2018	74.4	7092	5119	3597	15808	8494	N/A
4	4/22/2018	75.1	7441	5806	3761	17008	9024	N/A
5	4/23/2018	72.2	7844	6306	3958	18108	9024	N/A
6	4/23/2018	53.7	7950	5732	3864	17546	8258	N/A
7	4/24/2018	74.1	7360	5462	4000	16822	8275	N/A
8	4/24/2018	76.3	7560	4973	3804	16337	8509	N/A
9	4/25/2018	76.1	7782	5629	3796	17207	8265	N/A
10	4/25/2018	74.2	7860	5542	3917	17319	8245	N/A
11	4/26/2018	77.4	7513	5410	3810	16733	8050	N/A
12	4/26/2018	75.2	7833	5657	4051	17541	8090	N/A
13	4/27/2018	69.2	7957	5691	4733	18381	8160	N/A
14	4/28/2018	69.2	7852	5484	4054	17390	8291	N/A
15	4/28/2018	72.3	7798	5372	3793	16963	8137	N/A
16	4/29/2018	75	7667	5363	3954	16984	8184	N/A
17	4/29/2018	65.8	7308	5735	3928	16971	10165	N/A
18	4/30/2018	73.6	7438	5481	3795	16714	9118	N/A
19	4/30/2018	75.1	7373	5456	3773	16602	8278	N/A
20	5/1/2018	77.5	7553	5602	3719	16874	8132.005	N/A
21	5/1/2018	73.9	7282	5767	4022	17071	8059	N/A
22	5/2/2018	75.6	7090	5422	4016	16528	12882	N/A
23	5/2/2018	73	7225	5892	3803	16920	7983	N/A
24	5/3/2018	76	7429	5740	5007	18176	8136	N/A
25	5/3/2018	74.7	7038	5343	3703	16084	8260	N/A
26	5/4/2018	74.3	6995	5837	3745	16577	7973	N/A
27	5/4/2018	75.3	7180	5871	3679	16730	9918	N/A
28	5/5/2018	78	6890	6196	3882	16968	8222	N/A
29	5/5/2018	77.3	6878	5569	3868	16315	8038	N/A
30	5/6/2018	75.8	6916	6096	3778	16790	7898	N/A
31	5/6/2018	75.1	6877	5909	3990	16776	8150	N/A
32	5/7/2018	77	6903	5851	4071	16825	7741	N/A
33	5/7/2018	74.7	7072	5786	3945	16803	7856	N/A
34	5/8/2018	77.4	6878	6069	3900	16847	8337	N/A
35	5/8/2018	76.5	6496	5493	3855	15844	8164	N/A
36	5/9/2018	77.6	6591	5917	3863	16371	7947	N/A
37	5/9/2018	75.4	7342	5812	4034	17188	9432	N/A
38	5/10/2018	76.8	6780	5658	4023	16461	8043	N/A
39	5/10/2018	76.8	6953	5912	4152	17017	7944	N/A
40	5/11/2018	77.5	6686	5750	4119	16555	8418	N/A
41	5/11/2018	78.2	6950	5673	3992	16615	7894	N/A
42	5/12/2018	68.9	7466	7623	4245	19334	9351	N/A
43	5/12/2018	77.4	6769	6576	4171	17516	7949	N/A
		74.5	7,274	5,738	3,943	729,069	360,113	N/A

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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
Fresh Water	227'	N/A	227'	N/A
Sandstone	100	N/A	100	N/A
Sandy Siltstone	120	N/A	120	N/A
Sandy Shale	740	N/A	740	N/A
Calcareous Shale	880	N/A	880	N/A
Shaly Sandstone	920	N/A	920	N/A
Shaly Siltstone	1,020	N/A	1,020	N/A
Silty Shale	1,180	N/A	1,180	N/A
Sandstone	1,360	N/A	1,360	N/A
Sandy Shale	1,400	N/A	1,400	N/A
Shaly Sandstone	1,640	N/A	1,640	N/A
Silty Shale	1,700	N/A	1,700	N/A
Sandy Shale	1,780	N/A	1,780	N/A
Sandy Shale/Coal	1,920	N/A	1,920	N/A
Big Lime	2,007	N/A	2,008	N/A
Big Injun	2,177	N/A	2,179	N/A
Gantz Sand	2,613	N/A	2,614	N/A
Fifty Foot Sandstone	2,751	N/A	2,763	N/A
Gordon	2,858	N/A	2,860	N/A
Fifth Sandstone	3,036	N/A	3,037	N/A
Bayard	3,322	N/A	3,325	N/A
Warren	3,614	N/A	3,622	N/A
Speechley	4,003	N/A	4,024	N/A
Balltown	4,487	N/A	4,548	N/A
Bradford	4,686	N/A	4,768	N/A
Benson	4,916	N/A	5,022	N/A
Alexander	5,299	N/A	5,443	N/A
Rhinestreet	5,929	N/A	6,134	N/A
Sycamore	6,250	N/A	6,490	N/A
Middlesex	6,413	N/A	6,687	N/A
Burkett	6,507	N/A	6,816	N/A
Tully	6,533	N/A	6,863	N/A
Marcellus	6,565	N/A	6,939	N/A

\*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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## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/20/2018
Job End Date:	5/13/2018
State:	West Virginia
County:	Tyler
API Number:	47-095-02378-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Emerger Unit 2H
Latitude:	39.42524197
Longitude:	-80.90382689
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,594
Total Base Water Volume (gal):	19,331,071
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	87.91267	Density = 8.330
Ingredients	Operator	Listed Above	Listed Above				
			Water	7732-18-5	100.00000	0.24344	

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SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
FR-76	Halliburton	Friction Reducer					
				Listed Below			
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
				Listed Below			
SAND- PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
SCALECHEK LP-70	Halliburton	Scale Inhibitor					
				Listed Below			
SP BREAKER	Halliburton	Breaker					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			

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HYDROCHLORIC ACID	Halliburton	Solvent					
				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	11.79042	
			Hydrochloric acid	7647-01-0	60.00000	0.11580	
			Guar gum	9000-30-0	100.00000	0.02260	
			Acrylamide acrylate copolymer	Proprietary	30.00000	0.01715	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Inorganic salt	Proprietary	30.00000	0.01715	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01715	
			Ethylene glycol	107-21-1	60.00000	0.00875	
			Glutaraldehyde	111-30-8	30.00000	0.00267	
			Telmer	Proprietary	10.00000	0.00146	
			Sodium persulfate	7775-27-1	100.00000	0.00051	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00045	
			Sodium polyacrylate	9003-04-7	1.00000	0.00015	
			Methanol	67-56-1	60.00000	0.00010	
			Ethanol	64-17-5	1.00000	0.00009	
			Ethoxylated alcohols	Proprietary	30.00000	0.00004	
			Fatty acids, tall oil	Proprietary	30.00000	0.00004	
			Modified thiourea polymer	Proprietary	30.00000	0.00004	
			Olefins	Proprietary	5.00000	0.00002	
			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	

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			Sodium sulfate	7757-82-6	0.10000	0.00000
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\* 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)

LATITUDE 39°27'30"

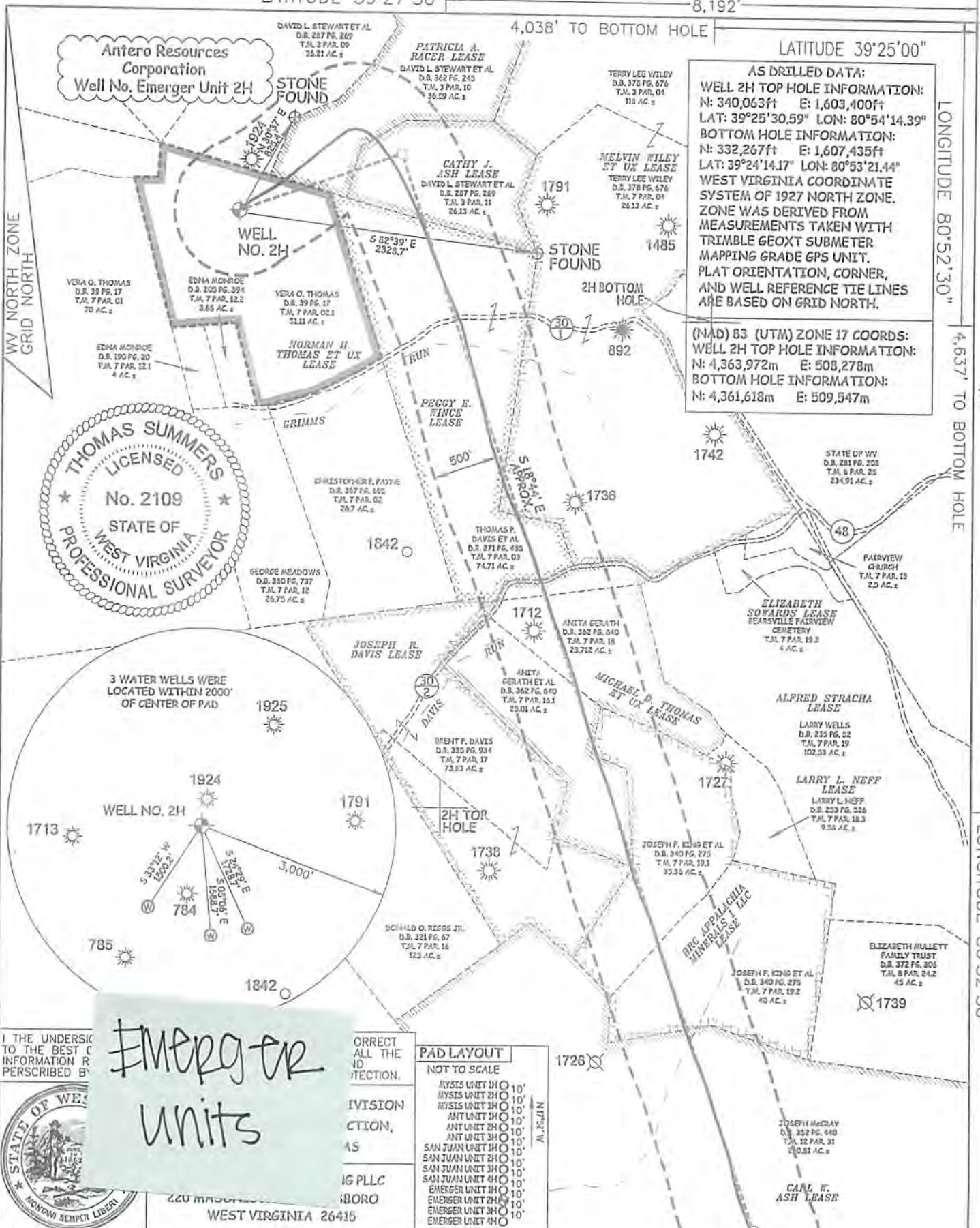
8,192'

LATITUDE 39°25'00"

LONGITUDE 80°52'30"

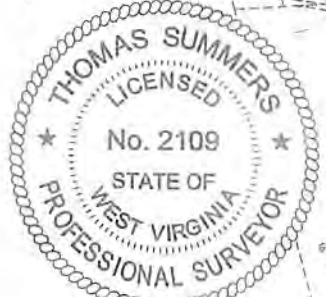
12,082'

LONGITUDE 80°52'30"



**AS DRILLED DATA:**  
**WELL 2H TOP HOLE INFORMATION:**  
 N: 340,063ft E: 1,603,400ft  
 LAT: 39°25'30.59" LON: 80°54'14.39"  
**BOTTOM HOLE INFORMATION:**  
 N: 332,267ft E: 1,607,435ft  
 LAT: 39°24'14.17" LON: 80°53'21.44"  
 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: 4,363,972m E: 508,278m  
**BOTTOM HOLE INFORMATION:**  
 N: 4,361,618m E: 509,547m



3 WATER WELLS WERE LOCATED WITHIN 2000' OF CENTER OF PAD



**Emerger units**

THE UNDERSIGNED HAS THE BEST INFORMATION RECORDED AND DESCRIBED BY



WEST VIRGINIA 26415

CORRECT ALL THE INFORMATION

DIVISION OF OIL AND GAS

REGISTRATION BOARD

**PAD LAYOUT**

- NOT TO SCALE
- EMERGER UNIT 1HO
- EMERGER UNIT 2HO
- EMERGER UNIT 3HO
- EMERGER UNIT 4HO
- EMERGER UNIT 5HO
- EMERGER UNIT 6HO
- EMERGER UNIT 7HO
- EMERGER UNIT 8HO
- EMERGER UNIT 9HO
- EMERGER UNIT 10HO
- EMERGER UNIT 11HO
- EMERGER UNIT 12HO
- EMERGER UNIT 13HO
- EMERGER UNIT 14HO
- EMERGER UNIT 15HO
- EMERGER UNIT 16HO
- EMERGER UNIT 17HO
- EMERGER UNIT 18HO
- EMERGER UNIT 19HO
- EMERGER UNIT 20HO

JOB # 16-020WA  
 DRAWING # EMERGER2HAD  
 SCALE 1" = 1000'  
 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 10/12/18  
 OPERATOR'S WELL# EMERGER UNIT #2H

**NOTES**  
 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 HERDSMAN 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 ALLEGHANY SURVEYS, INC.  
 3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.  
 4. WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.  
 5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

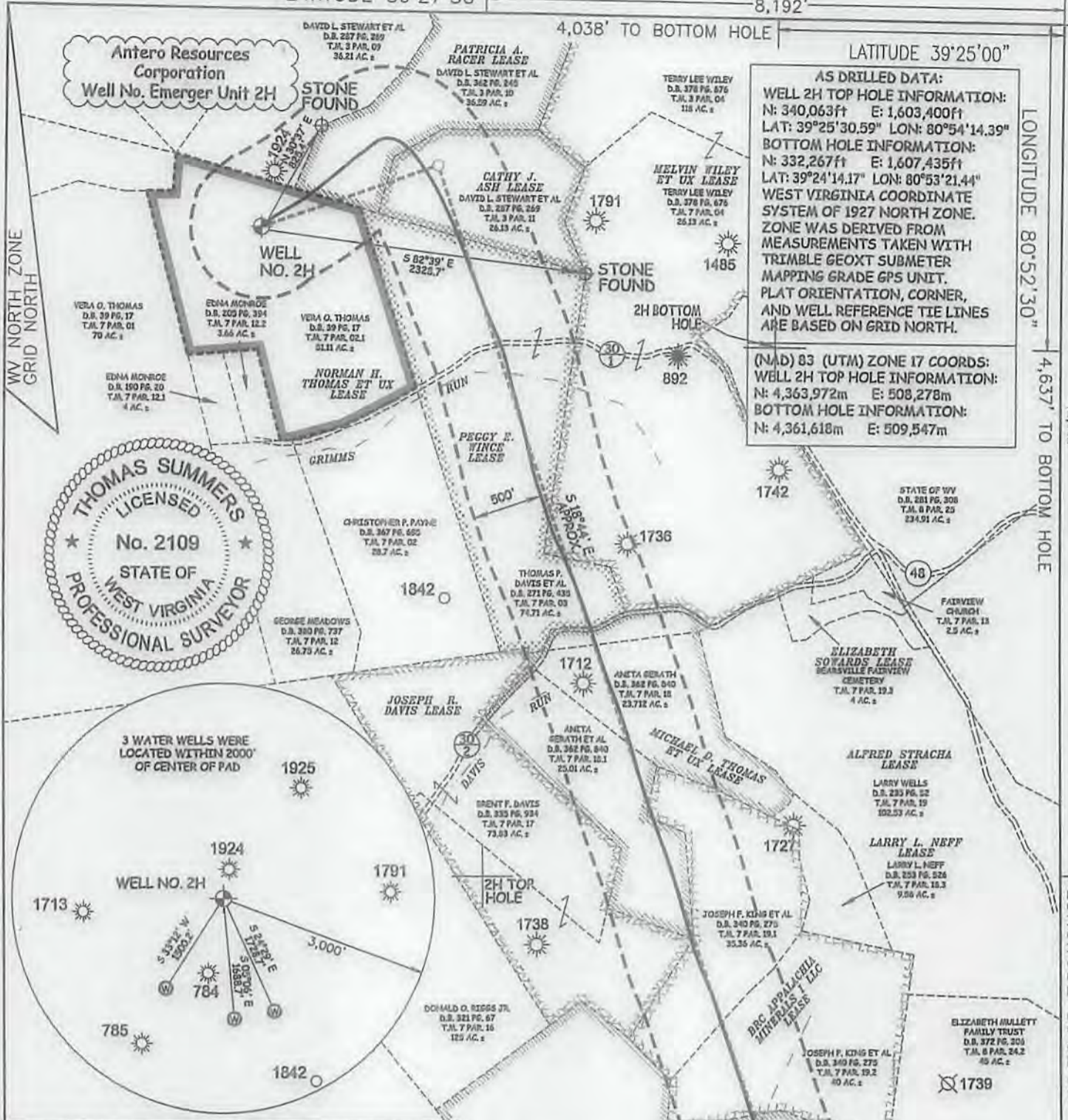
WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  47 - 095 - 02378  
 (IF "GAS") PRODUCTION  STORAGE  DEEP  SHALLOW  STATE COUNTY PERMIT  
 LOCATION: ELEVATION 1,148.1 AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK  
 QUADRANGLE MIDDLEBOURNE 7.5' DISTRICT CENTERVILLE COUNTY TYLER  
 SURFACE OWNER VERA O. THOMAS ACREAGE 51.11 ACRES +/-  
 OIL & GAS ROYALTY OWNER NORMAN H. THOMAS ET UX; PATRICIA A. RACER; CATHY J. ASH; LEASE ACREAGE 125 AC.±; 36.59 AC.±; 30 AC.±;  
 PEGGY E. WINCE; MELVIN WILEY ET UX; MICHAEL D. THOMAS ET UX; JOSEPH R. DAVIS; BRC APPALACHIA MINERALS I LLC; CARL W. ASH 74.71 AC.±; 553.16 AC.±; 48.13 AC.±; 73.83 AC.±; 79.74 AC.±; 352.8 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  
 TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,581' TVD 15,610' 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

LATITUDE 39°27'30"

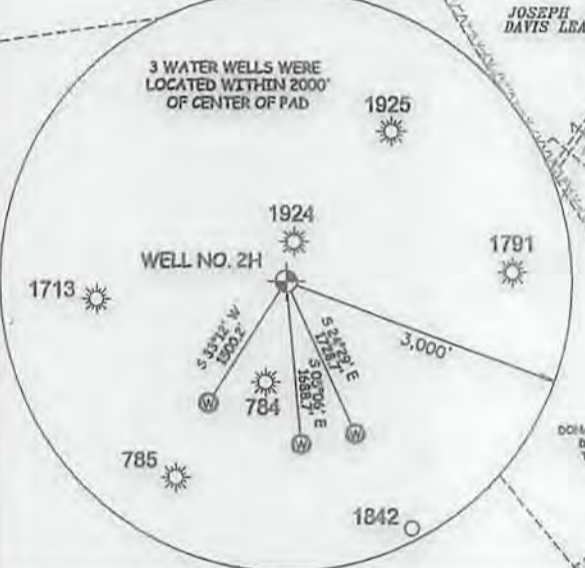
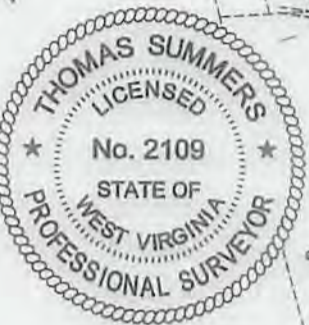
8,192'

LATITUDE 39°25'00"



**AS DRILLED DATA:**  
**WELL 2H TOP HOLE INFORMATION:**  
 N: 340,063ft E: 1,603,400ft  
 LAT: 39°25'30.59" LON: 80°54'14.39"  
**BOTTOM HOLE INFORMATION:**  
 N: 332,267ft E: 1,607,435ft  
 LAT: 39°24'14.17" LON: 80°53'21.44"  
**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: 4,363,972m E: 508,278m  
**BOTTOM HOLE INFORMATION:**  
 N: 4,361,618m E: 509,547m



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

**PAD LAYOUT**  
 NOT TO SCALE

MYSTIS UNIT 1H	10'
MYSTIS UNIT 2H	10'
MYSTIS UNIT 3H	10'
ANT UNIT 1H	10'
ANT UNIT 2H	10'
ANT UNIT 3H	10'
SAN JUAN UNIT 1H	10'
SAN JUAN UNIT 2H	10'
SAN JUAN UNIT 3H	10'
SAN JUAN UNIT 4H	10'
EMERGER UNIT 1H	10'
EMERGER UNIT 2H	10'
EMERGER UNIT 3H	10'
EMERGER UNIT 4H	10'

JOB # 16-020WA  
 DRAWING # EMERGERZHAD  
 SCALE 1" = 1000'  
 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 10/12/18

OPERATOR'S WELL# EMERGER UNIT #2H

**NOTE**

- 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.
- TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
- AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
- WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 1 AND 2, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
- WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  47  095  02378

(IF "GAS") PRODUCTION  STORAGE  DEEP  SHALLOW  STATE COUNTY PERMIT

LOCATION: ELEVATION 1,148.1 AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK

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TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,581' TVD 15,610' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM

ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD

FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

LONGITUDE 80°52'30"

