

WR-35  
Rev. 8/23/13

*Doc*  
12/19/18

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

API 47 - 017 - 06799 County Doddridge District Central  
Quad West Union 7.5' Pad Name Balli Pad Field/Pool Name -----  
Farm name Jeffrey K. Jones Sr. et al Well Number Boulder 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 4350343m Easting 513469m  
Landing Point of Curve Northing 4350362.23m Easting 512947.87m  
Bottom Hole Northing 4352826m Easting 512161m

Elevation (ft) 1135.5' 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 2/7/2017 Date drilling commenced 2/10/2017 Date drilling ceased 6/11/2017  
Date completion activities began 9/23/2017 Date completion activities ceased 3/20/2018  
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 107', 192' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft 737' 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

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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"	72'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	449'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2645'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15805'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	7077'		4.7#, P-110		
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	102 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	434 sx	15.6	1.19	516	0'	8 Hrs.
Coal							
Intermediate 1	Class A	950 sx	15.6	1.18	1121	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	660sx (Lead) 1417sx (Tail)	13.5(Lead), 15.2 (Tail)	1.44 (Lead), 1.87 (Tail)	3600	-500' into Intermediate casing	8 Hrs.
Tubing							

Drillers TD (ft) 15805' MD, 6613' TVD (BHL), 6617' (Deepest Point Drilled) Loggers TD (ft) 15805' MD

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

Plug back procedure N/A

Kick off depth (ft) 6046'

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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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
<b>*PLEASE SEE ATTACHED EXHIBIT 1</b>					

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)
<b>*PLEASE SEE ATTACHED EXHIBIT 2</b>								

Please insert additional pages as applicable.

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API 47-017-06799 Farm Name Jeffrey K. Jones Sr. et al Well Number Boulder Unit 2H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	9/23/2017	15651	0	48	Marcellus
2	2/25/2018	15449	15620	48	Marcellus
3	2/26/2018	15247	15417	48	Marcellus
4	2/26/2018	15045	15215	48	Marcellus
5	2/26/2018	14842	15013	48	Marcellus
6	2/27/2018	14640	14811	48	Marcellus
7	2/27/2018	14438	14608	48	Marcellus
8	2/27/2018	14236	14406	48	Marcellus
9	2/28/2018	14033	14204	48	Marcellus
10	2/28/2018	13831	14002	48	Marcellus
11	2/28/2018	13629	13799	48	Marcellus
12	3/1/2018	13427	13597	48	Marcellus
13	3/1/2018	13224	13395	48	Marcellus
14	3/1/2018	13022	13193	48	Marcellus
15	3/2/2018	12820	12990	48	Marcellus
16	3/2/2018	12618	12788	48	Marcellus
17	3/3/2018	12415	12586	48	Marcellus
18	3/3/2018	12213	12384	48	Marcellus
19	3/3/2018	12011	12181	48	Marcellus
20	3/3/2018	11808	11979	48	Marcellus
21	3/4/2018	11606	11777	48	Marcellus
22	3/4/2018	11404	11574	48	Marcellus
23	3/4/2018	11202	11372	48	Marcellus
24	3/4/2018	10999	11170	48	Marcellus
25	3/5/2018	10797	10968	48	Marcellus
26	3/5/2018	10595	10765	48	Marcellus
27	3/5/2018	10393	10563	48	Marcellus
28	3/5/2018	10190	10361	48	Marcellus
29	3/5/2018	9988	10159	48	Marcellus
30	3/6/2018	9786	9956	48	Marcellus
31	3/6/2018	9584	9754	48	Marcellus
32	3/6/2018	9381	9552	48	Marcellus
33	3/6/2018	9179	9350	48	Marcellus
34	3/6/2018	8977	9147	48	Marcellus
35	3/6/2018	8775	8945	48	Marcellus
36	3/7/2018	8572	8743	48	Marcellus
37	3/7/2018	8370	8541	48	Marcellus
38	3/7/2018	8168	8338	48	Marcellus
39	3/7/2018	7966	8136	48	Marcellus
40	3/7/2018	7763	7934	48	Marcellus
41	3/8/2018	7561	7732	48	Marcellus
42	3/8/2018	7359	7529	48	Marcellus
43	3/8/2018	7156	7327	48	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	9/23/2017	74.7	7989	5717	8972	131400	4300	N/A
2	2/25/2018	73.9	8054	5852	4022	389750	8811	N/A
3	2/26/2018	76.9	8024	6011	4163	411800	9074	N/A
4	2/26/2018	76.8	7929	5948	4508	410750	10225	N/A
5	2/26/2018	79.9	7653	5328	4558	411200	8228	N/A
6	2/27/2018	80.1	7653	5546	5038	411350	8204	N/A
7	2/27/2018	78.2	7183	6801	4821	411150	8217	N/A
8	2/27/2018	76.9	7546	6265	4254	411400	8186	N/A
9	2/28/2018	79.7	7706	6258	4861	411400	8162	N/A
10	2/28/2018	69.5	7333	5762	5138	411350	8060	N/A
11	2/28/2018	78.2	7312	5895	5315	410800	8067	N/A
12	3/1/2018	80.7	7348	5847	5244	411450	7781	N/A
13	3/1/2018	80.2	7127	4901	5203	412050	8379	N/A
14	3/1/2018	79.7	7216	5582	5240	411650	8010	N/A
15	3/2/2018	77.2	7548	6451	5633	411300	8395	N/A
16	3/2/2018	74.7	6899	6093	5049	411250	8630	N/A
17	3/3/2018	79.9	7347	6202	4920	411550	8033	N/A
18	3/3/2018	78.4	7586	6657	5184	411650	8033	N/A
19	3/3/2018	80.6	7230	6127	5229	411350	8059	N/A
20	3/3/2018	79.6	7100	5760	5260	411900	8043	N/A
21	3/4/2018	80.2	7399	6323	5350	411200	8013	N/A
22	3/4/2018	80.6	7365	5752	4956	411000	7922	N/A
23	3/4/2018	80.3	7289	5674	5120	411150	8004	N/A
24	3/4/2018	80.1	7319	5665	5200	411500	8018	N/A
25	3/5/2018	79	7190	5840	4640	411650	8025	N/A
26	3/5/2018	79.7	7497	6486	4550	410700	7935	N/A
27	3/5/2018	79.2	7273	5786	4935	410900	8904	N/A
28	3/5/2018	80.2	6957	6185	5368	411400	8001	N/A
29	3/5/2018	80.2	6855	6180	5386	412100	8078	N/A
30	3/6/2018	79.9	6785	6230	5209	412150	8081	N/A
31	3/6/2018	80.4	6872	6041	5148	411800	7941	N/A
32	3/6/2018	80.6	6827	5658	4782	411050	7827	N/A
33	3/6/2018	80.3	7115	5866	4726	411450	7854	N/A
34	3/6/2018	80.3	7030	5631	4713	411850	7820	N/A
35	3/6/2018	79.5	6888	6046	5404	411650	9085	N/A
36	3/7/2018	80.1	6728	6239	5740	417450	7880	N/A
37	3/7/2018	80	6663	6052	5046	411100	7808	N/A
38	3/7/2018	80.7	6751	6654	4998	411300	7828	N/A
39	3/7/2018	80.3	6575	6139	5091	410850	7832	N/A
40	3/7/2018	80.7	6686	6303	5457	412000	7837	N/A
41	3/8/2018	80.4	6707	6327	5600	411700	7815	N/A
42	3/8/2018	80	6305	6062	5066	411800	8710	N/A
43	3/8/2018	80	6281	5974	4397	413450	8028	N/A
	AVG=	79	7,189	6,003	5,105	17,397,700	348,143	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
Freshwater	107'	N/A	107'	N/A
Freshwater	192'	N/A	192'	N/A
Siltstone/Sandstone	0	147	0	147
Sandstone	est. 147	205	est. 147	205
Sandstone/Siltstone/Shale	est. 205	327	est. 205	327
Sandstone/Shale/Trace Coal	est. 327	447	est. 327	447
Sandstone	est. 447	547	est. 447	547
Sandstone/Shale	est. 547	607	est. 547	607
Sandstone	est. 607	687	est. 607	687
Siltstone	est. 687	727	est. 687	727
Shale	est. 727	767	est. 727	767
Limestone	est. 767	787	est. 767	787
Siltstone	est. 787	907	est. 787	907
Shale	est. 907	1,147	est. 907	1,147
Shale/Tr Coal	est. 1147	1,167	est. 1147	1,167
Shale	est. 1167	1,207	est. 1167	1,207
Sandstone	est. 1207	1,227	est. 1207	1,227
Shale	est. 1227	1,245	est. 1227	1,245
Sandstone	est. 1245	1,307	est. 1245	1,307
Shale/Siltstone	est. 1307	1,367	est. 1307	1,367
Limestone	est. 1367	1,387	est. 1367	1,387
Sandstone	est. 1387	1,447	est. 1387	1,447
Siltstone	est. 1447	1,489	est. 1447	1,489
Sandstone/Shale/Siltstone	est. 1489	2,025	est. 1489	2,028
Big Lime	2,025	2,693	2,028	2,703
Fifty Foot Sandstone	2,693	2,739	2,703	2,749
Gordon	2,739	3,068	2,749	3,087
Fifth Sandstone	3,068	3,096	3,087	3,116
Bayard	3,096	3,742	3,116	3,813
Speechley	3,742	4,102	3,813	4,199
Balltown	4,102	4,529	4,199	4,661
Bradford	4,529	5,011	4,661	5,186
Benson	5,011	5,290	5,186	5,490
Alexander	5,290	6,203	5,490	6,480
Sycamore	6,203	6,368	6,480	6,693
Middlesex	6,368	6,489	6,693	6,903
Burkett	6,489	6,521	6,903	6,987
Tully	6,521	6,551	6,987	7,104
Marcellus	6,551	NA	7,104	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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## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/14/2018
Job End Date:	3/8/2018
State:	West Virginia
County:	Doddridge
API Number:	47-017-06799-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Boulder 2H
Latitude:	39.30236300
Longitude:	-80.84378400
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,613
Total Base Water Volume (gal):	15,090,102
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	70.00000	87.51499	
CI-9100G	CWS	Corrosion Inhibitor					
				Listed Below			



Hydrochloric Acid	CWS	Clean Perforations					
				Listed Below			
Calbreak 5501	CWS	Breaker					
				Listed Below			
DAP-103	CWS	Iron Control					
				Listed Below			
DWP-111	CWS	Gel Slurry					
				Listed Below			
DWP-641	CWS	Friction Reducer					
				Listed Below			
DAP-902	CWS	Scale Inhibitor					
				Listed Below			
SANIFRAC 8844	CWS	Biocide					
				Listed Below			
Sand (Proppant)	CWS	Propping Agent					
				Listed Below			
Other Chemical (s)	Listed Above	See Trade Name (s) List					

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				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Crystalline silica (Quartz)	14808-60-7	100.00000	12.10148	
			Calcite	471-34-1	1.00000	0.08769	
			Hydrochloric acid	7647-01-0	37.00000	0.05765	
			Guar gum	9000-30-0	60.00000	0.04090	
			Distillates (petroleum), hydrotreated middle	64742-46-7	60.00000	0.04090	
			Illite	12173-60-3	1.00000	0.03329	
			Polymer	26100-47-0	45.00000	0.02320	
			Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.01546	
			Biotite	1302-27-8	0.10000	0.01210	
			Apatite	64476-38-6	0.10000	0.01210	
			Goethite	1310-14-1	0.10000	0.01210	
			Ammonium Persulfate	64742-47-8	100.00000	0.00973	
			2-Propenoic acid, homopolymer, sodium salt	9003-04-7	40.00000	0.00619	
			Polyethylene glycol mixture	25322-68-3	54.50000	0.00617	
			Ammonium chloride	12125-02-9	11.00000	0.00567	
			Quaternary ammonium compounds, bis (hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	5.00000	0.00341	
			Ilmenite	98072-94-7	0.10000	0.00333	
			2,2-Dibromo-3-Nitrilopropionamide	10222-01-2	20.00000	0.00226	
			Sorbitan monooleate	1338-43-8	4.00000	0.00206	
			Vinylidene chloride-methyl acrylate copolymer	69418-26-4	20.00000	0.00195	
			1,2-Propanediol	57-55-6	10.00000	0.00155	

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			Polyethylene glycol monooleate	9004-96-0	3.00000	0.00155	
			Sorbitol tetraoleate	61723-83-9	2.00000	0.00103	
			Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether	37251-67-5	1.50000	0.00102	
			Citric acid	77-92-9	60.00000	0.00052	
			Amines, tallow alkyl, ethoxylated	61791-26-2	1.00000	0.00052	
			Sodium bromide	7647-15-6	4.00000	0.00045	
			Dibromoacetonitrile	3252-43-5	3.00000	0.00034	
			Alkyloxypolyethyleneoxy ethanol	84133-50-6	0.50000	0.00026	
			Acrylamide	79-06-1	0.10000	0.00005	
			Ethylene glycol	107-21-1	40.00000	0.00003	
			Diethylene glycol (mono) methyl ether	34590-94-8	20.00000	0.00002	
			Tar bases, quinolone derivs	68513-87-1	1.00000	0.00001	
			Isopropanol	67-63-0	5.00000	0.00001	
			Ethoxylated alcohols	Proprietary	10.00000	0.00001	Proprietary CAS
			Cinnamaldehyde	104-55-2	10.00000	0.00001	
			Tar bases, quinolone derivs, benzyl chloride- quatenized	72480-70-7	10.00000	0.00001	
			Formic Acid	64-18-6	10.00000	0.00001	
			Diethylene glycol	111-46-6	1.00000	0.00001	

\* 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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LATITUDE 39°20'00" 3,005'

7,284' TO BOTTOM HOLE  
LATITUDE 39°20'00"

LONGITUDE 80°50'00" 3,154' TO BOTTOM HOLE

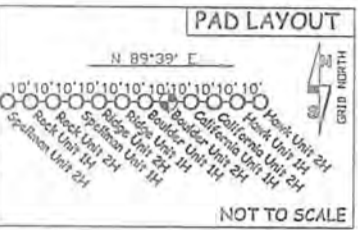
1,310'

LONGITUDE 80°50'00"

Antero Resources Corporation  
Well No. Boulder Unit 2H  
47-017-06799

AS DRILLED DATA:  
WELL 2H TOP HOLE INFORMATION:  
N: 295,052ft E: 1,619,691ft  
LAT: 39°18'08.21" LON: 80°50'38.23"  
BOTTOM HOLE INFORMATION:  
N: 303,271ft E: 1,615,533ft  
LAT: 39°19'28.83" LON: 80°47'27.89"  
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.

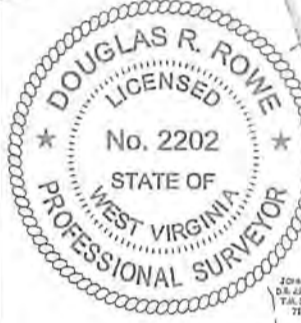
(NAD) 83 (UTM) ZONE 17 COORDS:  
WELL 2H TOP HOLE INFORMATION:  
N: 4,350,343m E: 513,469m  
BOTTOM HOLE INFORMATION:  
N: 4,352,826m E: 512,161m



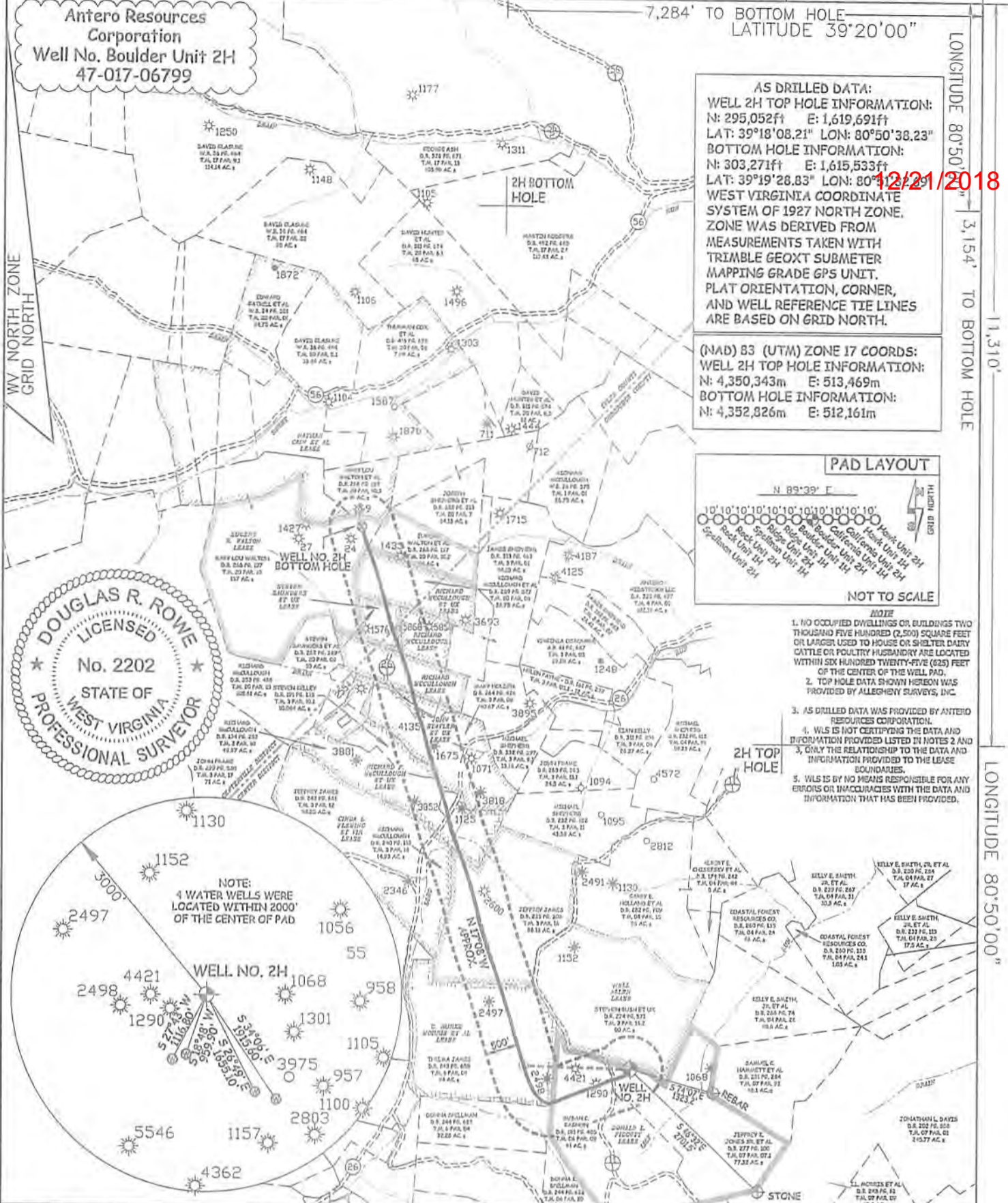
NOT TO SCALE

- 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 ALLEGHENY 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.

WV NORTH ZONE GRID NORTH



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



JOB # 16-059WA  
DRAWING # BOULDER2HAD  
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

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL  
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X  
LOCATION: ELEVATION 1,135.5 AS BUILT WATERSHED HEADWATERS MIDDLE ISLAND CREEK

QUADRANGLE WEST UNION 7.5 DISTRICT CENTRAL COUNTY DODDRIDGE  
SURFACE OWNER JEFFREY K. JONES SR. ET AL ACREAGE 77.32 ACRES +/-  
OIL & GAS ROYALTY OWNER DONALD L. PIGGOTT; C. BURKE MORRIS ET AL; NELL ALLEN; LEASE ACREAGE 81 AC±; 94 AC±; 176 AC±;  
RICHARD F. MCCULLOUGH ET UX; JOHN STATLER ET UX; RICHARD MCCULLOUGH; 63.5 AC±; 56 AC±; 26 AC±;  
STEVEN SAUNDERS ET UX; RICHARD MCCULLOUGH F UX; EUGENE R. WALTON 10 AC±; 29 AC±; 137 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 6,613' TVD 15,805' MD  
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
DENVER, CO 80202 CHARLESTON, WV 25313

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

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

DOUGLAS R. ROWE P.S. 2202  
DATE 07/17/18  
OPERATOR'S WELL # BOULDER UNIT #2H

API WELL # 47 - 017 - 06799  
STATE COUNTY PERMIT

COUNTY NAME

PERMIT

12/21/2018

RECEIVED  
Office of Oil and Gas  
SEP 10 2018  
WV Department of  
Environmental Protection

12/21/2018

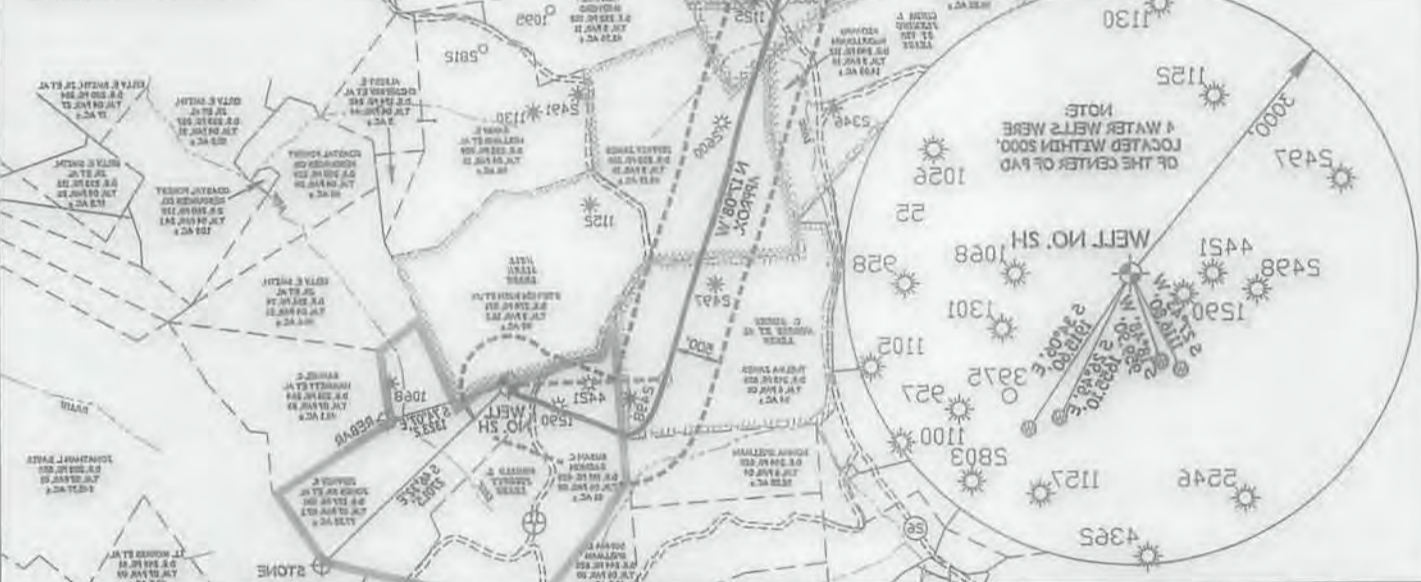
Antero Resources Corporation  
Well No. Boulder Unit 5H  
47-017-06299

AS DRILLED DATA:  
WELL 5H TOP HOLE INFORMATION:  
N: 292.052ft E: 1.119.631ft  
LAT: 39°18'08.21" LON: 80°50'38.23"  
BOTTOM HOLE INFORMATION:  
N: 303.271ft E: 1.119.631ft  
LAT: 39°18'28.83" LON: 80°51'32.69"  
WEST VIRGINIA COORDINATE  
SYSTEM OF 1927 NORTH ZONE  
ZONE WAS DERIVED FROM  
MEASUREMENTS TAKEN WITH  
TRIANGLE GEOX SUBMETER  
MAPPING GRADE EPS UNIT.  
PLAT ORIENTATION, CORNER  
AND WELL REFERENCE TIE LINES  
ARE BASED ON GRID NORTH.

(LWD) 83 (UTM) ZONE 17 COORDS:  
WELL 5H TOP HOLE INFORMATION:  
N: 4,350,343m E: 613,469m  
BOTTOM HOLE INFORMATION:  
N: 4,352,856m E: 612,191m



NOT TO SCALE  
1. NO OCCURRED DWELLERS OR BUILDINGS TWO  
THOUSAND FEET (610M) SURROUNDING  
OR LARGER RADIUS TO HOLE OR SHUTTER DAILY  
CALCULATED POINTS IN THIS AREA ARE LOCATED  
WITHIN THE BUFFER ZONE (100 FEET)  
2. TO THE CENTER OF THE WELL PAD  
3. TO THE DATA POINTS SHOWN HEREON WAS  
PROVIDED BY ANOTHER SURVEYOR, ETC.  
4. AS DRILLED DATA WAS PROVIDED BY WATERBURY  
CONSULTING CORPORATION.  
5. THIS IS NOT CERTIFYING THE DATA AND  
REPRODUCTION PROVIDED LISTED IN NOTES 2 AND  
3. THIS IS THE RELATIONSHIP TO THE DATA AND  
CONDUIT.  
6. THIS IS BY NO MEANS RESPONSIBLE FOR ANY  
ERRORS OR INACCURACIES WITH THE DATA AND  
INFORMATION THAT HAS BEEN PROVIDED.



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

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  
PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

JOB # 16-059AW  
DRAWING # BOLDERSHAD  
SCALE 1"=200'  
MINIMUM DEGREE OF  
ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV.  
SUBMETER MAPPING GRADE EPS

DOUGLAS R. ROWE P.S. 2202

STATE OF WEST VIRGINIA, DIVISION  
OF ENVIRONMENTAL PROTECTION,  
OFFICE OF OIL AND GAS

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

DATE 01/17/18

WILLOW LAND SURVEYING P.L.L.C.  
520 MAGNIFIC AVE. PENNSBORO  
WEST VIRGINIA 26412

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

OPERATOR'S WELL # BOLDER UNIT 5H  
API WELL # 47-017-06299

WASTE DISPOSAL  
WATERSHED HEADWATERS MIDDLE ISLAND CREEK

WELL TYPE: OIL  
GAS X LIQUID INJECTION  
(IF GAS) PRODUCTION X STORAGE  
DEEP SHALLOW X  
ELEVATION 1135.5 AS BUILT  
LOCATION: QUADRANGLE WEST UNION T.S.

DISTRICT CENTRAL COUNTY DODDRIDGE

STATE COUNTY PERMIT

SURFACE OWNER  
JEFFREY K. JONES SR. ET AL  
OIL & GAS ROYALTY OWNER DONALD L. PIGOTT, C. BURKE MORRIS ET AL; WELL ALLEN;  
RICHARD F. MCCULLOUGH ET UX; JOHN STATTAR ET UX; RICHARD MCCULLOUGH;  
STEVEN SAUNDERS ET UX; RICHARD MCCULLOUGH ET UX; EUGENE R. WALTON

ACREAGE 77.32 ACRES +  
LEASE ACREAGE 81 ACRES 84 ACRES 178 ACRES

DESIGNATED AGENT  
DIANNA STAMPER - CT CORPORATION SYSTEM

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL  
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL  
(SPECIFY) AS DRILLED  
TARGET FORMATION  
WELL OPERATOR  
ANTERO RESOURCES CORP.

8813 TWD 15803 MD  
PLUG & ABANDON CLEAN OUT & REPLUG

ESTIMATED DEPTH  
DESIGNATED AGENT  
DIANNA STAMPER - CT CORPORATION SYSTEM

ADDRESS  
1615 WYNKOP STREET  
DENVER, CO 80202

5400 D BIG TYLER ROAD  
CHARLESTON, WV 25313

ADDRESS  
5400 D BIG TYLER ROAD  
CHARLESTON, WV 25313

ADDRESS  
1615 WYNKOP STREET  
DENVER, CO 80202

FORM WW-8

LONGITUDE 80.20.00" LONGITUDE 80.20.00" LONGITUDE 80.20.00"  
LATITUDE 39.20.00" LATITUDE 39.20.00" LATITUDE 39.20.00"

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL  
 DIVISION OF OIL AND GAS  
 DEPARTMENT OF ENERGY  
 STATE OF WEST VIRGINIA  
 PROVEN SOURCE OF ELEV. SUBMETER  
 ACCURACY  
 MINIMUM DEGREE OF SCALE 1" = 2000'  
 DRAWING # BOULDER#47-017-06799  
 JOB # 16-059WA

TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS PLAN IS CORRECT  
 INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND  
 PERMITTED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

STATE OF WEST VIRGINIA  
 OFFICE OF ENVIRONMENTAL PROTECTION,  
 DIVISION OF OIL AND GAS

WILLOW LAND SURVEYING PLLC  
 220 MASONIC AVE. PENNSBORO  
 WEST VIRGINIA 26415

DATE 07/17/18  
 OPERATOR'S WELL # BOULDER UNIT #2H

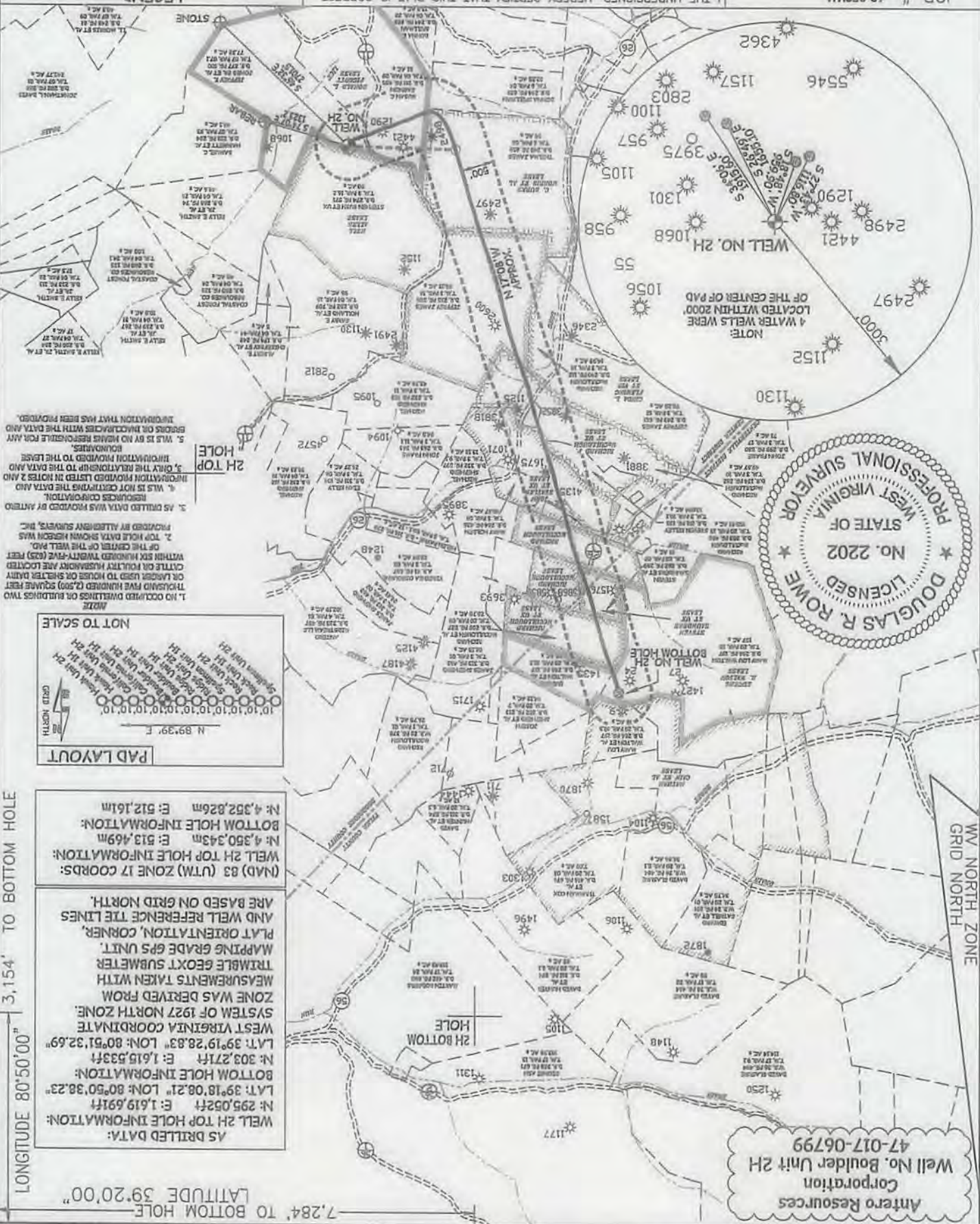
APRIL WELL #  
 STATE COUNTY PERMIT  
 DISTRICT CENTRAL COUNTY DODDRIDGE  
 ACREAGE 77.32 ACRES +/-  
 LEASE ACREAGE 81 AC. 84 AC. 176 AC.  
 63.5 AC. 26 AC. 10 AC. 29 AC. 137 AC.  
 REDRILL CONVERT DRILL DEEPER NEW FORMATION OTHER PHYSICAL CHANGE IN WELL  
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION  
 (SPECIFY) AS DRILLED  
 TARGET FORMATION MARCELLUS  
 WELL OPERATOR ANTERO RESOURCES CORP.  
 DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
 5400 D BIG TYLER ROAD  
 CHARLESTON, WV 25313

12/21/2018

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

DOUGLAS R. ROWE  
 No. 2202  
 LICENSED  
 STATE OF WEST VIRGINIA  
 PROFESSIONAL SURVEYOR

NOTE:  
 4 WATER WELLS WERE  
 LOCATED WITHIN 2000'  
 OF THE CENTER OF PAD  
 WELL NO. 2H



AS DRILLED DATA:  
 WELL 2H TOP HOLE INFORMATION:  
 N: 295.052ft E: 1,619.691ft  
 LAT: 39°18'08.21" LON: 80°50'38.23"  
 BOTTOM HOLE INFORMATION:  
 N: 303.271ft E: 1,619.533ft  
 LAT: 39°19'28.83" LON: 80°51'32.69"  
 WEST VIRGINIA COORDINATE  
 SYSTEM OF 1927 NORTH ZONE.  
 ZONE WAS DERIVED FROM  
 MEASUREMENTS TAKEN WITH  
 TRIANGLE GEOMX SUBMETER  
 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: 4,350.343m E: 513.469m  
 BOTTOM HOLE INFORMATION:  
 N: 4,352.026m E: 512.161m

PAD LAYOUT  
 NOT TO SCALE

ANTERO RESOURCES CORPORATION  
 Well No. Boulder Unit 2H  
 47-017-06799