

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

API 47 - 017 - 06818 County Doddridge District West Union
Quad West Union 7.5' Pad Name Middle Pad Field/Pool Name -----
Farm name Antero Resources Corporation Well Number Chalk Unit 1H
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 4352584.207m Easting 516702.091m
Landing Point of Curve Northing 4352408.75m Easting 517095.67m
Bottom Hole Northing 4350194.639m Easting 518037.876m

Elevation (ft) 843' 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 Gas Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
Air - Foam & 4% KCL
Mud - Polymer

RECEIVED
Office of Oil and Gas
JAN 24 2019
WV Department of
Environmental Protection

Date permit issued 6/19/2017 Date drilling commenced 9/29/2017 Date drilling ceased 3/3/2018
Date completion activities began 6/5/2018 Date completion activities ceased 9/20/2018
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 None Identified Open mine(s) (Y/N) depths No
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths No
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by: _____

Reviewed
Chris Lane 2/22/19

API 47-017 - 06818 Farm name Antero Resources Corporation Well number Chalk Unit 1H

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"	531'	New	54#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2610'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15475'	New	23#, HCP-110	N/A	Y
Tubing		2-3/8"	6649'		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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	204 sx	15.6	1.18	241	0'	8 Hrs.
Surface	Class A	480 sx	15.6	1.21	581	0'	8 Hrs.
Coal							
Intermediate 1	Class A	880 sx	15.6	1.21	1065	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	651 sx (Lead) 1425 sx (Tail)	13.5 (Lead), 16.2 (Tail)	1.53 (Lead), 1.83 (Tail)	3604	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15475' MD, 6551' TVD (BHL), 6554' (Deepest Point Drilled) Loggers TD (ft) 15475' MD

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

Plug back procedure N/A

RECEIVED
Office of Oil and Gas
JAN 24 2019

Kick off depth (ft) 5797'

WV Department of Environmental Protection

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 - 06818 Farm name Antero Resources Corporation Well number Chalk Unit 1H

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.

API 47- 017 - 06818 Farm name Antero Resources Corporation Well number Chalk Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6366' (TOP)</u>	<u>TVD</u>	<u>6672' (TOP)</u> <u>MD</u>

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 13461.74 mcfpd Oil 174.13 bpd NGL --- bpd Water 652.22 bpd GAS MEASURED BY Estimated Orifice Pilot

<u>LITHOLOGY/ FORMATION</u>	<u>TOP DEPTH IN FT</u>	<u>BOTTOM DEPTH IN FT</u>	<u>TOP DEPTH IN FT</u>	<u>BOTTOM DEPTH IN FT</u>	<u>DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H₂S, ETC)</u>
<u>NAME</u>	<u>TVD</u>	<u>TVD</u>	<u>MD</u>	<u>MD</u>	

***PLEASE SEE ATTACHED EXHIBIT 3**

RECEIVED
Office of Oil and Gas
JAN 24 2019
WV Department of Environmental Protection

Please insert additional pages as applicable.

Drilling Contractor Frontier Drilling LLC
Address 562 Spring Run Road City Pennsboro State WV Zip 26415

Logging Company Nine Energy Service
Address 125 Museum Rd City Washington State PA Zip 15301

Cementing Company C&J Energy Services
Address 1650 Hackers Creek City Lane Jew State WV Zip 26378

Stimulating Company Haliburton
Address 121 Champion Way City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Karin Cox Telephone 303-357-6820
Signature _____ Title Permitting Agent Date _____

API 47-017-06818 Farm Name Antero Resources Corp Well Number Chalk Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	6/5/2018	15270.7	15370.9	60	Marcellus
2	6/7/2018	15071.944	15239.574	60	Marcellus
3	6/7/2018	14873.188	15040.818	60	Marcellus
4	6/8/2018	14674.432	14842.062	60	Marcellus
5	6/8/2018	14475.676	14643.306	60	Marcellus
6	6/8/2018	14276.92	14444.55	60	Marcellus
7	6/9/2018	14078.164	14245.794	60	Marcellus
8	6/9/2018	13879.408	14047.038	60	Marcellus
9	6/9/2018	13680.652	13848.282	60	Marcellus
10	6/10/2018	13481.896	13649.526	60	Marcellus
11	6/10/2018	13283.14	13450.77	60	Marcellus
12	6/19/2018	13084.384	13252.014	60	Marcellus
13	6/20/2018	12885.628	13053.258	60	Marcellus
14	6/21/2018	12686.872	12854.502	60	Marcellus
15	6/21/2018	12488.116	12655.746	60	Marcellus
16	6/22/2018	12289.36	12456.99	60	Marcellus
17	6/22/2018	12090.604	12258.234	60	Marcellus
18	6/23/2018	11891.848	12059.478	60	Marcellus
19	6/23/2018	11693.092	11860.722	60	Marcellus
20	6/24/2018	11494.336	11661.966	60	Marcellus
21	6/24/2018	11295.58	11463.21	60	Marcellus
22	6/24/2018	11096.824	11264.454	60	Marcellus
23	6/25/2018	10898.068	11065.698	60	Marcellus
24	6/26/2018	10699.312	10866.942	60	Marcellus
25	6/28/2018	10500.556	10668.186	60	Marcellus
26	6/29/2018	10301.8	10469.43	60	Marcellus
27	6/29/2018	10103.044	10270.674	60	Marcellus
28	6/30/2018	9904.288	10071.918	60	Marcellus
29	6/30/2018	9705.532	9873.162	60	Marcellus
30	6/30/2018	9506.776	9674.406	60	Marcellus
31	7/1/2018	9308.02	9475.65	60	Marcellus
32	7/2/2018	9109.264	9276.894	60	Marcellus
33	7/2/2018	8910.508	9078.138	60	Marcellus
34	7/2/2018	8711.752	8879.382	60	Marcellus
35	7/2/2018	8512.996	8680.626	60	Marcellus
36	7/3/2018	8314.24	8481.87	60	Marcellus
37	7/3/2018	8115.484	8283.114	60	Marcellus
38	7/3/2018	7916.728	8084.358	60	Marcellus
39	7/4/2018	7717.972	7885.602	60	Marcellus
40	7/4/2018	7519.216	7686.846	60	Marcellus
41	7/5/2018	7320.46	7488.09	60	Marcellus
42	7/5/2018	7121.704	7289.334	60	Marcellus
43	7/5/2018	6922.948	7090.578	60	Marcellus
44	7/6/2018	6724.192	6891.822	60	Marcellus

RECEIVED
Office of Oil and Gas
JAN 24 2019
WV Department
Environmental Protection

API 47-017-06818 Farm Name Antero Resources Corp Well Number Chalk Unit 1H

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	6/5/2018	73.1	7741	5381	3885	258270	5859.214	N/A
2	6/7/2018	75.46	8119	5725	5621	397440	7964.881	N/A
3	6/7/2018	76.8	7954	5152	3813	395760	7871.31	N/A
4	6/8/2018	77.27	7617	5759	4095	401680	8374.524	N/A
5	6/8/2018	77.8	7551	6068	4110	402100	7897.762	N/A
6	6/8/2018	77.16	7780	6005	4350	398920	8244.286	N/A
7	6/9/2018	76.93	7829	6039	3964	396140	8111.19	N/A
8	6/9/2018	77.7	7716	5999	3899	400920	8178.595	N/A
9	6/9/2018	64.03	8197	5532	4746	403240	11341.6	N/A
10	6/10/2018	71.9	7924	5077	4157	399140	8330.619	N/A
11	6/10/2018	55.65	8233	5854	0	359780	12501.5	N/A
12	6/19/2018	71.14	7431	9589	4057	406540	12862.93	N/A
13	6/20/2018	67	6484	6484	8709	179940	7494.548	N/A
14	6/21/2018	79.52	7463	5856	4492	405330	9435.31	N/A
15	6/21/2018	75.4	7025	5866	3749	396900	10055.74	N/A
16	6/22/2018	56.14	8018	5786	4433	398140	11748.19	N/A
17	6/22/2018	66.58	8510	6134	6169	403760	10264.26	N/A
18	6/23/2018	74.55	7431	6007	4034	411200	8568.643	N/A
19	6/23/2018	66.45	7621	6112	3836	403960	9072.762	N/A
20	6/24/2018	71.71	7087	5957	4831	384260	8132.833	N/A
21	6/24/2018	73.38	6223	6223	3779	406980	8141.905	N/A
22	6/24/2018	70.96	7627	6339	7116	339110	8291.5	N/A
23	6/25/2018	79.18	7750	6103	4814	423780	9132.548	N/A
24	6/26/2018	74.38	7141	6020	4439	423920	8771.024	N/A
25	6/28/2018	75.29	7370	5051	3700	420650	8512.5	N/A
26	6/29/2018	77.57	7210	5750	5105	403220	9143.286	N/A
27	6/29/2018	75.6	7382	6109	5209	238360	6285.048	N/A
28	6/30/2018	71.18	6778	5289	5545	400520	8114.5	N/A
29	6/30/2018	74.41	6876	5960	4843	421390	8725	N/A
30	6/30/2018	74.47	7109	5893	4196	404920	8186	N/A
31	7/1/2018	78.2	6520	5986	4443	397460	8080.429	N/A
32	7/2/2018	77.2	6977	6290	3783	419450	8727	N/A
33	7/2/2018	73.78	6986	5754	5033	419840	8757.357	N/A
34	7/2/2018	65.23	6690	6450	4255	398700	9184.31	N/A
35	7/2/2018	75.6	6645	5931	4127	418340	8382	N/A
36	7/3/2018	77.26	6553	5952	4442	423530	8513.476	N/A
37	7/3/2018	71.6	6552	5776	4888	401520	10975.1	N/A
38	7/3/2018	77	6650	5701	5089	423390	8380	N/A
39	7/4/2018	75	6456	5963	4049	422390	8566	N/A
40	7/4/2018	71.86	6602	5535	3986	417590	8321.595	N/A
41	7/5/2018	76.6	6538	5559	4647	416630	8185.31	N/A
42	7/5/2018	76.56	6614	5987	4056	403480	7969.143	N/A
43	7/5/2018	76	6798	5958	3822	402860	7884.286	N/A
44	7/6/2018	77	6826	6599	3715	400760	8265.619	N/A
	AVG=	73	7,241	5,967	4,455	17,252,210	385,806	TOTAL

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Sandstone	0	177	0	177
Sandstone tr coal	est. 177	217	est. 177	217
Sandy shale	est. 217	232	est. 217	232
Calcareous Shale	est. 232	319	est. 232	319
Sandstone	est. 319	373	est. 319	373
Calcareous Shale	est. 373	1,065	est. 373	1,065
Silty Sandstone	est. 1065	1,137	est. 1065	1,137
Silty shale	est. 1137	1,287	est. 1137	1,287
Sandy Shale	est. 1287	1,357	est. 1287	1,357
Shale	est. 1357	1,557	est. 1357	1,567
Big Lime	1,557	2,192	1,567	2,213
Fifty Foot Sandstone	2,192	2,444	2,213	2,470
Gordon	2,444	2,664	2,470	2,694
Fifth Sandstone	2,664	2,729	2,694	2,761
Bayard	2,729	3,531	2,761	3,578
Speechley	3,531	3,817	3,578	3,870
Balltown	3,817	4,328	3,870	4,388
Bradford	4,328	4,743	4,388	4,810
Benson	4,743	4,998	4,810	5,068
Alexander	4,998	5,979	5,068	6,077
Sycamore	5,979	6,164	6,077	6,298
Middlesex	6,164	6,296	6,298	6,509
Burkett	6,296	6,325	6,509	6,569
Tully	6,325	6,366	6,569	6,672
Marcellus	6,366	NA	6,672	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.

RECEIVED
Office of Oil and Gas

JAN 24 2019

WV Department of
Environmental Protection



ANTERO RESOURCES CORPORATION

Location: Doddridge Co., WV
 Field: Doddridge
 Facility: Middle Pad

Slot: Slot #09
 Well: Chalk Unit 1H
 Wellbore: Chalk Unit 1H PWB

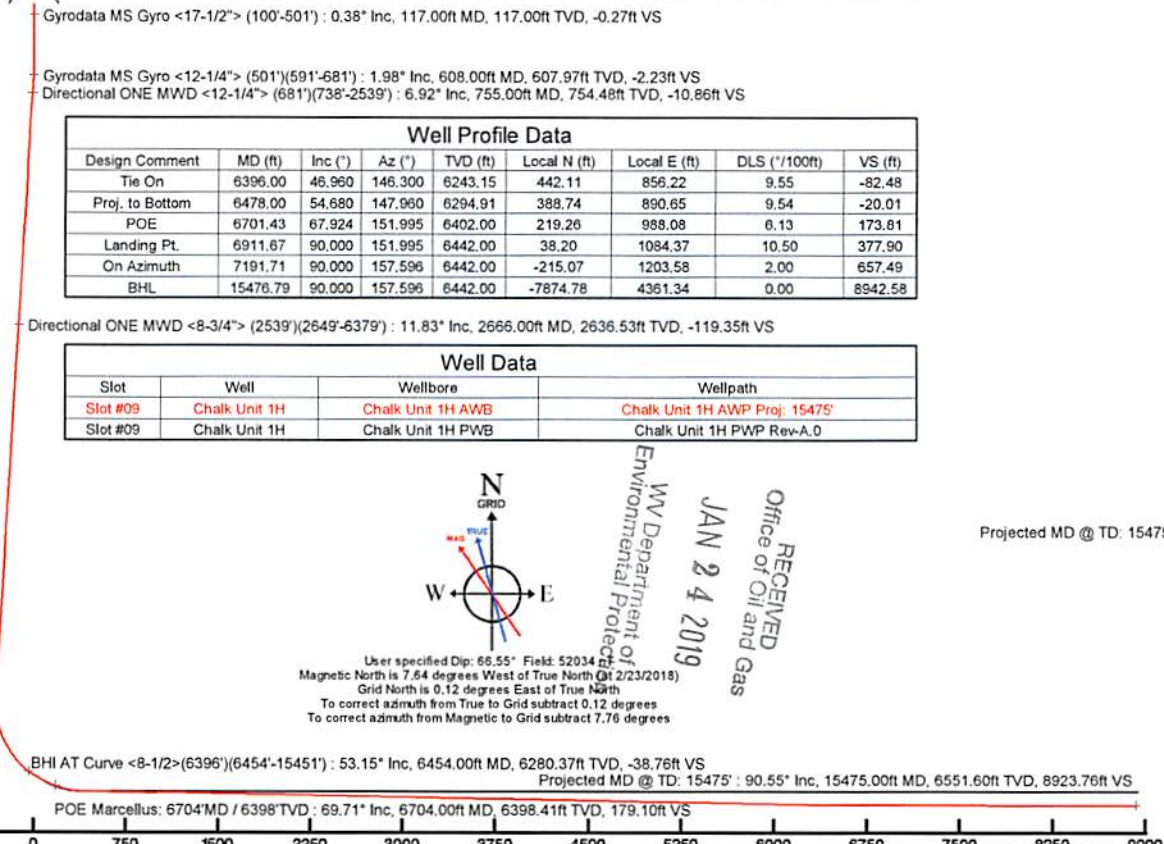


Plot reference wellpath is Chalk Unit 1H PWB Rev-A.0	Grid System: NAD27 / UTM Zone 17 North, US feet
True vertical depths are referenced to Frontier 32 (RKB)	North Reference: Grid north
Measured depths are referenced to Frontier 32 (RKB)	Scale: True distance
Frontier 32 (RKB) to Mean Sea Level: 875 feet	Depths are in feet
Mean Sea Level to Ground level (At Slot: Slot #09): -843 feet	Created by: mccreid on 2018-05-21
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	
Middle Pad		1695090.990	14279417.689	39°19'21.010"N	80°48'24.020"W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot #09	-29.18	74.72	1695165.682	14279388.519	39°19'20.720"N	80°48'23.070"W
Comment: Chalk Unit 1H						
Frontier 32 (RKB) to Ground level (At Slot: Slot #09)				32ft		
Mean Sea Level to Ground level (At Slot: Slot #09)				-843ft		
Frontier 32 (RKB) to Mean Sea Level				875ft		

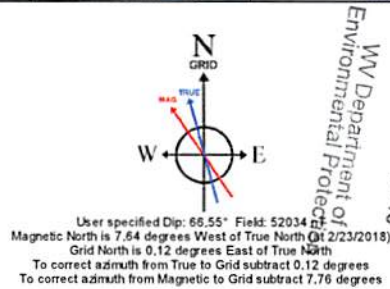
Scale 1 inch = 1500

True Vertical Depth (ft)

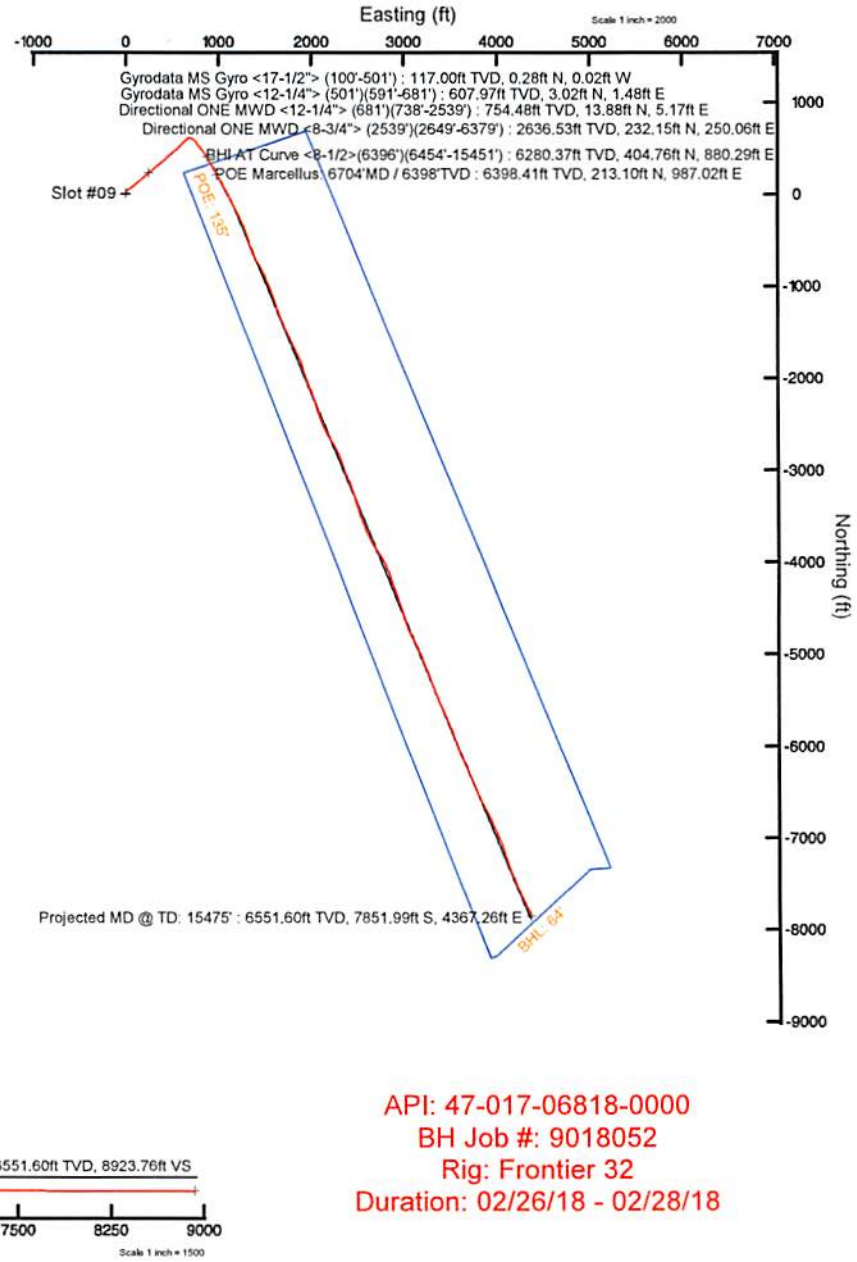


Well Profile Data								
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	6396.00	46.960	146.300	6243.15	442.11	856.22	9.55	-82.48
Proj. to Bottom	6478.00	54.680	147.960	6294.91	388.74	890.65	9.54	-20.01
POE	6701.43	67.924	151.995	6402.00	219.26	988.08	6.13	173.81
Landing Pt.	6911.67	90.000	151.995	6442.00	38.20	1084.37	10.50	377.90
On Azimuth	7191.71	90.000	157.596	6442.00	-215.07	1203.58	2.00	657.49
BHL	15476.79	90.000	157.596	6442.00	-7874.78	4361.34	0.00	8942.58

Well Data			
Slot	Well	Wellbore	Wellpath
Slot #09	Chalk Unit 1H	Chalk Unit 1H AWB	Chalk Unit 1H AWP Proj: 15475'
Slot #09	Chalk Unit 1H	Chalk Unit 1H PWB	Chalk Unit 1H PWB Rev-A.0



RECEIVED
 Office of Oil and Gas
 JAN 24 2019
 WV Department of Environmental Protection



API: 47-017-06818-0000
 BH Job #: 9018052
 Rig: Frontier 32
 Duration: 02/26/18 - 02/28/18

Vertical Section (ft)
 Azimuth 157.60° with reference 0.00 N, 0.00 E

Scale 1 inch = 1500



Actual Wellpath Report

Chalk Unit 1H AWP Proj: 15475'

Page 1 of 10



REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Doddridge Co., WV	Well	Chalk Unit 1H
Field	Doddridge	Wellbore	Chalk Unit 1H AWB
Facility	Middle Pad		

REPORT SETUP INFORMATION			
Projection System	NAD27 / UTM Zone 17 North, US feet	Software System	WellArchitect® 5.1
North Reference	Grid	User	Mccrerib
Scale	0.999603	Report Generated	5/21/2018 at 12:31:10 PM
Convergence at slot	0.12° East	Database/Source file	WA_MPL_EASTERNUS_Defn/Chalk_Unit_1H_AWP_Proj_15475_.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-29.18	74.72	1695165.68	14279388.52	39°19'20.720"N	80°48'23.070"W
Facility Reference Pt			1695090.99	14279417.69	39°19'21.010"N	80°48'24.020"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.301"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Frontier 32 (RKB) to Facility Vertical Datum	875.00ft
Horizontal Reference Pt	Slot	Frontier 32 (RKB) to Mean Sea Level	875.00ft
Vertical Reference Pt	Frontier 32 (RKB)	Frontier 32 (RKB) to Ground Level at Slot (Slot #09)	32.00ft
MD Reference Pt	Frontier 32 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	157.60°

RECEIVED
 Office of Oil and Gas
 JAN 24 2019
 WV Department of
 Environmental Protection



Actual Wellpath Report

Chalk Unit 1H AWP Proj: 15475'

Page 2 of 10



REFERENCE WELLPATH IDENTIFICATION				
Operator	ANTERO RESOURCES CORPORATION		Slot	Slot #09
Area	Doddridge Co., WV		Well	Chalk Unit 1H
Field	Doddridge		Wellbore	Chalk Unit 1H AWB
Facility	Middle Pad			

WELLPATH DATA (191 stations) † = interpolated/extrapolated station																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
0.00	0.00	355.900	0.00	0.00	0.00	0.00	1695165.68	14279388.52	39°19'20.720"N	80°48'23.070"W	0.00	0.000	0.00	0.00	0.00	
32.00	0.00	355.900	32.00	0.00	0.00	0.00	1695165.68	14279388.52	39°19'20.720"N	80°48'23.070"W	0.00	0.000	0.00	0.00	0.00	
117.00	0.380	355.900	117.00	-0.27	0.28	-0.02	1695165.66	14279388.80	39°19'20.723"N	80°48'23.070"W	0.28	355.900	0.45	0.45	-4.82	Gyrodata MS Gyro <17-1/2"> (100'-501')
217.00	0.540	4.510	217.00	-1.00	1.08	-0.01	1695165.68	14279389.60	39°19'20.731"N	80°48'23.070"W	1.08	359.639	0.17	0.16	8.61	
317.00	0.170	80.730	316.99	-1.39	1.58	0.18	1695165.86	14279390.09	39°19'20.736"N	80°48'23.068"W	1.59	6.399	0.53	-0.37	76.22	
417.00	0.130	90.750	416.99	-1.31	1.60	0.44	1695166.12	14279390.12	39°19'20.736"N	80°48'23.064"W	1.66	15.280	0.05	-0.04	10.02	
517.00	0.500	99.440	516.99	-1.04	1.52	0.98	1695166.66	14279390.04	39°19'20.735"N	80°48'23.057"W	1.81	32.740	0.37	0.37	8.69	
518.00	0.500	98.100	517.99	-1.03	1.52	0.99	1695166.67	14279390.04	39°19'20.735"N	80°48'23.057"W	1.82	32.992	1.17	0.00	-134.00	
608.00	1.980	3.740	607.97	-2.23	3.02	1.48	1695167.16	14279391.54	39°19'20.750"N	80°48'23.051"W	3.36	26.099	2.31	1.64	-104.84	Gyrodata MS Gyro <12-1/4"> (501')(591'-681')
698.00	5.110	19.690	697.79	-6.60	8.35	2.93	1695168.61	14279396.86	39°19'20.802"N	80°48'23.032"W	8.85	19.353	3.61	3.48	17.72	
755.00	6.920	23.770	754.48	-10.86	13.88	5.17	1695170.85	14279402.39	39°19'20.857"N	80°48'23.004"W	14.81	20.434	3.26	3.18	7.16	Directional ONE MWD <12-1/4"> (681')(738'-2539')
845.00	9.100	33.980	843.60	-18.56	24.74	11.34	1695177.01	14279413.25	39°19'20.964"N	80°48'22.925"W	27.22	24.612	2.88	2.42	11.34	
935.00	10.400	40.930	932.30	-26.15	36.78	20.64	1695186.31	14279425.29	39°19'21.083"N	80°48'22.806"W	42.18	29.292	1.95	1.44	7.72	
1023.00	9.300	47.890	1019.00	-32.11	47.55	31.11	1695196.78	14279436.05	39°19'21.189"N	80°48'22.673"W	56.83	33.197	1.84	-1.25	7.91	
1111.00	8.540	46.120	1105.94	-36.90	56.85	41.10	1695206.77	14279445.35	39°19'21.281"N	80°48'22.545"W	70.15	35.864	0.92	-0.86	-2.01	
1199.00	8.970	41.640	1192.91	-42.30	66.51	50.37	1695216.03	14279455.00	39°19'21.376"N	80°48'22.427"W	83.43	37.138	0.92	0.49	-5.09	
1288.00	9.440	51.470	1280.77	-47.36	76.24	60.69	1695226.35	14279464.73	39°19'21.472"N	80°48'22.296"W	97.45	38.520	1.84	0.53	11.04	
1376.00	8.740	58.780	1367.67	-50.39	84.20	72.05	1695237.71	14279472.69	39°19'21.551"N	80°48'22.151"W	110.82	40.554	1.53	-0.80	8.31	
1464.00	8.390	57.240	1454.69	-52.57	91.14	83.17	1695248.82	14279479.62	39°19'21.619"N	80°48'22.009"W	123.38	42.381	0.48	-0.40	-1.75	
1552.00	9.020	50.930	1541.68	-55.70	98.96	93.92	1695259.57	14279487.44	39°19'21.696"N	80°48'21.872"W	136.44	43.503	1.30	0.72	-7.17	
1640.00	10.130	50.170	1628.45	-60.00	108.27	105.22	1695270.86	14279496.74	39°19'21.788"N	80°48'21.728"W	150.98	44.183	1.27	1.26	-0.86	
1728.00	10.590	47.660	1715.01	-65.08	118.67	117.14	1695282.78	14279507.14	39°19'21.890"N	80°48'21.576"W	166.75	44.629	0.73	0.52	-2.85	
1817.00	11.530	47.090	1802.36	-70.98	130.24	129.70	1695295.33	14279518.70	39°19'22.004"N	80°48'21.416"W	183.80	44.883	1.06	1.06	-0.64	
1905.00	11.740	48.770	1888.55	-76.95	142.12	142.88	1695308.50	14279530.59	39°19'22.122"N	80°48'21.248"W	201.53	45.151	0.45	0.24	1.91	
1993.00	10.820	50.870	1974.85	-82.22	153.24	156.02	1695321.64	14279541.70	39°19'22.231"N	80°48'21.081"W	218.69	45.515	1.14	-1.05	2.39	
2081.00	10.210	50.830	2061.37	-86.85	163.38	168.47	1695334.09	14279551.83	39°19'22.331"N	80°48'20.922"W	234.68	45.880	0.69	-0.69	-0.05	
2169.00	10.490	50.990	2147.94	-91.39	173.35	180.74	1695346.35	14279561.80	39°19'22.429"N	80°48'20.765"W	250.43	46.197	0.32	0.32	0.18	
2257.00	9.770	50.680	2234.57	-95.85	183.12	192.74	1695358.35	14279571.57	39°19'22.526"N	80°48'20.612"W	265.86	46.467	0.82	-0.82	-0.35	
2345.00	10.230	46.210	2321.23	-100.88	193.26	204.16	1695369.76	14279581.70	39°19'22.626"N	80°48'20.467"W	281.12	46.572	1.02	0.52	-5.08	
2433.00	10.790	47.500	2407.76	-106.56	204.23	215.88	1695381.47	14279592.67	39°19'22.734"N	80°48'20.318"W	297.17	46.588	0.69	0.64	1.47	

RECEIVED
 Office of Oil and Gas
 JAN 24 2019
 WV Department of Environmental Protection



Actual Wellpath Report
 Chalk Unit 1H AWP Proj: 15475
 Page 3 of 10



Operator	ANTERO RESOURCES CORPORATION
Area	Doddridge Co., WV
Field	Doddridge
Facility	Middle Pad
Slot	Slot #09
Well	Well
Chalk Unit 1H	Chalk Unit 1H AWP

WELLPATH DATA (191 stations)												
MD	Inclination	TD	Vert Sect	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate
(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(°)	(ft/100ft)	(ft/100ft)
2521.00	10.750	228.24	-111.86	125.06	14279603.50	14279607.65	39°19'22.882"N	80°48'20.097"W	320.04	46.768	0.76	-0.74
2556.00	10.490	2528.61	-113.82	219.22	1695393.83	14279607.77	39°19'22.882"N	80°48'20.097"W	320.04	46.768	0.76	-0.74
2566.00	11.830	2636.53	-119.35	232.15	1695415.64	14279620.58	39°19'23.009"N	80°48'19.882"W	341.21	47.126	1.53	4.77
2754.00	11.040	50.270	-123.82	242.71	1695429.51	14279631.14	39°19'23.113"N	80°48'19.705"W	358.56	47.398	1.39	-0.90
2842.00	10.470	2809.24	-129.31	253.68	1695441.71	14279642.09	39°19'23.221"N	80°48'19.549"W	374.97	47.428	1.15	-0.65
2931.00	12.320	2896.48	-134.76	265.07	1695455.06	14279653.49	39°19'23.334"N	80°48'19.379"W	392.51	47.521	2.58	7.80
3019.00	11.510	46.390	-140.34	276.82	1695468.88	14279665.22	39°19'23.450"N	80°48'19.203"W	410.64	47.615	1.74	-0.92
3107.00	11.220	49.650	-146.16	288.42	1695481.76	14279676.82	39°19'23.564"N	80°48'19.039"W	427.98	47.631	0.80	-0.32
3195.00	12.450	52.220	-151.32	299.78	1695495.78	14279688.18	39°19'23.678"N	80°48'18.860"W	446.01	47.767	1.51	3.70
3283.00	11.750	46.490	-157.06	311.76	1695509.77	14279700.16	39°19'23.794"N	80°48'18.681"W	464.42	47.833	1.58	-0.80
3372.00	11.170	50.470	-162.87	323.49	1695522.99	14279711.88	39°19'23.910"N	80°48'18.513"W	482.09	47.855	1.10	-0.65
3460.00	11.120	54.100	-167.36	333.89	1695536.43	14279722.27	39°19'24.012"N	80°48'18.341"W	499.05	48.006	0.80	-0.06
3548.00	10.540	47.180	-172.15	344.34	1695549.21	14279732.72	39°19'24.115"N	80°48'18.179"W	515.53	48.093	1.62	-0.66
3636.00	10.150	52.900	-176.92	354.48	1695561.29	14279742.86	39°19'24.215"N	80°48'18.024"W	531.31	48.149	1.25	-0.44
3724.00	11.170	53.900	-180.91	364.18	1695574.36	14279752.56	39°19'24.311"N	80°48'17.858"W	547.52	48.306	1.18	1.14
3812.00	10.050	49.970	-185.25	374.14	1695587.12	14279762.51	39°19'24.409"N	80°48'17.695"W	563.68	48.413	1.51	-4.47
3901.00	9.400	47.100	-190.15	384.09	1695598.38	14279772.45	39°19'24.507"N	80°48'17.551"W	578.71	48.418	0.91	-0.73
3989.00	8.830	41.390	-195.65	394.05	1695608.11	14279782.41	39°19'24.605"N	80°48'17.427"W	592.60	48.322	1.21	-0.65
4077.00	9.390	42.200	-201.71	404.43	1695617.39	14279792.79	39°19'24.708"N	80°48'17.309"W	606.44	48.172	0.65	0.92
4165.00	10.160	42.220	-208.12	416.50	1695627.43	14279803.85	39°19'24.817"N	80°48'17.181"W	621.30	48.029	0.88	0.02
4254.00	10.130	45.230	-214.46	426.82	1695638.25	14279815.17	39°19'24.929"N	80°48'17.043"W	636.93	47.923	0.60	-0.03
4342.00	11.010	53.500	-219.45	437.27	1695650.50	14279825.62	39°19'25.032"N	80°48'16.887"W	653.03	47.963	1.99	9.40
4430.00	9.280	4456.14	-223.85	447.30	1695663.27	14279835.64	39°19'25.130"N	80°48'16.724"W	669.23	48.058	1.10	-0.84
4518.00	10.630	4543.80	-228.42	456.94	1695674.68	14279845.28	39°19'25.225"N	80°48'16.578"W	684.16	48.096	1.13	-0.83
4607.00	10.630	4643.80	-232.80	466.60	1695686.64	14279854.94	39°19'25.321"N	80°48'16.426"W	699.52	48.162	1.63	3.47
4695.00	10.490	47.630	-237.54	476.86	1695699.07	14279866.19	39°19'25.422"N	80°48'16.267"W	715.63	48.214	0.87	-0.16
4783.00	9.910	46.710	-242.88	487.37	1695710.56	14279875.70	39°19'25.525"N	80°48'16.121"W	731.21	48.200	0.74	-1.93
4872.00	10.390	46.010	-248.56	498.20	1695721.91	14279886.52	39°19'25.632"N	80°48'15.976"W	746.88	48.161	0.56	-0.79
4960.00	10.240	42.100	-254.85	509.51	1695732.86	14279897.83	39°19'25.744"N	80°48'15.836"W	762.59	48.077	0.81	-4.44
5048.00	9.870	46.770	-260.90	520.48	1695743.59	14279908.79	39°19'25.852"N	80°48'15.699"W	777.91	48.004	1.02	-0.42

Comments
 Turn Rate
 Build Rate
 Closure Dir
 Closure Dist
 Longitude
 Latitude
 Grid North
 Grid East
 East
 North
 Vert Sect
 TD
 Azimuth
 Inclin
 MD

RECEIVED
 Office of Oil and Gas
 JAN 24 2019
 WV Department of
 Environmental Protection



Actual Wellpath Report

Chalk Unit 1H AWP Proj: 15475'

Page 4 of 10



REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION		Slot #09
Area	Doddridge Co., WV		Well Chalk Unit 1H
Field	Doddridge		Wellbore Chalk Unit 1H AWB
Facility	Middle Pad		

WELLPATH DATA (191 stations) † = interpolated/extrapolated station																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
5136.00	10.440	48.870	5064.38	-266.14	530.89	589.64	1695755.09	14279919.20	39°19'25.955"N	80°48'15.553"W	793.43	48.001	0.77	0.65	2.39	
5224.00	10.170	44.840	5150.96	-271.71	541.65	601.13	1695766.57	14279929.95	39°19'26.061"N	80°48'15.406"W	809.16	47.979	0.87	-0.31	-4.58	
5313.00	10.150	44.750	5238.56	-277.79	552.79	612.19	1695777.63	14279941.09	39°19'26.171"N	80°48'15.265"W	824.83	47.919	0.03	-0.02	-0.10	
5401.00	10.370	43.070	5325.16	-284.09	564.08	623.06	1695788.49	14279952.37	39°19'26.282"N	80°48'15.126"W	840.47	47.844	0.42	0.25	-1.91	
5489.00	10.790	45.580	5411.66	-290.47	575.63	634.35	1695799.78	14279963.92	39°19'26.396"N	80°48'14.982"W	856.59	47.778	0.71	0.48	2.85	
5577.00	11.440	48.400	5498.01	-296.43	587.19	646.76	1695812.18	14279975.48	39°19'26.510"N	80°48'14.824"W	873.55	47.764	0.96	0.74	3.20	
5665.00	11.390	45.540	5584.27	-302.56	599.07	659.48	1695824.90	14279987.35	39°19'26.627"N	80°48'14.662"W	890.96	47.748	0.65	-0.06	-3.25	
5710.00	10.270	43.290	5628.47	-305.88	605.10	665.41	1695830.82	14279993.38	39°19'26.686"N	80°48'14.586"W	899.40	47.717	2.66	-2.49	-5.00	
5754.00	10.390	52.230	5671.76	-308.55	610.39	671.23	1695836.65	14279998.66	39°19'26.739"N	80°48'14.512"W	907.26	47.718	3.65	0.27	20.32	
5797.00	10.530	71.370	5714.06	-309.32	614.02	678.02	1695843.44	14280002.29	39°19'26.774"N	80°48'14.426"W	914.73	47.836	8.05	0.33	44.51	
5842.00	12.190	89.140	5758.19	-307.30	615.41	686.67	1695852.08	14280003.68	39°19'26.788"N	80°48'14.316"W	922.09	48.133	8.56	3.69	39.49	
5886.00	13.910	99.050	5801.05	-302.83	614.64	696.54	1695861.95	14280002.92	39°19'26.780"N	80°48'14.190"W	928.96	48.574	6.40	3.91	22.52	
5930.00	15.120	106.470	5843.65	-296.47	612.18	707.27	1695872.67	14280000.46	39°19'26.756"N	80°48'14.054"W	935.42	49.122	5.04	2.75	16.86	
5974.00	17.510	116.340	5885.89	-287.89	607.62	718.71	1695884.11	14279995.90	39°19'26.710"N	80°48'13.908"W	941.14	49.788	8.30	5.43	22.43	
6018.00	20.430	125.410	5927.50	-276.41	600.23	730.91	1695896.30	14279988.51	39°19'26.637"N	80°48'13.753"W	945.78	50.607	9.41	6.64	20.61	
6062.00	23.400	132.910	5968.32	-261.97	589.83	743.57	1695908.96	14279978.11	39°19'26.534"N	80°48'13.592"W	949.10	51.577	9.26	6.75	17.05	
6106.00	26.510	137.910	6008.22	-244.78	576.59	756.56	1695921.94	14279964.88	39°19'26.403"N	80°48'13.427"W	951.22	52.688	8.54	7.07	11.36	
6150.00	29.060	141.120	6047.14	-225.28	560.98	769.85	1695935.22	14279949.27	39°19'26.248"N	80°48'13.259"W	952.56	53.920	6.72	5.80	7.30	
6194.00	31.410	142.210	6085.15	-203.98	543.59	783.58	1695948.95	14279931.90	39°19'26.076"N	80°48'13.084"W	953.68	55.250	5.48	5.34	2.48	
6238.00	33.650	143.720	6122.25	-181.09	524.70	797.83	1695963.19	14279913.01	39°19'25.889"N	80°48'12.904"W	954.90	56.668	5.41	5.09	3.43	
6282.00	36.780	143.510	6158.19	-156.47	504.28	812.88	1695978.23	14279892.60	39°19'25.687"N	80°48'12.713"W	956.59	58.186	7.12	7.11	-0.48	
6327.00	40.570	144.830	6193.32	-129.12	481.48	829.32	1695994.67	14279869.81	39°19'25.461"N	80°48'12.504"W	958.96	59.862	8.62	8.42	2.93	
6371.00	44.590	145.900	6225.71	-100.03	456.98	846.23	1696011.57	14279845.32	39°19'25.219"N	80°48'12.290"W	961.74	61.630	9.28	9.14	2.43	
6396.00	46.960	146.300	6243.15	-82.48	442.11	856.22	1696021.56	14279830.46	39°19'25.071"N	80°48'12.163"W	963.63	62.690	9.55	9.48	1.60	
6454.00	53.150	148.030	6280.37	-38.76	404.76	880.29	1696045.62	14279793.11	39°19'24.702"N	80°48'11.858"W	968.89	65.307	10.91	10.67	2.98	BHI AT Curve <8-1/2>(6396')(6454'-15451')
6501.00	57.000	149.140	6307.27	-0.71	371.87	900.37	1696065.69	14279760.24	39°19'24.376"N	80°48'11.603"W	974.14	67.558	8.42	8.19	2.36	
6541.00†	59.492	150.636	6328.32	32.99	342.45	917.42	1696082.74	14279730.83	39°19'24.085"N	80°48'11.387"W	979.25	69.531	6.99	6.23	3.74	Burket: 6541' MD / 6328'TVD
6548.00	59.930	150.890	6331.85	38.99	337.18	920.37	1696085.69	14279725.56	39°19'24.033"N	80°48'11.349"W	980.19	69.880	6.99	6.26	3.63	
6595.00	62.250	152.170	6354.57	79.90	301.01	939.98	1696105.29	14279689.41	39°19'23.675"N	80°48'11.101"W	987.00	72.243	5.48	4.94	2.72	
6601.00†	62.695	152.097	6357.35	85.20	296.31	942.47	1696107.77	14279684.71	39°19'23.628"N	80°48'11.069"W	987.95	72.547	7.50	7.42	-1.22	Tully: 6601' MD / 6357'TVD



Actual Wellpath Report

Chalk Unit 1H AWP Proj: 15475'

Page 5 of 10



REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION		Slot #09
Area	Doddridge Co., WV		Well Chalk Unit 1H
Field	Doddridge		Wellbore Chalk Unit 1H AWB
Facility	Middle Pad		

WELLPATH DATA (191 stations) † = interpolated/extrapolated station																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (ft/100ft)	Comments
6642.00	65.740	151.610	6375.18	121.93	263.76	959.88	1696125.18	14279652.17	39°19'23.306"N	80°48'10.849"W	995.46	74.635	7.50	7.43	-1.19	
6681.00†	68.653	151.906	6390.29	157.69	232.09	976.89	1696142.19	14279620.52	39°19'22.993"N	80°48'10.633"W	1004.08	76.635	7.50	7.47	0.76	Hamilton: 6681MD / 6390'TVD
6691.00	69.400	151.980	6393.87	166.98	223.85	981.28	1696146.58	14279612.28	39°19'22.911"N	80°48'10.578"W	1006.49	77.150	7.50	7.47	0.74	
6704.00†	69.710	151.888	6398.41	179.10	213.10	987.02	1696152.30	14279601.54	39°19'22.805"N	80°48'10.505"W	1009.76	77.817	2.47	2.38	-0.71	POE Marcellus: 6704MD / 6398'TVD
6738.00	70.520	151.650	6409.98	210.91	184.93	1002.14	1696167.42	14279573.38	39°19'22.526"N	80°48'10.313"W	1019.06	79.544	2.47	2.38	-0.70	
6786.00	74.620	151.860	6424.35	256.46	144.60	1023.81	1696189.08	14279533.06	39°19'22.127"N	80°48'10.039"W	1033.97	81.961	8.55	8.54	0.44	
6833.00	80.880	151.530	6434.32	302.12	104.18	1045.58	1696210.84	14279492.66	39°19'21.727"N	80°48'09.763"W	1050.75	84.310	13.34	13.32	-0.70	
6881.00	86.270	153.110	6439.69	349.60	61.95	1067.72	1696232.98	14279450.45	39°19'21.310"N	80°48'09.482"W	1069.52	86.679	11.70	11.23	3.29	
6928.00	88.950	153.350	6441.65	396.42	20.03	1088.87	1696254.12	14279408.54	39°19'20.895"N	80°48'09.214"W	1089.05	88.946	5.72	5.70	0.51	
6976.00	89.110	153.000	6442.46	444.27	-22.80	1110.53	1696275.77	14279365.73	39°19'20.471"N	80°48'08.940"W	1110.76	91.176	0.80	0.33	-0.73	
7071.00	88.950	150.300	6444.07	538.73	-106.38	1155.63	1696320.85	14279282.18	39°19'19.644"N	80°48'08.368"W	1160.51	95.260	2.85	-0.17	-2.84	
7166.00	88.920	152.450	6445.84	633.15	-189.75	1201.13	1696366.33	14279198.84	39°19'18.819"N	80°48'07.792"W	1216.03	98.977	2.26	-0.03	2.26	
7262.00	88.860	156.060	6447.70	728.95	-276.19	1242.81	1696408.00	14279112.44	39°19'17.964"N	80°48'07.264"W	1273.13	102.529	3.76	-0.06	3.76	
7356.00	88.950	158.320	6449.49	822.93	-362.82	1279.25	1696444.42	14279025.84	39°19'17.107"N	80°48'06.802"W	1329.70	105.834	2.41	0.10	2.40	
7452.00	89.350	161.790	6450.92	918.81	-453.04	1311.99	1696477.14	14278935.66	39°19'16.214"N	80°48'06.388"W	1388.00	109.050	3.64	0.42	3.61	
7546.00	90.920	163.530	6450.70	1012.44	-542.76	1340.00	1696505.15	14278845.98	39°19'15.327"N	80°48'06.034"W	1445.75	112.050	2.49	1.67	1.85	
7641.00	90.830	158.120	6449.24	1107.24	-632.44	1371.19	1696536.32	14278756.33	39°19'14.440"N	80°48'05.640"W	1510.01	114.761	5.69	-0.09	-5.69	
7736.00	88.890	148.700	6449.48	1201.88	-717.30	1413.66	1696578.78	14278671.51	39°19'13.600"N	80°48'05.102"W	1585.23	116.903	10.12	-2.04	-9.92	
7831.00	88.120	151.170	6451.96	1295.99	-799.48	1461.23	1696626.33	14278589.36	39°19'12.787"N	80°48'04.499"W	1665.64	118.684	2.72	-0.81	2.60	
7926.00	88.860	157.270	6454.46	1390.74	-884.95	1502.52	1696667.60	14278503.92	39°19'11.941"N	80°48'03.976"W	1743.76	120.497	6.47	0.78	6.42	
8021.00	88.950	156.950	6456.28	1485.72	-972.46	1539.46	1696704.53	14278416.45	39°19'11.076"N	80°48'03.509"W	1820.88	122.280	0.35	0.09	-0.34	
8116.00	88.830	159.120	6458.12	1580.70	-1060.54	1574.98	1696740.04	14278328.40	39°19'10.204"N	80°48'03.059"W	1898.77	123.955	2.29	-0.13	2.28	
8211.00	88.980	163.100	6459.93	1675.48	-1150.39	1605.73	1696770.77	14278238.59	39°19'09.315"N	80°48'02.670"W	1975.29	125.619	4.19	0.16	4.19	
8306.00	89.170	160.920	6461.47	1770.18	-1240.73	1635.06	1696800.09	14278148.29	39°19'08.422"N	80°48'02.300"W	2052.52	127.192	2.30	0.20	-2.29	
8401.00	89.020	156.800	6462.97	1865.13	-1329.30	1669.31	1696834.33	14278059.75	39°19'07.546"N	80°48'01.866"W	2133.93	128.531	4.34	-0.16	-4.34	
8496.00	89.170	156.950	6464.47	1960.11	-1416.66	1706.62	1696871.62	14277972.42	39°19'06.682"N	80°48'01.394"W	2217.99	129.696	0.22	0.16	0.16	
8591.00	88.980	154.630	6466.00	2055.04	-1503.29	1745.57	1696910.56	14277885.83	39°19'05.825"N	80°48'00.901"W	2303.67	130.735	2.45	-0.20	-2.44	
8687.00	88.890	154.920	6467.79	2150.91	-1590.12	1786.48	1696951.45	14277799.04	39°19'04.965"N	80°48'00.383"W	2391.65	131.672	0.32	-0.09	0.30	
8782.00	88.800	154.170	6469.70	2245.75	-1675.88	1827.30	1696992.25	14277713.31	39°19'04.117"N	80°47'59.866"W	2479.43	132.525	0.79	-0.09	-0.79	
8877.00	88.920	154.810	6471.59	2340.59	-1761.60	1868.20	1697033.14	14277627.62	39°19'03.269"N	80°47'59.348"W	2567.76	133.318	0.69	0.13	0.67	

RECEIVED
 Office of Oil and Gas
 JAN 24 2019
 WV Department of
 Environmental Protection



Actual Wellpath Report

Chalk Unit 1H AWP Proj: 15475'

Page 6 of 10



REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Doddridge Co., WV	Well	Chalk Unit 1H
Field	Doddridge	Wellbore	Chalk Unit 1H AWB
Facility	Middle Pad		

WELLPATH DATA (191 stations)																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
8972.00	88.920	162.080	6473.38	2435.50	-1849.88	1903.08	1697068.00	14277539.38	39°19'02.395"N	80°47'58.907"W	2654.01	134.188	7.65	0.00	7.65	
9067.00	88.950	163.200	6475.15	2530.12	-1940.53	1931.42	1697096.33	14277448.76	39°19'01.499"N	80°47'58.549"W	2737.89	135.135	1.18	0.03	1.18	
9162.00	89.170	158.770	6476.71	2624.92	-2030.32	1962.36	1697127.26	14277359.01	39°19'00.611"N	80°47'58.157"W	2823.65	135.975	4.67	0.23	-4.66	
9257.00	88.580	158.200	6478.58	2719.89	-2118.68	1997.19	1697162.08	14277270.69	39°18'59.737"N	80°47'57.717"W	2911.63	136.691	0.86	-0.62	-0.60	
9352.00	89.110	161.080	6480.49	2814.80	-2207.72	2030.23	1697195.11	14277181.68	39°18'58.856"N	80°47'57.299"W	2999.31	137.398	3.08	0.56	3.03	
9447.00	89.080	162.800	6481.99	2909.51	-2298.02	2059.68	1697224.54	14277091.41	39°18'57.963"N	80°47'56.927"W	3085.96	138.131	1.81	-0.03	1.81	
9542.00	89.110	162.670	6483.49	3004.12	-2388.73	2087.87	1697252.72	14277000.74	39°18'57.066"N	80°47'56.571"W	3172.57	138.845	0.14	0.03	-0.14	
9637.00	88.490	158.210	6485.48	3098.95	-2478.20	2119.66	1697284.50	14276911.30	39°18'56.181"N	80°47'56.169"W	3261.05	139.459	4.74	-0.65	-4.69	
9732.00	88.800	154.460	6487.73	3193.89	-2565.18	2157.78	1697322.60	14276824.37	39°18'55.320"N	80°47'55.686"W	3352.03	139.930	3.96	0.33	-3.95	
9827.00	88.240	147.030	6490.19	3288.11	-2647.97	2204.15	1697368.96	14276741.60	39°18'54.501"N	80°47'55.099"W	3445.29	140.226	7.84	-0.59	-7.82	
9922.00	89.020	150.210	6492.46	3381.91	-2729.04	2253.60	1697418.38	14276660.56	39°18'53.698"N	80°47'54.472"W	3539.26	140.451	3.45	0.82	3.35	
10016.00	89.170	156.640	6493.94	3475.60	-2813.06	2295.62	1697460.39	14276576.58	39°18'52.867"N	80°47'53.939"W	3630.86	140.783	6.84	0.16	6.84	
10111.00	88.860	160.410	6495.58	3570.55	-2901.43	2330.39	1697495.14	14276488.24	39°18'51.993"N	80°47'53.500"W	3721.43	141.229	3.98	-0.33	3.97	
10206.00	89.140	161.130	6497.24	3665.39	-2991.12	2361.68	1697526.42	14276398.59	39°18'51.106"N	80°47'53.104"W	3811.08	141.707	0.81	0.29	0.76	
10301.00	89.200	156.370	6498.61	3760.33	-3079.62	2396.09	1697560.82	14276310.12	39°18'50.230"N	80°47'52.669"W	3901.97	142.115	5.01	0.06	-5.01	
10397.00	89.080	159.650	6500.05	3856.31	-3168.62	2432.03	1697596.74	14276221.16	39°18'49.350"N	80°47'52.214"W	3994.36	142.492	3.42	-0.12	3.42	
10492.00	89.110	161.610	6501.56	3951.16	-3258.22	2463.53	1697628.23	14276131.59	39°18'48.464"N	80°47'51.816"W	4084.73	142.907	2.06	0.03	2.06	
10586.00	88.400	163.710	6503.60	4044.76	-3347.93	2491.54	1697656.23	14276041.93	39°18'47.576"N	80°47'51.462"W	4173.30	143.343	2.36	-0.76	2.23	
10681.00	88.980	163.080	6505.77	4139.25	-3438.94	2518.68	1697683.36	14275950.95	39°18'46.676"N	80°47'51.119"W	4262.64	143.781	0.90	0.61	-0.66	
10776.00	88.980	159.990	6507.46	4234.00	-3529.02	2548.76	1697713.43	14275860.90	39°18'45.785"N	80°47'50.739"W	4353.18	144.162	3.25	0.00	-3.25	
10872.00	88.890	159.260	6509.25	4329.93	-3619.00	2582.18	1697746.83	14275770.96	39°18'44.895"N	80°47'50.317"W	4445.77	144.492	0.77	-0.09	-0.76	
10967.00	88.920	154.920	6511.06	4424.88	-3706.47	2619.15	1697783.79	14275683.53	39°18'44.030"N	80°47'49.849"W	4538.49	144.753	4.57	0.03	-4.57	
11062.00	89.020	149.270	6512.77	4519.39	-3790.38	2663.58	1697828.20	14275599.65	39°18'43.200"N	80°47'49.286"W	4632.67	144.903	5.95	0.11	-5.95	
11157.00	88.830	145.950	6514.55	4612.92	-3870.57	2714.46	1697879.06	14275519.49	39°18'42.406"N	80°47'48.641"W	4727.54	144.958	3.50	-0.20	-3.49	
11252.00	88.830	147.310	6516.49	4706.16	-3949.89	2766.70	1697931.28	14275440.20	39°18'41.621"N	80°47'47.978"W	4822.47	144.991	1.43	0.00	1.43	
11347.00	88.860	157.820	6518.41	4800.64	-4034.07	2810.40	1697974.96	14275356.06	39°18'40.788"N	80°47'47.425"W	4916.51	145.136	11.06	0.03	11.06	
11441.00	88.950	158.420	6520.21	4894.62	-4121.28	2845.42	1698009.97	14275268.88	39°18'39.925"N	80°47'46.982"W	5008.13	145.378	0.65	0.10	0.64	
11536.00	89.050	160.710	6521.87	4989.55	-4210.29	2878.58	1698043.12	14275179.91	39°18'39.045"N	80°47'46.562"W	5100.27	145.639	2.41	0.11	2.41	
11631.00	89.290	161.300	6523.24	5084.37	-4300.10	2909.50	1698074.02	14275090.13	39°18'38.156"N	80°47'46.172"W	5191.93	145.917	0.67	0.25	0.62	
11727.00	88.830	160.260	6524.82	5180.21	-4390.74	2941.10	1698105.61	14274999.53	39°18'37.260"N	80°47'45.772"W	5284.76	146.184	1.18	-0.48	-1.08	

RECEIVED
 Office of Oil and Gas
 JAN 24 2019
 WV Department of
 Environmental Protection



Actual Wellpath Report

Chalk Unit 1H AWP Proj: 15475'

Page 7 of 10



REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Doddridge Co., WV	Well	Chalk Unit 1H
Field	Doddridge	Wellbore	Chalk Unit 1H AWB
Facility	Middle Pad		

WELLPATH DATA (191 stations)																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
11822.00	88.920	161.410	6526.68	5275.03	-4480.45	2972.28	1698136.78	14274909.85	39°18'36.372"N	80°47'45.378"W	5376.70	146.440	1.21	0.09	1.21	
11917.00	88.830	162.320	6528.55	5369.75	-4570.72	3001.84	1698166.33	14274819.62	39°18'35.479"N	80°47'45.005"W	5468.32	146.705	0.96	-0.09	0.96	
12011.00	88.980	161.110	6530.35	5463.49	-4659.95	3031.33	1698195.80	14274730.42	39°18'34.597"N	80°47'44.632"W	5559.15	146.956	1.30	0.16	-1.29	
12107.00	88.950	156.390	6532.08	5559.43	-4749.39	3066.11	1698230.57	14274641.03	39°18'33.712"N	80°47'44.192"W	5653.11	147.155	4.92	-0.03	-4.92	
12201.00	88.830	152.690	6533.90	5653.26	-4834.23	3106.50	1698270.95	14274556.22	39°18'32.873"N	80°47'43.681"W	5746.31	147.275	3.94	-0.13	-3.94	
12296.00	88.920	154.390	6535.77	5748.00	-4919.25	3148.82	1698313.25	14274471.23	39°18'32.031"N	80°47'43.145"W	5840.73	147.377	1.79	0.09	1.79	
12392.00	88.950	157.650	6537.55	5843.93	-5006.94	3187.83	1698352.24	14274383.57	39°18'31.164"N	80°47'42.651"W	5935.63	147.516	3.40	0.03	3.40	
12486.00	88.860	159.140	6539.35	5937.91	-5094.32	3222.43	1698386.83	14274296.23	39°18'30.299"N	80°47'42.213"W	6027.95	147.684	1.59	-0.10	1.59	
12581.00	88.740	156.890	6541.34	6032.88	-5182.39	3257.99	1698422.37	14274208.20	39°18'29.428"N	80°47'41.764"W	6121.40	147.844	2.37	-0.13	-2.37	
12676.00	89.020	159.430	6543.20	6127.85	-5270.54	3293.32	1698457.69	14274120.08	39°18'28.556"N	80°47'41.317"W	6214.87	148.001	2.69	0.29	2.67	
12771.00	88.980	160.270	6544.85	6222.76	-5359.71	3326.04	1698490.39	14274030.94	39°18'27.674"N	80°47'40.903"W	6307.86	148.178	0.89	-0.04	0.88	
12866.00	89.290	159.200	6546.29	6317.68	-5448.82	3358.94	1698523.28	14273941.87	39°18'26.792"N	80°47'40.487"W	6400.95	148.348	1.17	0.33	-1.13	
12962.00	89.480	154.770	6547.32	6413.64	-5537.15	3396.46	1698560.79	14273853.57	39°18'25.919"N	80°47'40.012"W	6495.85	148.475	4.62	0.20	-4.61	
13057.00	89.600	155.020	6548.08	6508.53	-5623.18	3436.76	1698601.08	14273767.58	39°18'25.067"N	80°47'39.502"W	6590.26	148.568	0.29	0.13	0.26	
13152.00	90.150	156.600	6548.29	6603.48	-5709.83	3475.69	1698639.99	14273680.96	39°18'24.210"N	80°47'39.009"W	6684.50	148.670	1.76	0.58	1.66	
13247.00	90.030	158.620	6548.14	6698.48	-5797.67	3511.88	1698676.16	14273593.16	39°18'23.341"N	80°47'38.552"W	6778.36	148.795	2.13	-0.13	2.13	
13342.00	90.030	161.650	6548.09	6793.38	-5887.00	3544.15	1698708.42	14273503.86	39°18'22.458"N	80°47'38.143"W	6871.52	148.951	3.19	0.00	3.19	
13437.00	90.180	160.730	6547.92	6888.19	-5976.93	3574.78	1698739.04	14273413.97	39°18'21.568"N	80°47'37.756"W	6964.39	149.116	0.98	0.16	-0.97	
13532.00	89.720	157.230	6548.00	6983.15	-6065.59	3608.85	1698773.10	14273325.35	39°18'20.691"N	80°47'37.326"W	7057.99	149.249	3.72	-0.48	-3.68	
13627.00	89.750	156.190	6548.44	7078.13	-6152.85	3646.41	1698810.64	14273238.12	39°18'19.828"N	80°47'36.850"W	7152.19	149.347	1.10	0.03	-1.09	
13722.00	89.690	156.390	6548.90	7173.11	-6239.83	3684.61	1698848.83	14273151.18	39°18'18.967"N	80°47'36.367"W	7246.51	149.438	0.22	-0.06	0.21	
13817.00	89.750	156.270	6549.37	7268.08	-6326.83	3722.75	1698886.95	14273064.21	39°18'18.106"N	80°47'35.884"W	7340.83	149.527	0.14	0.06	-0.13	
13912.00	89.850	157.480	6549.70	7363.07	-6414.20	3760.06	1698924.25	14272976.88	39°18'17.242"N	80°47'35.412"W	7435.05	149.621	1.28	0.11	1.27	
14007.00	89.880	157.890	6549.92	7458.07	-6502.08	3796.13	1698960.30	14272889.03	39°18'16.373"N	80°47'34.956"W	7529.13	149.722	0.43	0.03	0.43	
14102.00	89.720	154.060	6550.25	7553.01	-6588.84	3834.80	1698998.96	14272802.31	39°18'15.514"N	80°47'34.466"W	7623.55	149.800	4.04	-0.17	-4.03	
14197.00	89.970	150.820	6550.51	7647.62	-6673.05	3878.75	1699042.89	14272718.13	39°18'14.681"N	80°47'33.910"W	7718.44	149.832	3.42	0.26	-3.41	
14292.00	89.720	153.320	6550.77	7742.17	-6756.97	3923.25	1699087.36	14272634.24	39°18'13.850"N	80°47'33.346"W	7813.36	149.860	2.64	-0.26	2.63	
14387.00	89.850	156.110	6551.13	7837.04	-6842.86	3963.82	1699127.92	14272548.38	39°18'13.001"N	80°47'32.833"W	7908.01	149.918	2.94	0.14	2.94	
14482.00	89.690	155.940	6551.51	7932.00	-6929.67	4002.42	1699166.51	14272461.62	39°18'12.142"N	80°47'32.344"W	8002.48	149.990	0.25	-0.17	-0.18	
14578.00	89.660	156.570	6552.05	8027.97	-7017.54	4041.08	1699205.15	14272373.78	39°18'11.272"N	80°47'31.855"W	8097.91	150.064	0.66	-0.03	0.66	



Actual Wellpath Report

Chalk Unit 1H AWP Proj: 15475'

Page 8 of 10



REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION			Slot	Slot #09
Area	Doddridge Co., WV			Well	Chalk Unit 1H
Field	Doddridge			Wellbore	Chalk Unit 1H AWB
Facility	Middle Pad				

WELLPATH DATA (191 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [ft]	Grid North [ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [F/100ft]	Build Rate [F/100ft]	Turn Rate [F/100ft]	Comments
14673.00	89.780	162.110	6552.52	8122.89	-7106.39	4074.58	1699238.54	14272284.96	39°18'10.393"N	80°47'31.431"W	8191.64	150.171	5.83	0.13	5.83	
14768.00	89.850	165.010	6552.82	8217.36	-7197.50	4101.46	1699265.51	14272193.89	39°18'09.492"N	80°47'31.092"W	8284.08	150.324	3.05	0.07	3.05	
14864.00	89.780	158.780	6553.13	8313.05	-7288.70	4131.28	1699295.32	14272102.72	39°18'08.590"N	80°47'30.715"W	8378.10	150.455	6.49	-0.07	-6.49	
14959.00	89.880	158.100	6553.41	8408.04	-7377.05	4166.19	1699330.21	14272014.41	39°18'07.716"N	80°47'30.274"W	8472.19	150.544	0.72	0.11	-0.72	
15053.00	89.820	157.830	6553.66	8502.03	-7464.19	4201.46	1699365.46	14271927.31	39°18'06.854"N	80°47'29.828"W	8565.41	150.626	0.29	-0.06	-0.29	
15148.00	89.850	156.850	6553.93	8597.03	-7551.85	4238.06	1699402.05	14271839.68	39°18'05.987"N	80°47'29.365"W	8659.77	150.699	1.03	0.03	-1.03	
15243.00	90.460	155.410	6553.68	8692.00	-7638.72	4278.50	1699440.48	14271752.84	39°18'05.127"N	80°47'28.878"W	8754.34	150.758	1.65	0.64	-1.52	
15338.00	90.430	154.320	6552.94	8786.88	-7724.72	4316.85	1699480.81	14271666.88	39°18'04.277"N	80°47'28.368"W	8849.10	150.802	1.15	-0.03	-1.15	
15433.00	90.680	160.090	6552.02	8881.84	-7812.26	4353.64	1699517.58	14271579.37	39°18'03.411"N	80°47'27.902"W	8943.47	150.870	6.08	0.26	6.07	
15451.00	90.550	161.330	6551.83	8899.81	-7829.25	4359.58	1699523.53	14271562.39	39°18'03.242"N	80°47'27.827"W	8961.20	150.890	6.93	-0.72	6.89	
15475.00	90.550	161.330	6551.60	8923.76	-7851.99	4367.26	1699531.21	14271539.66	39°18'03.018"N	80°47'27.730"W	8984.80	150.917	0.00	0.00	0.00	Projected MD @ TD: 15475'

HOLE & CASING SECTIONS - Ref Wellbore: Chalk Unit 1H AWB Ref Wellpath: Chalk Unit 1H AWP Proj: 15475'

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	End N/S [ft]	Start E/W [ft]	End E/W [ft]
20in Conductor	32.00	112.00	80.00	32.00	112.00	0.00	0.25	0.00	-0.02
17.5in Open Hole	112.00	548.40	436.40	112.00	548.39	0.25	1.67	-0.02	1.22
13.375in Casing Surface	32.00	548.40	516.40	32.00	548.39	0.00	1.67	0.00	1.22
12.25in Open Hole	548.40	2627.00	2078.60	548.39	2598.32	1.67	227.57	1.22	243.71
9.625in Casing Intermediate	32.00	2627.00	2595.00	32.00	2598.32	0.00	227.57	0.00	243.71
8.75in Open Hole	2627.00	6478.00	3851.00	2598.32	6294.43	0.00	388.21	243.71	890.50
8.5in Open Hole	6478.00	15475.00	8997.00	6294.43	6551.60	388.21	-7851.99	890.50	4367.26
5.5in Casing Production	32.00	15475.00	15443.00	32.00	6551.60	0.00	-7851.99	0.00	4367.26

RECEIVED
Office of Oil and Gas
JAN 24 2019
WV Department of Environmental Protection



Actual Wellpath Report

Chalk Unit 1H AWP Proj: 15475'

Page 9 of 10



REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Doddridge Co., WV	Well	Chalk Unit 1H
Field	Doddridge	Wellbore	Chalk Unit 1H AWB
Facility	Middle Pad		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Chalk Unit 1H POE Rev-2	6402.00	219.26	988.08	1696153.37	14279607.70	39°19'22.866"N	80°48'10.491"W	point
Chalk Unit 1H BHL Rev-2	6442.00	-7874.78	4361.34	1699525.29	14271516.87	39°18'02.792"N	80°47'27.806"W	point
Chalk Unit 1H LP Rev-1	6442.00	38.20	1084.37	1696249.62	14279426.71	39°19'21.074"N	80°48'09.271"W	point

WELLPATH COMPOSITION - Ref Wellbore: Chalk Unit 1H AWB Ref Wellpath: Chalk Unit 1H AWP Proj: 15475'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
32.00	518.00	Gyrodata standard - Drop gyro or Multi-shot	01_Gyrodata MS Gyro <17-1/2"> (100'-501')	Chalk Unit 1H AWB
518.00	698.00	Gyrodata standard - Drop gyro or Multi-shot	02_Gyrodata MS Gyro <12-1/4"> (501')(591'-681')	Chalk Unit 1H AWB
698.00	2556.00	ISCWSA MWD. Rev. 4 (Standard)	03_Directional ONE MWD <12-1/4"> (681')(738'-2539')	Chalk Unit 1H AWB
2556.00	6396.00	ISCWSA MWD. Rev. 4 (Standard)	04_Directional ONE MWD <8-3/4"> (2539')(2649'-6379')	Chalk Unit 1H AWB
6396.00	15451.00	BHI AutoTrak Curve (Short)	05_BHI AT Curve <8-1/2">(6396')(6454'-15451')	Chalk Unit 1H AWB
15451.00	15475.00	Blind Drilling (std)	Projection to bit	Chalk Unit 1H AWB

RECEIVED
 Office of Oil and Gas
 JAN 24 2019
 WV Department of
 Environmental Protection



Actual Wellpath Report

Chalk Unit 1H AWP Proj: 15475'

Page 10 of 10



REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Doddridge Co., WV	Well	Chalk Unit 1H
Field	Doddridge	Wellbore	Chalk Unit 1H AWB
Facility	Middle Pad		

COMMENTS
<p>Wellpath general comments API: 47-017-06818-0000 BH Job #: 9018052 Rig: Frontier 32 Duration: 02/26/18 - 02/28/18 Gyrodata MS Gyro <17-1/2"> (100'-501') Gyrodata MS Gyro <12-1/4"> (501')(591'-681') Directional ONE MWD <12-1/4"> (681')(738'-2539') Directional ONE MWD <8-3/4"> (2539')(2649'-6379') BHI AT Curve <8-1/2">(6396')(6454'-15451') Burket: 6541'MD / 6328'TVD Tully: 6601'MD / 6357'TVD Hamilton: 6681'MD / 6390'TVD POE Marcellus: 6704'MD / 6398'TVD Projected MD @ TD: 15475'</p>

RECEIVED
 Office of Oil and Gas
 JAN 24 2019
 WV Department of
 Environmental Protection

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/6/2018
Job End Date:	7/6/2018
State:	West Virginia
County:	Doddridge
API Number:	47-017-06818-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Chalk 1H
Latitude:	39.32241667
Longitude:	-80.79103000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,554
Total Base Water Volume (gal):	16,568,373
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	88.68543	Density = 8.330
Ingredients	Listed Above	Listed Above	Water	7732-18-5	100.00000	0.16757	

RECEIVED
 Office of Oil and Gas
 JAN 24 2019
 WV Department of Environmental Protection

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

RECEIVED
 Office of Oil and Gas
 WV Department of Environmental Protection
 JAN 24 2019

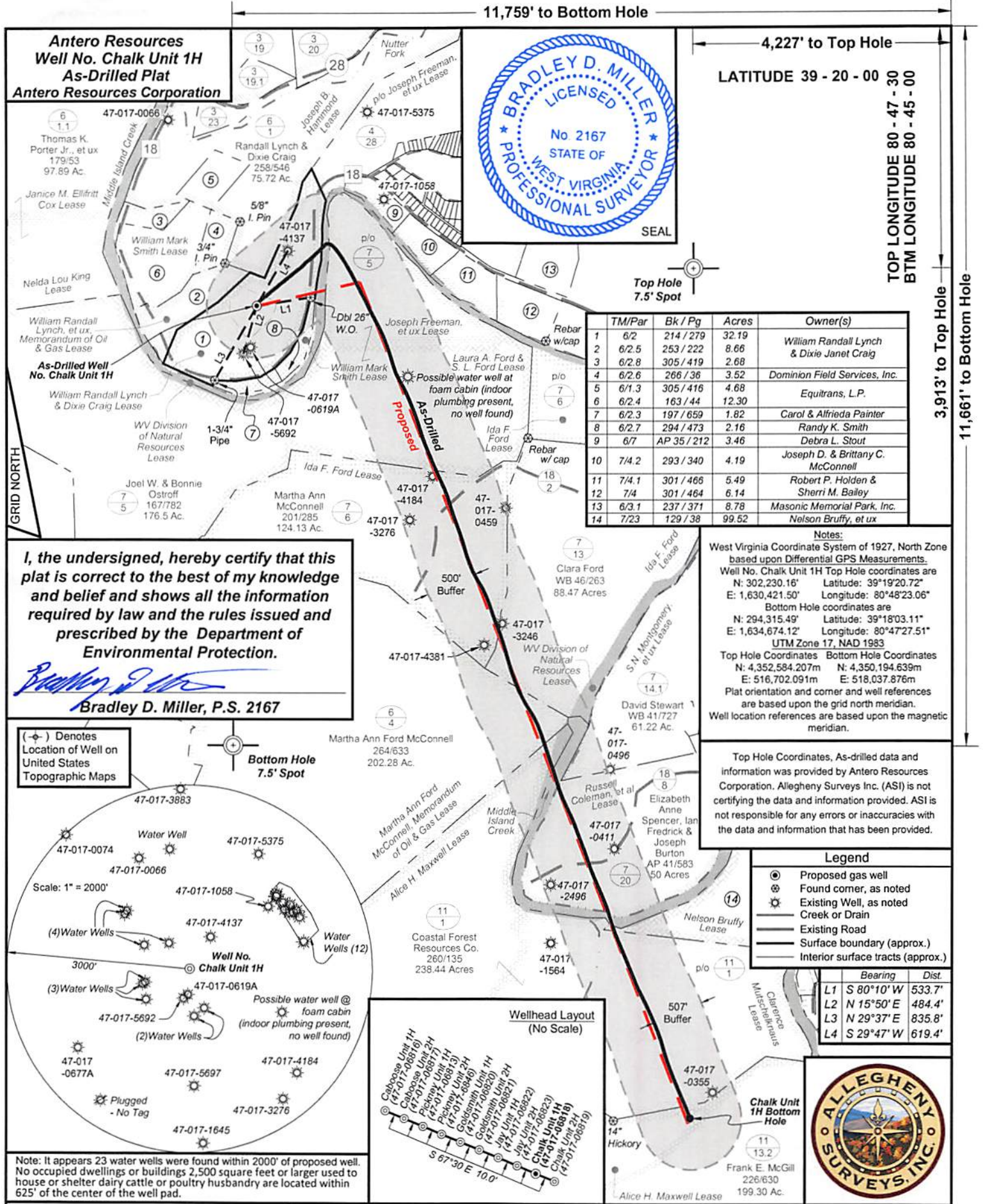
HYDROCHLORIC ACID	Halliburton	Solvent					
				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Crystalline silica, quartz	14808-60-7	100.00000	11.08602	
			Guar gum	9000-30-0	100.00000	0.03067	
			Hydrochloric acid	7647-01-0	15.00000	0.01775	
			Acrylamide acrylate polymer	Proprietary	30.00000	0.01692	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Inorganic salt	Proprietary	30.00000	0.01692	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01692	
			Ethylene glycol	107-21-1	60.00000	0.00819	
			Glutaraldehyde	111-30-8	30.00000	0.00262	
			Telmer	Proprietary	10.00000	0.00136	
			Sodium persulfate	7775-27-1	100.00000	0.00060	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00044	
			Methanol	67-56-1	60.00000	0.00014	
			Sodium polyacrylate	9003-04-7	1.00000	0.00014	
			Ethanol	64-17-5	1.00000	0.00009	
			Modified thiourea polymer	Proprietary	30.00000	0.00006	
			Ethoxylated alcohols	Proprietary	30.00000	0.00006	
			Fatty acids, tall oil	Proprietary	30.00000	0.00006	
			Olefins	Proprietary	5.00000	0.00003	
			Propargyl alcohol	107-19-7	10.00000	0.00002	
			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)

RECEIVED
 Office of Oil and Gas
 JAN 24 2019
 WV Department of
 Environmental Protection



TM/Par	Bk / Pg	Acres	Owner(s)
1	6/2	214 / 279	32.19
2	6/2.5	253 / 222	8.66
3	6/2.8	305 / 419	2.68
4	6/2.6	266 / 36	3.52
5	6/1.3	305 / 416	4.68
6	6/2.4	163 / 44	12.30
7	6/2.3	197 / 659	1.82
8	6/2.7	294 / 473	2.16
9	6/7	AP 35 / 212	3.46
10	7/4.2	293 / 340	4.19
11	7/4.1	301 / 466	5.49
12	7/4	301 / 464	6.14
13	6/3.1	237 / 371	8.78
14	7/2.3	129 / 38	99.52

Antero Resources
Well No. Chalk Unit 1H
As-Drilled Plat
Antero Resources Corporation

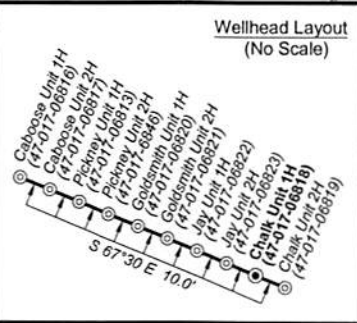
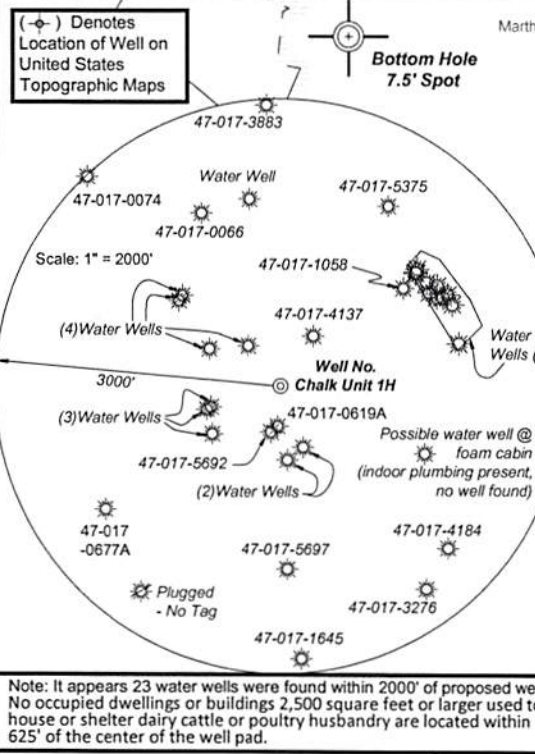
4,227' to Top Hole
 LATITUDE 39 - 20 - 00
 TOP LONGITUDE 80 - 47 - 30
 BTM LONGITUDE 80 - 45 - 00

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 prescribed by the Department of Environmental Protection.

Bradley D. Miller
Bradley D. Miller, P.S. 2167

Notes:
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Chalk Unit 1H Top Hole coordinates are N: 302,230.16' Latitude: 39°19'20.72" E: 1,630,421.50' Longitude: 80°48'23.06"
 Bottom Hole coordinates are N: 294,315.49' Latitude: 39°18'03.11" E: 1,634,674.12' Longitude: 80°47'27.51"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,352,584.207m N: 4,350,194.639m
 E: 516,702.091m E: 518,037.876m
 Plat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.

Top Hole Coordinates, As-drilled data and information was provided by Antero Resources Corporation, Allegheny Surveys Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.



Legend

- Proposed gas well
- Found corner, as noted
- Existing Well, as noted
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)

	Bearing	Dist.
L1	S 80°10' W	533.7'
L2	N 15°50' E	484.4'
L3	N 29°37' E	835.8'
L4	S 29°47' W	619.4'



FILE NO: 237-30-WU-14
 DRAWING NO: Chalk 1H As-Drilled Well Plat
 SCALE: 1" = 1200'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: CORS, Marietta, OH

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION

DATE: January 16 2019
 Operator's Well No. Chalk Unit 1H
 API WELL NO
 47 - 017 - 06818
 STATE COUNTY PERMIT

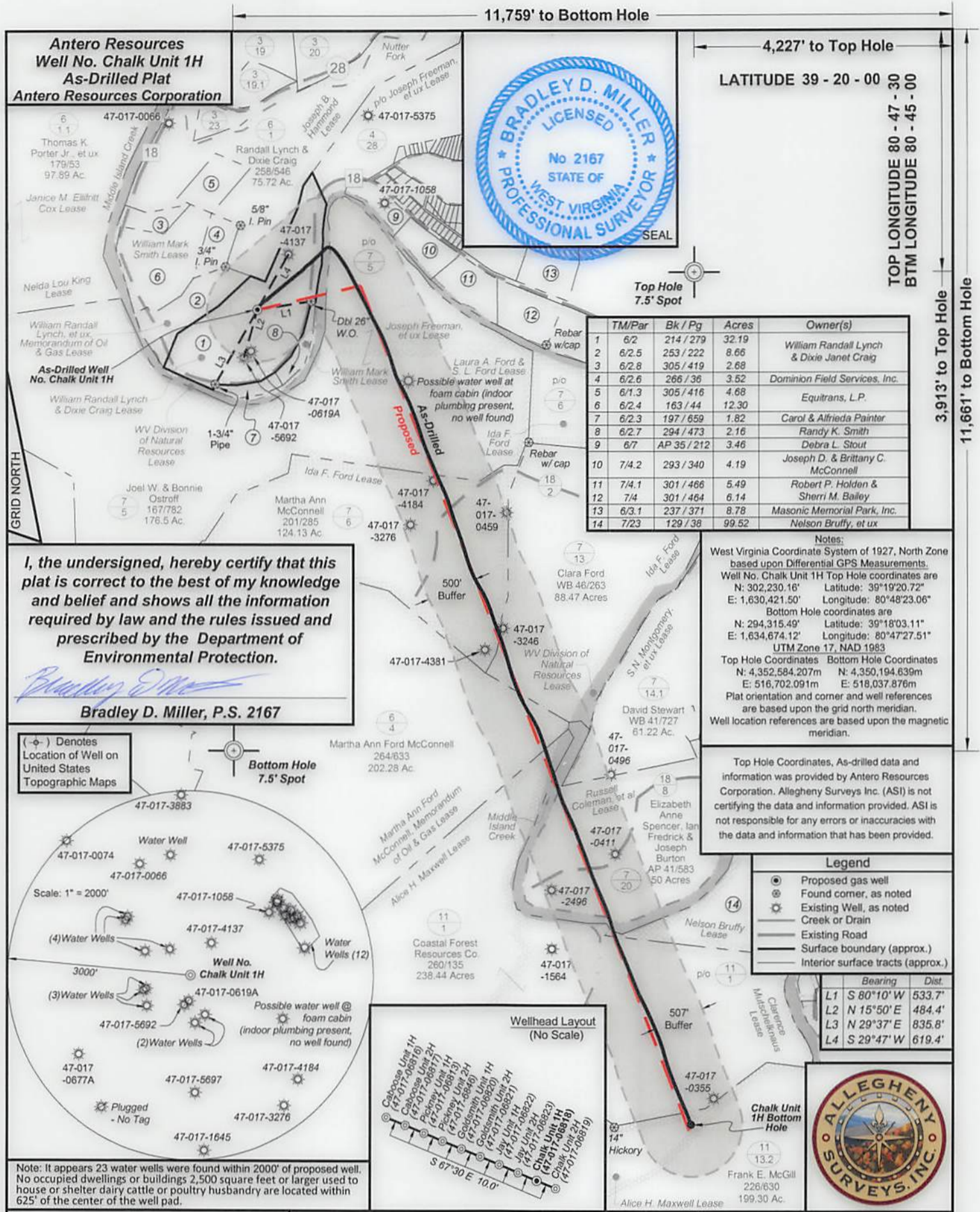
WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: As-Built Grade - 843' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union
 DISTRICT: West Union COUNTY: Doddridge 100; 32.15;
 SURFACE OWNER: William Randall Lynch & Dixie Craig Russell Coleman, et al; Martha Ann Ford McConnell, Memorandum of Oil & Gas; Nelson Bruffy; Clarence Mutschelknaus; Alice H. Maxwell; LEASE NO: ACREAGE: 600; 180; 56.07;
 ROYALTY OWNER: William Randall Lynch & Dixie Craig; Joseph Freeman, et ux; Ida F. Ford (2) Laura A. Ford & S.L. Ford; WV Division of Natural Resources; ACREAGE: 124; 90; 202.28;
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled ESTIMATED DEPTH: 6,551' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 15,475' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
 Denver, CO 80202 Charleston, WV 25313



[Faint handwritten text]

[Faint handwritten text]



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 prescribed by the Department of Environmental Protection.

Bradley D. Miller
Bradley D. Miller, P.S. 2167

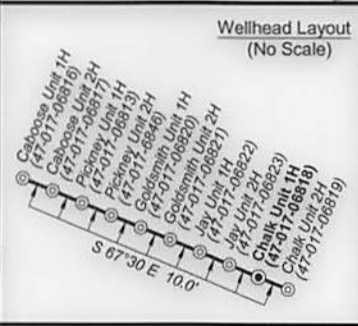
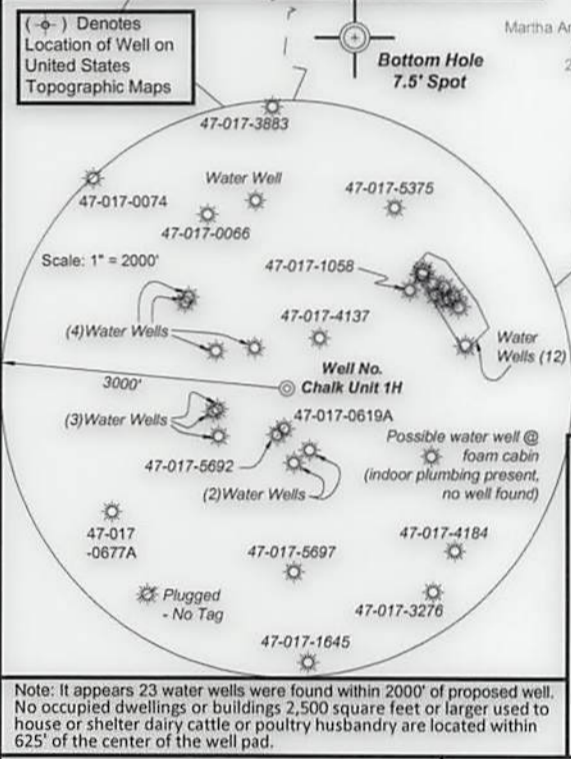
Notes:
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Chalk Unit 1H Top Hole coordinates are N: 302,230.16' Latitude: 39°19'20.72" E: 1,630,421.50' Longitude: 80°48'23.06"
 Bottom Hole coordinates are N: 294,315.49' Latitude: 39°18'03.11" E: 1,634,674.12' Longitude: 80°47'27.51"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,352,584.207m N: 4,350,194.839m
 E: 516,702.091m E: 518,037.876m
 Plat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.

Top Hole Coordinates, As-drilled data and information was provided by Antero Resources Corporation, Allegheny Surveys Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

Legend

- Proposed gas well
- Found corner, as noted
- Existing Well, as noted
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)

	Bearing	Dist.
L1	S 80°10' W	533.7'
L2	N 15°50' E	484.4'
L3	N 29°37' E	835.8'
L4	S 29°47' W	619.4'



FILE NO: 237-30-WU-14
 DRAWING NO: Chalk 1H As-Drilled Well Plat
 SCALE: 1" = 1200'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: CORS, Marietta, OH

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION

DATE: January 16 2019
 Operator's Well No. Chalk Unit 1H
 API WELL NO
 47 - 017 - 06818
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: As-Built Grade - 843' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union
 DISTRICT: West Union
 SURFACE OWNER: William Randall Lynch & Dixie Craig
 ROYALTY OWNER: William Randall Lynch & Dixie Craig; Joseph Freeman, et ux; Ida F. Ford (2)
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 6,551' TVD 15,475' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
 Denver, CO 80202 Charleston, WV 25313

WELL OPERATOR: Antero Resources Corporation
 ADDRESS: 1615 Wynkoop Street
 Denver, CO 80202

DESIGNATED AGENT: Diana Stampler - CT Corporation System
 ADDRESS: 2400 D Big Tyler Road
 Charleston, WV 25313

□ PLUG AND ABANDON □ CLEAN OUT AND REPLUG
 □ PERFORATE NEW FORMATION □ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 6,251' TVD
 □ PROPOSED WORK: □ DRILL □ CONVERT □ DRILL DEEPER □ FRACTURE OR STIMULATE □ PLUG OFF OLD FORMATION

ROYALTY OWNER: William Randall Lynch & Dixie Craig
 SURFACE OWNER: William Randall Lynch
 DISTRICT: West Union
 LOCATION: ELEVATION: As-Built Grade - 843' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union
 (IF GAS) PRODUCTION: □ STORAGE □ DEEP □ SHALLOW □ OIL □ GAS □ LIQUID INJECTION □ WASTE DISPOSAL

WELL TYPE: □ OIL □ GAS □ LIQUID INJECTION □ WASTE DISPOSAL

PROVEN SOURCE OF ELEVATION: Sumpter
 MINIMUM DEGREE OF ACCURACY: 1/4" = 1200'
 DRAWING NO: Chalk 1H As-Drilled Well Plat
 FILE NO: 237-30-WU-14

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 OIL AND GAS DIVISION

DATE: January 16 2019
 STATE: 47 COUNTY: PERMIT 00818
 OPERATOR'S WELL NO: Chalk Unit 1H
 API WELL NO: 47 - 017 - 00818



Legend

- Proposed gas well
- Found corner, as noted
- Existing Well, as noted
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)

Line	Bearing	Dist.
L1	S 80°10'W	633.7'
L2	N 18°50'E	484.4'
L3	N 29°37'E	832.8'
L4	S 29°47'W	819.4'

the data and information that has been provided.
 not responsible for any errors or inaccuracies with
 certifying the data and information provided. A SEI is
 Corporation. Allegheny Surveys Inc. (ASI) is not
 information was provided by Antero Resources
 Top Hole Coordinates, As-Drilled data and
 Well location references are based upon the magnetic
 are based upon the grid north meridian.
 Plot orientation and corner and well references
 E: 518.0591m N: 4.352584 207m
 UTM Zone 17, NAD 1983
 E: 1,634,674.12 N: 5,284,312.49
 W: 302,230.18 Longitude: 80°18'03.11"
 E: 1,630,421.50 Longitude: 80°48'23.06"
 West Virginia Coordinate System of 1927, North Zone
 based upon Differential GPS Measurements
 Well No. Chalk Unit 1H Top Hole coordinates are

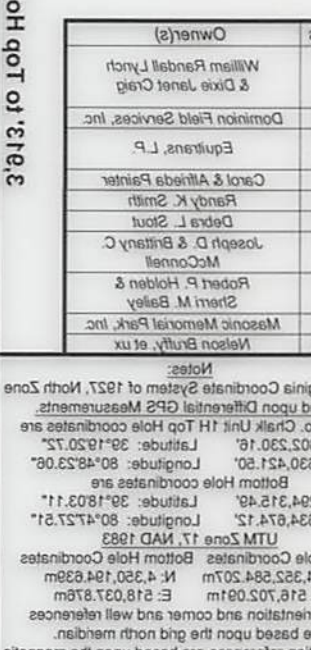
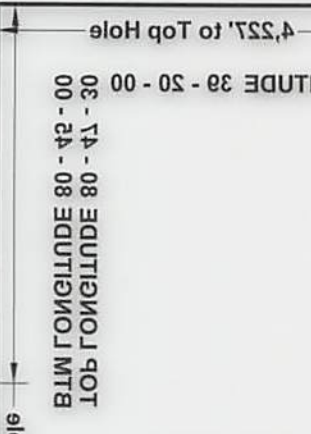
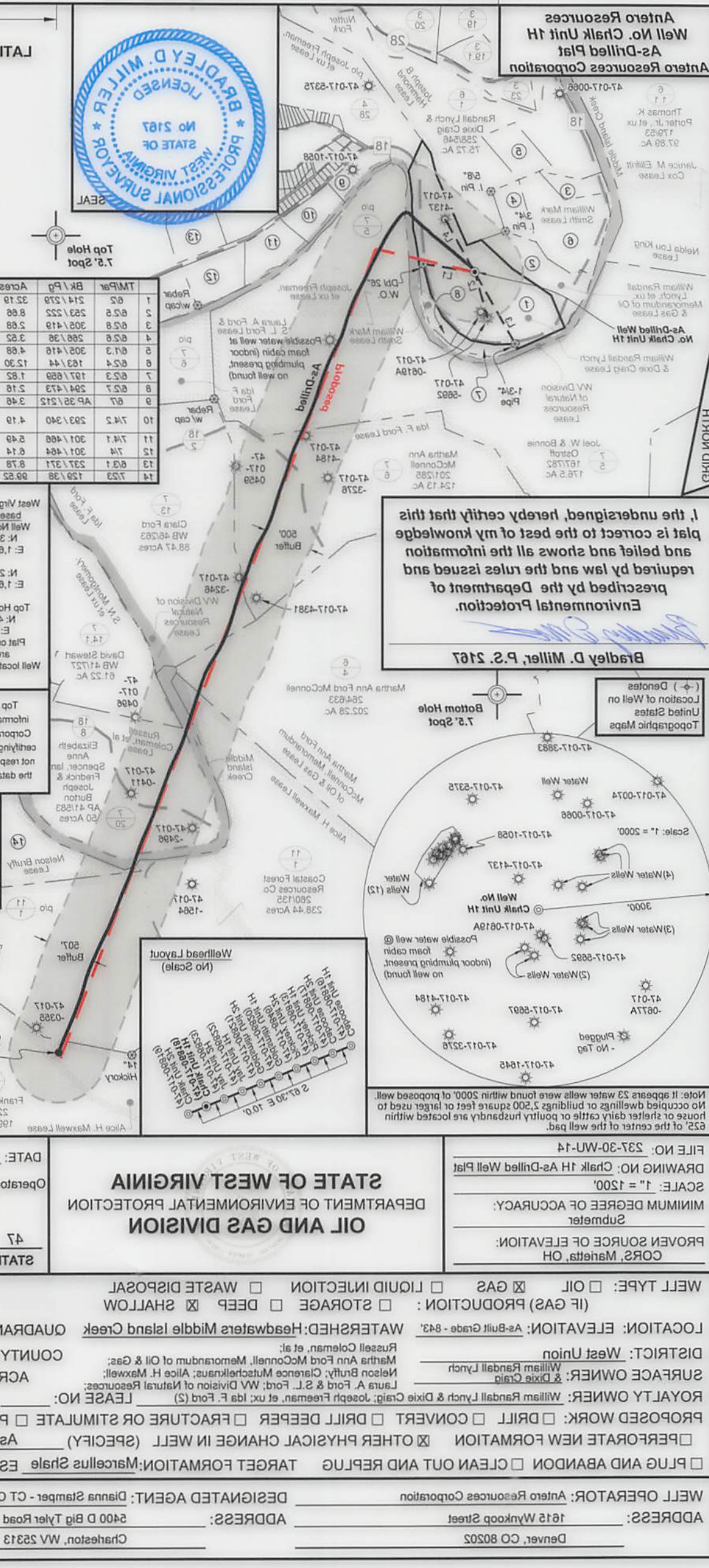
Notes:
 West Virginia Coordinate System of 1927, North Zone
 based upon Differential GPS Measurements
 Well No. Chalk Unit 1H Top Hole coordinates are
 E: 1,630,421.50 Longitude: 80°48'23.06"
 N: 5,284,312.49 Longitude: 80°18'03.11"
 E: 1,634,674.12 Longitude: 80°17'27.21"
 UTM Zone 17, NAD 1983
 E: 518.0591m N: 4.352584 207m
 Top Hole Coordinates Bottom Hole Coordinates
 E: 518.0591m N: 4.352584 207m
 E: 1,634,674.12 N: 5,284,312.49
 W: 302,230.18 Longitude: 80°18'03.11"
 E: 1,630,421.50 Longitude: 80°48'23.06"
 West Virginia Coordinate System of 1927, North Zone
 based upon Differential GPS Measurements
 Well No. Chalk Unit 1H Top Hole coordinates are

Owner(s)	Acres	Bk Pp	TMPr
William Randall Lynch & Dixie Janet Craig	8.68	214 \ 270	1 02
Dominion Field Services, Inc.	2.68	253 \ 222	2 02.5
Edupras, L.P.	3.52	308 \ 419	3 02.8
Carol & Alinda Painter	4.68	258 \ 38	4 02.6
Randy K. Smith	12.30	308 \ 418	5 01.3
Debra L. Stout	1.82	163 \ 44	6 02.4
Joseph D. & Brittany C. McConnell	7.82	197 \ 889	7 02.3
Robert P. Holden & Sherri M. Bailey	2.18	204 \ 473	8 02.7
Mason Memorial Park, Inc.	3.48	AP 32 \ 212	9 01.7
Nelson Bruffy, et ux	4.19	283 \ 340	10 74.2
Robert P. Holden & Sherri M. Bailey	5.49	301 \ 488	11 74.1
Robert P. Holden & Sherri M. Bailey	6.14	301 \ 484	12 74
Mason Memorial Park, Inc.	8.78	237 \ 371	13 03.1
Nelson Bruffy, et ux	98.82	129 \ 38	14 25.3

BRADLEY D. MILLER
 No. 2187
 WEST VIRGINIA
 PROFESSIONAL SURVEYOR
 LICENSED
 STATE OF

4,227' to Top Hole
 3,813' to Bottom Hole
 11,759' to Bottom Hole

LATITUDE 39 - 20 - 00
 LONGITUDE 80 - 17 - 30
 LONGITUDE 80 - 14 - 30



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
 prescribed by the Department of
 Environmental Protection.

Bradley D. Miller, P.S. 2187

Topographic Maps
 (---) Denotes
 Location of Well on
 United States

Note: It appears 23 water wells were found within 2000' of proposed well.
 No occupied dwelling or buildings 2,500 square feet or larger used to
 house or shelter dairy cattle or poultry husbandry are located within
 825' of the center of the well pad.