

Reviewed

12/21/2018

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WR-35
Rev. 8/23/13

John A. ...
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 - 06636 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 Rock 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 4350342m Easting 513451m
Landing Point of Curve Northing 4349940.21m Easting 513793.21m
Bottom Hole Northing 4347962m Easting 514449m

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 12/5/2014 Date drilling commenced 12/27/2015 Date drilling ceased 5/27/2016
Date completion activities began 9/23/2017 Date completion activities ceased 4/6/2018
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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API 47-017 - 06636 Farm name Jeffrey K. Jones Sr. et al Well number Rock Unit 1H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade w/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	97'	New	94#, K-55	N/A	Y
Surface	17-1/2"	13-3/8"	375'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2533'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15137'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6908'		4.7#, N-80		
Packer type and depth set		N/A					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	100 sx	15.6	1.18	118	0'	8 Hrs.
Surface	Class A	440 sx	15.6	1.19	524	0'	8 Hrs.
Coal							
Intermediate 1	Class A	934sx	15.6	1.18	1102	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	988sx (Lead) 1318sx (Tail)	14.5(Lead), 15.2 (Tail)	1.31 (Lead), 1.83 (Tail)	3706	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15137' MD, 6722' TVD (BHL), 6722' (Deepest Point Drilled) Loggers TD (ft) 15137' MD

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

Plug back procedure N/A

Kick off depth (ft) 6280'

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

Conductor - 0
Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface
Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface
Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

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API 47- 017 - 06636 Farm name Jeffrey K. Jones Sr. et al Well number Rock Unit 1H

PRODUCING FORMATION(S)	DEPTHS		
	6577' (TOP)	TVD	6917' (TOP) MD
Marcellus			

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 4175.83 mcfpd Oil 103.98 bpd NGL --- bpd Water 29.13 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	

***PLEASE SEE ATTACHED EXHIBIT 3**

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Please insert additional pages as applicable.


Drilling Contractor Frontier Drilling LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Allied Horizontal Wireline Services
Address 381 Colonial Manor Rd City North Huntington State PA Zip 15642

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

Stimulating Company CalFrac Well Services
Address 717 17th Street, Suite 1445 City Denver State CO Zip 80202

Please insert additional pages as applicable.

Completed by Karja Cox Telephone 303-357-6820
Signature  Title Permitting Agent Date 9/7/2018

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

API 47-017-06636 Farm Name Jeffrey K. Jones Sr. et al Well Number Rock Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	9/23/2017	14875	15046	48	Marcellus
2	11/24/2017	14673	14843	48	Marcellus
3	11/25/2017	14470	14641	48	Marcellus
4	11/26/2017	14267	14438	48	Marcellus
5	11/26/2017	14064	14235	48	Marcellus
6	11/27/2017	13862	14033	48	Marcellus
7	11/27/2017	13659	13830	48	Marcellus
8	11/28/2017	13456	13627	48	Marcellus
9	11/28/2017	13253	13424	48	Marcellus
10	11/29/2017	13051	13222	48	Marcellus
11	11/30/2017	12848	13019	48	Marcellus
12	11/30/2017	12645	12816	48	Marcellus
13	12/1/2017	12442	12613	48	Marcellus
14	12/2/2017	12240	12411	48	Marcellus
15	12/2/2017	12037	12208	48	Marcellus
16	12/3/2017	11834	12005	48	Marcellus
17	12/3/2017	11632	11802	48	Marcellus
18	12/4/2017	11429	11600	48	Marcellus
19	12/4/2017	11226	11397	48	Marcellus
20	12/5/2017	11023	11194	48	Marcellus
21	12/5/2017	10821	10992	48	Marcellus
22	12/6/2017	10618	10789	48	Marcellus
23	12/6/2017	10415	10586	48	Marcellus
24	12/7/2017	10212	10383	48	Marcellus
25	12/7/2017	10010	10181	48	Marcellus
26	12/8/2017	9807	9978	48	Marcellus
27	12/8/2017	9604	9775	48	Marcellus
28	12/9/2017	9401	9572	48	Marcellus
29	12/10/2017	9199	9370	48	Marcellus
30	12/10/2017	8996	9167	48	Marcellus
31	12/11/2017	8793	8964	48	Marcellus
32	12/11/2017	8591	8761	48	Marcellus
33	12/12/2017	8388	8559	48	Marcellus
34	12/12/2017	8185	8356	48	Marcellus
35	12/13/2017	7982	8153	48	Marcellus
36	12/13/2017	7780	7951	48	Marcellus
37	12/14/2017	7577	7748	48	Marcellus
38	12/15/2017	7374	7545	48	Marcellus
39	12/15/2017	7171	7342	48	Marcellus
40	12/16/2017	6969	7140	48	Marcellus

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Economic Development

API 47-017-06636 Farm Name Jeffrey K. Jones Sr. et al Well Number Rock 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	9/23/2017	67.9	7531	6004	3986	513200	9814	N/A
2	11/24/2017	69.9	7454	5838	4872	514350	9979	N/A
3	11/25/2017	71.8	7472	5819	3942	513300	9527	N/A
4	11/26/2017	70.9	7567	6018	4508	514250	10022	N/A
5	11/26/2017	75.4	7551	6072	4950	514650	10095	N/A
6	11/27/2017	77.6	7522	6107	4036	513300	10101	N/A
7	11/27/2017	74.5	7711	5604	4988	513400	9953	N/A
8	11/28/2017	70	7184	5532	3997	513150	9966	N/A
9	11/28/2017	77.9	7607	6317	4808	512700	10001	N/A
10	11/29/2017	77.9	7479	6201	5029	513000	9894	N/A
11	11/30/2017	75	7466	6067	4823	515000	9926	N/A
12	11/30/2017	78.7	7408	5827	5389	514650	9960	N/A
13	12/1/2017	75.4	7276	5916	4643	512500	12164	N/A
14	12/2/2017	74.6	7264	5679	4374	515500	9882	N/A
15	12/2/2017	75.6	7231	5433	5125	513100	9841	N/A
16	12/3/2017	78.9	7360	5527	5086	513650	9834	N/A
17	12/3/2017	78.3	7337	5490	4786	512500	9836	N/A
18	12/4/2017	77.8	7300	5642	3933	516350	9883	N/A
19	12/4/2017	70	7717	6247	4110	512800	12180	N/A
20	12/5/2017	75.9	7499	6990	5565	500200	9893	N/A
21	12/5/2017	75.4	7423	6243	5797	512700	9813	N/A
22	12/6/2017	73.4	7411	6049	5643	512375	10216	N/A
23	12/6/2017	69.8	7016	6335	5726	495000	9630	N/A
24	12/7/2017	72	7658	7240	3780	512500	11803	N/A
25	12/7/2017	77.7	7619	6377	3798	513500	11681	N/A
26	12/8/2017	77.1	7811	6860	4280	511950	10223	N/A
27	12/8/2017	74.8	7888	6154	4263	513700	11165	N/A
28	12/9/2017	73.9	7602	6112	4921	511350	10429	N/A
29	12/10/2017	77.9	7415	6186	4982	515200	9877	N/A
30	12/10/2017	74.6	7195	6554	4050	512500	9877	N/A
31	12/11/2017	74.6	7328	6617	3770	513100	9637	N/A
32	12/11/2017	74.5	7111	6467	5374	512600	9695	N/A
33	12/12/2017	77.3	7282	6399	5305	512900	9725	N/A
34	12/12/2017	73	7044	5987	5918	513650	9870	N/A
35	12/13/2017	75.3	7273	6244	3515	512500	9830	N/A
36	12/13/2017	74.4	7365	6290	3555	514200	10058	N/A
37	12/14/2017	74	7155	6761	3702	514900	11388	N/A
38	12/15/2017	76.5	7059	6436	5936	513800	12138	N/A
39	12/15/2017	76.1	6984	6276	5212	513850	9876	N/A
40	12/16/2017	76.9	6687	6225	3860	513350	9630	N/A
	AVG=	75	7,382	6,154	4,658	20,507,175	409,312	TOTAL

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API 47-017-06636 Farm Name Jeffrey K. Jones Sr. et al Well Number Rock Unit 1H				
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	2,016	est. 1489	2,021
Big Lime	2,016	2,622	2,021	2,627
Fifty Foot Sandstone	2,622	2,695	2,627	2,700
Gordon	2,695	3,102	2,700	3,107
Fifth Sandstone	3,102	3,120	3,107	3,125
Bayard	3,120	3,752	3,125	3,757
Speechley	3,752	4,108	3,757	4,113
Balltown	4,108	4,526	4,113	4,531
Bradford	4,526	5,012	4,531	5,020
Benson	5,012	5,283	5,020	5,298
Alexander	5,283	6,223	5,298	6,338
Sycamore	6,223	6,389	6,338	6,548
Middlesex	6,389	6,512	6,548	6,751
Burkett	6,512	6,541	6,751	6,813
Tully	6,541	6,577	6,813	6,917
Marcellus	6,577	NA	6,917	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:	11/24/2017
Job End Date:	12/16/2017
State:	West Virginia
County:	Doddridge
API Number:	47-017-06636-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Rock 1H
Latitude:	39.30235800
Longitude:	-80.84399700
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,720
Total Base Water Volume (gal):	17,635,637
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	87.45539	
SANIFRAC 8844	CWS	Biocide					
				Listed Below			

Hydrochloric Acid	CWS	Clean Perforations					
				Listed Below			
Sand (Proppant)	CWS	Propping Agent					
				Listed Below			
DWP-641	CWS	Friction Reducer					
				Listed Below			
DWP-111	CWS	Gel Slurry					
				Listed Below			
DAP-902	CWS	Scale Inhibitor					
				Listed Below			
Calbreak 5501	CWS	Breaker					
				Listed Below			
CI-9100G	CWS	Corrosion Inhibitor					
				Listed Below			
DAP-103	CWS	Iron Control					
				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	12.19542	
			Calcite	471-34-1	1.00000	0.08840	
			Hydrochloric acid	7647-01-0	37.00000	0.04634	
			Illite	12173-60-3	1.00000	0.03353	
			Polymer	26100-47-0	45.00000	0.03128	
			Distillates (petroleum), hydrotreated middle	64742-46-7	60.00000	0.02354	
			Guar gum	9000-30-0	60.00000	0.02354	
			Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.02085	
			Goethite	1310-14-1	0.10000	0.01219	
			Biotite	1302-27-8	0.10000	0.01219	
			Apatite	64476-38-6	0.10000	0.01219	
			Ammonium chloride	12125-02-9	11.00000	0.00765	
			Polyethylene glycol mixture	25322-68-3	54.50000	0.00620	
			2-Propenoic acid, homopolymer, sodium salt	9003-04-7	40.00000	0.00611	
			Ammonium Persulfate	64742-47-8	100.00000	0.00569	
			Ilmenite	98072-94-7	0.10000	0.00335	
			Sorbitan monooleate	1338-43-8	4.00000	0.00278	
			2,2-Dibromo-3-Nitrilopropionamide	10222-01-2	20.00000	0.00227	
			Polyethylene glycol monooleate	9004-96-0	3.00000	0.00209	
	RECEIVED Office of Oil and Gas SEP 10 2018		Quaternary ammonium compounds, bis (hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	5.00000	0.00196	
			1,2-Propanediol	57-55-6	10.00000	0.00153	
	Department of Environmental Protection		Sorbitol tetraoleate	61723-83-9	2.00000	0.00139	

			Vinylidene chloride-methyl acrylate copolymer	69418-26-4	20.00000	0.00114	
			Amines, tallow alkyl, ethoxylated	61791-26-2	1.00000	0.00070	
			Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether	37251-67-5	1.50000	0.00059	
			Sodium bromide	7647-15-6	4.00000	0.00045	
			Citric acid	77-92-9	60.00000	0.00042	
			Alkyloxypolyethyleneoxy ethanol	84133-50-6	0.50000	0.00035	
			Dibromoacetonitrile	3252-43-5	3.00000	0.00034	
			Acrylamide	79-06-1	0.10000	0.00007	
			Ethylene glycol	107-21-1	40.00000	0.00003	
			Tar bases, quinolone derivs, benzyl chloride- quatenized	72480-70-7	10.00000	0.00001	
			Tar bases, quinolone derivs	68513-87-1	1.00000	0.00001	
			Diethylene glycol (mono) methyl ether	34590-94-8	20.00000	0.00001	
			Formic Acid	64-18-6	10.00000	0.00001	
			Isopropanol	67-63-0	5.00000	0.00001	
			Cinnamaldehyde	104-55-2	10.00000	0.00001	
			Diethylene glycol	111-46-6	1.00000	0.00001	
			Ethoxylated alcohols	Proprietary	10.00000	0.00001	Proprietary CAS

* 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"

3,065'

11,599' TO BOTTOM HOLE

LATITUDE 39°17'30"

LONGITUDE 80°47'30"

3,954' TO BOTTOM HOLE

11,312'

LONGITUDE 80°50'00"

Antero Resources Corporation
Well No. Rock Unit 1H
47-017-06636

NOTES:

WELL 1H TOP HOLE INFORMATION:
N: 295,051ft E: 1,619,631ft
LAT: 39°18'08.20" LON: 80°50'38.99"

BOTTOM HOLE INFORMATION:
N: 287,185ft E: 1,622,776ft
LAT: 39°16'50.92" LON: 80°49'57.51"

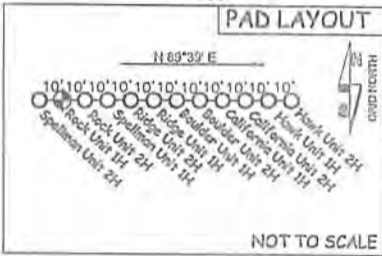
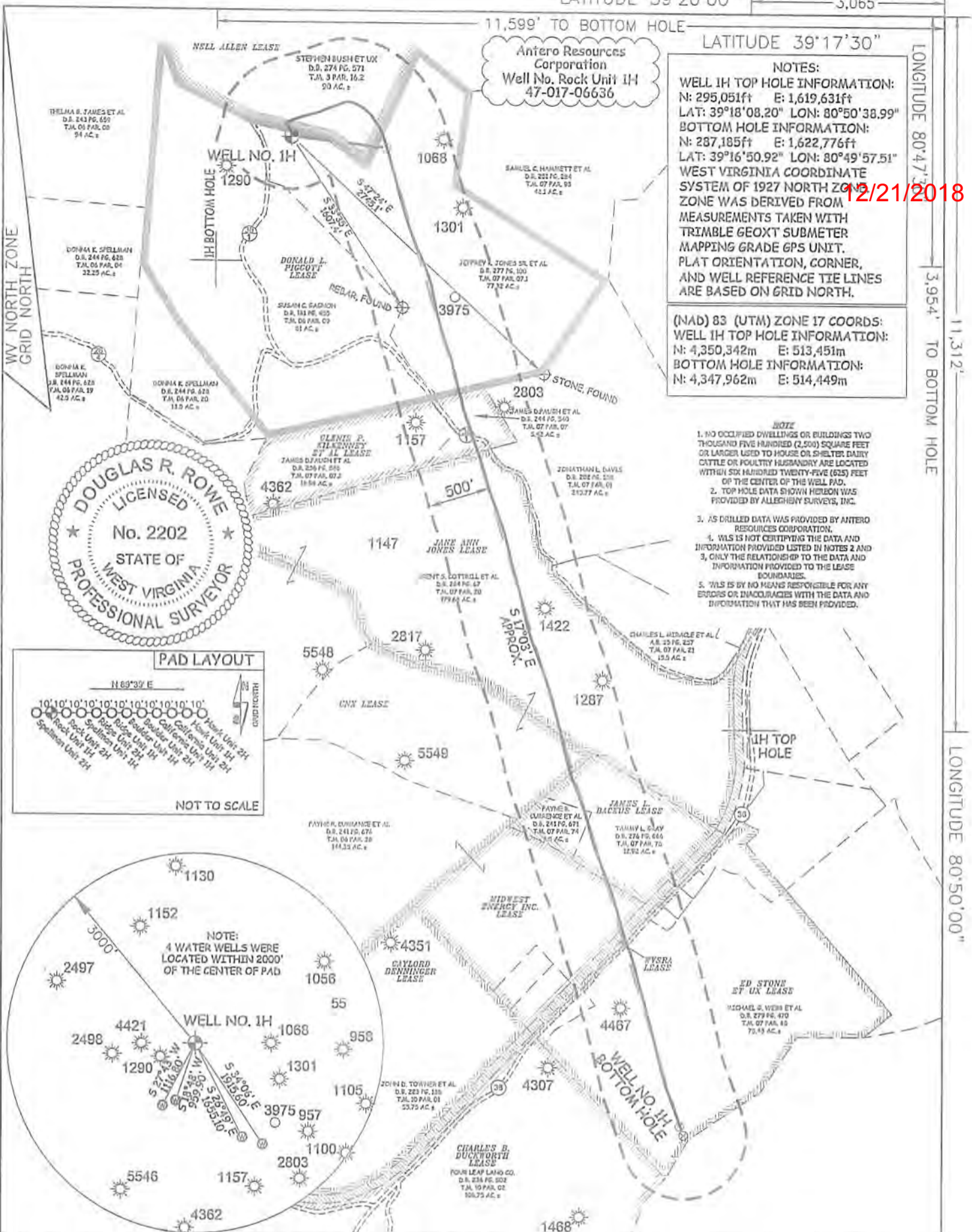
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIANGLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
N: 4,350,342m E: 513,451m
BOTTOM HOLE INFORMATION:
N: 4,347,962m E: 514,449m

NOTE

- NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR FOLIITY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
- TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
- AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
- WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
- WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

12/21/2018



JOB # 14-084WA
DRAWING # ROCK1HAD
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS
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; NEUL ALLEN; GLENIS P. KILKENNEY ET AL; LEASE ACREAGE 81 ACRES; 176 ACRES; 25 ACRES;
JANE ANN JONES; CNX; JAMES L. BACKUS; MIDWEST ENERGY INC.; WVSRA; ED STONE ET UX 114.5 ACRES; 230.04 ACRES; 21.13 ACRES; 34.17 ACRES; 301.19 ACRES; 07 ACRES

PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL ___
(SPECIFY) AS DRILLED PLUG & ABANDON ___ CLEAN OUT & REPLUG ___

TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,722' TVD 15,137' 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# ROCK UNIT #1H
API WELL # 47 - 017 - 06636
STATE COUNTY PERMIT

COUNTY NAME PERMIT

12/21/2018

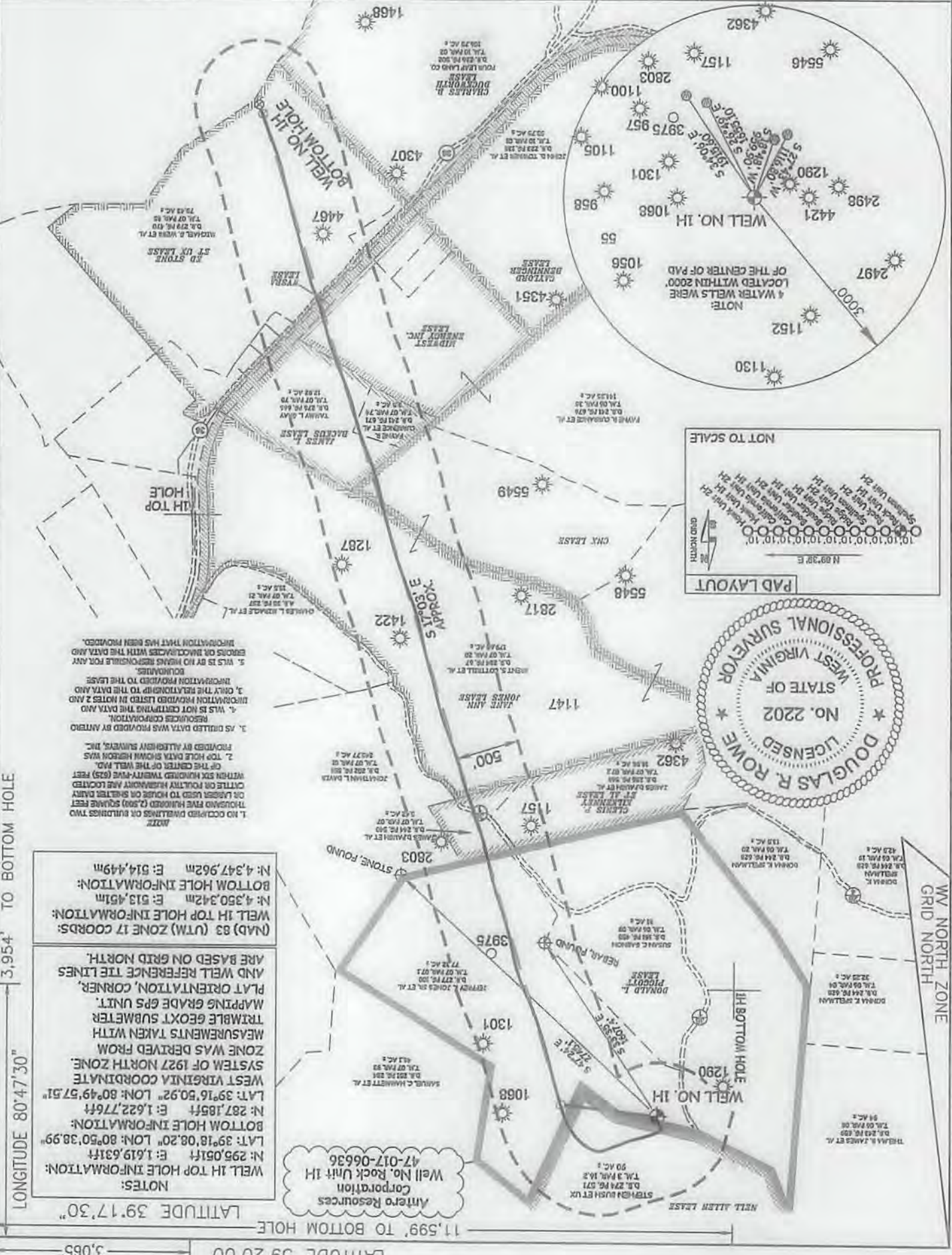
WV Department of
Environmental Protection

SEP 10 2018

RECEIVED
Office of Oil and Gas

12/2/18

JOB # 14-084WA
DRAWING # ROCKHAW
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS
WELL TYPE OIL GAS X LIQUID INJECTION
WASTE DISPOSAL
WELL # 47
STATE COUNTY PERMIT
017
47
06636
PERMIT
DATE 07/17/18
OPERATOR'S WELL # ROCK UNIT #1H
DOUGLAS R. ROWE P.S. 2202
OFFICE OF OIL AND GAS
STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION,
OFFICE OF OIL AND GAS
WILLOW LAND SURVEYING PLLC
220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415
JEFFREY K. JONES SR. ET AL
ACREAGE 77.32 ACRES +/-
LEASE ACRES 81 ACRES; 176 ACRES; 25 ACRES; 114 ACRES; 200 ACRES; 21.13 ACRES; 21.17 ACRES; 301.19 ACRES; 87 ACRES;
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL CLEAN OUT & REFLUG
WELL OPERATOR ANTERO RESOURCES CORP.
DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
ADDRESS 1615 WYNNCOOP STREET DENVER, CO 80202
FORM W-6



NOTES:
WELL 1H TOP HOLE INFORMATION:
N: 298.051ft E: 1,619.631ft
LAT: 39°18'08.20" LON: 80°50'38.99"
BOTTOM HOLE INFORMATION:
N: 287.185ft E: 1,622.776ft
LAT: 39°16'50.92" LON: 80°49'57.51"
**WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. MEASUREMENTS TAKEN WITH TRIMBLE GEOTX 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 1H TOP HOLE INFORMATION:
N: 4,350.342m E: 513.451m
N: 4,347.962m E: 514.449m
BOTTOM HOLE INFORMATION:**

Antero Resources Corporation
Well No. Rock Unit 1H
47-017-06636

LONGITUDE 80°47'30" TO 80°50'00"
 LONGITUDE 80°47'30"
 3,065'
 11,599' TO BOTTOM HOLE
 3,954' TO BOTTOM HOLE
 11,312'
 LONGITUDE 80°47'30"

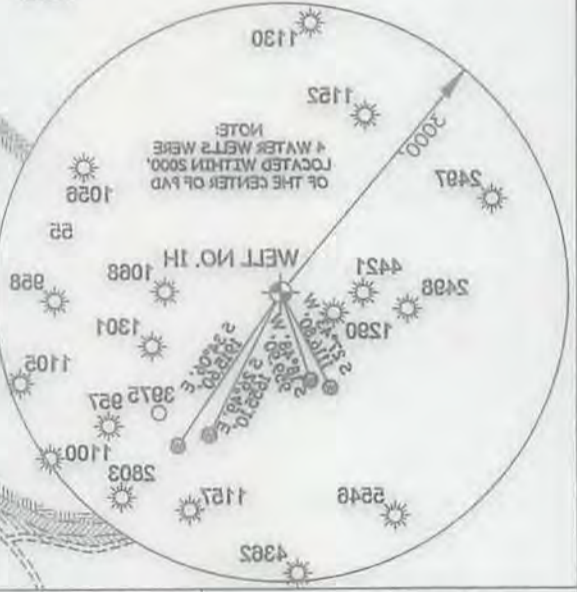
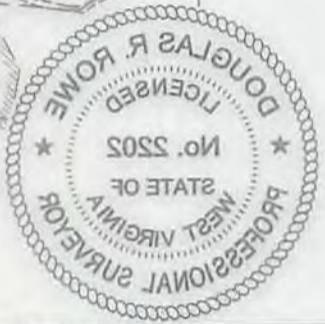
WV NORTH ZONE
 GRID NORTH

12/21/2018

NOTES:
 WELL IN TOP HOLE INFORMATION:
 N: 298,051ft E: 1,619,631ft
 LAT: 39°18'08.50" LON: 80°50'38.99"
 BOTTOM HOLE INFORMATION:
 N: 287,188ft E: 1,622,76ft
 LAT: 39°16'50.52" LON: 80°49'57.51"
 WEST VIRGINIA COORDINATE
 SYSTEM OF 1927 NORTH ZONE
 ZONE WAS DERIVED FROM
 MEASUREMENTS TAKEN WITH
 TRIMBLE GEOX SUBMETER
 MAPPING GRADE EPS UNIT.
 PLAT ORIENTATION, CORNER
 AND WELL REFERENCE TIE LINES
 ARE BASED ON GRID NORTH.

(MAD) 83 (UTM) ZONE 17 COORDS:
 WELL IN TOP HOLE INFORMATION:
 N: 4,350,342m E: 213,451m
 BOTTOM HOLE INFORMATION:
 N: 4,347,952m E: 214,449m

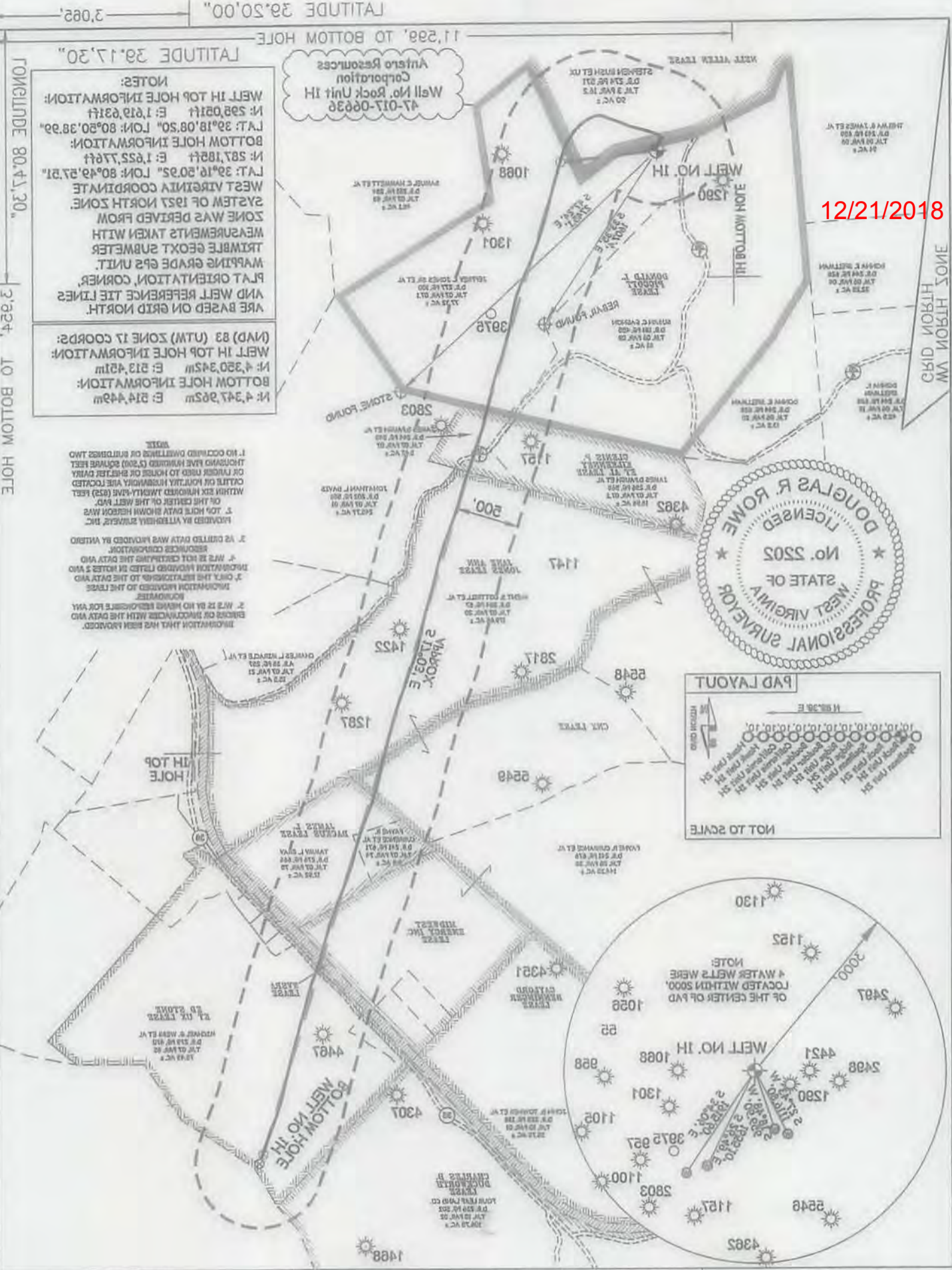
Antero Resources Corporation
 Well No. Rock Unit 1H
 47-017-08938



NOTE:
 1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO
 THOUSAND FEET HORIZON (2,000' SQUARE FEET
 OR LARGER) USED TO HOUSE OR SHEDS, DAILY
 OUTLETS OR HOUSING, HORIZONTAL VESICULATED
 WITHIN 200 HORIZONTAL HOURS (825' FEET
 OF THE CENTER OF THE WELL PAD.
 2. 100' HOLE DATA SHOWN HEREON WAS
 PROVIDED BY ANTERO RESOURCES, INC.

3. AS DETAILED DATA WAS PROVIDED BY ANTERO
 RESOURCES, INC. THE SURVEYOR HAS
 REVIEWED THE DATA AND
 HAS NOT CONDUCTED THE DATA AND
 INFORMATION PROVIDED LISTED IN NOTES 2 AND
 3. ONLY THE SURVEYOR IS RESPONSIBLE FOR THE
 INFORMATION PROVIDED TO THE LEASEE.

4. THE SURVEYOR HAS REVIEWED THE DATA AND
 HAS NOT CONDUCTED THE DATA AND
 INFORMATION PROVIDED LISTED IN NOTES 2 AND
 3. ONLY THE SURVEYOR IS RESPONSIBLE FOR THE
 INFORMATION THAT HAS BEEN PROVIDED.



FORM W-8	ADDRESS 1815 WYNNKOP STREET DENVER, CO 80202	WELL OPERATOR ANTERO RESOURCES CORP.	TARGET FORMATION MARCELLUS	ESTIMATED DEPTH 8,722' TVD @ 137' MD	PLUG & ABANDON CLEAN OUT & REPLUG OTHER PHYSICAL CHANGE IN WELL FRACURE OR STIMULATE	PERMIT
WELL TYPE: OIL	WELL TYPE: OIL	DIVISION OF OIL AND GAS	DEPARTMENT OF ENERGY	STATE OF WEST VIRGINIA	SUBMETER MAPPING GRADE GPS	PROVEN SOURCE OF ELEV.
ACCURACY	ACCURACY	OFFICE OF OIL AND GAS	OFFICE OF ENVIRONMENTAL PROTECTION,	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.	INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND
SCALE	SCALE	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
DRAWING #	DRAWING #	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
JOB #	JOB #	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
DATE	DATE	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
OPERATOR'S WELL #	OPERATOR'S WELL #	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
APL WELL #	APL WELL #	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
STATE COUNTY PERMIT	STATE COUNTY PERMIT	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
COUNTY NAME	COUNTY NAME	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
ADDRESS	ADDRESS	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
DESIGNATED AGENT	DESIGNATED AGENT	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
DINNA STAMPER - CT CORPORATION SYSTEM	DINNA STAMPER - CT CORPORATION SYSTEM	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
8,722' TVD @ 137' MD	8,722' TVD @ 137' MD	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
CLEAN OUT & REPLUG	CLEAN OUT & REPLUG	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
OTHER PHYSICAL CHANGE IN WELL	OTHER PHYSICAL CHANGE IN WELL	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
FRACURE OR STIMULATE	FRACURE OR STIMULATE	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
REDRILL	REDRILL	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
DRILL DEEPER	DRILL DEEPER	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
CONVERT	CONVERT	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
PROPOSED WORK: DRILL	PROPOSED WORK: DRILL	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
JANE ANI JONES; CNX; JAMES I. BACKUS; MIDWEST ENERGY INC.; WWSR; ED STONE ET UX	JANE ANI JONES; CNX; JAMES I. BACKUS; MIDWEST ENERGY INC.; WWSR; ED STONE ET UX	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
JEFFREY K. JONES SR. ET AL	JEFFREY K. JONES SR. ET AL	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
LOCATION: ELEVATION 1,135.5 AS BUILT WATERSHED	LOCATION: ELEVATION 1,135.5 AS BUILT WATERSHED	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
QUADRANGLE WEST UNION T.8	QUADRANGLE WEST UNION T.8	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
HEADWATERS MIDDLE ISLAND CREEK	HEADWATERS MIDDLE ISLAND CREEK	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
WASTE DISPOSAL	WASTE DISPOSAL	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
LIQUID INJECTION	LIQUID INJECTION	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
WILLOW LAND SURVEYING PLLC	WILLOW LAND SURVEYING PLLC	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
520 WASHINGTON AVE. PENNINGTON	520 WASHINGTON AVE. PENNINGTON	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
WEST VIRGINIA 26418	WEST VIRGINIA 26418	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
DATE 07/17/18	DATE 07/17/18	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
DOUGLAS R. ROWE P.S. 2202	DOUGLAS R. ROWE P.S. 2202	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
LEGEND	LEGEND	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
Surface Owner Boundary Lines +/-	Surface Owner Boundary Lines +/-	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
Interior Surface Tracts +/-	Interior Surface Tracts +/-	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
Proposed Well Path	Proposed Well Path	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
As Drilled Well Path	As Drilled Well Path	WEST VIRGINIA 26418	WILLOW LAND SURVEYING PLLC	OFFICE OF OIL AND GAS	STATE OF WEST VIRGINIA, DIVISION	PERFORMED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

LATITUDE 39.20'00" LONGITUDE 80.41.30"

LATITUDE 39.17.30" LONGITUDE 80.41.30"

LATITUDE 39.20'00" LONGITUDE 80.41.30"

LATITUDE 39.20'00" LONGITUDE 80.41.30"

LATITUDE 39.20'00" LONGITUDE 80.41.30"