

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

OCT 12 2017

WV Department of
Environmental Protection

API 47 - 095 - 02247 County Tyler District Meade
Quad Pennsboro 7.5' Pad Name Hartley East Field/Pool Name ---
Farm name David M. Hartley Well Number Plum Run Unit 2H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4357314m Easting 500596m
Landing Point of Curve Northing 4357183.179m Easting 500896.516m
Bottom Hole Northing 4354708m Easting 501926m

Elevation (ft) 1021' 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 05/28/2015 Date drilling commenced 06/06/2015 Date drilling ceased 11/16/2015
Date completion activities began 10/18/2016 Date completion activities ceased 03/07/2017
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 76', 135', 162' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 846' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 196', 1136', 1716' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

APPROVED

NAME: Sen m

DATE: 10-25-17

Reviewed by: _____

11/10/2017

API 47-095 - 02247 Farm name David M. Hartley Well number Plum Run Unit 2H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	40'	New	94#, K-55	N/A	Y
Surface	17- 1/2"	13- 3/8"	360'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2521'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	15656'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6465'		4#, 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	154 sx	15.6	1.18	182	0	8 Hrs.
Surface	Class A	430 sx	15.6	1.18	507	0	8 Hrs.
Coal							
Intermediate 1	Class A	988 sx	15.6	1.18	1166	0	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	831 sx (Lead), 1200 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.83 (Tail)	3393	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15656' MD, 6284' TVD (BHL); 6290' TVD (Deepest point drilled) Loggers TD (ft) 15605' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5841'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Squirrel Unit 1H API# 47-017-06258). Please reference the wireline logs submitted with Form WR-35 for the Squirrel Unit 1H. A Cement Bond Log has been included with this submittal.

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 Radioactive & Chemical

API 47- 095 - 02247 Farm name David M. Hartley Well number Plum Run Unit 2H

PERFORATION RECORD

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

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
* PLEASE SEE ATTACHED EXHIBIT 2								

Please insert additional pages as applicable.

API 47- 095 - 02247 Farm name David M. Hartley Well number Plum Run Unit 2H

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	6242' (Top)	TVD	6553' (Top)	MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3000 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 10940 mcfpd Oil 196 bpd NGL --- bpd Water 693 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/FORMATION	TOP DEPTH IN FT	BOTTOM DEPTH IN FT	TOP DEPTH IN FT	BOTTOM DEPTH IN FT	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	NAME	TVD	MD	MD	
	0		0		
* PLEASE SEE ATTACHED EXHIBIT 3					

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling Company, LP
Address 2640 Reach Road City Williamsport State PA Zip 17701

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

Cementing Company Allied Oil & Gas Services, LLC
Address 1036 East Main Street City Bridgeport State WV Zip 26330

Stimulating Company US Well Services
Address 533 Industrial Park Dr. City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Samantha Klaas Telephone 303-357-6759
Signature  Title Permitting Agent Date 10/11/2017

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

API 47-095-022447 Farm Name David M. Hartley Well Number Plum Run Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	11/12/2016	15376	15545	60	Marcellus
2	11/12/2016	15176	15345	60	Marcellus
3	11/21/2016	14976	15145	60	Marcellus
4	11/22/2016	14776	14945	60	Marcellus
5	11/22/2016	14576	14745	60	Marcellus
6	11/22/2016	14376	14545	60	Marcellus
7	11/23/2016	14176	14345	60	Marcellus
8	11/23/2016	13976	14144	60	Marcellus
9	11/23/2016	13776	13944	60	Marcellus
10	11/25/2016	13576	13744	60	Marcellus
11	11/25/2016	13376	13544	60	Marcellus
12	11/26/2016	13175	13344	60	Marcellus
13	11/26/2016	12975	13144	60	Marcellus
14	11/26/2016	12775	12944	60	Marcellus
15	11/26/2016	12575	12744	60	Marcellus
16	11/26/2016	12375	12544	60	Marcellus
17	11/27/2016	12175	12344	60	Marcellus
18	11/27/2016	11975	12144	60	Marcellus
19	11/27/2016	11775	11944	60	Marcellus
20	11/27/2016	11575	11744	60	Marcellus
21	11/28/2016	11375	11544	60	Marcellus
22	11/28/2016	11175	11343	60	Marcellus
23	11/28/2016	10975	11143	60	Marcellus
24	11/28/2016	10775	10943	60	Marcellus
25	11/29/2016	10574	10743	60	Marcellus
26	11/29/2016	10374	10543	60	Marcellus
27	11/29/2016	10174	10343	60	Marcellus
28	11/29/2016	9974	10143	60	Marcellus
29	11/30/2016	9774	9943	60	Marcellus
30	11/30/2016	9574	9743	60	Marcellus
31	11/30/2016	9374	9543	60	Marcellus
32	11/30/2016	9174	9343	60	Marcellus
33	12/1/2016	8974	9143	60	Marcellus
34	12/1/2016	8774	8943	60	Marcellus
35	12/1/2016	8574	8742	60	Marcellus
36	12/1/2016	8374	8542	60	Marcellus
37	12/2/2016	8174	8342	60	Marcellus
38	12/2/2016	7974	8142	60	Marcellus
39	12/2/2016	7773	7942	60	Marcellus
40	12/2/2016	7573	7742	60	Marcellus
41	12/4/2016	7373	7542	60	Marcellus
42	12/5/2016	7173	7342	60	Marcellus
43	12/5/2016	6973	7142	60	Marcellus
44	12/5/2016	6773	6942	60	Marcellus
45	12/5/2016	6573	6742	60	Marcellus

11/10/2017

API 47-095-02247 Farm Name David M. Hartley Well Number Plum Run Unit 2H

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	11/12/2016	71.6	7696	5125.0	5096	409690	9241.0	N/A
2	11/12/2016	72.2	7548	5686.0	5221	408440	9163.0	N/A
3	11/21/2016	69.8	7418	5482.0	5236	409050	10396.0	N/A
4	11/22/2016	69.2	7327	5271.0	5386	410900	9199.0	N/A
5	11/22/2016	69.4	7297	5450.0	5261	413500	9184.0	N/A
6	11/22/2016	69.6	7301	5958.0	5250	409500	9171.0	N/A
7	11/23/2016	68.8	7430	5808.0	5314	408770	9074.0	N/A
8	11/23/2016	69.7	7599	6012.0	5565	405550	9459.0	N/A
9	11/23/2016	69.7	7288	5368.0	5039	409000	9264.0	N/A
10	11/25/2016	69.6	7233	5533.0	5100	406500	9052.0	N/A
11	11/25/2016	68.3	7488	5858.0	4871	407600	9013.0	N/A
12	11/26/2016	71.5	7361	5915.0	5161	407900	8951.0	N/A
13	11/26/2016	69.1	7192	5414.0	4971	404580	9049.0	N/A
14	11/26/2016	69.4	6922	5418.0	3980	408490	8976.0	N/A
15	11/26/2016	72.3	7198	5407.0	4238	408250	9064.0	N/A
16	11/26/2016	73.2	7290	5411.0	5136	409150	9924.0	N/A
17	11/27/2016	69.6	7143	5375.0	4585	409500	8916.0	N/A
18	11/27/2016	69.5	7072	6230.0	4023	412850	9121.0	N/A
19	11/27/2016	69.7	6896	6584.0	4120	407050	8984.0	N/A
20	11/27/2016	70.3	7187	6559.0	4056	408850	8935.0	N/A
21	11/28/2016	56.1	7507	6548.0	3694	409850	10788.0	N/A
22	11/28/2016	68.9	6733	6166.0	3623	408500	8969.0	N/A
23	11/28/2016	70.1	6625	5454.0	3644	408700	9795.0	N/A
24	11/28/2016	73.3	6749	5520.0	3494	408990	8795.0	N/A
25	11/29/2016	69.9	6623	5990.0	3498	408350	8792.0	N/A
26	11/29/2016	70.1	6607	6570.0	3784	408700	8940.0	N/A
27	11/29/2016	70.2	7088	6809.0	3219	408290	10066.0	N/A
28	11/29/2016	73.1	6956	6602.0	3269	407650	8824.0	N/A
29	11/30/2016	73.1	7133	6741.0	4338	408860	8729.0	N/A
30	11/30/2016	70.6	6756	5862.0	3655	408200	9843.0	N/A
31	11/30/2016	69.9	6472	5808.0	3347	408300	8944.0	N/A
32	11/30/2016	58.1	7760	5628.0	3061	408900	15821.0	N/A
33	12/1/2016	72.8	7054	5729.0	3616	408350	8794.0	N/A
34	12/1/2016	70.3	6582	5697.0	3698	408250	10449.0	N/A
35	12/1/2016	69.6	6530	5493.0	4327	407900	8862.0	N/A
36	12/1/2016	71.6	6753	5229.0	3515	408790	8807.0	N/A
37	12/2/2016	73.0	6646	5511.0	4109	408260	8650.0	N/A
38	12/2/2016	68.6	6848	5314.0	3490	408950	11275.0	N/A
39	12/2/2016	70.9	6397	5590.0	3855	408100	9136.0	N/A
40	12/2/2016	73.4	6622	4928.0	4581	408400	8627.0	N/A
41	12/4/2016	72.0	6690	5536.0	5314	408050	11387.0	N/A
42	12/5/2016	72.0	6239	5218.0	4760	408350	8754.0	N/A
43	12/5/2016	70.9	6275	5740.0	3662	408600	8727.0	N/A
44	12/5/2016	72.2	6168	5529.0	3179	406200	8630.0	N/A
45	12/5/2016	72.6	6134	5175.0	3172	408780	8582.0	N/A
	AVG=	70.1	6,974	5,739	4,256	18,385,390	423,122	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
Fresh Water	76'	N/A	76'	N/A
Fresh Water	135'	N/A	135'	N/A
Fresh Water	162'	N/A	162'	N/A
Shale/ Sandstone	est. -11	196	est. -11	196
Shale/ Trace Coal	est. 196	236	est. 196	236
Sandstone	est. 236	456	est. 236	456
Shale/ Limestone	est. 456	556	est. 456	556
Sandstone	est. 556	616	est. 556	616
Shale/ Trace Limestone	est. 616	776	est. 616	776
Siltstone	est. 776	801	est. 776	801
Shale/ Limestone	est. 801	956	est. 801	956
Sandstone	est. 956	1036	est. 956	1036
Shale/ Limestone	est. 1036	1136	est. 1036	1136
Shale/ Trace Coal	est. 1136	1176	est. 1136	1176
Sandstone/ Trace Coal	est. 1176	1236	est. 1176	1236
Shale/ Trace Limestone	est. 1236	1316	est. 1236	1316
Sandstone/ Shale	est. 1316	1416	est. 1316	1416
Sanstone/ Coal	est. 1416	1556	est. 1416	1556
Shale/ Trace Coal	est. 1556	1716	est. 1556	1716
Siltstone/ Trace Coal	est. 1716	1954	est. 1716	1957
Big Lime	1954	3320	1957	3323
Fifth Sandstone	3320	3402	3323	3405
Bayard	3402	3940	3405	3943
Speechley	3940	4240	3943	4242
Baltown	4240	4659	4242	4664
Bradford	4659	4925	4664	4938
Benson	4925	5150	4938	5181
Alexander	5150	5420	5181	5477
Elk	5420	5728	5477	5810
Rhinestreet	5728	6036	5810	6166
Sycamore	6036	6132	6166	6301
Middlesex	6132	6221	6301	6492
Burkett	6221	6234	6492	6528
Tully	6234	6242	6528	6553
Marcellus	6242	NA	6553	NA

*Please note Antero determines formation tops based on mud logs that are only run on one well on a multi-well pad. The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/12/2016
Job End Date:	12/6/2016
State:	West Virginia
County:	Tyler
API Number:	47-095-02247-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Plum Run 2H
Latitude:	39.36531400
Longitude:	-80.99305800
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,290
Total Base Water Volume (gal):	18,313,614
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Service Abstract Number (CAS #)	Maximum Ingredient Concentration Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Antero Resources	Carrier/Base Fluid	Water	7732-18-5	100.00000	88.95197	
Sand	J.S. Well Services, LLC	Proppant					
HCL Acid (12.6%-17.5%)	J.S. Well Services, LLC	Bulk Acid	Crystalline Silica, quartz	14808-60-7	100.00000	10.70751	
			Water	7732-18-5	87.40000	0.16540	
			Hydrogen Chloride	7647-01-0	17.50000	0.03845	
LGC-15	J.S. Well Services, LLC	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.04054	
			Petroleum Distillates	64742-47-8	60.00000	0.03839	
			Suspending agent (solid)	14808-60-7	3.00000	0.00620	
			Surfactant	68439-51-0	3.00000	0.00243	
WFRA-405	J.S. Well Services, LLC	Friction Reducer					
			2-Propronic acid, polymer with propenamide	29003-06-9	30.00000	0.01721	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01385	

SI-100	J.S. Well Services, LLC	Scale Inhibitor						
			Ethylene Glycol	107-21-1		40.00000		0.00718
			Copolymer of Maleic and Acrylic acid	62255-49-9		10.00000		0.00148
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8		3.00000		0.00051
			Phosphino carboxylic acid polymer	71050-62-9		3.00000		0.00049
			Hexamethylene tramine penta (methylene phosphonic acid)	34690-00-1		3.00000		0.00049
Bioclear 2000	J.S. Well Services, LLC	Anti-Bacterial Agent						
			2,2-dibromo-3-nitropropionamide	10222-01-2		20.00000		0.00411
			Deionized Water	7732-18-5		28.00000		0.00235
AP One	J.S. Well Services, LLC	Gel Breakers						
			Ammonium Persulfate	7727-54-0		100.00000		0.00131
AI-303	J.S. Well Services, LLC	Acid Corrosion Inhibitors						
			Ethylene glycol	107-21-1		40.00000		0.00006
			Cinnamaldehyde	104-55-2		20.00000		0.00002
			Butyl cellosolve	111-76-2		20.00000		0.00002
			Formic acid	64-18-6		20.00000		0.00002
			Polyether	60828-78-6		10.00000		0.00001
			Acetophenone,thiourea,formaldehyde polymer	68527-49-1		5.00000		0.00000

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided. Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

LATITUDE 39°22'30"

9,870'

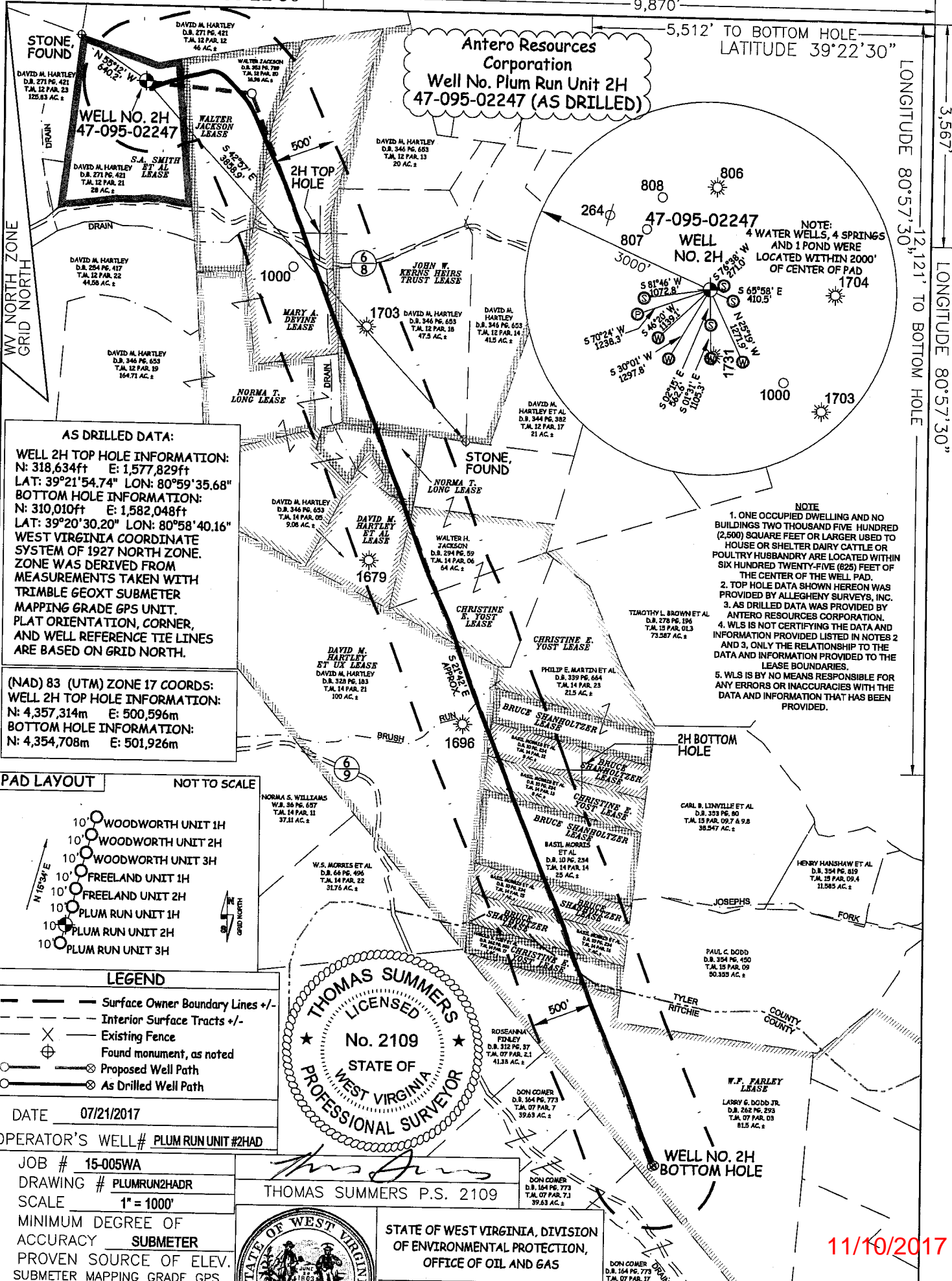
5,512' TO BOTTOM HOLE

LATITUDE 39°22'30"

LONGITUDE 80°57'30"

LONGITUDE 80°57'30"

Antero Resources Corporation
Well No. Plum Run Unit 2H
47-095-02247 (AS DRILLED)



AS DRILLED DATA:

WELL 2H TOP HOLE INFORMATION:
N: 318,634ft E: 1,577,829ft
LAT: 39°21'54.74" LON: 80°59'35.68"

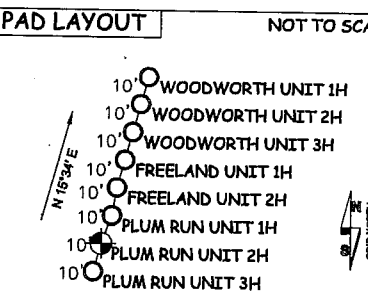
BOTTOM HOLE INFORMATION:
N: 310,010ft E: 1,582,048ft
LAT: 39°20'30.20" LON: 80°58'40.16"

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

(NAD) 83 (UTM) ZONE 17 COORDS:

WELL 2H TOP HOLE INFORMATION:
N: 4,357,314m E: 500,596m

BOTTOM HOLE INFORMATION:
N: 4,354,708m E: 501,926m



LEGEND

- Surface Owner Boundary Lines +/-
- - - Interior Surface Tracts +/-
- - - Existing Fence
- ⊕ Found monument, as noted
- Proposed Well Path
- ⊗ As Drilled Well Path

DATE 07/21/2017

OPERATOR'S WELL# PLUM RUN UNIT #2HAD

JOB # 15-005WA

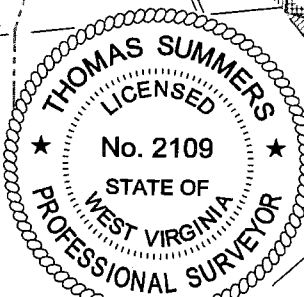
DRAWING # PLUMRUN2HADR

SCALE 1" = 1000'

MINIMUM DEGREE OF ACCURACY SUBMETER

PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

STATE OF WEST VIRGINIA



THOMAS SUMMERS P.S. 2109



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

WILLOW LAND SURVEYING PLLC

NOTE

- ONE OCCUPIED DWELLING AND NO BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
- TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
- AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
- WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 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.

11/10/2017

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT

LATITUDE 39°22'30"

9,870'

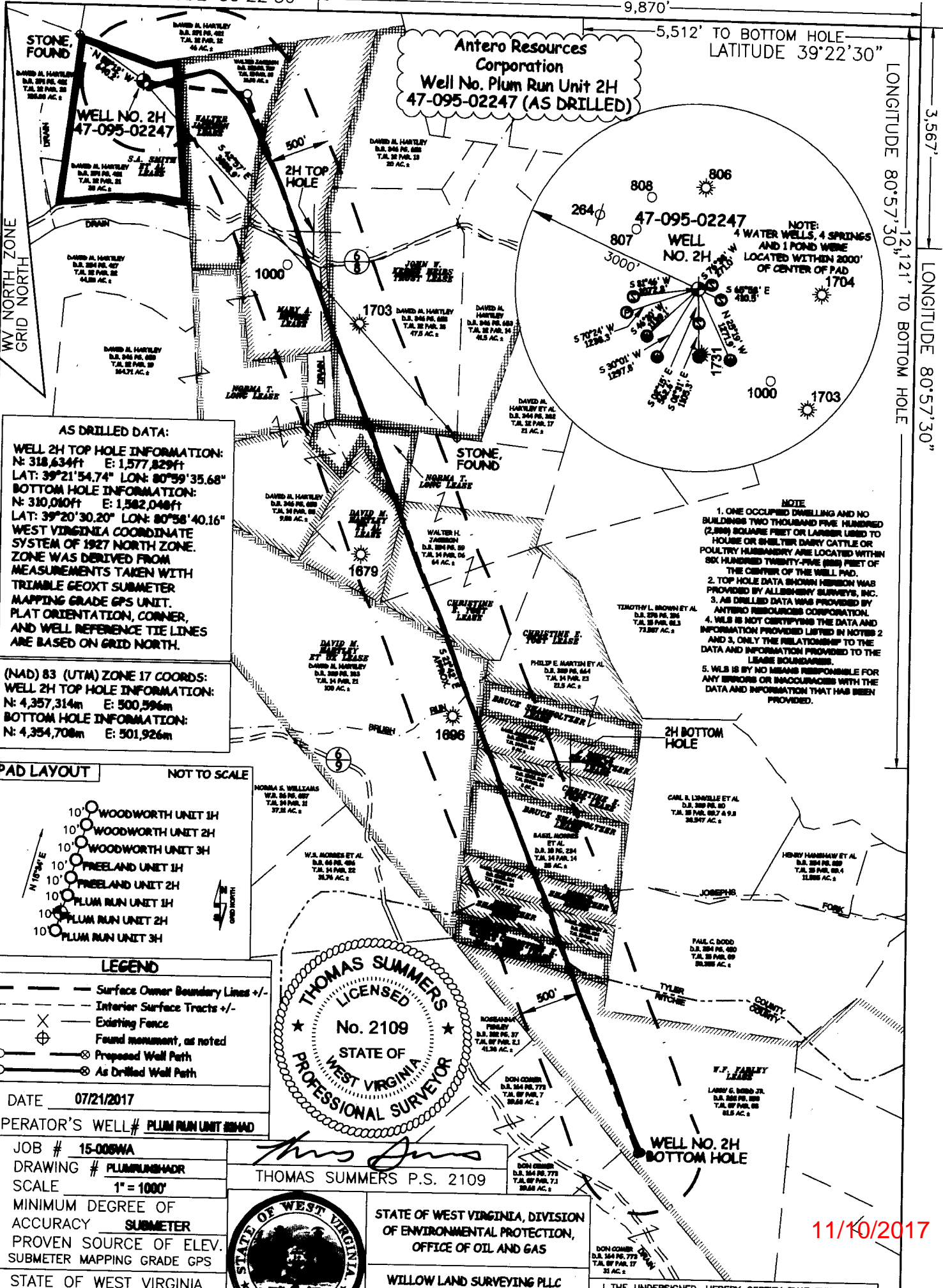
5,512' TO BOTTOM HOLE

LATITUDE 39°22'30"

LONGITUDE 80°57'30"

LONGITUDE 80°57'30"

Antero Resources Corporation
Well No. Plum Run Unit 2H
47-095-02247 (AS DRILLED)



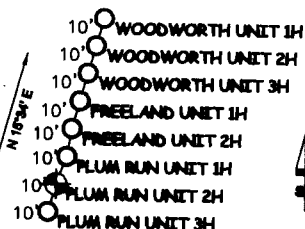
AS DRILLED DATA:

WELL 2H TOP HOLE INFORMATION:
N: 318,634ft E: 1,577,829ft
LAT: 39°21'54.74" LON: 80°59'35.68"
BOTTOM HOLE INFORMATION:
N: 310,010ft E: 1,582,040ft
LAT: 39°20'30.20" LON: 80°58'40.16"
WEST VIRGINIA COORDINATE
SYSTEM OF 1927 NORTH ZONE.
ZONE WAS DERIVED FROM
MEASUREMENTS TAKEN WITH
TRIMBLE GEOXT SUBMETER
MAPPING GRADE GPS UNIT.
PLAT ORIENTATION, CORNER,
AND WELL REFERENCE TIE LINES
ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 2H TOP HOLE INFORMATION:
N: 4,357,314m E: 500,596m
BOTTOM HOLE INFORMATION:
N: 4,354,708m E: 501,926m

PAD LAYOUT

NOT TO SCALE



LEGEND

- Surface Owner Boundary Lines +/-
- - - Interior Surface Tracts +/-
- - - Existing Fence
- ⊕ Found monument, as noted
- ⊙ Proposed Well Path
- ⊙ As Drilled Well Path

DATE 07/21/2017

OPERATOR'S WELL # PLUM RUN UNIT #2H4D

JOB # 15-008WA

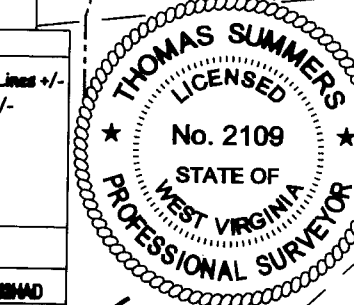
DRAWING # PLUMRUN2HADR

SCALE 1" = 1000'

MINIMUM DEGREE OF
ACCURACY SUBMETER

PROVEN SOURCE OF ELEV.
SUBMETER MAPPING GRADE GPS

STATE OF WEST VIRGINIA



THOMAS SUMMERS P.S. 2109



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

WILLOW LAND SURVEYING PLLC

- NOTE
- ONE OCCUPIED DWELLING AND NO BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER LISTED TO HOUSE OR BUILT FOR DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
 - TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEBERRY 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.

11/10/2017