

# APPROVED

WR-35  
Rev. 8/23/13

NAME J. G. M. Page     of    

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

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API 47-017-06701 County Doddridge District Central  
Quad Oxford 7.5' Pad Name James Webb Pad Field/Pool Name ----  
Farm name James E. Webb Well Number Mary Jane Unit 3H  
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 4343269m Easting 510945m  
Landing Point of Curve Northing 4343663.946m Easting 511222.880m  
Bottom Hole Northing 4346533m Easting 509866m

Elevation (ft) 991' 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 03/25/2015 Date drilling commenced 08/20/2015 Date drilling ceased 08/04/2016  
Date completion activities began 04/11/2017 Date completion activities ceased 08/26/2017  
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 62', 173' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft 1145' Void(s) encountered (Y/N) depths No  
Coal depth(s) ft 1552', 1632' Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

Reviewed by: \_\_\_\_\_

01/05/2018

API 47-017 - 06701

Farm name James E. Webb

Well number Mary Jane Unit 3H

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"	65'	New	94#, K-55	N/A	Y
Surface	17-1/2"	13-3/8"	511'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2592'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	18179'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6977'		4.7#, N-80		
Packer type and depth set		N/A					

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	60 sx	15.6	1.18	71	0'	8 Hrs.
Surface	Class A	569 sx	15.6	1.18	671	0'	8 Hrs.
Coal							
Intermediate 1	Class A	996 sx	15.6	1.18	1175	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	771 sx (Lead) 1668 sx (Tail)	13.57 (Lead), 14.96 (Tail)	1.44 (Lead), 1.84 (Tail)	4179	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 18179' MD, 6397' TVD (BHL) & 6541' TVD (Deepest Point Drilled)

Loggers TD (ft) 18166' MD

Deepest formation penetrated Marcellus

Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6330'

\*\* This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Mahogany Unit 2H API #47-017-06702). Please reference the wireline logs submitted with Form WR-35 for Mahogany Unit 2H. 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

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WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

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

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

API 47- 017 - 06701

Farm name James E. Webb

Well number Mary Jane Unit 3H

### PERFORATION RECORD

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

Please insert additional pages as applicable.

### STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

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

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Please insert additional pages as applicable.

API 47- 017 - 06701 Farm name James E. Webb Well number Mary Jane Unit 3H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6467' (TOP)</u>	<u>TVD</u>	<u>7038' (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 3000 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 11308 mcfpd Oil 76 bpd NGL --- bpd Water 19 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

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

**\*PLEASE SEE ATTACHED EXHIBIT 3**

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Please insert additional pages as applicable.

Drilling Contractor Patterson – UTI Drilling Company 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 Huntingdon State PA Zip 15642

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

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

Please insert additional pages as applicable.

Completed by Samantha Klaas Telephone 303-357-6759  
Signature  Title Permitting Agent Date 11/29/2017

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

**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	4/11/2017	17907	18076	60	Marcellus
2	4/11/2017	17707	17876	60	Marcellus
3	4/12/2017	17506	17675	60	Marcellus
4	4/12/2017	17306	17475	60	Marcellus
5	4/12/2017	17105	17274	60	Marcellus
6	4/13/2017	16905	17074	60	Marcellus
7	4/13/2017	16704	16873	60	Marcellus
8	4/13/2017	16504	16673	60	Marcellus
9	4/14/2017	16303	16473	60	Marcellus
10	4/14/2017	16103	16272	60	Marcellus
11	4/14/2017	15903	16072	60	Marcellus
12	4/14/2017	15702	15871	60	Marcellus
13	4/15/2017	15502	15671	60	Marcellus
14	4/15/2017	15301	15470	60	Marcellus
15	4/15/2017	15101	15270	60	Marcellus
16	4/15/2017	14900	15069	60	Marcellus
17	4/16/2017	14700	14869	60	Marcellus
18	4/16/2017	14500	14669	60	Marcellus
19	4/16/2017	14299	14468	60	Marcellus
20	4/16/2017	14099	14268	60	Marcellus
21	4/17/2017	13898	14067	60	Marcellus
22	4/17/2017	13698	13867	60	Marcellus
23	4/17/2017	13497	13666	60	Marcellus
24	4/17/2017	13297	13466	60	Marcellus
25	4/18/2017	13097	13266	60	Marcellus
26	4/18/2017	12896	13065	60	Marcellus
27	4/18/2017	12696	12865	60	Marcellus
28	4/18/2017	12495	12664	60	Marcellus
29	4/19/2017	12295	12464	60	Marcellus
30	4/19/2017	12094	12263	60	Marcellus
31	4/19/2017	11894	12063	60	Marcellus
32	4/19/2017	11693	11862	60	Marcellus
33	4/20/2017	11493	11662	60	Marcellus
34	4/20/2017	11293	11462	60	Marcellus
35	4/20/2017	11092	11261	60	Marcellus
36	4/20/2017	10892	11061	60	Marcellus
37	4/21/2017	10691	10860	60	Marcellus
38	4/21/2017	10491	10660	60	Marcellus
39	4/21/2017	10290	10459	60	Marcellus
40	4/21/2017	10090	10259	60	Marcellus
41	4/22/2017	9890	10059	60	Marcellus
42	4/22/2017	9689	9858	60	Marcellus
43	4/22/2017	9489	9658	60	Marcellus
44	4/22/2017	9288	9457	60	Marcellus
45	4/22/2017	9088	9257	60	Marcellus
46	4/23/2017	8887	9056	60	Marcellus
47	4/23/2017	8687	8856	60	Marcellus
48	4/23/2017	8486	8656	60	Marcellus
49	4/23/2017	8286	8455	60	Marcellus
50	4/24/2017	8086	8255	60	Marcellus
51	4/24/2017	7885	8054	60	Marcellus
52	4/24/2017	7685	7854	60	Marcellus
53	4/24/2017	7484	7653	60	Marcellus
54	4/24/2017	7284	7453	60	Marcellus
55	4/25/2017	7083	7252	60	Marcellus

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EXHIBIT 2								
API 47-017-06701 Farm Name James E. Webb Well Number Mary Jane Unit 3H								
Stage No.	Simulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	4/11/2017	77.4	7999	5650	5053	408150	10502	N/A
2	4/11/2017	77.1	7894	6152	4823	408150	9481	N/A
3	4/12/2017	77.8	8105	6005	4627	408350	9280	N/A
4	4/12/2017	78.4	8073	6873	4615	408700	9182	N/A
5	4/12/2017	77.1	7959	6486	5243	406900	11058	N/A
6	4/13/2017	78.0	7821	6278	4640	374900	9127	N/A
7	4/13/2017	78.4	7869	6434	4430	408600	9197	N/A
8	4/13/2017	79.8	7905	5927	5042	408200	10745	N/A
9	4/14/2017	77.9	7946	6277	5344	403000	10319	N/A
10	4/14/2017	78.8	7676	6248	4099	409500	9311	N/A
11	4/14/2017	78.8	7965	6830	4110	408150	9160	N/A
12	4/14/2017	78.7	8060	6495	4689	413200	9305	N/A
13	4/15/2017	72.6	7684	6782	5842	407200	10309	N/A
14	4/15/2017	79.7	7725	6974	4988	407900	9194	N/A
15	4/15/2017	79.5	7784	6031	4709	408800	11064	N/A
16	4/15/2017	78.4	7665	6193	4227	407450	9075	N/A
17	4/16/2017	75.6	7637	6422	4155	408700	9046	N/A
18	4/16/2017	77.5	7770	5894	5020	409000	9178	N/A
19	4/16/2017	78.0	7859	6953	4589	408200	9089	N/A
20	4/16/2017	71.8	7939	7602	5949	407550	9134	N/A
21	4/17/2017	75.9	7856	6229	5701	407900	12254	N/A
22	4/17/2017	78.8	7952	6326	5716	407800	9311	N/A
23	4/17/2017	78.4	7922	6106	4898	409250	9263	N/A
24	4/17/2017	79.7	7834	6198	4401	409950	9015	N/A
25	4/18/2017	79.7	7836	6509	5613	407250	10777	N/A
26	4/18/2017	79.9	7515	5669	5040	408500	9081	N/A
27	4/18/2017	79.5	7353	6019	4215	408550	8982	N/A
28	4/18/2017	77.9	7812	6035	4030	407300	10641	N/A
29	4/19/2017	72.3	7260	6329	5275	406450	9680	N/A
30	4/19/2017	79.5	7673	5720	5589	408100	10992	N/A
31	4/19/2017	77.8	7971	6976	4704	408250	12285	N/A
32	4/19/2017	80.4	7604	6293	3910	407400	11490	N/A
33	4/20/2017	79.8	7628	6269	4371	408150	8870	N/A
34	4/20/2017	79.3	7736	6128	5018	408300	9457	N/A
35	4/20/2017	78.6	7526	6182	5866	408550	9940	N/A
36	4/20/2017	80.1	7388	6374	4227	406900	9256	N/A
37	4/21/2017	79.8	7584	6417	5206	381700	9940	N/A
38	4/21/2017	79.7	7203	5881	5258	407300	9041	N/A
39	4/21/2017	79.9	6917	5883	5633	406450	8974	N/A
40	4/21/2017	80.5	7415	6346	5830	406950	8977	N/A
41	4/22/2017	77.2	7328	5823	5226	406850	9193	N/A
42	4/22/2017	79.6	7179	5693	5449	407450	8887	N/A
43	4/22/2017	79.8	7108	5911	4875	406900	10467	N/A
44	4/22/2017	79.8	6968	5975	4533	408650	9026	N/A
45	4/22/2017	81.8	7210	6688	5604	408230	8859	N/A
46	4/23/2017	79.5	6850	6316	5580	407350	8983	N/A
47	4/23/2017	79.4	6840	5921	5542	408200	8929	N/A
48	4/23/2017	80.0	7294	5871	4701	406850	9886	N/A
49	4/23/2017	81.9	6872	5510	5329	406400	8718	N/A
50	4/24/2017	81.0	7067	5558	4749	406700	8611	N/A
51	4/24/2017	80.6	6687	5629	4742	407200	8948	N/A
52	4/24/2017	79.8	6786	6002	4813	407750	8879	N/A
53	4/24/2017	79.7	6689	6090	4948	407900	8913	N/A
54	4/24/2017	80.5	6680	5929	5289	406350	8716	N/A
55	4/25/2017	80.2	6490	6522	4398	406310	9337	N/A
AVG=						22,370,690	527,334	TOTAL

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## EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Fresh Water	62'	N/A	62'	N/A
Fresh Water	173'	N/A	173'	N/A
Siltstone	est. 0	177	est. 0	177
Sandstone	est. 177	237	est. 177	237
Siltstone	est. 237	567	est. 237	567
Sandstone	est. 567	1552	est. 567	1552
Coal	est. 1552	1557	est. 1552	1557
Shale	est. 1557	1587	est. 1557	1587
Sandstone	est. 1587	1632	est. 1587	1632
Coal	est. 1632	1634	est. 1632	1634
Sandstone	est. 1634	2045	est. 1634	2046
Big Lime	2045	2131	2046	2132
Big Injun	2131	2440	2132	2441
Gantz Sand	2440	2686	2441	2687
Fifty Foot Sandstone	2686	2763	2687	2764
Gordon	2763	3080	2764	3081
Fifth Sandstone	3080	3105	3081	3107
Bayard	3105	3433	3107	3434
Warren	3433	3797	3434	3798
Speechley	3797	4541	3798	4542
Bradford	4541	4933	4542	4935
Benson	4933	5199	4935	5200
Alexander	5199	5354	5200	5356
Elk	5354	5804	5356	5806
Rhinestreet	5804	6127	5806	6137
Sycamore	6127	6293	6441	6680
Middlesex	6293	6411	6680	6887
Burkett	6411	6440	6887	6949
Tully	6440	6467	6949	7038
Marcellus	6467	NA	7038	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:	4/11/2017
Job End Date:	4/25/2017
State:	West Virginia
County:	Doddridge
API Number:	47-017-06701-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Mary Jane 3H
Latitude:	39.23865800
Longitude:	-80.87317500
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,540
Total Base Water Volume (gal):	23,019,125
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	100.00000	89.32758	
DWP-111	CWS	Gel Slurry					
				Listed Below			



DAP-103	CWS	Iron Control					
				Listed Below			
DAP-925	CWS	Acid Corrosion Inhibitor					
				Listed Below			
Sand (Proppant)	CWS	Propping Agent					
				Listed Below			
SANIFRAC 8844	CWS	Biocide					
				Listed Below			
DWP-641	CWS	Friction Reducer					
				Listed Below			
DWP-975	CWS	Breaker					
				Listed Below			
Hydrochloric Acid	CWS	Clean Perforations					
				Listed Below			
DAP-902	CWS	Scale Inhibitor					
				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	10.34828	
			Hydrochloric acid	7647-01-0	37.00000	0.05891	
			Guar gum	9000-30-0	60.00000	0.05608	
			Distillates (petroleum), hydrotreated middle	64742-46-7	60.00000	0.05608	
			Polymer	26100-47-0	45.00000	0.04174	
			Paraffinic hydrocarbon solvent	64742-47-8	30.00000	0.02783	
			Calcite	471-34-1	1.00000	0.01581	
			Ammonium chloride	12125-02-9	11.00000	0.01020	
			Illite	12173-60-3	1.00000	0.00773	
			2-Propenoic acid, homopolymer, sodium salt	9003-04-7	40.00000	0.00607	
			Polyethylene glycol mixture	25322-68-3	54.50000	0.00599	
			Goethite	1310-14-1	0.10000	0.00512	
			Quaternary ammonium compounds, bis (hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	5.00000	0.00467	
			Sorbitan monooleate	1338-43-8	4.00000	0.00371	
			Apatite	64476-38-6	0.10000	0.00361	
			Biotite	1302-27-8	0.10000	0.00361	
			Ilmenite	98072-94-7	0.10000	0.00286	
			Polyethylene glycol monooleate	9004-96-0	3.00000	0.00278	
			2,2-Dibromo-3-Nitropropionamide	10222-01-2		0.00220	
			Sorbitol tetraoleate	61723-83-9	2.00000	0.00186	
			1,2-Propanediol	57-55-6	10.00000	0.00152	

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			Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether	37251-67-5	1.50000	0.00140	
			Ammonium Persulfate	7727-54-0	100.00000	0.00111	
			Amines, tallow alkyl, ethoxylated	61791-26-2	1.00000	0.00093	
			Citric acid	77-92-9	60.00000	0.00055	
			Alcohols, C12-14, ethoxylated	84133-50-6	0.50000	0.00046	
			Sodium bromide	7647-15-6	4.00000	0.00044	
			Dibromoacetonitrile	3252-43-5	3.00000	0.00033	
			Vinylidene chloride-methyl acrylate copolymer	25038-72-6	30.00000	0.00024	
			Acrylamide	79-06-1	0.10000	0.00009	
			Methanol	67-56-1	60.00000	0.00004	
			Hydrated magnesium silicate	14807-96-6	1.00000	0.00004	
			Poly(tetrafluoroethylene)	9002-84-0	1.00000	0.00003	
			Modified thiourea polymer	68527-49-1	30.00000	0.00002	
			Alcohols, C14-15, ethoxylated	68951-67-7	30.00000	0.00002	
			Fatty acids, tall-oil	61790-12-3	30.00000	0.00002	
			Alkenes, C>10 a-	64743-02-8	5.00000	0.00001	
			Formaldehyde	50-00-0	0.10000	0.00001	
			Propargyl Alcohol	107-19-7	10.00000	0.00001	
			Sodium chloride	7647-14-5	1.00000	0.00001	

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\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

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

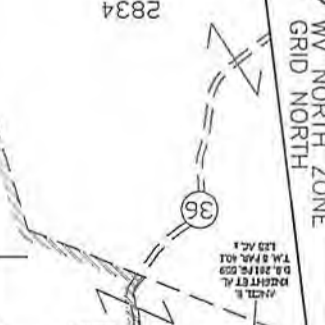
\*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(l) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

Antero Resources Corporation  
 (Well No. Mary Jane Unit 3H)  
 47-017-06701 (AS DRILLED)

8/20/2015



NOT TO SCALE  
 GRID NORTH

NOTE

1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR TWENTY-FIVE (25) FEET OF THE CENTER OF THE WELL.
2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY PAV.
3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
4. THIS IS NOT CERTIFIED DATA AND INFORMATION PROVIDED LISTED BY NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
5. THIS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

API WELL # 47 - 017 - 06701  
 STATE COUNTY PERMIT

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN 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.



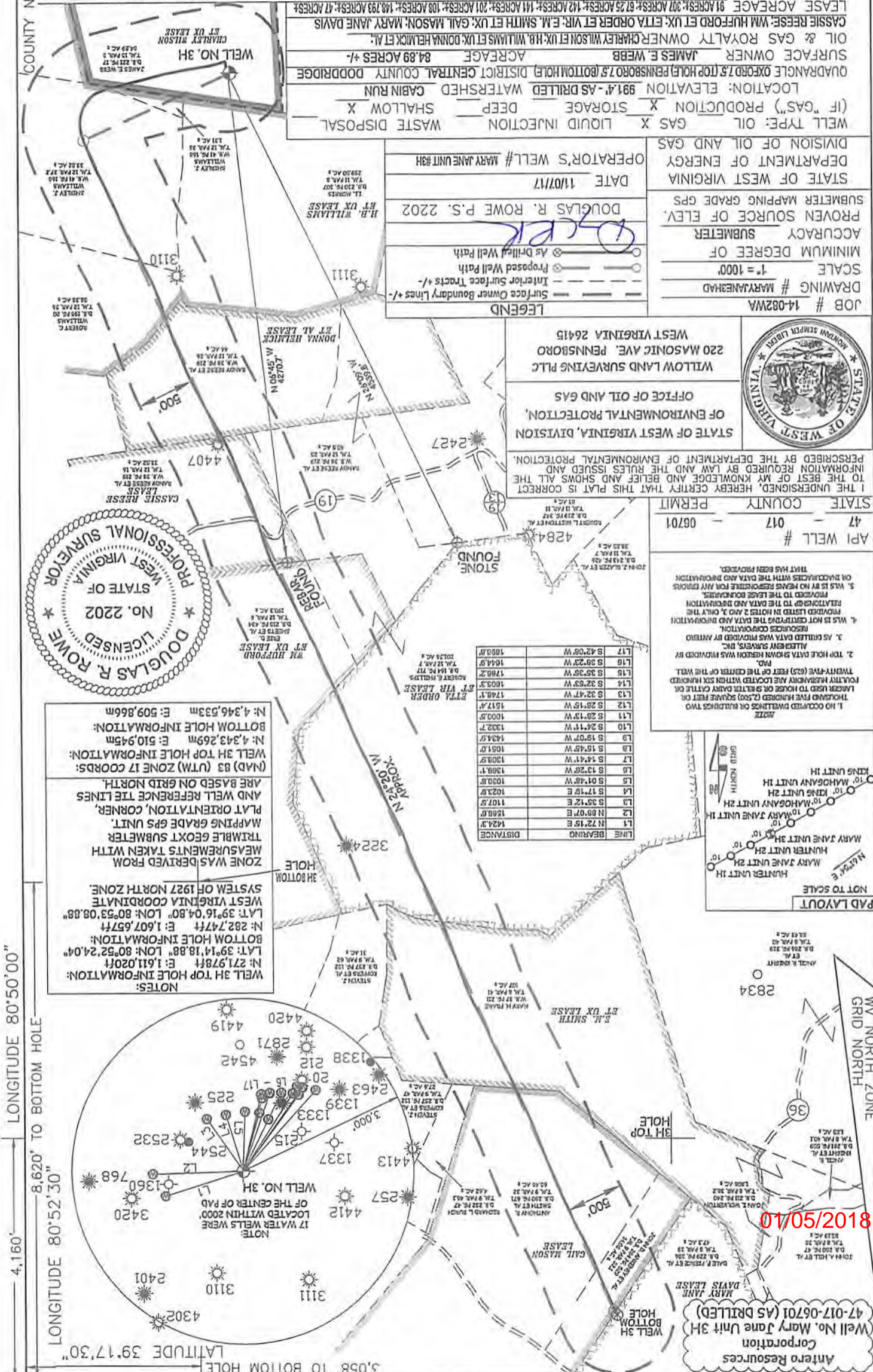
STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
 WILLOW LAND SURVEYING PLLC  
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

JOB # 14-082WA  
 DRAWING # MARYJANE3HAD  
 SCALE 1" = 1000'  
 MINIMUM DEGREE OF ACCURACY SUBMETER  
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS  
 STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY OPERATOR'S WELL # MARY JANE UNIT #3H  
 DATE 11/07/17  
 DOUGLAS R. ROWE P.S. 2202

WELL TYPE: OIL  
 GAS X LIQUID INJECTION  
 WASTE DISPOSAL  
 (IF "GAS") PRODUCTION X  
 DEEP SHALLOW X  
 LOCATION: ELEVATION 991.4' - AS DRILLED  
 WATERSHED CABIN RUN  
 QUADRANGLE OXFORD 7.5 (TOP HOLE) PENNSBORO 7.5 (BOTTOM HOLE) DISTRICT CENTRAL COUNTY DODDRIDGE  
 SURFACE OWNER JAMES E. WEBB  
 ACREAGE 84.89 ACRES +/-  
 OIL & GAS ROYALTY OWNER CHARLEY WILSON ET UX; H.B. WILLIAMS ET UX; DONNA HELMICK ET AL.  
 CASSIE REESE; WM HUFFORD ET UX; ET/A ORDER ET VIR; E.M. SMITH ET UX; GAIL MASON; MARY JANE DAVIS  
 LEASE ACREAGE 91 ACRES +/-; 307 ACRES +/-; 112 ACRES +/-; 141 ACRES +/-; 201 ACRES +/-; 108 ACRES +/-; 148.793 ACRES +/-; 47 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  
 TARGET FORMATION MARCELLUS  
 WELL OPERATOR ANTERO RESOURCES CORP.  
 1615 WYNKOOP STREET  
 DENVER, CO 80202  
 DESIGNATED AGENT DIANNA STAMPER  
 CT CORPORATION SYSTEM  
 6400 D BIG TYLER ROAD  
 CHARLESTON, WV 25313  
 FORM WV-6

PERMIT COUNTY NAME

PERMIT COUNTY NAME



NOTES:  
 WELL 3H TOP HOLE INFORMATION:  
 N: 271,978ft E: 1,611,020ft  
 LAT: 39°14'18.88" LON: 80°52'24.04"  
 BOTTOM HOLE INFORMATION:  
 N: 282,747ft E: 1,607,657ft  
 LAT: 39°16'04.80" LON: 80°53'08.88"  
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE.  
 ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIANGLE 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 3H TOP HOLE INFORMATION:  
 N: 4,343,269m E: 510,945m  
 BOTTOM HOLE INFORMATION:  
 N: 4,346,533m E: 509,866m

LONGITUDE 80°50'00"  
 LONGITUDE 80°52'30"  
 LONGITUDE 80°55'00"  
 LONGITUDE 80°57'30"  
 LONGITUDE 80°59'00"  
 LONGITUDE 80°51'30"  
 LONGITUDE 80°54'00"  
 LONGITUDE 80°56'30"  
 LONGITUDE 80°59'00"  
 LONGITUDE 80°51'30"  
 LONGITUDE 80°54'00"  
 LONGITUDE 80°56'30"  
 LONGITUDE 80°59'00"

WV NORTH ZONE  
 GRID NORTH  
 3,058' TO BOTTOM HOLE  
 11,333'  
 4,160'  
 8,620' TO BOTTOM HOLE  
 3,058' TO BOTTOM HOLE  
 11,333'

LATITUDE 39°15'00"

11,333'

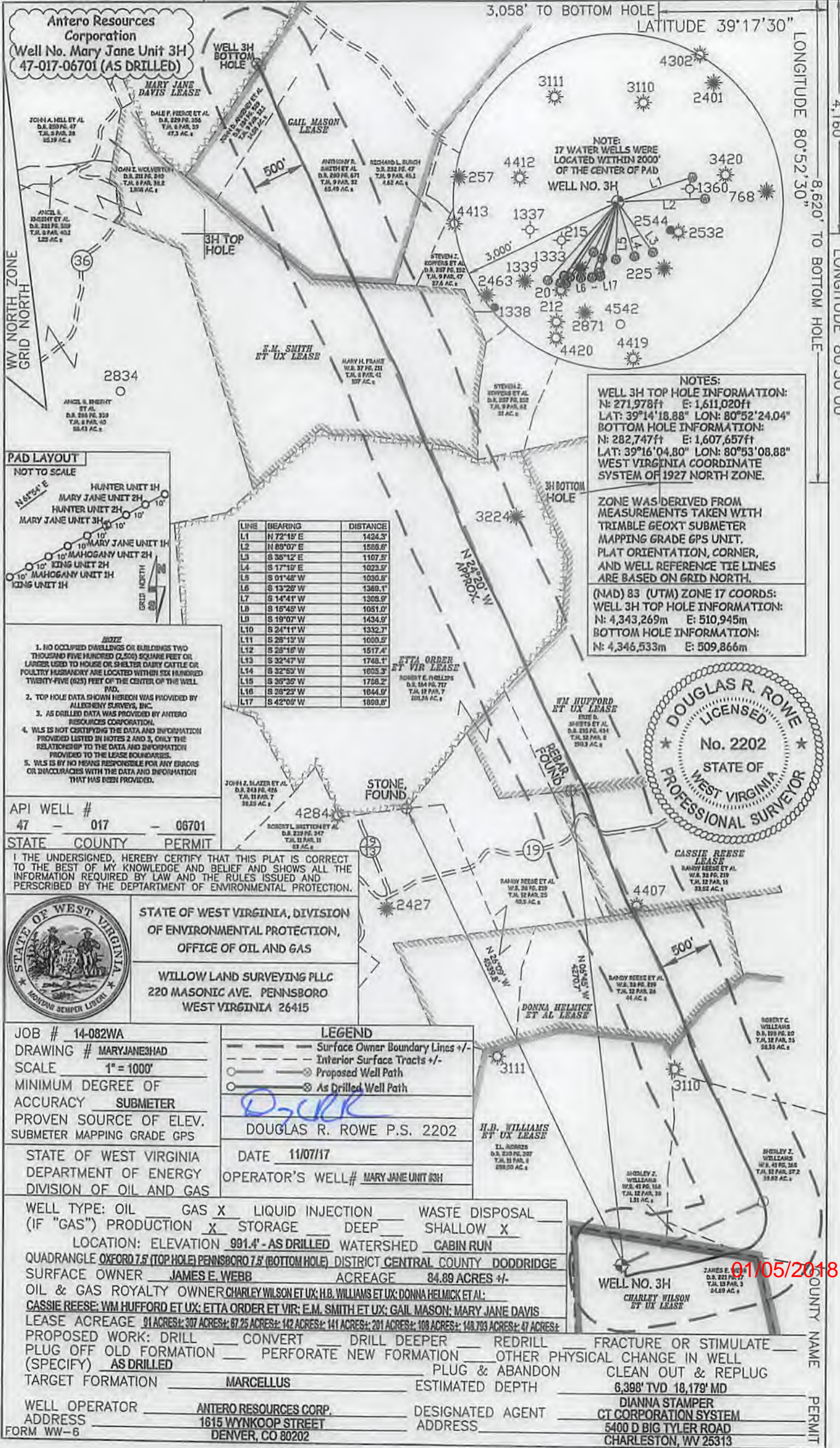
3,058' TO BOTTOM HOLE

LATITUDE 39°17'30"

LONGITUDE 80°52'30"

4,160'

LONGITUDE 80°50'00"



**Antero Resources Corporation**  
**Well No. Mary Jane Unit 3H**  
**47-017-06701 (AS DRILLED)**

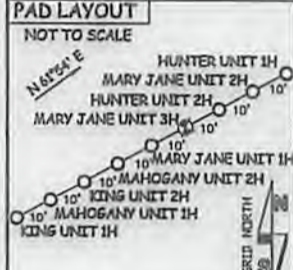
NOTE:  
 17 WATER WELLS WERE  
 LOCATED WITHIN 2000'  
 OF THE CENTER OF PAD  
**WELL NO. 3H**

NOTES:  
**WELL 3H TOP HOLE INFORMATION:**  
 N: 271,978ft E: 1,611,020ft  
 LAT: 39°14'18.88" LON: 80°52'24.04"  
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 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 3H TOP HOLE INFORMATION:**  
 N: 4,343,269m E: 510,945m  
**BOTTOM HOLE INFORMATION:**  
 N: 4,346,533m E: 509,866m

LINE	BEARING	DISTANCE
L1	N 72°15' E	1424.3'
L2	N 89°07' E	1586.6'
L3	S 35°12' E	1107.5'
L4	S 17°19' E	1023.5'
L5	S 01°48' W	1036.6'
L6	S 13°28' W	1369.1'
L7	S 14°41' W	1308.9'
L8	S 16°45' W	1051.0'
L9	S 19°07' W	1434.3'
L10	S 24°11' W	1332.7'
L11	S 25°15' W	1000.5'
L12	S 25°16' W	1517.4'
L13	S 32°47' W	1748.1'
L14	S 32°53' W	1805.3'
L15	S 26°35' W	1788.2'
L16	S 26°23' W	1844.6'
L17	S 42°08' W	1888.6'



- NOTE:
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THIS WELL PAD.
  2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
  3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
  4. WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
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API WELL #  
 47 - 017 - 06701

STATE COUNTY PERMIT

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

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

JOB # 14-082WA  
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 SCALE 1" = 1000'  
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 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

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

**LEGEND**

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

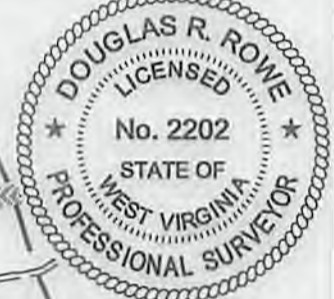
DOUGLAS R. ROWE P.S. 2202

DATE 11/07/17

OPERATOR'S WELL# MARY JANE UNIT #3H

WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
 (IF "GAS") PRODUCTION X STORAGE \_\_\_ DEEP \_\_\_ SHALLOW X  
 LOCATION: ELEVATION 991.4' - AS DRILLED WATERSHED CABIN RUN  
 QUADRANGLE OXFORD 7.5 (TOP HOLE) PENNSBORO 7.5 (BOTTOM HOLE) DISTRICT CENTRAL COUNTY DODDRIDGE  
 SURFACE OWNER JAMES E. WEBB ACRFAGE 84.89 ACRES +/-  
 OIL & GAS ROYALTY OWNER CHARLEY WILSON ET UX; H.B. WILLIAMS ET UX; DONNA HELMICK ET AL;  
 CASSIE REESE; WM HUFFORD ET UX; ETTA ORDER ET VIR; E.M. SMITH ET UX; GAIL MASON; MARY JANE DAVIS  
 LEASE ACREAGE 91 ACRES; 307 ACRES; 67.25 ACRES; 142 ACRES; 141 ACRES; 201 ACRES; 108 ACRES; 148.793 ACRES; 47 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 6,398' TVD 18,179' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER  
 ADDRESS 1615 WYNKOOP STREET CT CORPORATION SYSTEM  
 FORM WW-6 DENVER, CO 80202 ADDRESS 5400 D BIG TYLER ROAD  
 CHARLESTON, WV 25313



01/05/2018