

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

API 47 - 017 - 06246 County Doddridge District Grant  
Quad Smithburg 7.5' Pad Name RJ Smith Pad Field/Pool Name \_\_\_\_\_  
Farm name Smith, Robert J. Well Number Duff 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 4,357,414m Easting 523,018m  
Landing Point of Curve Northing 4,357,156m Easting 522,902.33m  
Bottom Hole Northing 4,354,294m Easting 524,064m

Elevation (ft) 998' 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 06/19/2013 Date drilling commenced 09/15/2013 Date drilling ceased 12/27/2013  
Date completion activities began 05/21/2014 Date completion activities ceased 08/24/2014  
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 231' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft 1,425' Void(s) encountered (Y/N) depths None  
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths None  
Is coal being mined in area (Y/N) No

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42 5/27/15  
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API 47-017 - 06246 Farm name Smith, Robert J. Well number Duff 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"	40'	New	94#; H-40	N/A	Yes
Surface	17 1/2"	13 3/8"	450'	New	48#; J-55	N/A	Yes*
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,608'	New	36#; J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	17,739'	New	23#; P-110	N/A	Yes
Tubing		2 3/8"	7,034'	<del>New</del>	4.7#; N-80	N/A	
Packer type and depth set		N/A					

Comment Details \*Surface cement (338 sacks) fell out and was grouted (112 sacks) to bring returns back to surface.

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	112 sx	15.6	1.19	38	0'	8 Hrs.
Surface	Class A	450 sx*	15.6	1.18	313	0'	8 Hrs.
Coal							
Intermediate 1	Class A	956 sx	15.6	1.18	817	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1,164 sx (Lead); 1,572 sx (Tail)	14.5 (Lead); 15.2 (Tail)	1.3 (Lead); 1.86 (Tail)	3,581	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 17,739' MD, 6,850' TVD (BHL); 6,888' TVD (Deepest Point Drilled) Loggers TD (ft) 17,683'  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 6,161'

\*\*This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Duff Unit 2H, API #47-017-06247). Please reference the wireline logs submitted with Form WR-35 for the Duff Unit 2H. A Cement Bond Log has been included with this submittal.

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

Well cored  Yes  No Conventional Sidewall Were cuttings collected  Yes  No

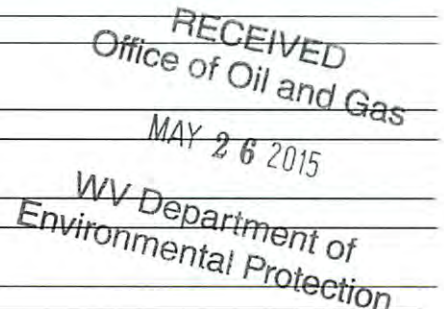
DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_

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 \_\_\_\_\_







API 47-017-06246 Farm Name Smith, Robert J. Well Number Duff Unit 1H

**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	21-May-14	17,483	17,653	60	Marcellus
2	1-Jul-14	17,282	17,452	60	Marcellus
3	1-Jul-14	17,082	17,251	60	Marcellus
4	1-Jul-14	16,881	17,050	60	Marcellus
5	1-Jul-14	16,680	16,849	60	Marcellus
6	2-Jul-14	16,479	16,649	60	Marcellus
7	2-Jul-14	16,278	16,448	60	Marcellus
8	2-Jul-14	16,078	16,247	60	Marcellus
9	2-Jul-14	15,877	16,046	60	Marcellus
10	3-Jul-14	15,676	15,845	60	Marcellus
11	3-Jul-14	15,475	15,645	60	Marcellus
12	3-Jul-14	15,274	15,444	60	Marcellus
13	4-Jul-14	15,074	15,243	60	Marcellus
14	4-Jul-14	14,873	15,042	60	Marcellus
15	4-Jul-15	14,672	14,841	60	Marcellus
16	5-Jul-14	14,471	14,641	60	Marcellus
17	5-Jul-14	14,271	14,440	60	Marcellus
18	5-Jul-14	14,070	14,239	60	Marcellus
19	5-Jul-14	13,869	14,038	60	Marcellus
20	6-Jul-14	13,668	13,837	60	Marcellus
21	6-Jul-14	13,467	13,637	60	Marcellus
22	6-Jul-14	13,267	13,436	60	Marcellus
23	6-Jul-14	13,066	13,235	60	Marcellus
24	7-Jul-14	12,865	13,034	60	Marcellus
25	8-Jul-14	12,664	12,834	60	Marcellus
26	8-Jul-14	12,463	12,633	60	Marcellus
27	8-Jul-14	12,263	12,432	60	Marcellus
28	8-Jul-14	12,062	12,231	60	Marcellus
29	9-Jul-14	11,861	12,030	60	Marcellus
30	9-Jul-14	11,660	11,830	60	Marcellus
31	10-Jul-14	11,459	11,629	60	Marcellus
32	10-Jul-14	11,259	11,428	60	Marcellus
33	10-Jul-14	11,058	11,227	60	Marcellus
34	10-Jul-14	10,857	11,026	60	Marcellus
35	11-Jul-14	10,656	10,826	60	Marcellus
36	11-Jul-14	10,456	10,625	60	Marcellus
37	11-Jul-14	10,255	10,424	60	Marcellus
38	12-Jul-14	10,054	10,223	60	Marcellus
39	12-Jul-14	9,853	10,022	60	Marcellus
40	13-Jul-14	9,652	9,822	60	Marcellus
41	13-Jul-14	9,452	9,621	60	Marcellus
42	13-Jul-14	9,251	9,420	60	Marcellus
43	13-Jul-14	9,050	9,219	60	Marcellus
44	14-Jul-14	8,849	9,019	60	Marcellus
45	14-Jul-14	8,648	8,818	60	Marcellus
46	14-Jul-14	8,448	8,617	60	Marcellus
47	14-Jul-14	8,247	8,416	60	Marcellus
48	15-Jul-14	8,046	8,215	60	Marcellus
49	15-Jul-14	7,845	8,015	60	Marcellus
50	15-Jul-14	7,644	7,814	60	Marcellus
51	15-Jul-14	7,444	7,613	60	Marcellus
52	15-Jul-14	7,243	7,412	60	Marcellus

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## EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	30-Jun-14	77.0	7,585	5,998	5,280	255,716	6,807	N/A
2	1-Jul-14	78.1	8,005	5,892	5,526	242,198	7,331	N/A
3	1-Jul-14	74.0	7,844	5,655	4,832	255,802	6,753	N/A
4	1-Jul-14	73.0	7,822	5,820	4,501	237,681	7,277	N/A
5	2-Jul-14	76.9	7,910	5,967	5,110	256,794	6,655	N/A
6	2-Jul-14	77.0	7,966	6,002	4,750	257,475	6,655	N/A
7	2-Jul-14	75.0	7,860	5,838	4,493	253,547	6,639	N/A
8	2-Jul-14	79.6	7,879	5,719	5,214	255,549	6,598	N/A
9	3-Jul-14	79.1	8,088	6,295	5,400	256,600	6,619	N/A
10	3-Jul-14	79.2	8,114	6,184	5,082	243,381	6,549	N/A
11	3-Jul-14	79.1	7,831	5,700	4,869	254,715	6,661	N/A
12	3-Jul-14	81.8	7,794	6,076	4,381	256,546	6,605	N/A
13	5-Jul-14	81.8	7,794	5,617	5,293	260,418	6,715	N/A
14	4-Jul-14	78.9	7,598	5,648	5,098	263,928	6,857	N/A
15	4-Jul-14	72.9	7,278	5,798	5,222	258,977	6,581	N/A
16	5-Jul-14	79.5	8,041	5,863	4,523	258,038	6,527	N/A
17	5-Jul-14	77.0	7,634	5,886	4,619	258,978	6,587	N/A
18	5-Jul-14	79.6	7,565	5,826	5,172	254,822	6,566	N/A
19	5-Jul-14	79.5	7,809	5,964	4,290	256,444	6,471	N/A
20	6-Jul-14	79.1	7,707	5,881	4,544	257,808	6,472	N/A
21	6-Jul-14	78.0	7,934	5,754	5,111	255,774	6,430	N/A
22	6-Jul-14	79.9	7,846	5,678	4,751	255,265	6,466	N/A
23	7-Jul-14	81.1	7,761	5,741	4,191	254,605	6,329	N/A
24	7-Jul-14	72.6	7,465	5,462	5,710	149,243	6,433	N/A
25	8-Jul-14	75.4	7,823	5,728	5,820	234,188	6,814	N/A
26	8-Jul-14	79.4	7,424	5,631	4,263	249,140	6,308	N/A
27	8-Jul-14	81.0	7,686	5,729	4,953	252,080	6,365	N/A
28	9-Jul-14	79.9	7,433	5,385	4,559	252,217	6,371	N/A
29	9-Jul-14	84.5	7,527	5,620	3,967	255,396	6,494	N/A
30	10-Jul-14	81.0	7,525	5,742	4,650	255,677	6,374	N/A
31	10-Jul-14	78.6	7,210	5,745	4,170	255,219	6,347	N/A
32	10-Jul-14	77.8	7,072	5,791	4,528	249,577	6,164	N/A
33	10-Jul-14	81.3	7,448	5,886	4,035	255,670	6,295	N/A
34	10-Jul-14	79.9	7,644	6,007	4,456	254,457	6,324	N/A
35	17-Jul-14	77.4	7,513	5,881	5,099	258,334	6,252	N/A
36	17-Jul-14	78.0	5,651	5,615	5,126	255,416	6,249	N/A
37	17-Jul-14	79.6	7,653	6,118	5,998	208,489	6,562	N/A
38	17-Jul-14	75.2	7,221	5,696	3,858	254,224	6,207	N/A
39	13-Jul-14	72.4	7,129	5,846	4,286	252,719	6,217	N/A
40	17-Jul-14	80.7	7,108	5,586	4,240	260,635	6,210	N/A
41	17-Jul-14	80.2	7,170	5,936	4,833	257,417	6,139	N/A
42	13-Jul-14	77.4	7,218	5,856	2,109	254,523	6,144	N/A
43	14-Jul-14	77.6	6,947	5,671	5,681	254,759	6,135	N/A
44	17-Jul-14	83.1	6,949	5,772	5,296	258,836	6,143	N/A
45	17-Jul-14	80.3	6,978	5,899	4,443	248,585	6,132	N/A
46	17-Jul-14	79.1	6,889	5,682	4,658	256,176	6,108	N/A
47	14-Jul-14	77.6	6,761	5,583	5,454	255,840	6,076	N/A
48	15-Jul-14	77.5	6,787	5,752	5,166	270,819	6,034	N/A
49	17-Jul-14	79.3	6,882	6,130	5,669	255,043	6,053	N/A
50	17-Jul-14	79.3	6,605	5,311	4,243	256,178	6,113	N/A
51	15-Jul-14	77.6	6,635	5,883	5,320	253,622	5,987	N/A
52	15-Jul-14	77.2	6,472	6,212	4,069	256,154	6,002	N/A
AVG=		78.4	7,433	5,807	4,787	13,091,694	334,202	TOTAL

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**EXHIBIT 3**

LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Fresh Water	231'	N/A	231'	N/A
Sandstone/ Siltstone	0	591	0	591
Sandy Shale/ Dolostone	Est. 591	691	Est. 591	691
Sandstone/ Siltstone	Est. 691	871	Est. 691	871
Silty Shale	Est. 871	1,021	Est. 871	1,021
Sandstone/ Siltstone	Est. 1021	1,101	Est. 1021	1,101
Sandstone/ Trace Coal	Est. 1101	1,191	Est. 1101	1,191
Sandstone/ Siltstone	Est. 1191	1,641	Est. 1191	1,641
Limestone/ Sandstone	Est. 1641	1,701	Est. 1641	1,701
Sandstone/ Trace Coal	Est. 1701	1,731	Est. 1701	1,731
Sandy Shale	Est. 1731	1,861	Est. 1731	1,861
Sandstone/ Siltstone	Est. 1861	1,941	Est. 1861	1,941
Limestone/ Sandstone	Est. 1941	1,964	Est. 1941	1,964
Big Lime	1,964	2,076	1,964	2,076
Big Injun	2,076	2,523	2,076	2,523
Gantz Sand	2,523	2,657	2,523	2,657
Fifty Foot Sandstone	2,657	2,722	2,657	2,722
Gordon	2,722	3,075	2,722	3,075
Fifth Sandstone	3,075	3,092	3,075	3,092
Bayard	3,092	3,461	3,092	3,461
Warren	3,461	3,841	3,461	3,841
Speechley	3,841	4,094	3,841	4,094
Baltown	4,094	4,564	4,094	4,564
Bradford	4,564	5,072	4,564	5,072
Benson	5,072	5,330	5,072	5,330
Alexander	5,330	5,524	5,330	5,524
Elk	5,524	6,053	5,524	6,054
Rhinestreet	6,053	6,412	6,054	6,436
Sycamore	6,412	6,595	6,436	6,717
Middlesex	6,595	6,729	6,717	6,967
Burkett	6,729	6,757	6,967	7,033
Tully	6,757	6,816	7,033	7,204
Marcellus	6,816	NA	7,204	NA

\*Please note Antero determines shallow formation tops based on mud and/or wireline logs that are only run on one well on a multi-well pad (Please reference Wireline Logs submitted for the Duff Unit 2H API# 47-017-06247). 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:	6/30/2014
Job End Date:	7/15/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06246-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Duff Unit 1H
Longitude:	-80.73279700
Latitude:	39.36588100
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,888
Total Base Water Volume (gal):	14,497,770
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
Water	Operator	Carrier	Water	7732-18-5	100.00000	89.86138	
Sand, White, 40/70	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		5.69317	
Sand, White, 20/40	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		3.45815	
Sand, White, 100 mesh	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.57541	
HCl, 10.1 - 15%	Baker Hughes	Acidizing	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.20120	SmartCare Product
FRW-18	Baker Hughes	Friction Reducer	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.06050	SmartCare Product
GW-3LDF	Baker Hughes	Gelling Agent	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.04947	SmartCare Product
Scaleinol 720	Baker Hughes	Scale Inhibitor	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.01500	SmartCare Product

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GW-3	Baker Hughes	Gelling Agent	MSDS and Non-MSDS Ingredients Listed Below	N/A				0.01387	
Alpha 1427	Baker Hughes	Biocide	MSDS and Non-MSDS Ingredients Listed Below	N/A				0.01351	SmartCare Product
Enzyme G-NE	Baker Hughes	Breaker	MSDS and Non-MSDS Ingredients Listed Below	N/A				0.01166	SmartCare Product
Ferrolrol 300L	Baker Hughes	Iron Control	MSDS and Non-MSDS Ingredients Listed Below	N/A				0.00139	SmartCare Product
CI-14	Baker Hughes	Corrosion Inhibitor	MSDS and Non-MSDS Ingredients Listed Below	N/A				0.00032	SmartCare Product
Ingredients shown above are subject to 29 CFR 1910.1200(f) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.									
Ingredients in Additive (s) (MSDS and non- MSDS)	Baker Hughes	See Trade Name(s) List							
			Crystalline Silica (Quartz)	14808-60-7	100.00000			9.72188	
			Water	7732-18-5	95.00000			0.22252	
			Guar Gum	9000-30-0	100.00000			0.04353	
			Mineral Oil	8042-47-5	70.00000			0.03461	
			Hydrochloric Acid	7647-01-0	15.00000			0.03017	
			Poly (acrylamide-co-acrylic acid) partial sodium salt	62649-23-4	30.00000			0.01814	
			Hydroreated Light Distillate	64742-47-8	30.00000			0.01814	
			Paraffinic Petroleum Distillate	64742-55-8	30.00000			0.01483	
			Ethylene Glycol	107-21-1	45.00000			0.00675	
			Glutaraldehyde	111-30-8	30.00000			0.00405	
			Sodium Chloride	7647-14-5	5.00000			0.00317	
			2-Propenoic, Polymer with Sodium Phosphinate, Sodium Salt	71050-62-9	20.00000			0.00300	
			1-butoxy-2-propanol	5131-66-8	5.00000			0.00247	
			Crystalline Silica: Quartz	14808-60-7	5.00000			0.00247	
			Isotridecanol, ethoxylated	9043-30-5	5.00000			0.00247	
			Ammonium Chloride	12125-02-9	3.00000			0.00181	
			Didecyl Dimethyl Ammonium Chloride	7173-51-5	10.00000			0.00135	
			Oleamide DEA	93-83-4	2.00000			0.00121	
			Alcohols, C12-16, ethoxylated	68551-12-2	2.00000			0.00121	
			Citric Acid	77-92-9	60.00000			0.00083	
			Calcium Chloride	10043-52-4	5.00000			0.00075	
			Quaternary Ammonium Compound	68424-85-1	5.00000			0.00068	
			Ethanol	64-17-5	5.00000			0.00068	
			Hemicellulase Enzyme Concentrate	9025-56-3	5.00000			0.00058	
			Methanol	67-56-1	100.00000			0.00032	
			Sorbitan Monooleate	1338-43-8	0.50000			0.00030	

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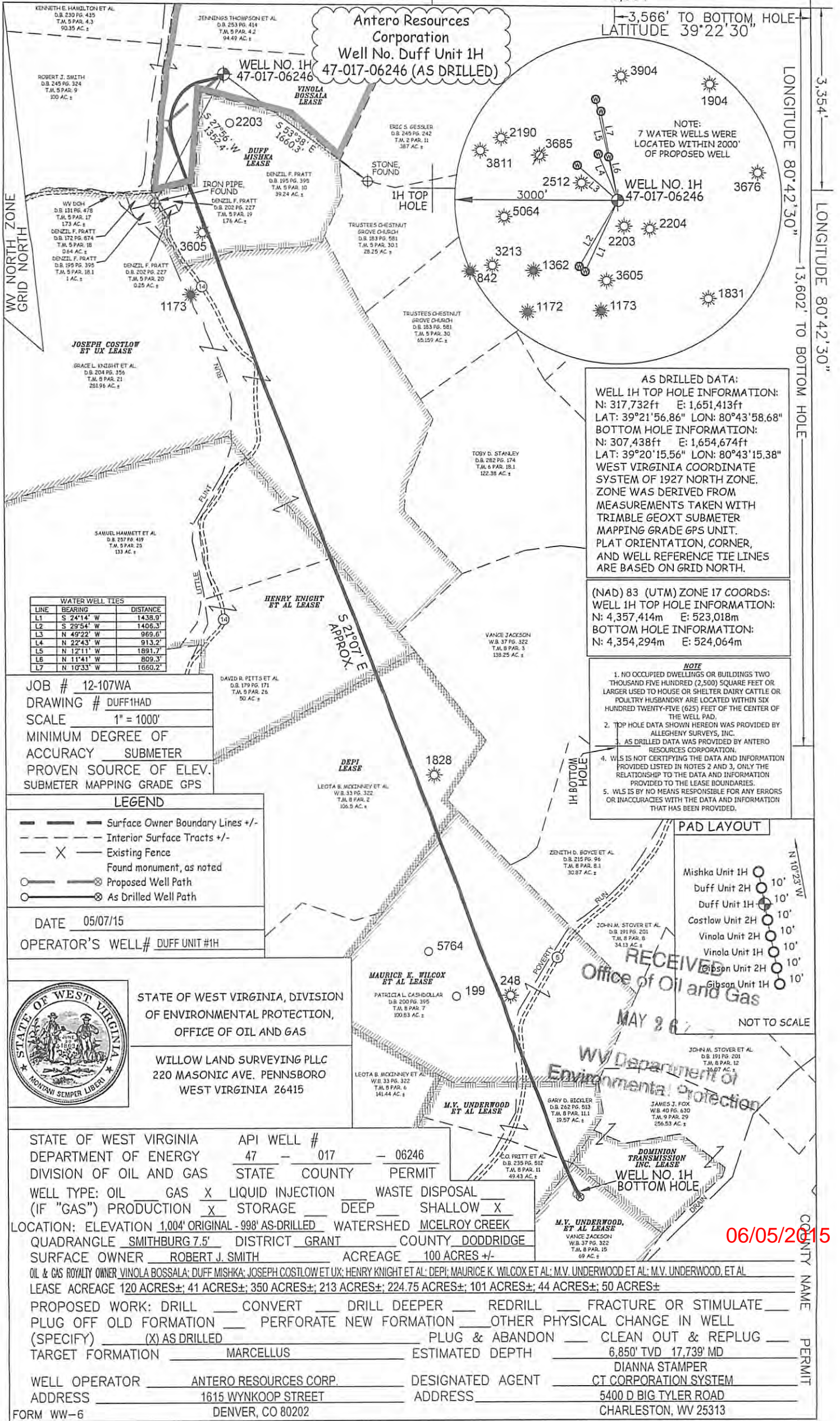
LATITUDE 39°22'30"

6,964'

3,566' TO BOTTOM, HOLE  
LATITUDE 39°22'30"

LONGITUDE 80°42'30"

LONGITUDE 80°42'30"



Antero Resources Corporation  
Well No. Duff Unit 1H  
47-017-06246 (AS DRILLED)

AS DRILLED DATA:  
WELL 1H TOP HOLE INFORMATION:  
N: 317,732ft E: 1,651,413ft  
LAT: 39°21'56.86" LON: 80°43'58.68"  
BOTTOM HOLE INFORMATION:  
N: 307,438ft E: 1,654,674ft  
LAT: 39°20'15.56" LON: 80°43'15.38"  
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 1H TOP HOLE INFORMATION:  
N: 4,357,414m E: 523,018m  
BOTTOM HOLE INFORMATION:  
N: 4,354,294m E: 524,064m

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

LINE	BEARING	DISTANCE
L1	S 24°14' W	1438.9'
L2	S 29°54' W	1406.3'
L3	N 49°22' W	969.6'
L4	N 22°43' W	913.2'
L5	N 12°11' W	1891.7'
L6	N 11°41' W	809.3'
L7	N 10°33' W	1660.2'

JOB # 12-107WA  
DRAWING # DUFF1HAD  
SCALE 1" = 1000'  
MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

LEGEND

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

DATE 05/07/15

OPERATOR'S WELL# DUFF UNIT #1H



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

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

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS  
API WELL # 47 - 017 - 06246  
STATE COUNTY PERMIT

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL  
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X

LOCATION: ELEVATION 1,004' ORIGINAL - 998' AS-DRILLED WATERSHED MCELROY CREEK  
QUADRANGLE SMITHBURG 7.5' DISTRICT GRANT COUNTY DODDRIDGE

SURFACE OWNER ROBERT J. SMITH ACREAGE 100 ACRES +/-  
OIL & GAS ROYALTY OWNER VINOLA BOSSALA; DUFF MISHKA; JOSEPH COSTLOW ET UX; HENRY KNIGHT ET AL; DEPI; MAURICE K. WILCOX ET AL; M.V. UNDERWOOD ET AL; M.V. UNDERWOOD, ET AL

LEASE ACREAGE 120 ACRES±; 41 ACRES±; 350 ACRES±; 213 ACRES±; 224.75 ACRES±; 101 ACRES±; 44 ACRES±; 50 ACRES±

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE  
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL  
(SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG  
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,850' TVD 17,739' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER  
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
DENVER, CO 80202 CHARLESTON, WV 25313

06/05/2015