

WR-35
Rev. 8/23/13

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

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

API 47 - 017 - 06566 County Doddridge District Grant
Quad Smithburg 7.5' Pad Name RJ Smith Field/Pool Name ---
Farm name Smith, Robert J. Well Number Vinola Unit 2H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop St. 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 4357408m Easting 523020m
Landing Point of Curve Northing 4357544.84m Easting 523369.66m
Bottom Hole Northing 4359666m Easting 522508m

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 10/29/2014 Date drilling commenced 1/19/2015 Date drilling ceased 5/7/2015
Date completion activities began 11/4/2015 Date completion activities ceased 1/8/2016
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 181', 237' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 804', 1267', 1350', 1431' Void(s) encountered (Y/N) depths No
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:

API 47- 017 - 06566 Farm name Smith, Robert J. Well number Vinola 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	30"	20"	40'	New	94# J-55	N/A	Y
Surface	17- 1/2"	13- 3/8"	409'	New	48# H-40	N/A	Y*
Coal							
Intermediate 1	12-1/4"	9-5/8"	2568'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	14994'	New	23# P-110	N/A	Y
Tubing		2-3/8"	7243'		4.7# N-80	N/A	
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	193 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	486 sx	15.6	1.18	284	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1005 sx	15.6	1.18	804	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	846 sx (Lead) 1775 sx (Tail)	13.5 Lead 15.2 Tail	1.44 Lead 1.80 Tail	2961	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 14994' MD, 6859' TVD (BHL) 6906' (Deepest Point Drilled) Loggers TD (ft) 14994'
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6240'

** 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 Duff 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

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 - 06566 Farm name Smith, Robert J. Well number Vinola Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6841' (TOP)</u> TVD	<u>7289' (TOP)</u> MD
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3550 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 14485 mcfpd Oil 21 bpd NGL --- bpd Water 6 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	<u>0</u>		<u>0</u>		

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling Company LP
Address 2640 Reach Rd. City Williamsport State PA Zip 17701

Logging Company Rush Wellsite Services
Address 600 Alpha Drive City Canonsburg State PA Zip 15317

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

Stimulating Company Baker Hughes
Address 837 Philippi Pike City Clarksburg State WV Zip 26301

Please insert additional pages as applicable.

Completed by Kara Quackenbush Telephone 303-357-7233
Signature [Signature] Title Permit Representative Date 3/17/2016

API 47-017-06566 Farm Name Smith, Robert J. Well Number Vinola Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	4-Nov-15	14,733	14,902	60	Marcellus
2	10-Nov-15	14,533	14,702	60	Marcellus
3	12-Nov-15	14,333	14,501	60	Marcellus
4	12-Nov-15	14,132	14,301	60	Marcellus
5	12-Nov-15	13,932	14,101	60	Marcellus
6	13-Nov-15	13,732	13,901	60	Marcellus
7	13-Nov-15	13,532	13,701	60	Marcellus
8	13-Nov-15	13,332	13,500	60	Marcellus
9	14-Nov-15	13,131	13,300	60	Marcellus
10	14-Nov-15	12,931	13,100	60	Marcellus
11	14-Nov-15	12,731	12,900	60	Marcellus
12	14-Nov-15	12,531	12,699	60	Marcellus
13	15-Nov-15	12,330	12,499	60	Marcellus
14	15-Nov-15	12,130	12,299	60	Marcellus
15	15-Nov-15	11,930	12,099	60	Marcellus
16	15-Nov-15	11,730	11,899	60	Marcellus
17	16-Nov-15	11,530	11,698	60	Marcellus
18	16-Nov-15	11,329	11,498	60	Marcellus
19	16-Nov-15	11,129	11,298	60	Marcellus
20	16-Nov-15	10,929	11,098	60	Marcellus
21	17-Nov-15	10,729	10,897	60	Marcellus
22	17-Nov-15	10,528	10,697	60	Marcellus
23	17-Nov-15	10,328	10,497	60	Marcellus
24	17-Nov-15	10,128	10,297	60	Marcellus
25	18-Nov-15	9,928	10,097	60	Marcellus
26	17-Nov-15	9,728	9,896	60	Marcellus
27	18-Nov-15	9,527	9,696	60	Marcellus
28	18-Nov-15	9,327	9,496	60	Marcellus
29	18-Nov-15	9,127	9,296	60	Marcellus
30	18-Nov-15	8,927	9,096	60	Marcellus
31	19-Nov-15	8,726	8,895	60	Marcellus
32	19-Nov-15	8,526	8,695	60	Marcellus
33	19-Nov-15	8,326	8,495	60	Marcellus
34	19-Nov-15	8,126	8,295	60	Marcellus
35	19-Nov-15	7,926	8,094	60	Marcellus
36	20-Nov-15	7,725	7,894	60	Marcellus
37	20-Nov-15	7,525	7,694	60	Marcellus
38	20-Nov-15	7,325	7,494	60	Marcellus

API 47-017-06566 Farm Name Smith, Robert J. Well Number Vinola 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	10-Nov-15	68.0	7,122	-	5,325	150,819	6,518	N/A
2	10-Nov-15	70.1	7,308	5,964	5,390	211,691	7,168	N/A
3	12-Nov-15	69.2	7,147	5,751	5,389	73,011	7,585	N/A
4	12-Nov-15	69.6	7,026	5,663	5,148	262,969	6,754	N/A
5	12-Nov-15	68.0	7,053	5,849	5,160	241,854	7,127	N/A
6	13-Nov-15	70.0	6,990	5,509	5,224	261,477	6,365	N/A
7	13-Nov-15	67.6	6,960	5,734	5,566	264,372	6,667	N/A
8	13-Nov-15	68.0	7,053	5,811	5,124	236,318	7,137	N/A
9	14-Nov-15	69.0	7,093	5,615	5,622	207,361	6,865	N/A
10	14-Nov-15	69.0	6,880	5,815	5,503	266,606	6,513	N/A
11	14-Nov-15	69.9	6,960	5,538	5,047	233,272	6,985	N/A
12	14-Nov-15	68.0	7,280	5,433	5,667	256,132	6,355	N/A
13	15-Nov-15	67.0	6,951	5,571	5,428	266,694	6,212	N/A
14	15-Nov-15	58.0	7,615	5,498	4,753	110,039	6,705	N/A
15	15-Nov-15	64.0	6,655	5,496	4,978	245,339	7,013	N/A
16	15-Nov-15	67.0	6,787	5,349	5,382	219,216	7,153	N/A
17	16-Nov-15	64.0	7,032	5,704	5,211	224,072	6,313	N/A
18	16-Nov-15	66.4	6,845	5,775	6,403	263,400	6,314	N/A
19	16-Nov-15	68.0	6,992	6,033	5,274	103,088	6,519	N/A
20	16-Nov-15	65.0	6,808	5,585	5,539	264,198	6,207	N/A
21	17-Nov-15	68.0	6,726	5,551	5,145	265,877	6,221	N/A
22	17-Nov-15	69.0	6,746	5,662	5,321	266,725	6,247	N/A
23	17-Nov-15	69.4	6,598	5,696	6,204	268,695	6,603	N/A
24	17-Nov-15	67.4	6,644	6,398	5,476	192,247	6,776	N/A
25	18-Nov-15	70.0	6,623	5,800	4,911	267,107	6,198	N/A
26	17-Nov-15	72.0	6,685	5,601	4,975	267,211	6,207	N/A
27	18-Nov-15	70.0	6,867	5,851	5,101	267,189	6,072	N/A
28	18-Nov-15	69.0	6,784	5,340	5,411	263,644	6,224	N/A
29	18-Nov-15	67.5	6,590	5,382	5,111	194,170	6,342	N/A
30	18-Nov-15	68.0	6,848	5,865	5,109	233,420	6,191	N/A
31	19-Nov-15	71.0	6,682	5,576	5,339	233,541	6,761	N/A
32	19-Nov-15	71.0	6,874	5,528	5,090	186,066	6,706	N/A
33	19-Nov-15	64.7	6,394	5,368	5,233	256,061	6,109	N/A
34	19-Nov-15	69.0	6,583	5,439	5,249	254,800	6,106	N/A
35	19-Nov-15	70.0	7,175	5,464	4,478	187,148	6,611	N/A
36	20-Nov-15	71.5	6,149	5,537	5,011	225,456	6,687	N/A
37	20-Nov-15	70.0	6,716	5,240	5,008	255,817	6,111	N/A
38	20-Nov-15	73.2	6,671	5,392	4,613	249,422	5,981	N/A
AVG=		68.3	6,866	5,632	5,261	8,696,524	248,628	TOTAL

API 47-017-06566 Farm Name Smith, Robert J. Well Number Vinola Unit 2H

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	181'	N/A	181'	N/A
Fresh Water	237'	N/A	237'	N/A
Siltstone	0	427	0	427
Sandstone	est. 427	597	est. 427	597
Dolostone/Sandstone/Siltstone	est. 597	637	est. 597	637
Sandstone and Siltstone w/trace coal	est. 637	697	est. 637	697
Siltstone	est. 697	877	est. 697	877
Shale	est. 877	1027	est. 877	1027
Sandstone	est. 1027	1107	est. 1027	1107
Sandstone w/trace coal	est. 1107	1197	est. 1107	1197
Sandstone	est. 1197	1527	est. 1197	1527
Siltstone	est. 1527	1587	est. 1527	1587
Sandstone	est. 1587	1647	est. 1587	1647
Shale	est. 1647	1707	est. 1647	1707
Sandstone	est. 1707	1737	est. 1707	1737
Shale	est. 1737	1867	est. 1737	1867
Siltstone	est. 1867	2008	est. 1867	2010
Big Lime	2008	2115	2010	2117
Big Injun	2115	2564	2117	2566
Gantz Sand	2564	2697	2566	2699
Fifty Foot Sandstone	2697	2784	2699	2786
Gordon	2784	3116	2786	3118
Fifth Sandstone	3116	3130	3118	3132
Bayard	3130	3500	3132	3502
Warren	3500	3889	3502	3891
Speechley	3889	4601	3891	4624
Bradford	4601	5079	4624	5164
Benson	5079	5348	5164	5473
Alexander	5348	5544	5473	5688
Elk	5544	6067	5688	6274
Rhinestreet	6067	6426	6274	6680
Sycamore	6426	6611	6680	6896
Middlesex	6611	6751	6896	7101
Burkett	6751	6781	7101	7156
Tully	6781	6841	7156	7289
Marcellus	6841	NA	7289	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:	11/10/2015
Job End Date:	11/20/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06566-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	VINOLA UNIT 2H
Longitude:	-80.74050000
Latitude:	39.38948000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,905
Total Base Water Volume (gal):	10,849,188
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Service Abstract 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	90.74973	
Sand, White, 40/70	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		4.77222	
Sand, White, 20/40	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		3.30204	
Sand, White, 100 mesh	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.66187	
HCl, 10.1 - 15%	Baker Hughes	Acidizing	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.20954	SmartCare Product
GW-3LDF	Baker Hughes	Gelling Agent	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.06361	SmartCare Product
FRW-18	Baker Hughes	Friction Reducer	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.06765	SmartCare Product
GW-3	Baker Hughes	Gelling Agent	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.01694	

LATITUDE 39°22'30"

6,960'

8,616' TO BOTTOM HOLE

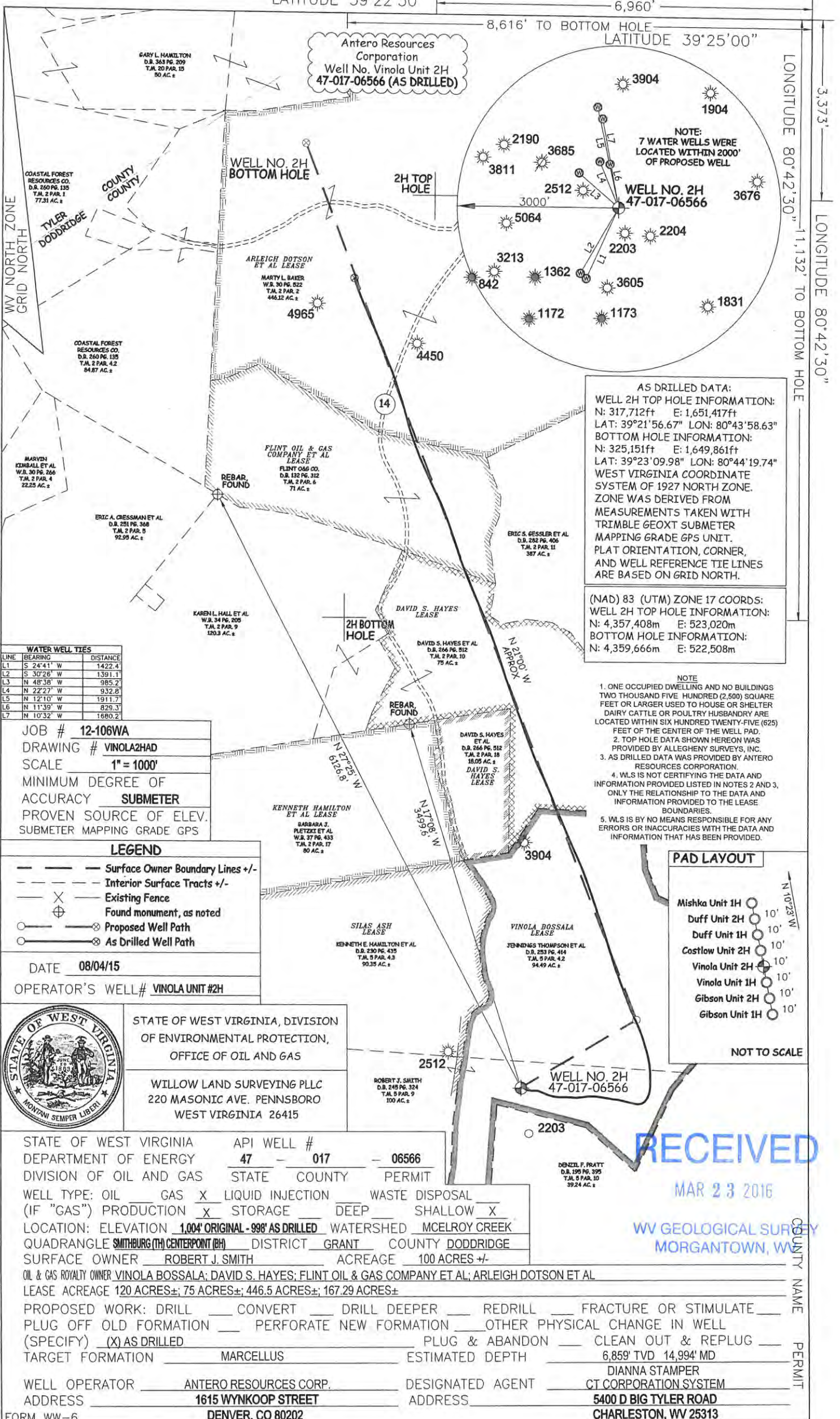
LATITUDE 39°25'00"

3,373'

LONGITUDE 80°42'30"

1,132' TO BOTTOM HOLE

LONGITUDE 80°42'30"



LINE	BEARING	DISTANCE
L1	S 24°41' W	1422.4'
L2	S 30°26' W	1391.1'
L3	N 48°38' W	985.2'
L4	N 22°27' W	932.8'
L5	N 12°10' W	1911.7'
L6	N 11°39' W	829.3'
L7	N 10°32' W	1680.2'

JOB # 12-106WA
 DRAWING # VINOLA2HAD
 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 08/04/15
 OPERATOR'S WELL# VINOLA UNIT #2H



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 - 06566
 STATE COUNTY PERMIT

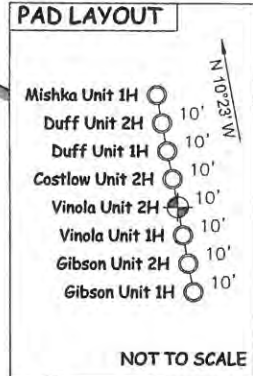
WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW
 LOCATION: ELEVATION 1,004' ORIGINAL - 998' AS DRILLED WATERSHED MCELROY CREEK
 QUADRANGLE SMITHBURG (TH) CENTERPOINT (BH) DISTRICT GRANT COUNTY DODDRIDGE
 SURFACE OWNER ROBERT J. SMITH ACREAGE 100 ACRES +/-

OIL & GAS ROYALTY OWNER VINOLA BOSSALA; DAVID S. HAYES; FLINT OIL & GAS COMPANY ET AL; ARLEIGH DOTSON ET AL
 LEASE ACREAGE 120 ACRES±; 75 ACRES±; 446.5 ACRES±; 167.29 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 6,859' TVD 14,994' 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

AS DRILLED DATA:
 WELL 2H TOP HOLE INFORMATION:
 N: 317,712ft E: 1,651,417ft
 LAT: 39°21'56.67" LON: 80°43'58.63"
 BOTTOM HOLE INFORMATION:
 N: 325,151ft E: 1,649,861ft
 LAT: 39°23'09.98" LON: 80°44'19.74"
 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: 4,357,408m E: 523,020m
 BOTTOM HOLE INFORMATION:
 N: 4,359,666m E: 522,508m

- 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.



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 MAR 23 2016
 WV GEOLOGICAL SURVEY
 MORGANTOWN, WV