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WR-35

Rev. 8/23/13

WV GEOLOGICAL SURVEY  
MORGANTOWN, WV

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

API 47 - 017 - 06311 County Doddridge District New Milton  
Quad New Milton 7.5' Pad Name Cline Pad Field/Pool Name \_\_\_\_\_  
Farm name Cline, Johnnie et al Well Number Nickers 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 4,337,432m Easting 525,950m  
Landing Point of Curve Northing 4,337,496.69 Easting 525,518.03  
Bottom Hole Northing 4,339,742m Easting 524,823m

Elevation (ft) 1,096' 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 09/25/2013 Date drilling commenced 11/25/2013 Date drilling ceased 07/09/2014  
Date completion activities began 07/17/2014 Date completion activities ceased 11/26/2014  
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 56' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft 637' 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

Reviewed by:

\_\_\_\_\_

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API 47-017 - 06311 Farm name Cline, Johnnie et al Well number Nickers 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	Yes
Surface	17 1/2"	13 3/8"	383'	New	48#; J-55	N/A	Yes
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,546'	New	36#; J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	15,470'	New	23#; P-110	N/A	Yes
Tubing		2 3/8"	7,358'		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 <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	196 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	457 sx	15.6	1.18	266	0'	8 Hrs.
Coal							
Intermediate 1	Class A	963 sx	15.6	1.18	797	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	873 sx (Lead); 1,434 sx (Tail)	13.5 (Lead); 15.2 (Tail)	1.3 (Lead); 1.8 (Tail)	3,075	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15,473' MD, 7,034' TVD (BHL), 7,064' TVD (Deepest Point Drilled)      Loggers TD (ft) 15,426'  
 Deepest formation penetrated Marcellus      Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 6,038'

\*\*This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Nickers Unit 3H, API #47-017-06333). Please reference the wireline logs submitted with Form WR-35 for the Nickers Unit 3H. 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 RA; Chemical





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API 47-017-06311 Farm Name Cline, Johnnie et al Well Number Nickers Unit 2H

**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	17-Jul-14	15,217	15,381	60	Marcellus
2	16-Aug-14	15,022	15,186	60	Marcellus
3	16-Aug-14	14,827	14,992	60	Marcellus
4	17-Aug-14	14,633	14,797	60	Marcellus
5	17-Aug-14	14,438	14,602	60	Marcellus
6	17-Aug-14	14,243	14,408	60	Marcellus
7	17-Aug-14	14,049	14,213	60	Marcellus
8	17-Aug-14	13,854	14,018	60	Marcellus
9	18-Aug-14	13,659	13,824	60	Marcellus
10	18-Aug-14	13,465	13,629	60	Marcellus
11	18-Aug-14	13,270	13,434	60	Marcellus
12	18-Aug-14	13,075	13,240	60	Marcellus
13	19-Aug-14	12,881	13,045	60	Marcellus
14	19-Aug-14	12,686	12,850	60	Marcellus
15	20-Aug-14	12,491	12,656	60	Marcellus
16	20-Aug-14	12,297	12,461	60	Marcellus
17	20-Aug-14	12,102	12,266	60	Marcellus
18	20-Aug-14	11,907	12,072	60	Marcellus
19	21-Aug-14	11,713	11,877	60	Marcellus
20	21-Aug-14	11,518	11,682	60	Marcellus
21	21-Aug-14	11,065	11,231	60	Marcellus
22	22-Aug-14	10,868	11,034	60	Marcellus
23	22-Aug-14	10,672	10,838	60	Marcellus
24	22-Aug-14	10,475	10,641	60	Marcellus
25	23-Aug-14	10,278	10,444	60	Marcellus
26	23-Aug-14	10,082	10,248	60	Marcellus
27	23-Aug-14	9,885	10,051	60	Marcellus
28	23-Aug-14	9,688	9,854	60	Marcellus
29	23-Aug-14	9,492	9,658	60	Marcellus
30	24-Aug-14	9,295	9,461	60	Marcellus
31	24-Aug-14	9,098	9,264	60	Marcellus
32	24-Aug-14	8,902	9,068	60	Marcellus
33	25-Aug-14	8,705	8,871	60	Marcellus
34	25-Aug-14	8,508	8,674	60	Marcellus
35	25-Aug-14	8,312	8,477	60	Marcellus
36	25-Aug-14	8,115	8,281	60	Marcellus
37	25-Aug-14	7,918	8,084	60	Marcellus
38	26-Aug-14	7,722	7,887	60	Marcellus
39	26-Aug-14	7,525	7,691	60	Marcellus

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API 47-017-06311 Farm Name Cline, Johnnie et al Well Number Nickers 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	15-Aug-14	72.0	6,850	5,790	5,540	177,050	6,774	N/A
2	16-Aug-14	76.3	7,245	5,771	5,395	253,990	6,758	N/A
3	16-Aug-14	77.0	7,458	5,833	5,400	256,900	7,358	N/A
4	17-Aug-14	76.0	7,572	5,819	4,988	251,100	6,667	N/A
5	17-Aug-14	76.1	7,330	5,841	5,466	253,815	6,664	N/A
6	17-Aug-14	74.1	7,558	5,692	5,578	245,155	6,727	N/A
7	17-Aug-14	73.0	7,590	5,702	5,342	214,950	6,571	N/A
8	17-Aug-14	76.0	7,582	5,628	5,089	252,960	6,587	N/A
9	18-Aug-14	75.3	7,250	5,667	5,895	253,565	6,703	N/A
10	18-Aug-14	72.2	7,412	5,608	5,779	192,600	7,018	N/A
11	18-Aug-14	71.0	7,511	5,524	5,467	221,350	6,584	N/A
12	18-Aug-14	65.0	7,492	5,519	4,941	160,700	6,663	N/A
13	19-Aug-14	76.9	7,268	5,536	6,392	252,650	6,542	N/A
14	19-Aug-14	76.0	7,324	5,698	5,282	250,525	6,528	N/A
15	20-Aug-14	73.1	7,218	5,542	6,012	250,750	6,502	N/A
16	20-Aug-14	74.4	7,244	5,507	6,933	251,650	6,484	N/A
17	20-Aug-14	76.0	7,211	5,559	5,088	250,250	6,477	N/A
18	20-Aug-14	71.0	7,225	5,596	5,432	250,900	6,455	N/A
19	21-Aug-14	75.0	7,079	5,715	5,145	250,750	6,434	N/A
20	21-Aug-14	74.3	7,159	5,723	5,914	253,300	6,762	N/A
21	21-Aug-14	73.0	7,139	5,438	4,836	160,350	6,851	N/A
22	22-Aug-14	56.8	7,335	5,763	4,539	112,620	6,952	N/A
23	22-Aug-14	73.5	7,536	5,763	5,585	153,530	6,754	N/A
24	22-Aug-14	74.0	7,089	5,445	5,323	254,350	6,326	N/A
25	23-Aug-14	77.0	6,869	5,643	5,243	254,800	6,315	N/A
26	23-Aug-14	78.5	7,063	5,448	6,028	253,675	6,301	N/A
27	23-Aug-14	73.3	7,379	5,611	5,870	184,275	6,736	N/A
28	23-Aug-14	74.0	6,870	5,480	5,279	188,100	6,480	N/A
29	23-Aug-14	77.0	6,778	5,351	5,096	253,250	6,248	N/A
30	24-Aug-14	74.9	7,469	5,541	5,299	204,600	6,529	N/A
31	24-Aug-14	67.3	6,752	5,630	5,690	186,625	6,714	N/A
32	24-Aug-14	77.0	6,853	5,946	4,888	233,100	6,121	N/A
33	25-Aug-14	77.0	6,859	5,691	5,002	256,175	6,176	N/A
34	25-Aug-14	78.0	7,025	5,574	4,756	255,150	6,166	N/A
35	25-Aug-14	79.0	6,834	5,436	5,603	254,710	6,145	N/A
36	25-Aug-14	76.0	6,985	5,764	4,662	255,850	6,127	N/A
37	25-Aug-14	70.0	6,819	5,559	4,891	225,000	6,137	N/A
38	26-Aug-14	72.0	6,783	5,445	4,972	256,050	6,103	N/A
39	26-Aug-14	77.0	6,681	5,943	5,397	253,010	6,079	N/A
	AVG=	74	7,172	5,634	5,386	8,940,130	254,518	TOTAL

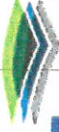
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API 47-017-06311 Farm Name Cline, Johnnie et al Well Number Nickers Unit 2H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Fresh Water	56'	N/A	56'	N/A
Siltstone	0	412	0	412
Shale/ Trace Coal	412	537	412	537
Shale/ Limestone	537	557	537	557
Shale/ Sandstone	557	762	557	762
Shale/ Coal	762	787	762	787
Shale/ Sandstone	787	997	787	997
Siltstone	997	1,057	997	1,057
Shale	1,057	1,307	1,057	1,307
Shale/Limestone/ Trace Coal	1,307	1,397	1,307	1,397
Shale/ Siltstone	1,397	1,437	1,397	1,437
Sandstone/ Shale/ Trace Coal	1,437	1,677	1,437	1,677
Sandy Shale/ Coal	1,677	1,747	1,677	1,747
Shale	1,747	1,812	1,747	1,812
Shale/ Coal	1,812	1,837	1,812	1,837
Sandstone	1,837	1,867	1,837	1,867
Shale	1,867	2,047	1,867	2,047
Siltstone/ Shale	2,047	2,107	2,047	2,107
Shale	2,107	2,129	2,107	2,129
Big Lime	2,142	2,235	2,142	2,235
Big Injun	2,235	2,469	2,235	2,469
Gantz Sand	2,469	2,575	2,469	2,575
Fifty Foot Sandstone	2,575	2,937	2,575	2,937
Gordon	2,937	3,241	2,937	3,241
Fifth Sandstone	3,241	3,301	3,241	3,301
Bayard	3,301	3,527	3,301	3,527
Warren	3,527	3,816	3,527	3,816
Speechley	3,816	4,006	3,816	4,006
Baltown	4,006	4,661	4,006	4,665
Bradford	4,661	5,121	4,665	5,142
Benson	5,121	5,394	5,142	5,433
Alexander	5,394	5,591	5,433	5,639
Elk	5,591	6,099	5,639	6,172
Rhinestreet	6,099	6,620	6,172	6,800
Sycamore	6,596	6,749	6,776	6,989
Middlesex	6,749	6,885	6,989	7,210
Burkett	6,885	6,919	7,210	7,276
Tully	6,919	6,995	7,276	7,481
Marcellus	6,995	NA	7,481	NA

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MORGANTOWN, WV



**Frac Focus**  
Chemical Disclosure Registry



# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/15/2014
Job End Date:	8/26/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06311-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Nickers Unit 2H
Longitude:	-80.69953100
Latitude:	39.18574200
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,064
Total Base Water Volume (gal):	10,689,756
Total Base Non Water Volume:	452,036

## 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	Antero Resources	Base Fluid	Water	7732-18-5	100.00000	90.58568	
Sand	J.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	9.08384	
LGC-15	J.S. Well Services, LLC	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.05379	
			Petroleum Distillates	64742-47-8	60.00000	0.05094	
			Suspending agent (solid)	14808-60-7	3.00000	0.00823	
			Surfactant	68439-51-0	3.00000	0.00323	
HCL Acid (12.6%-18.0%)	J.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.50000	0.08519	
			Hydrogen Chloride	7647-01-1	18.00000	0.02035	
WFRA-405	J.S. Well Services, LLC	Friction Reducer	Anionic Polyacrylamide	Proprietary		0.02878	
			Water	7732-18-5	40.00000	0.02878	
			Petroleum Distillates	64742-47-8	22.00000	0.02317	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00360	



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SI-1000	J.S. Well Services, LLC	Scale Inhibitor	Crystalline Salt	12125-02-9	5.00000	0.00360
			Anionic Copolymer	Proprietary		0.00435
			Ethylene Glycol	107-21-1	20.00000	0.00393
			Water	7732-18-5	30.00000	0.00328
K-BAC 1020	J.S. Well Services, LLC	Anti-Bacterial Agent	2,2-dibromo-3-nitropropionamide	10222-01-2	20.00000	0.00445
			Deionized Water	7732-18-5	28.00000	0.00254
AP One	J.S. Well Services, LLC	Gel Breakers	Ammonium Persulfate	7727-54-0	100.00000	0.00175
AI-300	J.S. Well Services, LLC	Acid Corrosion Inhibitors	Ethylene Glycol	107-21-1	31.00000	0.00023
			N,N-Dimethylformamide	68-12-2	15.00000	0.00007
			Cinnamaldehyde	104-55-2	5.00000	0.00006
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	13.00000	0.00006
			2-Butoxyethanol	111-76-2	7.00000	0.00005
			Water	7732-18-5	20.00000	0.00002
			Ethoxylated Nonylphenol	68412-54-4	5.00000	0.00002
			Isopropyl Alcohol	67-63-0	3.00000	0.00001
			Triethyl Phosphate	78-40-0	3.00000	0.00001

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°12'30"

9,364'

1,229' TO BOTTOM HOLE  
LATITUDE 39°12'30"

668' TO BOTTOM HOLE  
LONGITUDE 80°42'30"

8,260'

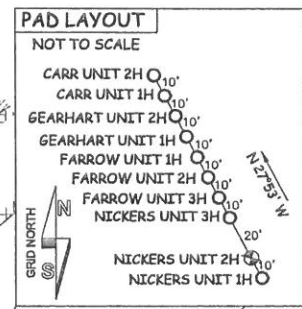
LONGITUDE 80°40'00"

**Antero Resources Corporation**  
**Well No. Nickers Unit 2H**  
**47-017-06311 (AS DRILLED)**

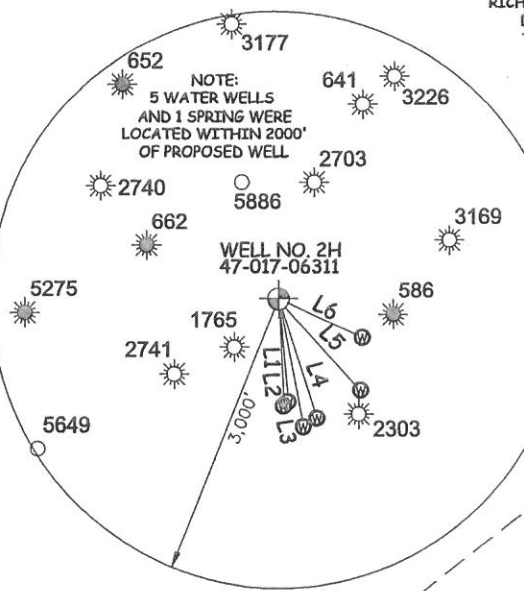
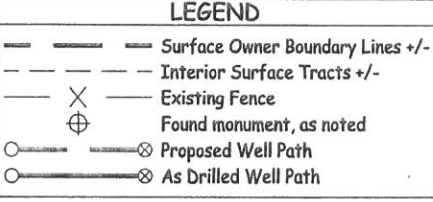
LINE	BEARING	DISTANCE
L1	S 02°32' E	1116.9'
L2	S 05°07' E	1077.4'
L3	S 10°50' E	1354.7'
L4	S 17°49' E	1303.4'
L5	S 42°00' E	1281.9'
L6	S 64°54' E	969.2'

**AS DRILLED DATA:**  
**WELL 2H TOP HOLE INFORMATION:**  
 N: 252,000ft E: 1,659,941ft  
 LAT: 39°11'08.36" LON: 80°41'58.93"  
**BOTTOM HOLE INFORMATION:**  
 N: 259,641ft E: 1,656,368ft  
 LAT: 39°12'23.40" LON: 80°42'45.61"  
 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: 4,337,432m E: 525,950m  
**BOTTOM HOLE INFORMATION:**  
 N: 4,339,742m E: 524,823m



- 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.



JOB # 13-029WA  
 DRAWING # NICKERS2HAD  
 SCALE 1" = 1000'  
 MINIMUM DEGREE OF ACCURACY **SUBMETER**  
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS



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

DATE 05/22/15  
 OPERATOR'S WELL# NICKERS UNIT #2H

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

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

LOCATION: ELEVATION 1,105' ORIGINAL - 1,096' AS DRILLED WATERSHED HEADWATERS OF MIDDLE ISLAND CREEK  
 QUADRANGLE NEW MILTON 7.5' DISTRICT NEW MILTON COUNTY DODDRIDGE

SURFACE OWNER JOHNNIE CLINE ET AL ACREAGE 70.088 ACRES +/-  
 OIL & GAS ROYALTY OWNER FRANK HINTER ET AL; GROVER JOHNSON ET AL; LEASE ACREAGE 329.73 ACRES±; 153.25 ACRES±; 156 ACRES±; 117.197 ACRES±; 211 ACRES±  
S.A. HURST ET UX; RUBY GENE DICKS; STOKES HURST JR. ET UX

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 7,034' TVD 15,473' 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

COUNTY NAME PERMIT