



Antero Resources  
1615 Wynkoop Street  
Denver, CO 80202  
Office 303.357.7310  
Fax 303.357.7315

July 13, 2016

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
Attn: John Kearney  
601 57<sup>th</sup> Street  
Charleston, WV 25304

Mr. Kearney:

Please find enclosed the Well Operator's Report of Well Work, Form WR-35 (including As-Drilled Survey Plat, Directional Survey and FracFocus report) and corresponding logs for the following well:

- Knoll Unit 1H (API# 47-085-10098) – Noland Pad
- Knoll Unit 2H (API# 47-085-10181) – Noland Pad
- Penns Park Unit 1H (API# 47-085-10099) – Noland Pad
- Penns Park Unit 2H (API# 47-085-02182) – Noland Pad
- **Owo Unit 1H (API# 47-095-02179) – Coastal 1 Pad**
- **Owo Unit 2H (API# 47-095-02180) – Coastal 1 Pad**
- James Gray Unit 1H (API# 47-095-02187) – Coastal 1 Pad

If you have any questions please feel free to contact me at (303) 357-6820.

Sincerely,

Natalie Komp  
Permitting Agent  
Antero Resources Corporation

Enclosures

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JUL 18 2016

10/28/2016

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

API 47-095-02179 County Tyler District McElroy  
Quad Centerpoint 7.5' Pad Name Fritz Field/Pool Name ---  
Farm name Coastal Lumber Company Well Number Owo Unit 1H  
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 4363813m Easting 522877m  
Landing Point of Curve Northing 4363515.03m Easting 522973.10m  
Bottom Hole Northing 4361041m Easting 523778m

Elevation (ft) 1164' 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 6/10/2014 Date drilling commenced 8/18/2014 Date drilling ceased 12/10/2014  
Date completion activities began 1/7/2016 Date completion activities ceased 4/17/2016  
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 97' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths No  
Coal depth(s) ft 1327' Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

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**APPROVED**  
Reviewed by: \_\_\_\_\_  
NAME: [Signature]  
DATE: 7/8/16 10/28/2016

API 47-095 - 02179 Farm name Coastal Lumber Company Well number Owo 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	30"	20"	40'	New	94# H-40	N/A	Y
Surface	17- 1/2"	13- 3/8"	369'	New	48# H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2504'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	16390'	New	23# P-110	N/A	Y
Tubing		2-3/8"	7153'		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	438 sx	15.6	1.18	256	0'	8 Hrs.
Coal							
Intermediate 1	Class A	sx	15.6	1.18	784	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1000 sx (Lead) 1478 sx (Tail)	13.5 Lead 15.2 Tail	1.44 Lead 1.80 Tail	3296	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16309' MD, 7089' TVD (BHL), 7097' (Deepest Point Drilled) Loggers TD (ft) 16342'

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6579'

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 \_\_\_\_\_

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API 47- 095 - 02179 Farm name Coastal Lumber Company Well number Owo Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>7006' (TOP)</u>	<u>TVD</u>	<u>7160' (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 3550 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 14231 mcfpd Oil 65 bpd NGL --- bpd Water 326 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 <sub>2</sub> 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 Oil & Gas Services, LLC  
Address 1036 East Main St. 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 Kara Quackenbush Telephone 303-357-7233  
Signature *Kara Quackenbush* Title Permit Representative Date 7/12/2016

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

10/28/2016

## EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	7-Jan-16	16,156	16,324	60	Marcellus
2	1-Feb-16	15,957	16,125	60	Marcellus
3	1-Feb-16	15,758	15,926	60	Marcellus
4	1-Feb-16	15,559	15,727	60	Marcellus
5	1-Feb-16	15,360	15,528	60	Marcellus
6	2-Feb-16	15,161	15,329	60	Marcellus
7	2-Feb-16	14,962	15,130	60	Marcellus
8	2-Feb-16	14,763	14,931	60	Marcellus
9	2-Feb-16	14,564	14,732	60	Marcellus
10	3-Feb-16	14,365	14,533	60	Marcellus
11	3-Feb-16	14,166	14,334	60	Marcellus
12	3-Feb-16	13,967	14,134	60	Marcellus
13	3-Feb-16	13,767	13,935	60	Marcellus
14	3-Feb-16	13,568	13,736	60	Marcellus
15	4-Feb-16	13,369	13,537	60	Marcellus
16	4-Feb-16	13,170	13,338	60	Marcellus
17	5-Feb-16	12,971	13,139	60	Marcellus
18	5-Feb-16	12,772	12,940	60	Marcellus
19	5-Feb-16	12,573	12,741	60	Marcellus
20	5-Feb-16	12,374	12,542	60	Marcellus
21	6-Feb-16	12,175	12,343	60	Marcellus
22	6-Feb-16	11,976	12,144	60	Marcellus
23	6-Feb-16	11,777	11,945	60	Marcellus
24	6-Feb-16	11,578	11,745	60	Marcellus
25	6-Feb-16	11,378	11,546	60	Marcellus
26	7-Feb-16	11,179	11,347	60	Marcellus
27	7-Feb-16	10,980	11,148	60	Marcellus
28	8-Feb-16	10,781	10,949	60	Marcellus
29	8-Feb-16	10,582	10,750	60	Marcellus
30	8-Feb-16	10,383	10,551	60	Marcellus
31	8-Feb-16	10,184	10,352	60	Marcellus
32	8-Feb-16	9,985	10,153	60	Marcellus
33	8-Feb-16	9,786	9,954	60	Marcellus
34	9-Feb-16	9,587	9,755	60	Marcellus
35	9-Feb-16	9,388	9,556	60	Marcellus
36	9-Feb-16	9,189	9,356	60	Marcellus
37	9-Feb-16	8,990	9,157	60	Marcellus
38	9-Feb-16	8,790	8,958	60	Marcellus
39	10-Feb-16	8,591	8,759	60	Marcellus
40	10-Feb-16	8,392	8,560	60	Marcellus
41	9-Mar-16	8,193	8,361	60	Marcellus
42	9-Mar-16	7,994	8,162	60	Marcellus
43	10-Mar-16	7,795	7,963	60	Marcellus
44	10-Mar-16	7,596	7,764	60	Marcellus
45	10-Mar-16	7,397	7,565	60	Marcellus
46	10-Mar-16	7,198	7,366	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 (bbbls)	Amount of Nitrogen/ other (units)
1	31-Jan-16	70.3	7,986	5,808	4,742	247,980	6,915	N/A
2	1-Feb-16	71.2	8,045	5,683	5,139	178,600	7,023	N/A
3	1-Feb-16	67.3	7,983	5,600	5,432	202,500	7,156	N/A
4	1-Feb-16	69.2	7,777	5,636	5,279	248,400	6,579	N/A
5	1-Feb-16	70.0	7,449	5,372	5,990	250,400	6,480	N/A
6	2-Feb-16	71.0	7,451	5,465	5,969	251,100	6,463	N/A
7	2-Feb-16	71.4	7,782	5,536	5,375	250,050	6,457	N/A
8	2-Feb-16	71.8	7,536	5,447	5,207	252,000	6,466	N/A
9	2-Feb-16	70.0	7,389	5,461	5,504	249,800	6,466	N/A
10	3-Feb-16	71.0	7,428	5,414	6,040	251,300	6,411	N/A
11	3-Feb-16	71.2	7,332	5,593	5,625	250,750	6,414	N/A
12	3-Feb-16	72.6	7,542	5,343	5,733	250,600	6,381	N/A
13	3-Feb-16	68.4	7,590	5,797	4,967	217,250	7,198	N/A
14	3-Feb-16	70.0	7,393	5,683	5,597	251,050	6,467	N/A
15	4-Feb-16	70.0	7,420	5,833	5,311	239,250	6,187	N/A
16	4-Feb-16	68.3	7,388	5,894	5,488	212,000	7,278	N/A
17	5-Feb-16	71.0	7,301	5,686	5,736	251,650	6,316	N/A
18	5-Feb-16	72.4	7,076	5,322	5,400	254,200	6,339	N/A
19	5-Feb-16	71.8	7,041	5,397	5,325	253,100	6,312	N/A
20	5-Feb-16	72.0	7,031	5,364	5,708	251,700	6,283	N/A
21	6-Feb-16	71.0	7,004	5,997	5,869	234,500	7,185	N/A
22	6-Feb-16	71.9	7,288	5,397	5,718	242,700	7,165	N/A
23	6-Feb-16	72.2	7,106	5,418	4,810	250,500	6,252	N/A
24	6-Feb-16	71.0	7,157	5,722	6,001	247,450	6,275	N/A
25	6-Feb-16	72.0	6,861	5,461	5,765	251,750	6,958	N/A
26	7-Feb-16	71.0	6,996	5,554	5,651	251,050	6,217	N/A
27	7-Feb-16	69.0	6,914	5,379	5,533	248,000	6,902	N/A
28	8-Feb-16	71.0	6,988	5,701	5,565	254,050	6,195	N/A
29	8-Feb-16	72.0	7,058	5,887	5,071	251,800	6,159	N/A
30	8-Feb-16	72.0	7,058	5,887	5,071	251,800	6,159	N/A
31	8-Feb-16	71.3	6,862	5,490	5,379	251,480	6,186	N/A
32	8-Feb-16	71.0	7,055	5,429	6,047	252,350	6,178	N/A
33	8-Feb-16	70.0	7,017	5,486	5,811	251,550	6,112	N/A
34	9-Feb-16	71.0	7,006	5,708	5,676	251,200	6,103	N/A
35	9-Feb-16	71.4	6,859	5,386	5,150	251,790	6,100	N/A
36	9-Feb-16	70.5	7,156	5,554	5,275	252,300	6,080	N/A
37	9-Feb-16	71.8	6,859	5,418	5,329	250,700	6,078	N/A
38	9-Feb-16	71.0	6,816	5,611	5,779	250,450	6,095	N/A
39	10-Feb-16	71.0	6,544	5,304	5,364	251,600	6,038	N/A
40	10-Feb-16	69.7	7,128	5,919	5,364	250,600	6,027	N/A
41	9-Mar-16	71.8	6,762	5,558	5,454	250,380	6,048	N/A
42	9-Mar-16	76.7	7,083	5,779	5,125	228,500	6,559	N/A
43	10-Mar-16	74.8	7,108	6,055	5,382	247,300	6,722	N/A
44	10-Mar-16	70.3	7,015	5,633	6,108	255,740	6,333	N/A
45	10-Mar-16	72.9	6,808	5,733	6,055	270,150	6,432	N/A
46	10-Mar-16	74.9	6,731	6,566	4,102	253,550	6,313	N/A
AVG=		<b>71.2</b>	<b>7,200</b>	<b>5,617</b>	<b>5,479</b>	<b>11,316,920</b>	<b>6,445</b>	<b>TOTAL</b>

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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	97'	N/A	97'	N/A
Sandstone	0	267	0	267
Shale and Sandstone	267	727	267	727
Shale	727	767	727	767
Shale and Siltstone	767	1107	767	1107
Shale	1107	1187	1107	1187
Sandstone	1187	1327	1187	1327
Coal	1327	1347	1327	1347
Sandstone	1347	1627	1347	1627
Shale/Sandstone/Siltstone	1627	2163	1627	2163
Big Lime	2163	2284	2163	2284
Big Injun	2284	2715	2284	2715
Gantz Sand	2715	2853	2715	2853
Fifty Foot Sandstone	2853	2931	2853	2931
Gordon	2931	3219	2931	3219
Fifth Sandstone	3219	3251	3219	3251
Bayard	3251	3664	3251	3664
Warren	3664	4033	3664	4034
Speechley	4033	4334	4034	4334
Baltown	4334	4805	4334	4805
Bradford	4805	5285	4805	5285
Benson	5285	5540	5285	5541
Alexander	5540	5835	5541	5736
Elk	5835	6239	5736	6239
Rhinestreet	6239	6618	6239	6620
Sycamore	6618	6782	6620	6798
Middlesex	6782	6917	6798	6981
Burkett	6917	6944	6981	7027
Tully	6944	7006	7027	7160
Marcellus	7006	NA	7160	NA



LATITUDE 39°27'30"

7,361'

4,433' TO BOTTOM HOLE

LATITUDE 39°25'00"

LONGITUDE 80°42'30"

12,703'

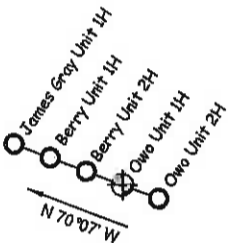
6,633' TO BOTTOM HOLE

LONGITUDE 80°42'30"

WV NORTH ZONE  
GRID NORTH

- NOTE**
1. NO 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.
  2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALBOKENY 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.
  6. THIS WELL BORE IS SUBJECT TO THAT 80 FOOT STRIP OF GROUND KNOWN AS THE SISTERVILLE AND SALEM TURNPIKE WHICH MAY OR MAY NOT COINCIDE WITH STATE ROUTE 23 IN THIS AREA.

**PAD LAYOUT**



NOT TO SCALE

JOB # 13-115WA  
 DRAWING # OWOUNIT1HADR  
 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 06/23/15

OPERATOR'S WELL # OWO 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 - 095 - 02179

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

LOCATION: ELEVATION 1,171' ORIGINAL -1,164' AS DRILLED. WATERSHED MCELROY CREEK  
 QUADRANGLE CENTERPOINT 7.5' DISTRICT MCELROY COUNTY TYLER

SURFACE OWNER COASTAL LUMBER COMPANY ACREAGE 766 ACRES +/-

OIL & GAS ROYALTY OWNER O.W.O. HARDMAN ET AL; RONALD NOHE ET AL; M. FOSTER LIVING TRUST; JAMES DOAN ET UX; S.A. SMITH ET AL

LEASE ACREAGE 952.3 AC±; 50 AC±; 101.549 AC±; 263.67 AC±; 443.68 AC±

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 7,089' TVD 16,390' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT CT CORPORATION SYSTEM-DIANNA STAMPER

ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
DENVER, CO 80202 CHARLESTON, WV 25313

Antero Resources Corporation  
 Well No. Owo Unit 1H  
 47-095-02179 (AS DRILLED)

NOTE:  
 NO WATER WELLS WERE  
 LOCATED WITHIN 2000'  
 OF CENTER OF PAD

**AS DRILLED DATA:**  
 WELL 1H TOP HOLE INFORMATION:  
 N: 338,738ft E: 1,651,299ft  
 LAT: 39°25'24.45" LON: 80°44'03.80"  
 BOTTOM HOLE INFORMATION:  
 N: 329,593ft E: 1,654,104ft  
 LAT: 39°23'54.44" LON: 80°43'26.47"  
 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: 4,363,813m E: 522,877m  
 BOTTOM HOLE INFORMATION:  
 N: 4,361,041m E: 523,778m

10/28/2015

COUNTY NAME PERMIT

LATITUDE 39°27'30"

7,361'

4,433' TO BOTTOM HOLE

LATITUDE 39°25'00"

LONGITUDE 80°42'30"

12,703'

6,633' TO BOTTOM HOLE

LONGITUDE 80°42'30"

COUNTY NAME

PERMIT

Antero Resources Corporation  
Well No. Owo Unit 1H  
47-095-02179 (AS DRILLED)

NOTE:  
NO WATER WELLS WERE  
LOCATED WITHIN 2000'  
OF CENTER OF PAD

WV NORTH ZONE  
GRID NORTH

PATRICIA C. GUYNN ET AL  
W.B. 36 PG. 523  
T.M. 17 PAR. 07  
545 AC. ±

G.W.O. HARDMAN  
ET AL LEASE  
COASTAL LUMBER COMPANY  
D.B. 199 PG. 267  
T.M. 17 PAR. 03  
766 AC. ±

ALTA NICHOLS ET AL  
D.B. 316 PG. 432  
T.M. 17 PAR. 10  
13.62 AC. ±

COASTAL LUMBER COMPANY  
D.B. 337 PG. 120A  
T.M. 17 PAR. 12.1  
12.5 AC. ±

RONALD NOHE  
ET AL LEASE  
RONALD R. JONES SR.  
D.B. 295 PG. 451  
T.M. 17 PAR. 12  
90 AC. ±

M. FOSTER LIVING  
TRUST LEASE  
RONALD R. JONES SR.  
D.B. 295 PG. 451  
T.M. 17 PAR. 13  
90.29 AC. ±

JAMES DOAN  
ET UX LEASE  
COASTAL LUMBER COMPANY  
D.B. 340 PG. 272  
T.M. 17 PAR. 14  
79.02 AC. ±

S.A. SMITH  
ET AL LEASE  
GARY LEE REYNOLDS ET AL  
D.B. 263 PG. 700  
T.M. 10 PAR. 04  
182.74 AC. ±

FORREST C. MOORE ET UX  
D.B. 340 PG. 440  
T.M. 10 PAR. 05  
87.75 AC. ±

KENNETH MASON ET AL  
D.B. 282 PG. 610  
T.M. 10 PAR. 06  
12.5 AC. ±

GARY LEE REYNOLDS ET AL  
D.B. 239 PG. 075  
T.M. 10 PAR. 08  
80.11 AC. ±

GARY LEE REYNOLDS ET AL  
D.B. 239 PG. 075  
T.M. 10 PAR. 09  
188.5 AC. ±

10/28/2016

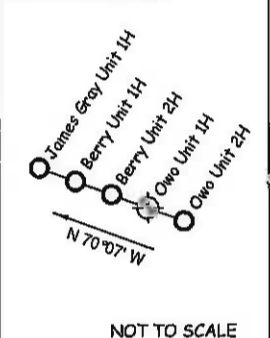
ELTON WINE  
D.B. 269 PG. 129  
T.M. 11 PAR. 30  
74 AC. ±

- NOTE
1. NO OCCUPIED DWELLINGS AND NO BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHEPHERD 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.
  6. THIS WELL BORE IS SUBJECT TO THAT 90 FOOT STRIP OF GROUND KNOWN AS THE SISTERSVILLE AND SALEM TURNPIKE WHICH MAY OR MAY NOT COINCIDE WITH STATE ROUTE 23 IN THIS AREA.

AS DRILLED DATA:  
WELL 1H TOP HOLE INFORMATION:  
N: 338,738ft E: 1,651,299ft  
LAT: 39°25'24.45" LON: 80°44'03.80"  
BOTTOM HOLE INFORMATION:  
N: 329,593ft E: 1,654,104ft  
LAT: 39°23'54.44" LON: 80°43'26.47"  
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TREMBLE GEOST 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: 4,363,813m E: 522,877m  
BOTTOM HOLE INFORMATION:  
N: 4,361,041m E: 523,778m

PAD LAYOUT



NOT TO SCALE

JOB # 13-115WA  
DRAWING # OWOUNIT1HADR  
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 06/23/15  
OPERATOR'S WELL# OWOUNIT#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 - 095 - 02179

WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL

(IF "GAS") PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION 1,171' ORIGINAL - 1,164' AS DRILLED WATERSHED MCELROY CREEK

QUADRANGLE CENTERPOINT 7.5' DISTRICT MCELROY COUNTY TYLER

SURFACE OWNER COASTAL LUMBER COMPANY ACREAGE 786 ACRES +/-

OIL & GAS ROYALTY OWNER O.W.O. HARDMAN ET AL; RONALD NOHE ET AL; M. FOSTER LIVING TRUST; JAMES DOAN ET UX; S.A. SMITH ET AL

LEASE ACREAGE 952.3 AC ±; 50 AC ±; 101.549 AC ±; 263.67 AC ±; 443.68 AC ±

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 ESTIMATED DEPTH 7,089' TVD 16,390' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT CT CORPORATION SYSTEM-DIANNA STAMPER

ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD

FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

SI-1100	U.S. Well Services	Scale Inhibitor	Ethoxylated alcohol blend	68002-97-1	4.00000	0.00228
			Water	7732-18-5	80.00000	0.01018
			Ethylene Glycol	107-21-1	25.00000	0.00360
			Copolymer of Maleic and Acrylic acid	52255-49-9	10.00000	0.00150
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	7.50000	0.00129
			Phosphino carboxylic acid polymer	71050-62-9	5.00000	0.00083
			Hexamethylene tramine penta (methylene phosphonic acid)	34690-00-1	5.00000	0.00083
			Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5	2.00000	0.00033
K-BAC 1020	U.S. Well Services	Anti-Bacterial Agent				
			2,2-dibromo-3-nitropropionamide	10222-01-2	20.00000	0.00399
			Deionized Water	7732-18-5	28.00000	0.00228
AP One	U.S. Well Services	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00185
AI-302	U.S. Well Services	Acid Corrosion Inhibitors				
			Water	7732-18-5	95.00000	0.00035
			2-Propyn-1-ol compound with methylsiloxane	38172-91-7	15.00000	0.00006

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)



# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/31/2016
Job End Date:	3/10/2016
State:	West Virginia
County:	Tyler
API Number:	47-095-02179-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Owo 1H
Latitude:	39.42354200
Longitude:	-80.73421400
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,097
Total Base Water Volume (gal):	12,900,596
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	Antero Resources	Base Fluid	Water	7732-18-5	100.00000	90.10711	
Sand	J.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	9.46365	
HCL Acid (12.6%-18.0%)	J.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.50000	0.16180	
LGC-15	J.S. Well Services	Gelling Agents	Hydrogen Chloride	7647-01-0	18.00000	0.03865	
			Guar Gum	9000-30-0	50.00000	0.06227	
			Petroleum Distillates	64742-47-8	60.00000	0.05897	
			Suspending agent (solid)	14808-60-7	3.00000	0.00952	
			Surfactant	68439-51-0	3.00000	0.00374	
WFRA-405	J.S. Well Services	Friction Reducer	Water	7732-18-5	60.00000	0.03413	
			2-Propanoic acid, polymer with 29003-06-9 propenamide	29003-06-9	30.00000	0.01707	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01374	



Antero Resources  
1615 Wynkoop Street  
Denver, CO 80202  
Office 303.357.7310  
Fax 303.357.7315

July 18, 2016

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
Attn: John Kearney  
601 57<sup>th</sup> Street  
Charleston, WV 25304

Mr. Kearney:

Please find enclosed **updated page 2** of the Well Operator's Report of Well Work, Form WR-35 for the following well:

- Owo Unit 1H (API# 47-095-02179) – Coastal 1 Pad

If you have any questions please feel free to contact me at (303) 357-7233.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kara Quackenbush", is written over a light blue horizontal line.

Kara Quackenbush  
Permitting Agent  
Antero Resources Corporation

Enclosures

RECEIVED  
Office of Oil and Gas  
JUL 21 2016  
WV Department of  
Environmental Protection

10/28/2016

API 47-095 - 02179 Farm name Coastal Lumber Company Well number Owo 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	30"	20"	40'	New	94# H-40	N/A	Y
Surface	17- 1/2"	13- 3/8"	369'	New	48# H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2504'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	16390'	New	23# P-110	N/A	Y
Tubing		2-3/8"	7153'		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	438 sx	15.6	1.18	256	0'	8 Hrs.
Coal							
Intermediate 1	Class A	922 sx	15.6	1.18	784	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1000 sx (Lead) 1478 sx (Tail)	13.5 Lead 15.2 Tail	1.44 Lead 1.80 Tail	3296	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16309' MD, 7089' TVD (BHL), 7087' (Deepest Point Drilled) Loggers TD (ft) 16342'

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6579'

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 \_\_\_\_\_

WV Department of  
 Environmental Protection

RECEIVED  
 Office of Oil and Gas  
 JUL 21 2016