



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Monday, July 30, 2018
WELL WORK PERMIT
Horizontal 6A / Fracture

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202


Re: Permit approval for OXF97 AHS
47-017-06481-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number: OXF97 AHS
Farm Name: HAESSLY LAND & TIMBER 
U.S. WELL NUMBER: 47-017-06481-00-00
Horizontal 6A Fracture
Date Issued: 7/30/2018

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

PERMIT CONDITIONS

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.

3/16/18

WW-6B
(04/15)

API NO. 47- 017 - 06481
OPERATOR WELL NO. OXF97 AHS
Well Pad Name: Oxford 97 Pad

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: Antero Resources Corporation 494507062 017 - Doddri West Uni Oxford 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: OXF97 AHS Well Pad Name: Oxford 97 Pad

3) Farm Name/Surface Owner: Haessly Land & Timber, LLC Public Road Access: Waco Rd.

4) Elevation, current ground: 1333' Elevation, proposed post-construction: 1333'

5) Well Type (a) Gas Oil Underground Storage

Other

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 6876' TVD, Anticipated Thickness- 60 feet, Associated Pressure- 3100#

8) Proposed Total Vertical Depth: 6876' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 16742' MD

11) Proposed Horizontal Leg Length: 9064'

12) Approximate Fresh Water Strata Depths: 266', 503', 810'

13) Method to Determine Fresh Water Depths: OXF97 AHS (API #47-017-06481)

14) Approximate Saltwater Depths: None Identified

15) Approximate Coal Seam Depths: None Identified

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

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DAF
3/21/18

WW-6B
(04/15)

API NO. 47- 017 - 06481
 OPERATOR WELL NO. CXF97 AHS
 Well Pad Name: Oxford B7 Pad

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	J-55	94#	58'	58'	CTS, 56 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	904'	904'	1256 563 Cu. Ft.
Coal	9-5/8"	New	HCK-55	36#	3000'	3000'	CTS, 1221 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	16725'	16725'	4040 Cu. Ft.
Tubing							
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	Lead HPOZ & Tail - H	H/POZ-1.44 & H-1.6
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

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WW-6B
(10/14)

API NO. 47- 017 - 06481
 OPERATOR WELL NO. CXF97 AHS
 Well Pad Name: Oxford 97 Pad

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

This well has been drilled to TD - 16,742'. Antero is requesting approval to perforate, fracture the existing horizontal shallow well and complete Marcellus Shale.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

Anticipated Max Pressure - 9300 lbs
 Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 59.26 existing acres

22) Area to be disturbed for well pad only, less access road (acres): 7.04 existing acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers
 Surface Casing: one centralizer 10' above the float shoe, one on the Insert float collar and one every 4th joint spaced up the hole to surface.
 Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.
 Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

24) Describe all cement additives associated with each cement type:

Conductor: no additives, Class A cement.
 Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake
 Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat
 Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51
 Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.
 Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.
 Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.
 Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

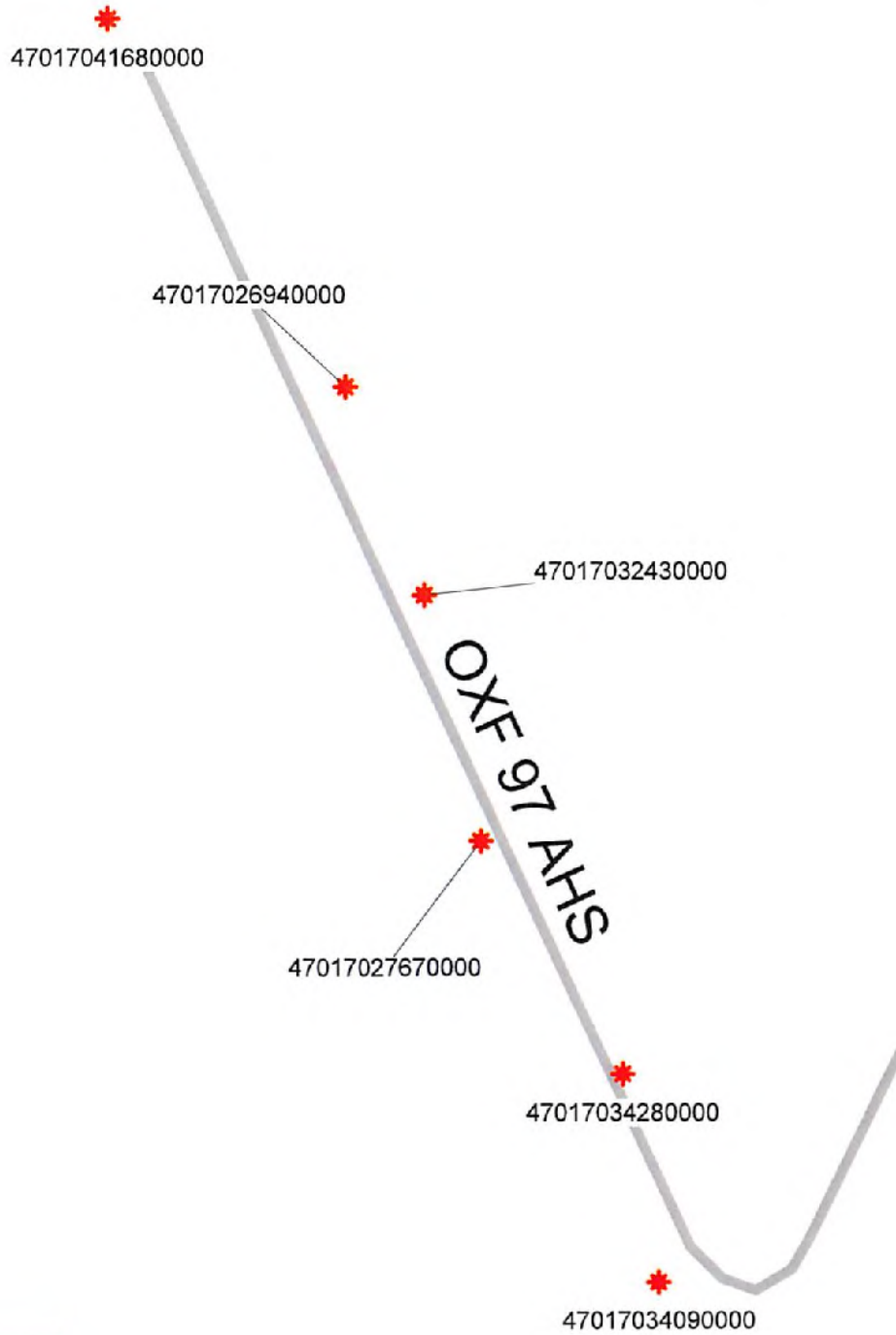
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*Note: Attach additional sheets as needed.

WAS
 3/26/18



4701706481



Antero Resources Corporation

OXF 97 AHS- AOR



WELL SYMBOLS
Gas Well

March 13, 2018

08/03/2018

UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
47017041680000	BEE LIVINGSTON ETAL	1	KEY OIL COMPANY	KEY OIL INCORPORATED	5,317'	3870-5222	Baltown, Riley, Benson, Alexander	Big Injun, Weir, Bradford
47017026940000	FLEMING & HEFLIN	J-109	ENERGY CORP OF AMER	J & J ENTERPRISES	5,445'	5209-5241	Alexander	Big Injun, Weir, Baltown, Bradford
47017032430000	STINESPRING CARTER	J-789	ENERGY CORP OF AMER	J & J ENTERPRISES	5,299'	2662-5300	Gordon, Bradford, Benson, Alexander	Big Injun, Weir, Baltown, Bradford
47017027670000	BRITTON RITCHIE	J-97	ENERGY CORP OF AMER	J & J ENTERPRISES	5,419'	5106-5169	Alexander	Big Injun, Weir, Baltown, Bradford
47017034280000	NUTTER E M ET AL	1611	CONSOL GAS COMPANY	CNG DEVELOPMENT CO	5,330'	5081-5116	Alexander	Big Injun, Weir, Baltown, Bradford
47017034090000	POST MARY K & RICHARD A ET AL	459	CONSOL GAS COMPANY	CNG DEVELOPMENT CO	5,343'	5154-5191	Alexander	Big Injun, Weir, Baltown, Bradford

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APPROVED

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Rev. 8/23/13

NAME: [Signature]

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DATE: 1/23/17

State of West Virginia

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

API 47-017-06481 County Doddridge District West Union

Quad Oxford Pad Name Oxf 97 Field/Pool Name N/A

Farm name Haessly Land & Timber, LLC Well Number Oxf 97 AHS

Operator (as registered with the OOG) Noble Energy, Inc.

Address 1000 Noble Energy Drive City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing <u>as drilled plat to be submitted by CNX</u>	Easting _____
Landing Point of Curve	Northing <u>upon completion of the well.</u>	Easting _____
Bottom Hole	Northing _____	Easting _____

Elevation (ft) 1360 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)

Synthetic Oil Based

Date permit issued 07/24/2014 Date drilling commenced 12/23/2014 Date drilling ceased 02/25/2015

Date completion activities began Not completed Date completion activities ceased JAN 17 2017

Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 266', 503', 810'

Open mine(s) (Y/N) depths N

Salt water depth(s) ft none noted for offsets

Void(s) encountered (Y/N) depths N

Coal depth(s) ft NA

Cavern(s) encountered (Y/N) depths N

Is coal being mined in area (Y/N) No

Reviewed by: _____

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API 47-017-06481

Farm name Haessly Land & Timber, LLC Well number Oxf 97 AHS

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	26"	20"	58.4'	New	J-55		
Surface	17.5"	13 3/8"	903.8'	New	J-55		Y
Coal							
Intermediate 1	12.38"	9 5/8"	2999.8'	New	HCK-55		N
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5 1/2"	16,725.2'	New	P-110		Y
Tubing							
Packer type and depth set							

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							
Surface	Type 1 / Class A	778	15.6	1.18	918.04	18.4	8
Coal							
Intermediate 1	Type 1 / Class A	stage (1) 1185	15.6	Stage (1) 1.18	1398.3	18.4	8
Intermediate 2							
Intermediate 3							
Production	Type 1 / Class A	3801	14.5	1.27	4827.27	18.4	8
Tubing							

Drillers TD (ft) 18742'

Loggers TD (ft) 18742'

Deepest formation penetrated Marcellus

Plug back to (ft) _____

Plug back procedure _____

Kick off depth (ft) 5983'

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 Office of Oil and Gas

9 Centralizers on Surface Casing 38 Centralizers on Intermediate String (Bow string centralizers on first two joints then every third joint to 100' from surface).

281 Centralizers on Production String (rigid bow string every joint to KOP, rigid bow spring every third joint from KOP to top of cement)

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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- 017 - 06481 Farm name Haessly Land & Timber, LLC Well number Oxf 97 AHS

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	well not complete				

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

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Complete a separate record for each stimulation stage.

JAN 16 2018

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 (bbls)

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Please insert additional pages as applicable.

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API 47- 017 - 06481

Farm name Haessly Land & Timber, LLC Well number Oxf 97 AHS

PRODUCING FORMATION(S)

DEPTHS

	TVD	MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

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

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ 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)
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Please insert additional pages as applicable.

Drilling Contractor Whipstock 23 Top Hole & Precision 543 Horizontal Rig
Address 13846 Route 403 Hwy N / 5400D Big Tyler Rd City Clymer / Charleston State PA Zip 15728-7816 / 25313

Logging Company Baker Hughes
Address 400 Technology Drive City Canonsburg State PA

Cementing Company Schlumberger
Address 4600 J. Barry Ct., Suite 200 City Canonsburg State PA Zip 15317

Stimulating Company _____
Address _____ City _____ State _____

Please insert additional pages as applicable.

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Completed by Dee Swiger Telephone 724-820-3061
Signature *Dee Swiger* Title Regulatory Analyst, III Date 01/09/2017

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



Actual Wellpath Report

OXF-97A-HS AWP Proj: 16766'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot A
Area	Doddridge Co., WV	Well	OXF-97A-HS
Field	Doddridge	Wellbore	OXF-97A-HS AWB
Facility	OXF-97 Pad		

REPORT SETUP INFORMATION

Projection System	NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect® 4.0.1
North Reference	Grid	User	Edsaryar
Scale	0.999964	Report Generated	06/May/2015 at 11:54
Convergence at slot	0.83° West	Database/Source file	WellArchitectEasternDB/OXF-97A-HS_AWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-0.03	0.03	1630662.80	269664.25	39°13'58.903"N	80°48'13.980"W
Facility Reference Pt			1630662.77	269664.28	39°13'58.904"N	80°48'13.980"W
Field Reference Pt			609601.22	0.00	38°23'48.753"N	84°21'09.765"W

WELLPATH DATUM

Calculation method	Minimum curvature	Precision 543 (RKB) to Facility Vertical Datum	1351.45ft
Horizontal Reference Pt	Slot	Precision 543 (RKB) to Mean Sea Level	1351.45ft
Vertical Reference Pt	Precision 543 (RKB)	Precision 543 (RKB) to Mud Line at Slot (Slot A)	18.00ft
MD Reference Pt	Precision 543 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	335.49°

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06/May/2015

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Actual Wellpath Report

OXF-97A-HS AWP Proj: 16766'
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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot A
Area	Doddridge Co., WV	Well	OXF-97A-HS
Field	Doddridge	Wellbore	OXF-97A-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (208 stations) † = Interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
0.00†	0.000	150.880	0.00	0.00	0.00	0.00	1630662.80	269664.25	39°13'58.903"N	80°48'13.980"W	0.00	0.000	0.00	0.00	0.00
18.00	0.000	150.880	18.00	0.00	0.00	0.00	1630662.80	269664.25	39°13'58.903"N	80°48'13.980"W	0.00	0.000	0.00	0.00	0.00
118.00	0.400	150.880	118.00	-0.35	-0.30	0.17	1630662.97	269663.95	39°13'58.900"N	80°48'13.978"W	0.35	150.880	0.40	0.40	0.00
218.00	0.200	173.230	218.00	-0.86	-0.78	0.36	1630663.16	269663.47	39°13'58.896"N	80°48'13.975"W	0.86	155.295	0.23	-0.20	22.35
318.00	0.280	153.740	318.00	-1.27	-1.18	0.49	1630663.29	269663.07	39°13'58.892"N	80°48'13.974"W	1.27	157.418	0.17	0.08	-19.49
418.00	0.380	105.680	418.00	-1.73	-1.48	0.92	1630663.72	269662.77	39°13'58.889"N	80°48'13.968"W	1.74	148.311	0.28	0.10	-48.06
518.00	0.350	95.200	517.99	-2.10	-1.60	1.54	1630664.34	269662.65	39°13'58.888"N	80°48'13.960"W	2.22	136.128	0.07	-0.03	-10.48
618.00	0.380	106.930	617.99	-2.47	-1.73	2.16	1630664.96	269662.52	39°13'58.887"N	80°48'13.952"W	2.77	128.611	0.08	0.03	11.73
718.00	0.270	117.700	717.99	-2.87	-1.93	2.69	1630665.49	269662.32	39°13'58.885"N	80°48'13.945"W	3.31	125.716	0.13	-0.11	10.77
818.00	0.370	130.520	817.99	-3.35	-2.25	3.14	1630665.99	269662.00	39°13'58.882"N	80°48'13.940"W	3.86	125.639	0.12	0.10	12.83
918.00	0.180	106.360	917.99	-3.75	-2.51	3.54	1630666.34	269661.74	39°13'58.879"N	80°48'13.935"W	4.33	125.309	0.22	-0.19	-24.16
1018.00	0.090	144.140	1017.99	-3.93	-2.61	3.73	1630666.53	269661.64	39°13'58.878"N	80°48'13.932"W	4.56	124.986	0.12	-0.09	37.78
1118.00	0.090	129.860	1117.99	-4.07	-2.73	3.84	1630666.64	269661.52	39°13'58.877"N	80°48'13.931"W	4.71	125.381	0.02	0.00	-14.28
1218.00	0.330	95.260	1217.99	-4.29	-2.80	4.19	1630666.99	269661.45	39°13'58.876"N	80°48'13.926"W	5.04	123.807	0.26	0.24	-34.60
1318.00	0.320	122.590	1317.99	-4.37	-2.82	4.66	1630667.46	269661.63	39°13'58.875"N	80°48'13.920"W	5.35	119.379	0.28	0.01	-54.01
1418.00	0.660	25.890	1417.98	-3.84	-1.90	5.10	1630667.90	269662.35	39°13'58.885"N	80°48'13.915"W	5.44	110.417	0.36	0.34	-16.36
1518.00	0.810	5.520	1517.97	-2.86	-0.68	5.42	1630668.22	269663.57	39°13'58.898"N	80°48'13.911"W	5.46	97.120	0.30	0.15	-20.37
1618.00	0.440	36.330	1617.97	-2.07	0.34	5.72	1630668.52	269664.59	39°13'58.908"N	80°48'13.907"W	5.73	86.638	0.49	-0.37	30.81
1718.00	0.410	78.020	1717.96	-1.96	0.73	6.33	1630669.13	269664.98	39°13'58.912"N	80°48'13.900"W	6.37	83.450	0.32	0.01	41.69
1818.00	0.780	101.940	1817.96	-2.34	0.71	7.19	1630669.99	269664.96	39°13'58.915"N	80°48'13.899"W	7.22	84.394	0.24	0.11	-3.90
1918.00	0.980	74.430	1917.96	-2.66	0.71	7.98	1630670.78	269664.96	39°13'58.912"N	80°48'13.879"W	8.01	84.906	0.30	-0.18	-30.51
2018.00	0.00	65.870	2017.96	-2.70	0.91	8.51	1630671.31	269665.16	39°13'58.914"N	80°48'13.872"W	8.56	83.875	0.11	-0.11	-5.56
2118.00	0.050	53.140	2117.95	-2.77	1.04	8.95	1630671.75	269665.29	39°13'58.915"N	80°48'13.866"W	9.01	83.393	0.08	-0.01	17.27
2218.00	0.200	108.800	2217.95	-2.91	1.03	9.28	1630672.08	269665.28	39°13'58.915"N	80°48'13.862"W	9.33	83.663	0.16	-0.14	25.66
2318.00	0.350	122.430	2317.95	-3.27	0.79	9.60	1630672.40	269665.04	39°13'58.913"N	80°48'13.858"W	9.97	83.315	0.25	0.23	20.63
2418.00	0.320	150.590	2417.95	-3.74	0.41	9.91	1630672.71	269664.66	39°13'58.909"N	80°48'13.854"W	9.92	87.636	0.15	-0.13	17.16
2518.00	0.140	120.940	2517.95	-4.03	0.18	10.11	1630672.91	269664.43	39°13'58.907"N	80°48'13.852"W	10.11	88.985	0.12	-0.08	-29.65
2618.00	0.270	114.240	2617.95	-4.27	0.04	10.38	1630673.18	269664.29	39°13'58.905"N	80°48'13.848"W	10.38	89.773	0.07	0.07	-6.70
2718.00	0.230	154.520	2717.95	-4.61	-0.22	10.64	1630673.44	269664.03	39°13'58.903"N	80°48'13.845"W	10.64	91.159	0.15	0.02	40.28
2818.00	0.140	153.090	2817.95	-4.93	-0.51	10.78	1630673.58	269663.74	39°13'58.900"N	80°48'13.845"W	10.79	92.684	0.08	0.09	-1.43

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot A
Area	Doddridge Co., WV	Well	OXF-97A-HS
Field	Doddridge	Wellbore	OXF-97A-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (208 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
2918.00	0.210	147.300	2917.95	-5.24	-0.77	10.93	1630673.73	269663.48	39°13'58.897"N	80°48'13.841"W	10.96	94.021	0.07	0.07	-5.79
2975.00	0.200	147.570	2974.95	-5.44	-0.94	11.04	1630673.84	269663.31	39°13'58.896"N	80°48'13.839"W	11.08	94.867	0.02	-0.02	0.47
3102.00	0.480	229.310	3101.95	-5.80	-1.47	10.76	1630673.56	269662.78	39°13'58.890"N	80°48'13.843"W	10.86	97.803	0.39	0.22	64.36
3132.00	2.530	210.400	3131.93	-6.22	-2.13	10.33	1630673.13	269662.12	39°13'58.884"N	80°48'13.848"W	10.55	101.639	6.94	6.83	-63.03
3162.00	4.110	204.770	3161.88	-7.30	-3.67	9.54	1630672.34	269660.58	39°13'58.868"N	80°48'13.850"W	10.23	111.060	4.37	5.27	-18.71
3192.00	5.360	206.130	3191.78	-8.89	-5.91	8.48	1630671.28	269658.34	39°13'58.846"N	80°48'13.871"W	10.33	124.883	4.18	4.17	4.53
3222.00	7.060	207.330	3221.60	-10.92	-8.81	7.01	1630669.81	269655.45	39°13'58.817"N	80°48'13.889"W	11.26	141.468	5.68	5.67	4.00
3253.00	8.480	208.410	3252.32	-13.48	-12.51	5.05	1630667.85	269651.74	39°13'58.781"N	80°48'13.914"W	13.49	158.015	4.60	4.58	3.48
3283.00	9.270	209.810	3281.96	-16.22	-16.55	2.80	1630665.60	269647.70	39°13'58.740"N	80°48'13.941"W	16.78	170.411	2.73	2.63	4.67
3313.00	11.030	212.520	3311.49	-19.19	-21.07	0.05	1630662.85	269643.18	39°13'58.683"N	80°48'13.975"W	21.07	179.459	3.00	3.01	9.33
3343.00	11.960	211.240	3340.89	-22.50	-26.14	-3.10	1630659.70	269638.11	39°13'58.645"N	80°48'14.015"W	26.33	186.769	3.21	3.10	-4.27
3374.00	12.540	210.330	3371.18	-26.25	-31.80	-6.47	1630656.33	269632.46	39°13'58.588"N	80°48'14.056"W	32.45	191.499	1.97	1.87	-2.94
3404.00	13.780	209.350	3400.39	-30.23	-37.72	-9.86	1630652.94	269626.53	39°13'58.529"N	80°48'14.098"W	38.99	194.655	4.20	4.13	-3.27
3434.00	14.350	208.720	3429.49	-34.56	-44.10	-13.40	1630649.40	269620.16	39°13'58.466"N	80°48'14.142"W	46.09	196.906	1.97	1.90	-2.10
3464.00	14.640	207.930	3458.54	-39.10	-50.71	-16.96	1630645.94	269613.54	39°13'58.408"N	80°48'14.188"W	53.42	198.491	1.22	0.97	-2.97
3494.00	16.210	207.940	3487.46	-43.97	-57.76	-20.69	1630642.11	269606.49	39°13'58.330"N	80°48'14.232"W	61.36	199.708	5.23	5.23	0.37
3524.00	17.860	205.760	3516.22	-49.31	-65.38	-24.54	1630638.26	269598.87	39°13'58.254"N	80°48'14.280"W	69.83	200.576	2.99	2.17	-7.27
3555.00	17.390	206.050	3545.84	-55.12	-73.59	-28.53	1630634.27	269590.66	39°13'58.172"N	80°48'14.329"W	78.93	201.192	1.73	1.71	0.94
3585.00	18.720	205.300	3574.36	-61.08	-81.97	-32.56	1630630.24	269582.28	39°13'58.089"N	80°48'14.379"W	88.20	201.663	4.50	4.43	-2.50
3615.00	19.200	204.640	3602.73	-67.35	-90.78	-36.76	1630626.04	269573.47	39°13'58.001"N	80°48'14.430"W	97.99	202.044	1.84	1.80	1.13
3645.00	19.820	203.970	3631.07	-73.77	-99.72	-40.90	1630621.90	269564.53	39°13'57.912"N	80°48'14.481"W	107.78	202.299	1.82	-0.60	-5.23
3675.00	19.920	203.890	3659.40	-80.31	-108.74	-44.91	1630617.89	269555.52	39°13'57.822"N	80°48'14.531"W	117.65	202.440	0.86	0.83	-0.60
3705.00	19.100	203.590	3687.50	-87.35	-118.48	-49.30	1630613.50	269545.77	39°13'57.725"N	80°48'14.585"W	128.33	202.591	5.44	5.39	2.26
3736.00	18.110	203.330	3715.44	-94.44	-128.38	-53.93	1630608.88	269535.88	39°13'57.627"N	80°48'14.642"W	139.24	202.785	2.66	2.40	3.13
3766.00	17.120	203.390	3743.39	-101.53	-138.41	-58.82	1630603.98	269525.85	39°13'57.527"N	80°48'14.706"W	150.39	203.026	1.48	0.80	3.33
3796.00	16.130	203.820	3771.35	-108.84	-148.79	-63.99	1630598.82	269515.46	39°13'57.424"N	80°48'14.766"W	161.97	203.269	5.27	5.27	-0.70
3827.00	15.140	207.490	3800.17	-116.83	-160.22	-69.79	1630593.01	269504.03	39°13'57.310"N	80°48'14.837"W	174.76	203.537	5.92	5.71	3.77
3857.00	14.150	207.860	3827.24	-124.76	-171.68	-75.80	1630587.00	269492.58	39°13'57.196"N	80°48'14.911"W	187.67	203.822	1.62	1.53	1.23
3887.00	13.160	209.840	3854.06	-132.78	-183.44	-82.29	1630580.51	269480.81	39°13'57.079"N	80°48'14.992"W	201.05	204.160	6.36	5.63	6.60
3917.00	12.170	211.660	3880.51	-140.84	-195.61	-89.53	1630573.27	269468.65	39°13'56.957"N	80°48'15.082"W	215.12	204.594	5.47	4.67	6.07

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot A
Area	Doddridge Co., WV	Well	OXF-97A-HS
Field	Doddridge	Wellhore	OXF-97A-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (208 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
3947.00	29.290	211.790	3906.73	-148.94	-208.01	-97.20	1630565.61	269456.25	39°13'56.834"N	80°48'15.177"W	229.60	205.046	1.45	1.43	0.43
3978.00	30.100	211.280	3933.66	-157.52	-221.10	-105.23	1630557.58	269443.16	39°13'56.703"N	80°48'15.276"W	244.86	205.452	2.74	2.61	-1.65
4008.00	30.110	212.060	3959.61	-165.89	-233.90	-113.13	1630549.68	269430.36	39°13'56.576"N	80°48'15.374"W	259.82	205.811	1.30	0.03	2.60
4038.00	29.900	211.350	3985.59	-174.24	-246.67	-121.01	1630541.79	269417.59	39°13'56.448"N	80°48'15.472"W	274.75	206.132	1.38	-0.70	-2.37
4179.00	30.430	208.910	4064.27	-200.70	-288.21	-143.95	1630518.80	269378.05	39°13'56.014"N	80°48'15.750"W	320.37	206.700	1.47	0.58	-2.08
4220.00	29.660	207.510	4143.04	-228.29	-326.36	-165.50	1630497.31	269337.91	39°13'55.654"N	80°48'16.023"W	365.92	206.890	1.14	-0.85	-1.54
4314.00	30.900	207.050	4224.22	-257.61	-368.48	-187.22	1630475.59	269295.78	39°13'55.235"N	80°48'16.291"W	413.31	206.934	1.34	1.32	-0.49
4404.00	30.270	205.640	4301.70	-286.51	-409.51	-207.54	1630455.27	269254.75	39°13'54.827"N	80°48'16.542"W	459.10	206.876	1.06	-0.70	-1.57
4495.00	30.180	206.540	4380.33	-315.59	-450.65	-227.69	1630435.12	269213.61	39°13'54.417"N	80°48'16.790"W	504.91	206.805	0.51	-0.10	0.99
4586.00	30.630	206.240	4458.81	-344.64	-491.91	-248.16	1630414.65	269172.36	39°13'54.004"N	80°48'17.043"W	550.96	206.770	0.32	0.49	-0.13
4677.00	30.030	204.750	4537.36	-374.16	-533.38	-267.94	1630394.87	269130.89	39°13'53.594"N	80°48'17.286"W	596.90	206.672	1.06	-0.66	-1.64
4768.00	30.330	205.760	4616.02	-403.71	-574.76	-287.46	1630375.35	269089.52	39°13'53.182"N	80°48'17.527"W	642.63	206.572	0.65	0.33	1.11
4858.00	29.700	208.090	4693.96	-431.78	-614.89	-307.83	1630354.98	269049.38	39°13'52.782"N	80°48'17.778"W	687.64	206.594	1.47	-0.70	2.59
4949.00	28.210	207.590	4773.58	-458.68	-653.85	-328.41	1630334.40	269010.43	39°13'52.394"N	80°48'18.032"W	731.69	206.669	1.66	-1.64	-0.55
5043.00	28.310	208.280	4856.38	-486.42	-693.50	-348.57	1630314.24	268970.75	39°13'51.999"N	80°48'18.283"W	776.19	206.684	0.67	0.11	-1.39
5133.00	29.140	206.980	4935.30	-513.56	-732.19	-367.96	1630294.85	268932.09	39°13'51.615"N	80°48'18.520"W	819.45	206.682	1.00	0.92	0.78
5225.00	30.290	206.320	5015.20	-542.16	-772.94	-388.41	1630274.40	268891.33	39°13'51.209"N	80°48'18.773"W	865.05	206.680	1.30	1.25	-0.72
5316.00	31.530	207.330	5093.27	-571.36	-814.65	-409.51	1630253.30	268849.63	39°13'50.794"N	80°48'19.033"W	911.79	206.688	1.48	1.36	1.11
5407.00	30.520	207.200	5171.26	-600.38	-856.35	-431.00	1630231.82	268807.94	39°13'50.379"N	80°48'19.299"W	958.69	206.716	1.11	-1.11	-0.14
5499.00	30.560	207.970	5250.49	-629.10	-897.78	-452.64	1630210.17	268766.50	39°13'49.966"N	80°48'19.566"W	1005.43	206.756	0.43	0.04	0.64
5590.00	29.870	209.190	5329.13	-656.60	-937.99	-474.55	1630188.27	268726.29	39°13'49.565"N	80°48'19.837"W	1051.20	206.836	1.01	-0.76	1.34
5680.00	29.260	207.960	5407.41	-683.27	-976.99	-495.79	1630167.03	268687.30	39°13'49.177"N	80°48'20.100"W	1095.59	206.906	0.96	-0.68	-1.37
5772.00	30.100	205.340	5487.35	-711.84	-1017.70	-516.21	1630146.61	268646.59	39°13'48.772"N	80°48'20.351"W	1141.13	206.895	1.68	0.91	-2.85
5862.00	30.470	206.190	5565.06	-740.85	-1058.57	-535.94	1630126.88	268605.72	39°13'48.365"N	80°48'20.595"W	1186.51	206.852	0.63	0.41	0.94
5953.00	29.920	208.230	5643.72	-769.30	-1099.27	-556.86	1630105.97	268565.02	39°13'47.960"N	80°48'20.852"W	1232.27	206.865	1.28	-0.60	2.44
5983.00	29.680	209.460	5669.75	-778.10	-1112.33	-564.05	1630098.77	268551.96	39°13'47.830"N	80°48'20.942"W	1247.17	206.889	2.19	-0.80	4.10
6025.00	28.930	209.960	5706.38	-790.12	-1130.19	-574.23	1630088.59	268534.10	39°13'47.652"N	80°48'21.068"W	1267.70	206.935	1.88	-1.79	1.19
6115.00	29.200	208.690	5785.04	-815.92	-1168.31	-595.65	1630067.18	268495.99	39°13'47.272"N	80°48'21.333"W	1311.39	207.014	0.75	0.30	-1.41
6204.00	30.990	208.380	5862.04	-842.69	-1207.47	-617.03	1630045.79	268456.82	39°13'46.882"N	80°48'21.597"W	1355.99	207.067	2.01	2.01	-0.12
6293.00	31.300	208.330	5934.04	-870.60	-1248.16	-638.94	1630023.84	268410.14	39°13'46.476"N	80°48'21.861"W	1402.21	207.119	0.73	0.41	0.31

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot A
Area	Doddridge Co., WV	Well	OXF-97A-HS
Field	Doddridge	Wellbore	OXF-97A-HS AWB
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WELLPATH DATA (208 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
6383.00	31.660	208.320	6014.72	-899.18	-1289.75	-661.31	1630001.52	268374.55	39°13'46.062"N	80°48'22.145"W	1449.40	207.146	0.13	0.07	0.21
6473.00	31.920	207.580	6091.22	-928.07	-1331.63	-683.53	1629979.30	268332.67	39°13'45.645"N	80°48'22.419"W	1496.81	207.172	0.52	0.29	-0.82
6562.00	32.020	210.230	6166.73	-956.15	-1372.87	-706.30	1629956.52	268291.43	39°13'45.234"N	80°48'22.701"W	1543.90	207.225	1.58	0.11	2.98
6652.00	32.950	226.990	6242.80	-977.73	-1410.26	-736.27	1629926.55	268254.04	39°13'44.860"N	80°48'23.075"W	1590.89	207.568	10.03	1.03	18.62
6741.00	33.090	241.850	6317.55	-986.97	-1438.28	-775.46	1629887.37	268226.03	39°13'44.378"N	80°48'23.588"W	1634.01	207.332	2.04	2.16	16.70
6831.00	36.420	249.020	6391.51	-986.89	-1459.45	-822.10	1629840.73	268204.86	39°13'44.362"N	80°48'24.157"W	1675.06	209.392	5.85	3.70	7.97
6920.00	41.800	261.690	6460.66	-976.96	-1473.23	-876.24	1629786.59	268191.08	39°13'44.218"N	80°48'24.842"W	1714.12	210.743	10.80	6.04	14.24
7009.00	46.360	274.060	6524.70	-953.23	-1475.24	-937.86	1629724.97	268189.07	39°13'44.189"N	80°48'25.625"W	1748.12	212.446	10.92	5.12	13.90
7099.00	50.820	282.530	6584.27	-916.59	-1465.35	-1004.50	1629658.34	268198.96	39°13'44.277"N	80°48'26.473"W	1776.59	214.431	8.62	4.96	9.41
7188.00	55.700	290.430	6637.57	-869.75	-1444.99	-1072.73	1629590.11	268219.32	39°13'44.469"N	80°48'27.344"W	1799.65	216.289	3.99	5.48	6.30
7278.00	61.220	297.580	6684.65	-812.27	-1413.69	-1142.64	1629520.20	268250.62	39°13'44.768"N	80°48'28.238"W	1817.73	218.948	9.12	6.13	7.92
7368.00	66.090	304.770	6724.62	-745.68	-1371.90	-1211.51	1629451.34	268292.41	39°13'45.171"N	80°48'29.121"W	1830.26	221.447	8.97	5.41	7.99
7457.00	68.120	311.810	6759.28	-672.80	-1321.11	-1275.78	1629387.07	268343.19	39°13'45.664"N	80°48'29.947"W	1836.56	224.000	7.63	2.28	7.91
7547.00	72.850	317.840	6789.36	-593.47	-1261.31	-1335.85	1629327.00	268402.99	39°13'46.246"N	80°48'30.721"W	1837.23	226.644	8.21	5.26	6.70
7637.00	78.360	324.020	6811.73	-509.16	-1193.65	-1390.79	1629272.15	268470.04	39°13'46.907"N	80°48'31.451"W	1832.72	229.260	9.03	5.14	6.87
7726.00	84.790	331.290	6824.77	-422.04	-1119.34	-1437.71	1629225.15	268544.95	39°13'47.635"N	80°48'32.042"W	1822.06	232.097	10.82	7.20	8.17
7816.00	88.000	337.600	6830.43	-332.29	-1038.35	-1476.42	1629186.44	268625.94	39°13'48.429"N	80°48'32.548"W	1804.99	234.882	7.85	3.57	7.01
7905.00	88.060	337.880	6833.49	-243.41	-956.03	-1510.11	1629152.74	268708.25	39°13'49.238"N	80°48'32.992"W	1787.30	237.663	0.32	0.07	0.31
7995.00	88.080	338.060	6836.59	-153.55	-872.65	-1543.85	1629119.01	268791.63	39°13'50.057"N	80°48'33.436"W	1773.42	240.523	0.21	-0.07	0.20
8084.00	88.070	338.240	6838.23	-64.66	-790.95	-1576.93	1629085.93	268876.23	39°13'50.899"N	80°48'33.877"W	1760.17	243.389	2.15	2.11	0.26
8174.00	89.970	332.880	6838.35	25.30	-708.10	-1614.05	1629048.81	268956.18	39°13'51.673"N	80°48'34.358"W	1762.54	246.313	5.90	0.10	-5.90
8261.00	89.910	332.710	6838.44	114.19	-629.05	-1654.95	1629007.92	269035.22	39°13'52.449"N	80°48'34.893"W	1770.47	249.188	0.76	-0.07	-0.75
8353.00	90.060	332.850	6838.47	204.08	-549.16	-1696.39	1628966.47	269115.11	39°13'53.232"N	80°48'35.434"W	1783.06	252.062	0.62	0.17	0.60
8442.00	90.430	334.040	6838.09	293.02	-469.55	-1736.18	1628926.69	269194.72	39°13'54.013"N	80°48'35.954"W	1798.55	254.866	1.40	0.42	1.34
8532.00	90.490	344.300	6837.36	382.72	-385.59	-1768.26	1628894.60	269273.67	39°13'54.838"N	80°48'36.378"W	1809.82	257.698	11.21	0.07	11.21
8621.00	90.860	340.910	6836.31	470.56	-299.75	-1791.72	1628871.15	269364.51	39°13'55.683"N	80°48'36.692"W	1816.62	260.503	1.39	0.42	1.33
8711.00	90.860	340.990	6834.96	559.73	-213.64	-1817.80	1628845.07	269450.62	39°13'56.531"N	80°48'37.039"W	1830.31	263.297	4.80	0.00	-4.80
8800.00	91.080	339.160	6833.46	648.42	-129.98	-1848.12	1628814.75	269534.27	39°13'57.353"N	80°48'37.440"W	1852.69	265.977	2.07	0.25	-2.06
8889.00	90.650	337.550	6832.11	737.30	-47.27	-1880.94	1628781.93	269616.98	39°13'58.166"N	80°48'37.872"W	1881.54	268.560	1.87	-0.48	-1.81
8979.00	91.580	333.310	6831.15	827.27	34.52	-1918.43	1628744.45	269698.77	39°13'59.999"N	80°48'38.364"W	1918.74	271.093	4.82	0.08	-4.82

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot A
Area	Doddridge Co., WV	Well	OXF-97A-HS
Field	Doddridge	Wellbore	OXF-97A-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (208 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
9068.00	90.710	330.850	6830.14	916.10	113.12	-1960.16	1628702.71	269777.36	39°13'59.739"N	80°48'38.909"W	1963.42	273.303	2.66	0.15	-2.65
9158.00	90.620	329.450	6829.10	1005.70	191.17	-2004.95	1628657.92	269855.41	39°14'00.504"N	80°48'39.492"W	2014.05	275.447	1.56	-0.10	-1.56
9247.00	90.620	328.970	6828.14	1094.16	267.62	-2050.51	1628612.37	269931.86	39°14'01.253"N	80°48'40.085"W	2067.90	277.436	0.54	0.00	-0.54
9337.00	90.680	329.060	6827.11	1183.58	344.77	-2096.84	1628566.04	270009.01	39°14'02.009"N	80°48'40.688"W	2124.99	279.337	0.12	0.07	0.10
9424.00	90.500	332.400	6826.14	1272.26	422.35	-2140.35	1628522.34	270086.63	39°14'03.710"N	80°48'41.250"W	2181.63	281.164	3.75	-0.11	3.73
9516.00	90.680	335.710	6825.15	1362.21	503.30	-2179.71	1628483.17	270167.54	39°14'03.564"N	80°48'41.771"W	2237.07	283.002	3.68	0.11	3.68
9605.00	90.550	333.900	6824.19	1451.19	583.83	-2217.60	1628445.29	270248.06	39°14'04.354"N	80°48'42.267"W	2293.16	284.750	2.04	-0.15	-2.03
9695.00	90.580	332.740	6823.30	1541.12	664.24	-2258.00	1628404.88	270328.47	39°14'05.143"N	80°48'42.796"W	2353.68	286.392	1.29	0.03	-1.29
9784.00	90.650	333.380	6822.35	1630.04	743.58	-2298.32	1628364.56	270407.80	39°14'05.921"N	80°48'43.323"W	2415.62	287.928	0.72	0.08	0.72
9874.00	90.770	335.860	6821.23	1720.01	824.89	-2336.89	1628323.96	270489.10	39°14'06.719"N	80°48'43.828"W	2478.21	289.442	2.70	0.13	3.70
9963.00	90.710	337.870	6820.08	1808.98	906.71	-2371.86	1628291.03	270570.93	39°14'07.523"N	80°48'44.287"W	2539.26	290.921	2.26	-0.07	2.26
10053.00	90.680	334.010	6818.99	1898.95	988.87	-2408.54	1628254.35	270653.08	39°14'08.330"N	80°48'44.769"W	2603.64	292.322	4.29	-0.03	-4.29
10143.00	91.080	335.790	6817.61	1988.93	1070.36	-2446.71	1628216.18	270734.57	39°14'09.129"N	80°48'45.269"W	2670.59	293.628	2.03	0.44	1.98
10232.00	91.020	338.140	6815.98	2077.88	1152.24	-2481.53	1628181.37	270816.45	39°14'09.934"N	80°48'45.727"W	2735.99	294.907	2.64	-0.07	2.64
10322.00	91.110	339.310	6814.30	2167.72	1236.09	-2514.13	1628148.72	270900.30	39°14'10.738"N	80°48'46.157"W	2801.61	296.161	1.30	0.60	1.70
10411.00	90.980	337.760	6812.68	2256.58	1318.90	-2546.74	1628116.16	270983.10	39°14'11.571"N	80°48'46.586"W	2867.99	297.379	1.75	-0.15	-1.74
10501.00	91.080	336.340	6811.06	2346.53	1401.76	-2581.83	1628081.07	271065.96	39°14'12.385"N	80°48'47.047"W	2937.82	298.499	1.58	0.11	-1.58
10590.00	90.310	335.380	6809.98	2435.52	1482.97	-2618.22	1628044.68	271147.17	39°14'13.182"N	80°48'47.525"W	3009.04	299.527	1.38	-0.87	-1.08
10679.00	89.690	334.800	6809.98	2524.51	1563.69	-2655.71	1628007.19	271227.88	39°14'13.975"N	80°48'48.016"W	3081.87	300.490	0.95	-0.70	-0.65
10769.00	89.690	334.440	6810.47	2614.50	1645.01	-2694.20	1627966.62	271309.19	39°14'14.772"N	80°48'48.522"W	3156.77	301.406	0.40	0.00	-0.10
10858.00	89.690	333.940	6810.95	2703.48	1725.13	-2733.03	1627929.87	271389.31	39°14'15.559"N	80°48'49.029"W	3231.95	302.261	0.56	0.00	-0.56
10948.00	89.780	333.370	6811.37	2793.43	1805.78	-2772.97	1627889.93	271469.96	39°14'16.350"N	80°48'49.551"W	3309.11	303.072	0.64	0.10	-0.63
11038.00	89.340	334.520	6811.27	2883.40	1886.63	-2812.50	1627850.41	271550.81	39°14'17.144"N	80°48'50.069"W	3386.67	303.854	1.42	0.62	1.28
11127.00	89.950	333.810	6811.27	2972.36	1966.73	-2851.28	1627811.63	271630.90	39°14'17.930"N	80°48'50.577"W	3463.79	304.597	1.05	0.69	-0.80
11217.00	89.920	332.280	6811.80	3062.27	2046.94	-2892.07	1627770.84	271711.11	39°14'18.716"N	80°48'51.110"W	3543.77	305.290	1.90	-0.31	-0.70
11307.00	89.890	333.430	6812.38	3152.16	2127.01	-2933.13	1627729.78	271791.18	39°14'19.502"N	80°48'51.646"W	3623.18	305.948	1.28	-0.03	1.28
11396.00	89.430	333.540	6813.36	3241.10	2206.65	-2972.86	1627690.05	271870.81	39°14'20.283"N	80°48'52.166"W	3702.32	306.585	0.53	-0.52	0.12
11486.00	89.820	335.220	6814.16	3331.08	2287.79	-3011.77	1627651.14	271951.96	39°14'21.079"N	80°48'52.676"W	3782.17	307.221	1.99	-0.68	1.87
11575.00	89.910	338.620	6814.37	3420.04	2369.66	-3046.66	1627616.26	272033.82	39°14'21.883"N	80°48'53.134"W	3859.71	307.875	3.82	0.10	3.82
11665.00	89.940	339.820	6814.49	3509.84	2453.82	-3076.55	1627584.57	272117.97	39°14'22.710"N	80°48'53.535"W	3938.84	308.557	1.50	0.03	1.30

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Actual Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot A
Area	Doddridge Co., WV	Well	OXF-97A-HS
Field	Doddridge	Wellbore	OXF-97A-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (208 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
11754.00	89.320	337.620	6807.06	3598.69	2536.75	-3110.81	1627552.11	272200.91	39°14'23.525"N	80°48'53.981"W	4014.01	309.196	2.62	-0.70	-2.53
11843.00	89.380	336.130	6808.07	3687.66	2618.60	-3145.76	1627517.16	272282.75	39°14'24.329"N	80°48'54.440"W	4093.03	309.775	1.68	0.07	-1.67
11933.00	89.380	336.810	6809.05	3777.64	2701.11	-3181.69	1627481.23	272365.25	39°14'25.139"N	80°48'54.912"W	4173.62	310.330	0.76	0.00	0.76
12023.00	89.450	337.130	6809.97	3867.60	2783.93	-3216.90	1627446.02	272448.07	39°14'25.953"N	80°48'55.375"W	4254.26	310.873	0.36	0.08	0.36
12112.00	89.750	339.480	6810.50	3956.49	2866.62	-3249.79	1627415.11	272530.76	39°14'26.765"N	80°48'55.838"W	4333.47	311.415	2.06	0.34	2.04
12202.00	90.150	339.630	6810.67	4046.26	2950.95	-3281.23	1627381.69	272615.09	39°14'27.594"N	80°48'56.223"W	4413.00	311.966	0.47	0.44	0.17
12291.00	90.030	339.250	6810.53	4135.05	3034.28	-3312.49	1627350.44	272698.41	39°14'28.413"N	80°48'56.636"W	4492.15	312.490	0.45	-0.13	-0.43
12381.00	89.850	335.310	6810.62	4224.99	3117.28	-3347.24	1627315.69	272781.41	39°14'29.228"N	80°48'57.093"W	4574.00	312.963	4.38	-0.20	-4.38
12470.00	89.940	332.570	6810.78	4313.95	3197.22	-3386.34	1627276.59	272861.35	39°14'30.013"N	80°48'57.605"W	4657.20	313.355	3.08	0.10	-3.08
12560.00	89.940	334.490	6810.88	4403.89	3277.18	-3426.45	1627236.48	272941.91	39°14'30.803"N	80°48'58.130"W	4741.77	313.790	2.13	0.00	2.13
12649.00	89.690	338.660	6811.16	4492.85	3359.43	-3461.82	1627201.11	273023.55	39°14'31.605"N	80°48'58.595"W	4823.90	314.140	4.69	-0.28	4.69
12739.00	89.820	343.100	6811.55	4582.43	3444.44	-3491.30	1627171.64	273108.56	39°14'32.441"N	80°48'58.985"W	4904.42	314.613	4.94	0.14	4.93
12828.00	89.660	344.650	6811.95	4670.48	3529.94	-3516.01	1627146.92	273194.05	39°14'33.282"N	80°48'59.315"W	4982.25	315.113	1.75	-0.18	1.74
12918.00	89.750	343.680	6812.42	4759.44	3616.52	-3540.57	1627122.36	273280.63	39°14'34.134"N	80°48'59.643"W	5061.11	315.608	1.08	0.10	-1.08
13007.00	89.780	339.430	6812.78	4847.93	3700.93	-3568.72	1627094.21	273365.04	39°14'34.964"N	80°49'00.017"W	5141.21	316.047	4.76	0.03	-4.76
13097.00	89.720	336.200	6813.17	4937.84	3784.25	-3602.70	1627060.24	273448.36	39°14'35.783"N	80°49'00.464"W	5224.94	316.408	3.59	-0.07	-3.59
13187.00	89.850	332.980	6813.51	5027.82	3865.54	-3641.31	1627021.62	273529.64	39°14'36.581"N	80°49'00.970"W	5310.51	316.711	3.58	0.14	-3.58
13276.00	89.910	331.580	6813.70	5116.67	3944.31	-3682.74	1626980.20	273608.41	39°14'37.353"N	80°49'01.511"W	5396.31	316.964	1.62	0.07	-1.62
13366.00	89.850	325.720	6813.89	5205.99	4021.14	-3729.54	1626933.40	273685.23	39°14'38.106"N	80°49'02.120"W	5484.43	317.155	6.41	-0.07	-6.41
13455.00	89.780	326.300	6814.18	5293.75	4094.82	-3779.15	1626883.48	273758.91	39°14'38.827"N	80°49'02.763"W	5573.42	317.297	5.27	-0.06	0.06
13545.00	90.180	327.350	6814.21	5382.68	4170.02	-3828.90	1626834.05	273834.11	39°14'39.563"N	80°49'03.411"W	5661.23	317.442	1.56	0.44	1.50
13635.00	90.150	328.650	6813.95	5471.90	4246.30	-3876.65	1626786.29	273910.39	39°14'40.310"N	80°49'04.032"W	5749.74	317.606	1.33	-0.03	1.33
13724.00	90.120	331.700	6813.74	5560.50	4323.46	-3920.98	1626741.97	273987.55	39°14'41.066"N	80°49'04.610"W	5836.65	317.795	3.54	-0.03	3.54
13814.00	89.600	333.850	6813.96	5650.37	4403.27	-3962.57	1626700.38	274067.36	39°14'41.848"N	80°49'05.153"W	5923.75	318.015	1.82	-0.58	1.72
13903.00	89.080	332.980	6814.98	5739.23	4482.32	-4003.46	1626659.50	274146.44	39°14'42.624"N	80°49'05.687"W	6009.90	318.230	1.47	0.28	1.39
13993.00	88.650	333.090	6816.77	5829.13	4562.25	-4044.77	1626618.19	274226.33	39°14'43.408"N	80°49'06.227"W	6097.07	318.441	1.46	-0.48	1.38
14083.00	88.550	336.830	6818.97	5919.08	4643.81	-4082.74	1626580.22	274307.88	39°14'44.208"N	80°49'06.725"W	6183.34	318.679	3.88	-0.11	3.88
14172.00	88.550	337.890	6821.22	6008.01	4725.91	-4117.02	1626545.94	274389.98	39°14'45.015"N	80°49'07.176"W	6267.70	318.939	1.25	0.00	1.25
14262.00	88.710	338.010	6823.37	6097.90	4809.30	-4150.80	1626512.16	274473.37	39°14'45.834"N	80°49'07.621"W	6352.83	319.203	0.22	0.18	0.13
14351.00	88.810	340.510	6825.45	6186.87	4892.50	-4182.30	1626480.65	274556.57	39°14'46.652"N	80°49'08.037"W	6436.48	319.475	2.81	0.11	2.81

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Actual Wellpath Report

OXF-97A-HS AWP Proj: 16766'
Page 8 of 10



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot A
Area	Doddridge Co., WV	Well	OXF-97A-HS
Field	Doddridge	Wellbore	OXF-97A-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (208 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Buidl Rate [°/100ft]	Turn Rate [°/100ft]
14441.00	88.950	339.780	6827.37	6276.35	4977.13	-4212.86	1626450.10	274641.20	39°14'47.483"N	80°49'08.441"W	6520.74	319.754	0.89	0.38	-0.81
14530.00	88.950	341.190	6829.00	6365.00	5061.01	-4242.59	1626420.37	274725.06	39°14'48.308"N	80°49'08.835"W	6604.04	320.027	1.58	0.00	1.58
14619.00	88.890	341.950	6830.68	6453.48	5145.43	-4270.72	1626392.24	274809.48	39°14'49.138"N	80°49'09.208"W	6686.89	320.307	0.86	-0.07	0.85
14709.00	88.800	336.270	6832.49	6543.25	5229.46	-4302.79	1626360.17	274893.51	39°14'49.964"N	80°49'09.631"W	6772.09	320.552	6.31	-0.10	-6.31
14799.00	88.830	334.530	6834.35	6633.23	5311.27	-4340.23	1626322.73	274971.32	39°14'50.767"N	80°49'10.122"W	6859.10	320.744	1.97	0.03	1.91
14888.00	88.950	334.480	6836.08	6722.20	5391.60	-4378.52	1626284.44	275055.65	39°14'51.555"N	80°49'10.624"W	6945.56	320.920	0.16	0.13	-0.08
14978.00	88.860	326.640	6837.80	6812.17	5473.52	-4415.75	1626247.22	275137.56	39°14'52.360"N	80°49'11.112"W	7032.65	321.105	2.40	-0.10	2.40
15067.00	89.010	336.340	6839.45	6901.14	5555.11	-4451.25	1626211.72	275219.15	39°14'53.161"N	80°49'11.579"W	7118.49	321.295	0.38	0.17	-0.34
15156.00	89.050	336.200	6840.96	6990.12	5636.58	-4487.06	1626175.91	275300.61	39°14'53.961"N	80°49'12.049"W	7204.49	321.478	0.16	0.04	-0.16
15246.00	88.830	333.200	6842.62	7080.11	5718.61	-4524.04	1626138.93	275382.04	39°14'54.766"N	80°49'12.544"W	7291.76	321.652	1.97	0.34	-1.04
15336.00	88.950	331.210	6844.37	7170.00	5798.93	-4564.56	1626098.42	275462.96	39°14'55.554"N	80°49'13.064"W	7379.89	321.792	4.50	0.13	-4.50
15425.00	88.830	328.140	6846.09	7258.52	5875.73	-4609.48	1626053.49	275539.76	39°14'56.306"N	80°49'13.650"W	7468.03	321.886	3.45	-0.13	-3.45
15515.00	88.920	331.800	6847.86	7348.07	5953.62	-4654.50	1626008.47	275617.65	39°14'57.070"N	80°49'14.236"W	7557.12	321.982	4.07	0.10	4.07
15604.00	88.950	334.700	6849.51	7436.97	6033.08	-4694.55	1625968.43	275697.10	39°14'57.849"N	80°49'14.760"W	7644.40	322.112	3.26	0.03	3.26
15694.00	88.950	334.430	6851.16	7526.95	6114.34	-4733.20	1625929.78	275778.36	39°14'58.657"N	80°49'15.267"W	7732.29	322.250	0.30	0.00	-0.30
15783.00	88.860	335.580	6852.86	7615.93	6194.99	-4770.80	1625892.18	275859.00	39°14'59.438"N	80°49'15.760"W	7819.10	322.400	1.30	-0.10	1.29
15873.00	88.890	333.640	6854.63	7705.89	6276.27	-4809.38	1625853.60	275940.29	39°15'00.236"N	80°49'16.265"W	7907.07	322.538	2.16	0.03	-2.16
15963.00	88.830	334.870	6856.40	7794.85	6356.42	-4848.03	1625814.95	276020.43	39°15'01.022"N	80°49'16.771"W	7994.22	322.667	1.38	-0.07	1.38
16052.00	88.550	334.080	6858.46	7884.81	6437.62	-4886.80	1625776.19	276101.62	39°15'01.819"N	80°49'17.279"W	8082.31	322.798	0.93	-0.31	-0.88
16142.00	88.580	334.490	6860.69	7973.75	6517.44	-4926.10	1625738.81	276181.44	39°15'02.602"N	80°49'17.784"W	8169.67	322.917	0.66	0.02	0.66
16231.00	88.210	334.010	6863.21	8063.67	6598.12	-4965.89	1625697.10	276262.12	39°15'03.394"N	80°49'18.315"W	8258.05	323.034	0.71	-0.41	0.58
16320.00	88.570	333.370	6865.86	8152.60	6678.04	-5004.97	1625658.02	276342.04	39°15'04.178"N	80°49'18.826"W	8345.42	323.150	0.24	0.18	-0.16
16409.00	88.200	332.430	6868.28	8241.54	6758.10	-5043.77	1625619.23	276422.10	39°15'04.964"N	80°49'19.334"W	8432.77	323.265	0.65	0.17	0.63
16499.00	88.490	331.560	6870.63	8331.50	6839.66	-5081.74	1625581.25	276503.65	39°15'05.764"N	80°49'19.832"W	8520.86	323.388	1.33	-0.03	1.33
16588.00	88.580	332.340	6872.99	8420.47	6920.95	-5117.95	1625545.04	276584.92	39°15'06.562"N	80°49'20.308"W	8607.71	323.517	0.80	0.10	0.80
16678.00	88.550	333.310	6875.16	8510.40	7003.82	-5152.93	1625510.07	276667.81	39°15'07.376"N	80°49'20.768"W	8695.18	323.657	1.74	-0.03	1.74
16767.00	88.460	333.320	6876.83	8574.29	7063.40	-5176.25	1625486.74	276727.38	39°15'07.961"N	80°49'21.076"W	8757.01	323.765	2.21	-0.14	2.20
16856.00	88.460	339.320	6877.47	8598.22	7085.84	-5184.73	1625478.27	276749.82	39°15'08.182"N	80°49'21.187"W	8780.12	323.807	0.00	0.00	0.00

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Actual Wellpath Report

OXF-97A-HS AWP Proj: 16766'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot A
Area	Doddridge Co., WV	Well	OXF-97A-HS
Field	Doddridge	Wellbore	OXF-97A-HS AWB
Facility	OXF-97 Pad		

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
OXF-97A-HS LP Rev-1		6826.70	-909.73	-1527.86	1629135.00	268754.55	39°13'49.693"N	80°48'33.226"W	point
OXF-97A-HS LP Rev-2		6830.00	-1046.22	-1465.63	1629197.23	268618.07	39°13'48.353"N	80°48'32.410"W	point
OXF-97A-HS BHL Rev-2		6865.00	7097.29	-5178.56	1625484.44	276761.27	39°15'08.296"N	80°49'21.111"W	point
OXF-97 LL		7198.45	0.03	-0.03	1630662.77	269664.28	39°13'58.904"N	80°48'13.980"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: OXF-97A-HS AWB Ref Wellpath: OXF-97A-HS AWP Proj: 16766'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.00	2918.00	Generic gyro - northseeking (Standard)	01 Gyrodata MS Gyro <12-1/4"> (100'-2900')	OXF-97A-HS AWB
2918.00	5983.00	ISCWSA MWD, Rev. 2 (Standard)	02 Scientific EM <8-3/4"> (2910')(2967'-5975')	OXF-97A-HS AWB
5983.00	16742.00	NaviTrak (AT Curve Short Spaced)	03 BHI AT Curve <8-1/2"> (5983')(6025'-16742')	OXF-97A-HS AWB
16742.00	16746.00	Blind Drilling (std)	Projection to bit	OXF-97A-HS AWB

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Actual Wellpath Report

OXF-97A-HS AWP Proj: 16766'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot A
Area	Doddridge Co., WV	Well	OXF-97A-HS
Field	Doddridge	Wellbore	OXF-97A-HS AWB
Facility	OXF-97 Pad		

COMMENTS

Wellpath general comments

API: 47-017-06481-0000

BHI Job #: 7176330

Rig: Precision 543

Duration: 4/15/2015-4/20/2015

Gyrodata MS Gyro <12-1/4"> (100'-2900')

Scientific EM <8-3/4"> (2910')(2967'-5975')

BHI AT Curve <8-1/2"> (5983')(6025'-16742')

Projected MD at TD: 16766'

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06/May/2015



NOBLE ENERGY

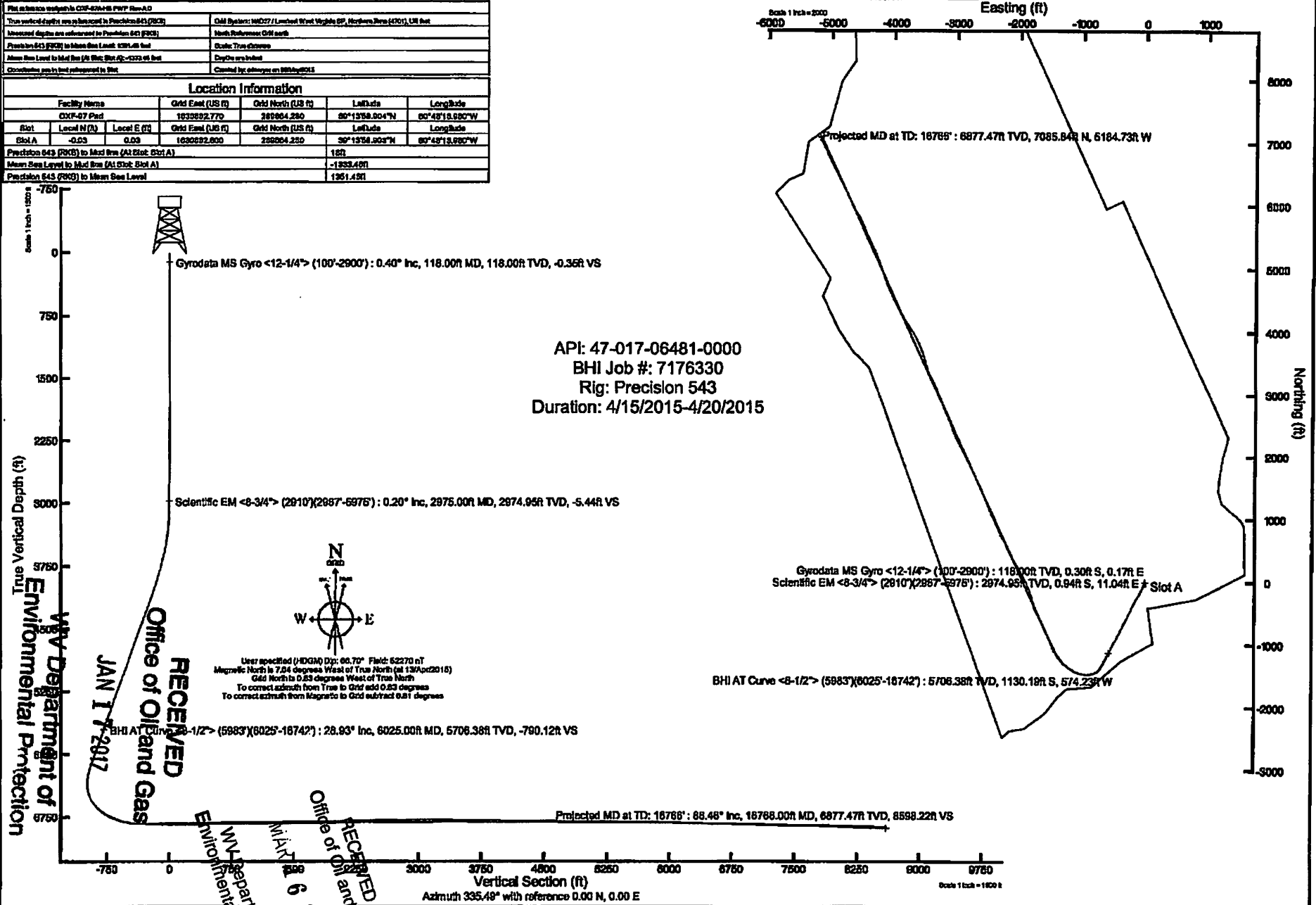


Location: Doddridge Co., WV
Field: Doddridge
Facility: OXF-97 Pad

Slot: Slot A
Well: OXF-97A-HS
Wellbore: OXF-97A-HS PWB

Plot as shown and path is OXF-97A-HS PWB Rev A-D	OMI System: MD27 / Limited West Virginia SP, Northern Area (4701), US Int
True vertical depth was referenced to Precision 643 (RKB)	North Reference: OMI north
Measured depths are referenced to Precision 643 (RKB)	Scale: True distance
Precision 643 (RKB) to Mean Sea Level: 3291.481 feet	Depth are in feet
Mean Sea Level to Mad Bra (At Slot A): -1233.45 feet	Created by software on 08/04/2015
Coordinates are in feet referenced to NAD	

Location Information					
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
OXF-97 Pad	1833892.770	289864.280	80°13'58.904"N	80°48'18.990"W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude
Slot A	-0.03	0.09	1833892.600	289864.250	80°13'58.903"N
Precision 643 (RKB) to Mad Bra (At Slot A)					182
Mean Sea Level to Mad Bra (At Slot A)					-1333.401
Precision 643 (RKB) to Mean Sea Level					1261.481



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Oxf 97 Formations	Top	Base
Shale and Sandstone	0	2123
Big Lime & Big Injun	2123	2323
Price	2323	2623
Shale and Sandstone	2623	2890
Fourth	2890	2907
Shale and Sandstone	2907	2982
Fifth	2982	2990
Shale and Sandstone	2990	3570
Speechley	3570	3601
Shale	3601	4107
Balltown A	4107	4132
Shale and Sandstone	4132	4321
Balltown B	4321	4378
Shale and Sandstone	4378	4366
Bradford	4366	4377
Shale and Sandstone	4377	4625
Riley	4625	4647
Shale and Sandstone	4647	5157
Benson	5157	5189
Shale and Sandstone	5189	5437
Alexander	5437	5484
Shale	5484	6474
Cashaqua	6474	6602
Middlesex	6602	6651
West River	6651	6727
Burkett	6727	6756
Tully Limestone	6756	6759
Hamilton	6759	6790
Marcellus	6790	6840
Onondaga	6840	

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WW-9
(4/16)

API Number 47 - 017 - 06481
Operator's Well No. OXF97 AHS

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Antero Resources Corporation OP Code 494507062

Watershed (HUC 10) Headwaters Middle Island Creek Quadrangle Oxford 7.5'

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: No pit will be used at this site (Drilling and Flowback Fluids will be stored in tanks. Cuttings will be landed and hauled off site.)

Will a synthetic liner be used in the pit? Yes No If so, what ml.? N/A

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number *UIC Permit # will be provided on Form WR-34)
- Reuse (at API Number Future permitted well locations when applicable. API# will be provided on Form WR-34)
- Off Site Disposal (Supply form WW-9 for disposal location) (Meadowfill Landfill Permit #SWF-1032-98)
- Other (Explain Northwestern Landfill Permit #SWF-1025/WV0109410)

Will closed loop system be used? If so, describe: Yes, fluids stored in tanks, cuttings removed offsite and taken to landfill.

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc.
Surface - Air/Freshwater, Intermediate - Dust/Suff Foam, Production - Water Based Mud

-If oil based, what type? Synthetic, petroleum, etc. Synthetic

Additives to be used in drilling medium? Please See Attachment

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Drill cuttings stored in tanks, removed offsite and taken to landfill.

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? Meadowfill Landfill (Permit #SWF-1032-98), Northwestern Landfill (Permit # SWF-1025/WV0109410)

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

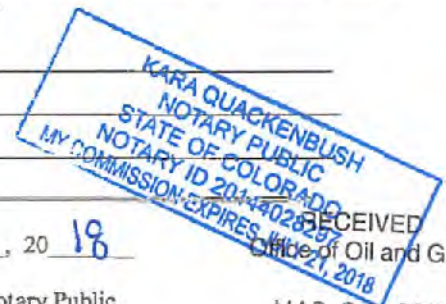
I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature Gretchen Kohler

Company Official (Typed Name) Gretchen Kohler

Company Official Title Senior Environmental & Regulatory Manager



Subscribed and sworn before me this 15th day of March, 20 18

Kara Quackenbush Notary Public

My commission expires July 21, 2018

DWF
3/21/18

WV Department of Environmental Protection
08/03/2018

Form WW-9

Operator's Well No. OXF97 AHS

Antero Resources Corporation

Proposed Revegetation Treatment: Acres Disturbed 59.26 acres Prevegetation pH _____

Lime 2-4 Tons/acre or to correct to pH 6.5

Fertilizer type Hay or straw or Wood Fiber (will be used where needed)

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

Access Road "A" (24.76 acres) + Access Road "B" (19.99 acres) + Well Pad (7.04 acres) + Water Containment Pad (1.00 acres) + Express/Topsoil Material Stockpiles (3.79 acres) = 59.26 Total Affected Acres

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Ryegrass	40	Crownvetch	10-15
Field Bromegrass	40	Tall Fescue	30
<small>See attached Table IV-3 for additional seed type (Page 35 Oxford 87 Pad Design)</small>		<small>See attached Table IV-4A for additional seed type (Page 35 Oxford 87 Pad Design)</small>	
*or type of grass seed requested by surface owner		*or type of grass seed requested by surface owner	

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: _____

Comments: _____

Title: District Gas Inspector

Date: 3/21/18

Field Reviewed? Yes No

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Form WW-9 Additives Attachment**SURFACE INTERVAL**

1. Fresh Water
2. Soap –Foamer AC
3. Air

INTERMEDIATE INTERVAL***STIFF FOAM RECIPE:***

- 1) 1 ppb Soda Ash / Sodium Carbonate-Alkalinity Control Agent
- 2) 1 ppb Conqor 404 (11.76 ppg) / Corrosion Inhibitor
- 3) 4 ppb KLA-Gard (9.17 ppg) / Amine Acid Complex-Shale Stabilizer
- 4) 1ppb Mil Pac R / Sodium Carboxymethylcellulose-Filtration Control Agent
- 5) 12 ppb KCL / Potassium Chloride-inorganic Salt
- 6) Fresh Water 80 bbls
- 7) Air

PRODUCTION INTERVAL

1. Alpha 1655
Salt Inhibitor
2. Mil-Carb
Calcium Carbonate
3. Cottonseed Hulls
Cellulose-Cottonseed Pellets – LCM
4. Mil-Seal
Vegetable, Cotton & Cellulose-Based Fiber Blend – LCM
5. Clay-Trol
Amine Acid Complex – Shale Stabilizer
6. Xan-Plex
Viscosifier For Water Based Muds
7. Mil-Pac (All Grades)
Sodium Carboxymethylcellulose – Filtration Control Agent
8. New Drill
Anionic Polyacrylamide Copolymer Emulsion – Shale Stabilizer
9. Caustic Soda
Sodium Hydroxide – Alkalinity Control
10. Mil-Lime
Calcium Hydroxide – Lime
11. LD-9
Polyether Polyol – Drilling Fluid Defoamer
12. Mil Mica
Hydro-Biotite Mica – LCM

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13. Escaid 110
Drilling Fluid Solvent – Aliphatic Hydrocarbon
14. Ligco
Highly Oxidized Leonardite – Filtration Control Agent
15. Super Sweep
Polypropylene – Hole Cleaning Agent
16. Sulfatrol K
Drilling Fluid Additive – Sulfonated Asphalt Residuum
17. Sodium Chloride, Anhydrous
Inorganic Salt
18. D-D
Drilling Detergent – Surfactant
19. Terra-Rate
Organic Surfactant Blend
20. W.O. Defoam
Alcohol-Based Defoamer
21. Perma-Lose HT
Fluid Loss Reducer For Water-Based Muds
22. Xan-Plex D
Polysaccharide Polymer – Drilling Fluid Viscosifier
23. Walnut Shells
Ground Cellulosic Material – Ground Walnut Shells – LCM
24. Mil-Graphite
Natural Graphite – LCM
25. Mil Bar
Barite – Weighting Agent
26. X-Cide 102
Biocide
27. Soda Ash
Sodium Carbonate – Alkalinity Control Agent
28. Clay Trol
Amine Acid complex – Shale Stabilizer
29. Sulfatrol
Sulfonated Asphalt – Shale Control Additive
30. Xanvis
Viscosifier For Water-Based Muds
31. Milstarch
Starch – Fluid Loss Reducer For Water Based Muds
32. Mil-Lube
Drilling Fluid Lubricant

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911 Address
965 Waco Rd.
West Union, WV 26456

Well Site Safety Plan

Antero Resources

Well Name: OXF97 Unit AHS, BHS, CHS, DHS, EHS, FHS, GHS and HHS

Pad Location: OXFORD 97 PAD
Doddridge County/Southwest & West Union District

GPS Coordinates:

Entrance - Lat 39°12'12.6282"/Long -80°47'33.2016" (NAD83)
Pad Center - Lat 39°13'59.6778"/Long -80°48'12.9234" (NAD83)

Driving Directions:

From the intersection of Hwy 50 and Arnolds Creek Rd: Head south on Arnolds Creek Rd/Central Station Rd/Right Fork Rd toward Rte 11/3 for 0.7 miles. Continue straight onto Co Rte 11/4/Left fork Run Rd for 4.4 miles. Lease road will be on your right.

Alternate Route:

From the intersection of Sunnyside Rd and Oxford Rd: Head east on Old U.S 50 W/Sunnyside Rd toward Co Rte/6 for 1.9 miles. Turn right onto US-50 E for 0.5 miles. Turn right at the 1st cross street onto Arnolds Creek Rd/Central Station Rd/Right Fork Rd toward Rte 11/3 for 0.7 miles. Continue straight onto Co Rte 11/4/Left fork Run Rd for 4.4 miles. Lease road will be on your right.

EMERGENCY (24 HOUR) CONTACT 1-800-878-1373

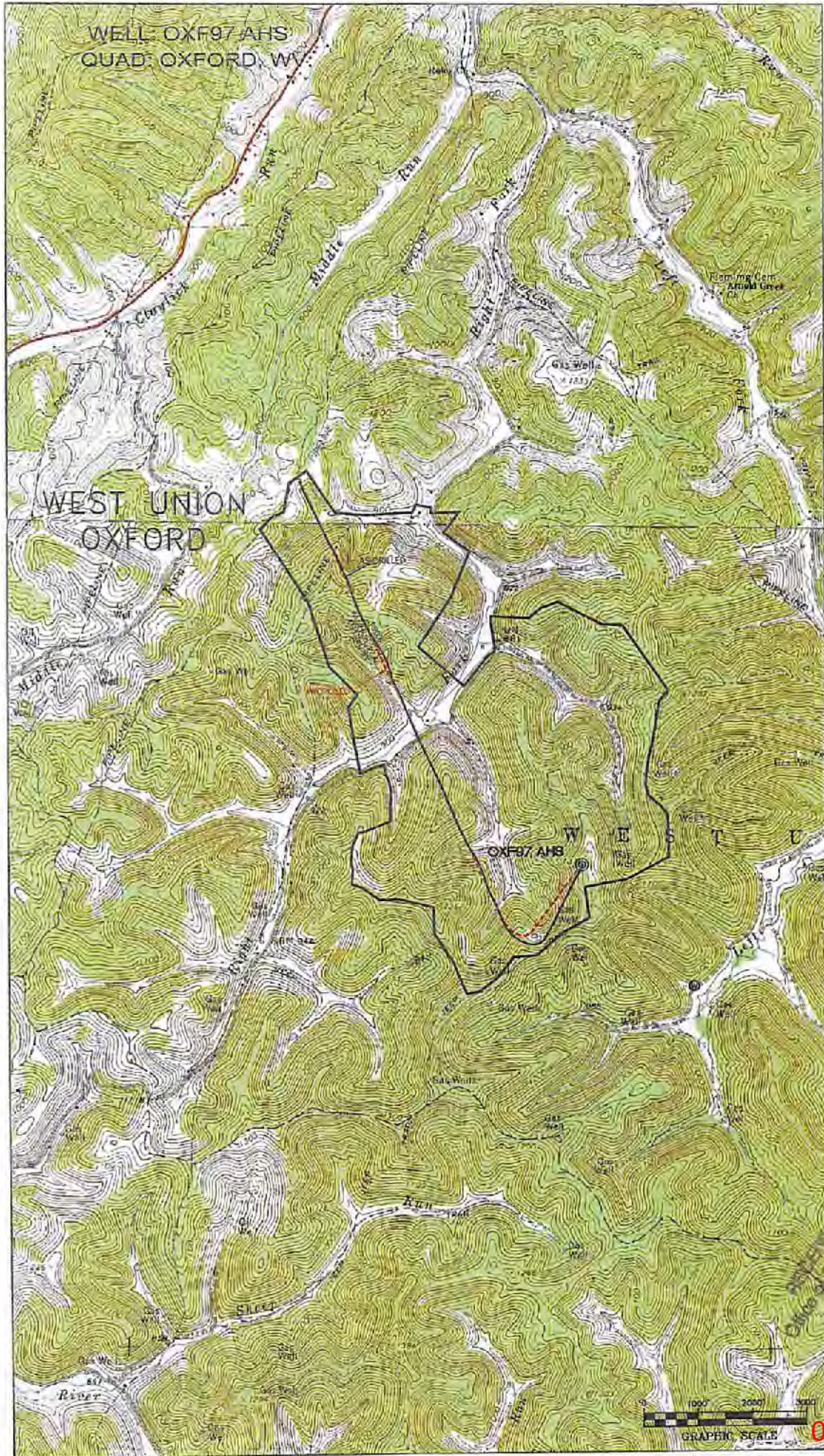
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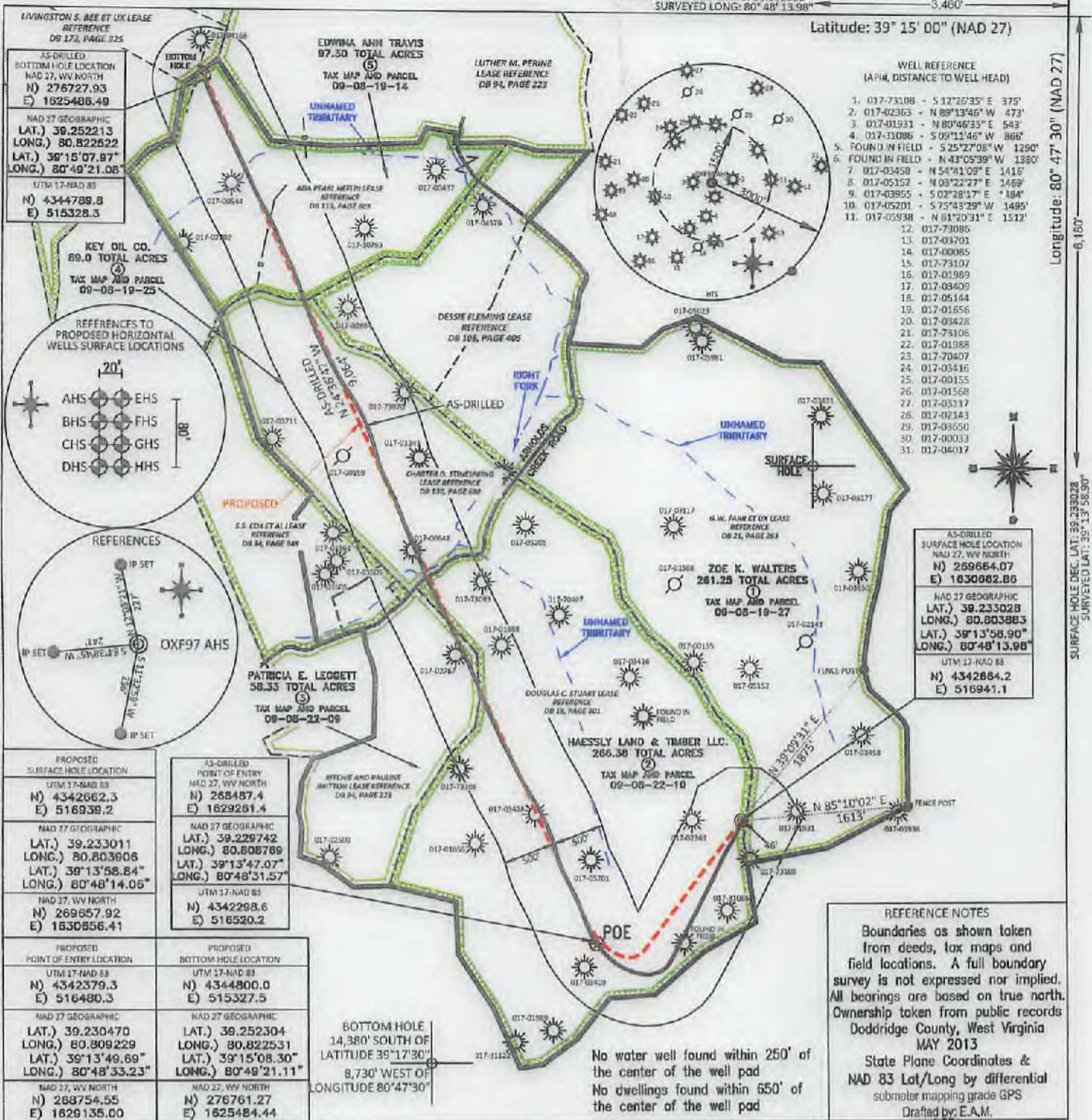
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08/03/2018



LIVINGSTON S. BEE ET UX LEASE REFERENCE DB 173, PAGE 325
 AS-DRILLED BOTTOM HOLE LOCATION NAD 27, WV NORTH
 N) 276727.93
 E) 1825486.49
 NAD 27 GEOGRAPHIC
 (LAT.) 39.252213
 (LONG.) 80.822622
 (LAT.) 39°15'07.97"
 (LONG.) 80°49'21.06"
 UTM 17-NAD 83
 N) 4344789.8
 E) 516328.3

KEY OIL CO. 89.0 TOTAL ACRES
 TAX MAP AND PARCEL 09-08-19-25
 REFERENCES TO PROPOSED HORIZONTAL WELLS SURFACE LOCATIONS
 AHS, BHS, CHS, DHS, EHS, FHS, GHS, HHS
 20' 100'

REFERENCES
 IP SET, M. SPUR, OXF97 AHS

PROPOSED SURFACE HOLE LOCATION
 UTM 17-NAD 83
 N) 4342062.3
 E) 516939.2
 NAD 27 GEOGRAPHIC
 (LAT.) 39.233011
 (LONG.) 80.803606
 (LAT.) 39°13'58.84"
 (LONG.) 80°48'14.06"
 NAD 27, WV NORTH
 N) 269857.92
 E) 1630656.41

AS-DRILLED POINT OF ENTRY NAD 27, WV NORTH
 N) 268487.4
 E) 1629261.4
 NAD 27 GEOGRAPHIC
 (LAT.) 39.229742
 (LONG.) 80.808789
 (LAT.) 39°13'47.07"
 (LONG.) 80°48'31.57"
 UTM 17-NAD 83
 N) 4342298.6
 E) 516520.2

PROPOSED POINT OF ENTRY LOCATION
 UTM 17-NAD 83
 N) 4342379.3
 E) 516480.3
 NAD 27 GEOGRAPHIC
 (LAT.) 39.230470
 (LONG.) 80.809229
 (LAT.) 39°13'49.69"
 (LONG.) 80°48'33.23"
 NAD 27, WV NORTH
 N) 269754.55
 E) 1629135.00

PROPOSED BOTTOM HOLE LOCATION
 UTM 17-NAD 83
 N) 4344800.0
 E) 515327.5
 NAD 27 GEOGRAPHIC
 (LAT.) 39.252304
 (LONG.) 80.822531
 (LAT.) 39°15'08.30"
 (LONG.) 80°49'21.11"
 NAD 27, WV NORTH
 N) 276761.27
 E) 1625484.44

BOTTOM HOLE 14,380' SOUTH OF LATITUDE 39°17'30" 8,730' WEST OF LONGITUDE 80°47'30"

No water well found within 250' of the center of the well pad
 No dwellings found within 650' of the center of the well pad

- WELL REFERENCE (API#, DISTANCE TO WELL HEAD)
- 017-73108 - 5 12'26'35" E 375'
 - 017-02363 - N 89°13'46" W 473'
 - 017-01931 - N 80°46'33" E 543'
 - 017-11086 - S 09°11'46" W 866'
 - FOUND IN FIELD - S 25°27'08" W 1290'
 - FOUND IN FIELD - N 43°05'39" W 1380'
 - 017-03458 - N 54°41'09" E 1416'
 - 017-05152 - N 08°22'27" E 1469'
 - 017-03955 - S 02°28'17" E 1484'
 - 017-05201 - S 75°43'29" W 1495'
 - 017-05938 - N 81°20'31" E 1512'
 - 017-73086
 - 017-03701
 - 017-00085
 - 017-73107
 - 017-01589
 - 017-03609
 - 017-05144
 - 017-01556
 - 017-03428
 - 017-73106
 - 017-01988
 - 017-70407
 - 017-03416
 - 017-00155
 - 017-01568
 - 017-03317
 - 017-02343
 - 017-03650
 - 017-00033
 - 017-04017

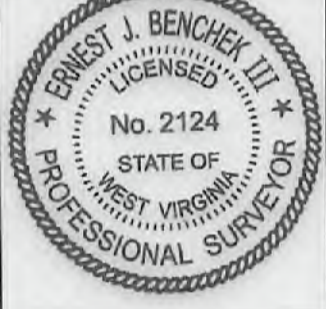
AS-DRILLED SURFACE HOLE LOCATION NAD 27, WV NORTH
 N) 269664.07
 E) 1630082.86
 NAD 27 GEOGRAPHIC
 (LAT.) 39.233028
 (LONG.) 80.803883
 (LAT.) 39°13'58.90"
 (LONG.) 80°48'13.98"
 UTM 17-NAD 83
 N) 4342864.2
 E) 516941.1

REFERENCE NOTES
 Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records Doddridge County, West Virginia MAY 2013
 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS
 Drafted by: E.A.M.

FILE #: NOB 009
 DRAWING #: 2344
 SCALE: PLAT - 1" = 1400'
 TICK MARK - 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1/200
 PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: *[Signature]*
 L.L.S. #2124 Ernest J. Benchek III



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
 WYDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304

Well Type: Oil Waste Diposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: HEADWATERS MIDDLE ISLAND CREEK AS-BUILT ELEVATION: 1,333'

COUNTY/DISTRICT: DODDRIDGE / WEST UNION QUADRANGLE: (SHL) OXFORD WV. (BHL) WEST UNION WV.
 SURFACE OWNER: HAESSLY LAND & TIMBER LLC. ACREAGE: 266.38 +/-

OIL & GAS ROYALTY OWNER: G.W. FARR ET UX, DOUGLAS C. STUART, RITCHIE AND PAULINE BRITTON, CHARTER D. STINESPRING, ADA PEARL HEFLIN ACREAGE: 262.00 +/-, 266.00 +/- 08/03/2018

LEASE NUMBERS: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY):

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,876' TMD: 16,742'
 WELL OPERATOR: ANTERO RESOURCES CORPORATION DESIGNATED AGENT: DIANNA STAMPER - CT CORPORATION SYSTEM
 ADDRESS: 1615 WYNKOOP STREET ADDRESS: 5400 D BIG TYLER ROAD
 CITY: DENVER STATE: CO ZIP CODE: 80202 CITY: CHARLESTON STATE: WV ZIP CODE: 25313

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>G.W. Farr, et ux Lease</u>			
G.W. Farr, et ux	Hope Natural Gas Company	1/8	0021/0263
Hope Natural Gas Company	Consolidated Gas Supply Corporation	Merger	0143/0345
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0135/0583
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Certificate of Authority	0051/0795
CNG Transmission Corporation	Dominion Transmission, Inc.	Certificate of Authority	0058/0362
Dominion Transmission, Inc.	Consol Energy Holdings LLC XVI	Assignment	0245/0001
Consol Energy Holdings LLC XVI	CNX Gas Company	Corp Book	1472/0295
CNX Gas Company	Antero Resources Corporation	Assignment	0387/0216
<u>Douglas C. Stuart Lease</u>			
Douglas C. Stuart	The Carter Oil Co.	1/8	0016/0301
The Carter Oil Co.	Hope Natural Gas Company	Assignment	0042/0410
Hope Natural Gas Company	Consolidated Gas Supply Corporation	Merger	0143/0345
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0135/0583
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Certificate of Authority	0051/0795
CNG Transmission Corporation	Dominion Transmission, Inc.	Certificate of Authority	0058/0362
Dominion Transmission, Inc.	Consol Energy Holdings LLC XVI	Assignment	0245/0001
Consol Energy Holdings LLC XVI	CNX Gas Company	Corp Book	1472/0295
CNX Gas Company	Antero Resources Corporation	Assignment	0387/0216
<u>Ritchie & Pauline Britton Lease</u>			
Ritchie & Pauline Britton	Key Oil Company	1/8	0104/0343
Key Oil Company	J & J Enterprises	Assignment	0141/0090
J & J Enterprises	Eastern American Energy Corporation	Assignment	0159/0139
Eastern American Energy Corporation	Eastern Corporation of America	Assignment	0240/0498
Eastern Corporation of America	Antero Resources Appalachian Corporation	Assignment	0307/0321
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Charter D. Stinespring Lease</u>			
Charter D. Stinespring	J & J Enterprises	1/8	0130/0630
J & J Enterprises	Eastern American Energy Corporation	Assignment	0159/0139
Eastern American Energy Corporation	Eastern Corporation of America	Assignment	0240/0498
Eastern Corporation of America	Antero Resources Appalachian Corporation	Assignment	0307/0321
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0046/0523
<u>Ada Pearl Heflin Lease</u>			
Ada Pearl Heflin	Justin L. Henderson	1/8	0113/0609
Justin Henderson	Antero Resources Appalachian Corporation	Assignment	0289/0490
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

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*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

WW-6A1
(5/13)

Operator's Well No. OXF97 AHS

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Livingston S. Bee, et ux Lease</u>	Livingstone S. Bee, et ux	Key Oil Company	1/8	0173/0325
	Key Oil Company	Antero Resources Appalachia Corp.	Assignment	0256/0285
	Antero Resources Appalachian Corp.	Antero Resources Corporation	Name Change	0046/0523

*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources
- WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

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Well Operator: Antero Resources Corporation
 By: Kevin Kilstrom
 Its: Senior Vice President - Production

FILED

JUN 10 2013



Penney Barker, Manager
Corporations Division
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvsos.com
E-mail: business@wvsos.com

Natalie E. Tennant,
Secretary of State
1900 Kanawha Blvd E
Bldg 1, Suite 157-K
Charleston, WV 25305

APPLICATION FOR
AMENDED CERTIFICATE
OF AUTHORITY

Office Hours: Monday - Friday
8:30 a.m. - 5:00 p.m. ET

FILE ONE ORIGINAL
(Two if you want a filed
stamped copy returned to you)
FEE: \$25.00

**** In accordance with the provisions of the West Virginia Code, the undersigned corporation hereby ****
applies for an Amended Certificate of Authority and submits the following statement:

- Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
- Date Certificate of Authority was issued in West Virginia: 6/25/2008
- Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home State of Incorporation.)
- Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)
- Other amendments: _____
(attach additional pages if necessary)
- Name and phone number of contact person. (This is optional; however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)
Alvyn A. Schopp (303) 357-7310
Contact Name Phone Number
- Signature information (See below Important Legal Notice Regarding Signature):
Print Name of Signer: Alvyn A. Schopp Title/Capacity: Authorized Person
Signature: [Handwritten Signature] Date: June 10, 2013

***Important Legal Notice Regarding Signature:** Per West Virginia Code §31D-1-12b, Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.

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Office of Oil and Gas
16 2018
WV Department of
Environmental Protection



March 14, 2018

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

West Virginia Department of Environmental Protection
Chief, Office of Oil and Gas
Attn: Mr. James Martin
601 57th Street SE
Charleston, WV 25304

RE: OXF97 AHS
Quadrangle: Oxford 7.5'
Doddridge County/West Union District, West Virginia

Mr. Martin:

Antero Resources Corporation (Antero) is submitting the following application for a new well work permit for the OXF97 AHS horizontal shallow well. As an authorized representative, I certify that Antero has the right to extract, produce or market the oil or gas for all leases through which the OXF97 AHS horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

A handwritten signature in blue ink, appearing to read "Tyler Adams", is written over a white background.

Tyler Adams
Landman

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WV Department of
Environmental Protection

08/03/2018

WW-6AC
(1/12)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION

Date of Notice Certification: 03/14/2018

API No. 47- 017 - 06481
Operator's Well No. OXF97 AHS
Well Pad Name: Oxford 97 Pad

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>516939.2m</u>
County: <u>Doddridge</u>	Northing: <u>4342662.3m</u>
District: <u>West Union</u>	Public Road Access: <u>Waco Rd.</u>
Quadrangle: <u>Oxford 7.5'</u>	Generally used farm name: <u>Haessly Land & Timber, LLC</u>
Watershed: <u>Headwaters Middle Island Creek</u>	

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
---	---

Required Attachments:

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

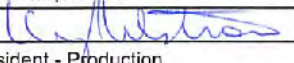
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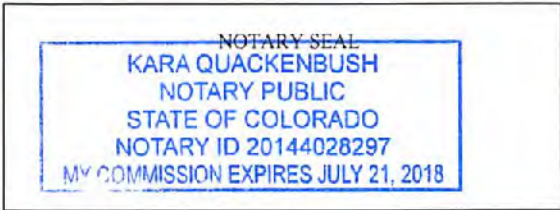
08/03/2018

WW-6AC
(1/12)

Certification of Notice is hereby given:

THEREFORE, I Kevin Kilstrom, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator:	<u>Antero Resources Corporation</u>	Address:	<u>1615 Wynkoop Street</u>
By:	<u>Kevin Kilstrom</u> 		<u>Denver, CO 80202</u>
Its:	<u>Senior Vice President - Production</u>	Facsimile:	<u>303-357-7315</u>
Telephone:	<u>303-357-7310</u>	Email:	<u>kquackenbush@anteroresources.com</u>



Subscribed and sworn before me this 14th day of March 2018.
Kara Quackenbush Notary Public
 My Commission Expires July 21, 2018

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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WW-6A
(9-13)

API NO. 47- 017 - 06481
OPERATOR WELL NO. OXF97 AHS
Well Pad Name: Oxford 97 Pad

**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION**

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 3/15/2018 **Date Permit Application Filed:** 3/15/2018

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)

Name: PLEASE SEE ATTACHMENT
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: PLEASE SEE ATTACHMENT
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: NO DECLARATIONS ON RECORD WITH COUNTY
Address: _____

COAL OPERATOR

Name: NO DECLARATIONS ON RECORD WITH COUNTY
Address: _____

WATER PURVEYOR(s)/OWNER(s) OF WATER WELL, SPRING OR OTHER WATER SUPPLY SOURCE

Name: NONE IDENTIFIED WITHIN 1500'
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

*Please attach additional forms if necessary

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Office of Oil and Gas

MAR 16 2018

03/16/2018
Environmental Protection

WW-6A
(8-13)

API NO. 47- 017 - 06481
OPERATOR WELL NO. OXF97 AHS
Well Pad Name: Oxford 97 Pad

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, **RECEIVED** the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the Gas **Office of the** well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items **MAR 16 2018**

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WV Department of
Environmental Protection

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(8-13)

API NO. 47- 017 - 06481
OPERATOR WELL NO. OXF97 AHS
Well Pad Name: Oxford 97 Pad

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

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(8-13)

API NO. 47- 017 - 06481

OPERATOR WELL NO. OXF97 AHS

Well Pad Name: Oxford 97 Pad

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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Environmental Protection
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WW-6A
(8-13)

API NO. 47- 017 - 06481
OPERATOR WELL NO. OXF97 AHS
Well Pad Name: Oxford 97 Pad

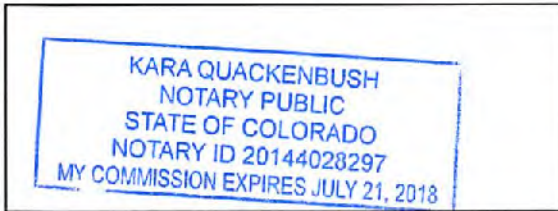
Notice is hereby given by:

Well Operator: Antero Resources Corporation
Telephone: (303) 357-7310
Email: kquackenbush@anteroresources.com

Address: 1615 Wynkoop Street
Denver, CO 80202
Facsimile: 303-357-7315

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.



Subscribed and sworn before me this 15th day of March 2018.
Kara Quackenbush Notary Public
My Commission Expires July 21, 2018

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WW-6A Notice of Application Attachment (OXFORD 97 PAD):

List of Surface Owner(s) with Proposed Disturbance associated with Oxford 97 Well Pad:

WELL PAD – These owners were notified of all well work permit applications, and have executed signed Surface Use Agreements with Antero Resources Corporation.

09-08-22-10

Owner: Haessley Land & Timber, LLC ✓
Address: 25 Sheets Run Rd.
Marietta, OH 45750

09-08-19-27

Owner: Zoe K. Walters ✓
Address: 9407 Scratch Ct.
Wilmington, NC 28412

ROAD AND/OR OTHER DISTURBANCE – These owners were only notified if their tract is overlying the oil and gas leasehold being developed by the proposed well work as outlined in WV Code 22-6A-10(b)(2).

9-8-22-10 &14 and 7-5-4 ✓

(ON LEASE)
Owner: Haessley Land & Timber, LLC
Address: 25 Sheets Run Rd.
Marietta, OH 45750

09-08-19-27

(ON LEASE)
Owner: Zoe K. Walters ✓
Address: 9407 Scratch Ct.
Wilmington, NC 28412

9-8-23-3

(OFF LEASE)
Owner: Lucy E. Harper
Address: 511 Boca Ciega Point
St. Petersburg, FL 33708

9-8-23-3.1

(OFF LEASE)
Owner: Gary Stephenson
Address: PO Box 71
West Union, WV 26456

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WW-6A4
(1/12)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least **TEN (10)** days prior to filing a permit application.

Date of Notice: 01/08/2017 **Date Permit Application Filed:** 03/15/2018

Delivery method pursuant to West Virginia Code § 22-6A-16(b)

HAND DELIVERY CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: Haessly Land & Timber, LLC
Address: 25 Sheets Run Rd.
Marietta, OH 45750

Name: Zoe Kathryn Walters
Address: 9407 Scratch Court
Wilmington, NC 28412

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>4342678.80m (Approximate Pad Center)</u>
County: <u>Doddridge</u>	Northing: <u>516951.53m (Approximate Pad Center)</u>
District: <u>West Union</u>	Public Road Access: <u>Waco Rd.</u>
Quadrangle: <u>Oxford 7.5'</u>	Generally used farm name: <u>Haessly Land & Timber</u>
Watershed: <u>Headwaters Middle Island Creek</u>	

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: Antero Resources Appalachian Corporation
Address: 1615 Wynkoop St.
Denver, CO 80202
Telephone: 303-357-7310
Email: kquackenbush@anteroresources.com
Facsimile: 303-357-7315

Authorized Representative: Kara Quackenbush
Address: 1615 Wynkoop St.
Denver, CO 80202
Telephone: 303-357-7310
Email: kquackenbush@anteroresources.com
Facsimile: 303-357-7315

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. **COE/OTG** will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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(1/12)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 03/15/2018 **Date Permit Application Filed:** 03/15/2018

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: Haessley Land & Timber, LLC
Address: 25 Sheets Run Rd.
Marietta, OH 45750

Name: Zoe K. Walters
Address: 9407 Scratch Ct.
Wilmington, NC 28412

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83 Easting:	<u>516939 2m</u>
County:	<u>Doddridge</u>	Northing:	<u>4342662.3m</u>
District:	<u>West Union</u>	Public Road Access:	<u>Waco Rd.</u>
Quadrangle:	<u>Oxford 7.5'</u>	Generally used farm name:	<u>Haessley Land & Timber, LLC</u>
Watershed:	<u>Headwaters Middle Island Creek</u>		

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by W. Va. Code § 22-6A-10(b) to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator: Antero Resources Corporation
Telephone: (303) 357-7310
Email: kquackenbush@anteroresources.com

Address: 1615 Wynkoop Street
Denver, CO 80202
Facsimile: 303-357-7315

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Thomas J. Smith, P. E.
Secretary of Transportation/
Commissioner of Highways

March 6, 2018

Jill M. Newman
Deputy Commissioner

James A. Martin, Chief
Office of Oil and Gas
Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Subject: DOH Permit for the OXF97 Pad, Doddridge County
OXF97 AHS Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #04-2014-0912 which has been transferred to Antero Resources Corporation for access to the State Road for a well site located off of Doddridge County Route 23/2 SLS.

The operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton, P.E.
Regional Maintenance Engineer
Central Office O&G Coordinator

Cc: Kara Quackenbush
Antero Resources Corporation
CH, OM, D-4
File

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List of Anticipated Additives Used for Fracturing or Stimulating Well

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Additives	Chemical Abstract Service Number (CAS #)
Fresh Water	7732-18-5
2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1
Ammonium Persulfate	7727-54-0
Anionic copolymer	Proprietary
Anionic polymer	Proprietary
BTEX Free Hydrotreated Heavy Naphtha	64742-48-9
Cellulase enzyme	Proprietary
Demulsifier Base	Proprietary
Ethoxylated alcohol blend	Mixture
Ethoxylated Nonylphenol	68412-54-4
Ethoxylated oleylamine	26635-93-8
Ethylene Glycol	107-21-1
Glycol Ethers	111-76-2
Guar gum	9000-30-0
Hydrogen Chloride	7647-01-0
Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8
Isopropyl alcohol	67-63-0
liquid, 2,2-dibromo-3-nitrilopropionamide	10222-01-2
Microparticle	Proprietary
Petroleum Distillates (BTEX Below Detect)	64742-47-8
Polyacrylamide	57-55-6
Propargyl Alcohol	107-19-7
Propylene Glycol	57-55-6
Quartz	14808-60-7
Silica, crystalline quartz	7631-86-9
Sodium Chloride	7647-14-5
Sodium Hydroxide	1310-73-2
Sugar	57-50-1
Surfactant	68439-51-0
Suspending agent (solid)	14808-60-7
Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7
Solvent Naphtha, petroleum, heavy aliph	64742-96-7
Soybean Oil, Me ester	67784-80-9
Copolymer of Maleic and Acrylic Acid	52255-49-9
DETA phosphonate	15827-60-8
Hexamethylene Triamine Penta	34690-00-1
Phosphino Carboxylic acid polymer	71050-62-9
Hexamethylene Diamine Tetra	23605-75-5
2-Propenoic acid, polymer with 2 propenamide	9003-06-9
Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5
Diethylene Glycol	111-46-6
Methenamine	100-97-0
Polyethylene polyamine	68603-67-8
Coco amine	61791-14-8
2-Propyn-1-olcompound with methyloxirane	38172-91-7

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SHEET INDEX:

- 1 - COVER SHEET
2 - CONSTRUCTION AND AS-BUILT NOTES
3 - LEGEND
4 - MATERIAL QUANTITIES
5 - EARTH EXCAVATION & FILL COMPUTATIONS
6 - OVERALL SHEET INFO AND VOLUMES
7-11 - ACCESS ROAD AS-BUILT PLAN
12 - ACCESS ROAD AS-BUILT & STOPPING PLAN
13 - WELL PAD AS-BUILT & WATER CONTAINMENT PAD PLAN
14 - WELL PAD & WATER CONTAINMENT PAD GRADING PLAN
15 - ACCESS ROAD PROFILES
16-21 - ACCESS ROAD SECTIONS
22-27 - WELL PAD & WATER CONTAINMENT PAD SECTIONS
28 - WELL PAD WATER CONTAINMENT PAD & DRAINAGE SECTIONS
29-35 CONSTRUCTION DETAILS
36 - WELL PAD & WATER CONTAINMENT PAD RECLAMATION PLAN

LOCATION COORDINATES:

ACCESS ROAD ENTRANCE
LATITUDE: 39.8509169 LONGITUDE: -79.260834 (NAD 83)
N AD 83000 07 - 2 675011.98 (UTM ZONE 17 METERS)



CENTER OF PAD
LATITUDE: 39.8535844 LONGITUDE: -79.262546 (NAD 83)
N AD 83250 08 - 2 599053.49 (UTM ZONE 17 METERS)

CENTRE OF WELL
LATITUDE: 39.8535844 LONGITUDE: -79.262546 (NAD 83)
N AD 83250 08 - 2 599053.49 (UTM ZONE 17 METERS)

GENERAL DESCRIPTION:

THE ACCESS ROADS, AND WELL PAD ARE BEING UPGRADED AND THE WATER CONTAINMENT PAD IS BEING CONSTRUCTED TO ADD IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

FLOODPLAIN NOTES:

THE SITE IS LOCATED WITHIN FEMA FLOOD ZONE X PER FEMA FLOOD MAP #20070202C.

MISS UTILITY STATEMENT:

ANTERO RESOURCES CORPORATION HAS ADVISED MISS UTILITY OF WEST VIRGINIA FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT BEGINS. IN ADDITION, MISS UTILITY WILL BE CONTACTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION FOR THIS PROJECT.

ENTRANCE PERMIT:

ANTERO RESOURCES CORPORATION HAS OBTAINED AN ENTRANCE PERMIT (FORM MA-409) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

ENVIRONMENTAL NOTES:

STREAM AND WETLAND DEMARCATIONS WERE PERFORMED IN NOVEMBER, 2017 BY ALLSTAR RECLAY TO REVISE THE SITE FOR WATER AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY PROTECT OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE NOVEMBER 16, 2017 STREAM AND WETLAND DEMARCATION INDEX MAP WAS PREPARED BY ALLSTAR RECLAY AND SUMMARIZED THE RESULTS OF THE FIELD DEMARCATION THIS MAP SHOWS WELLS AND WELLS NEARBY A SUCCESSEFUL SUPERSTITION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP.

PROJECT CONTACTS:

MARK BRITTON, LAND AGENT
6744 CHASE RD-8515
CHARLES K. CUMPTON, II, SURVEYING COORDINATOR
CELL: (604) 710-8543

ENGINEER/SURVEYOR
WALTER ENGINEERING, INC
COURTNEY R. RYAN, PE, PROJECT MANAGER/ENGINEER
042-068 (800) 642-3185 CELL: (506) 818-3747

ENVIRONMENTAL
ANTERA RECLAY, LLC
RYAN J. HARRIS - ENVIRONMENTAL SCIENTIST
OFFICE: (606) 212-2888 CELL: (304) 592-3177

JOHN MCKAY, SUPERVISOR SUPERVISOR
OFFICE: (910) 294-8799 CELL: (252) 908-8421

ROBERT D. HUBBS, FIELD ENGINEER
OFFICE: (304) 612-4700 CELL: (304) 627-7400

RESTRICTIONS NOTES:

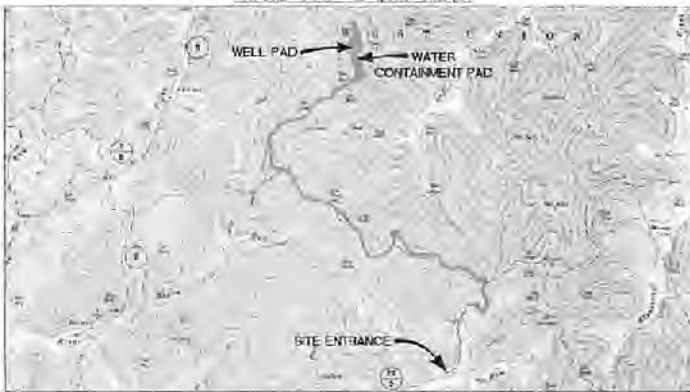
- 1. THERE ARE NO LAKE, POND, OR RESERVOIR WITHIN 100 FEET OF THE WELL PAD AND LEO. THERE ARE 2 WETLANDS AND 1 PERMANENT STREAM ADJACENT TO THE EXISTING ACCESS ROAD THAT HAVE REMAINED UNDISTURBED.
2. THERE ARE NO NATURALLY PRODUCING FRESH STREAMS WITHIN 300 FEET OF THE WELL PAD AND LEO.
3. THERE ARE NO UNDERGROUND INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 2000 FEET OF THE WELL PAD AND LEO.
4. THERE ARE NO ADJACENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELLS BEING DRILLED.
5. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.
6. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2500 SQUARE FEET WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.

OXFORD 97 WELL PAD & WATER CONTAINMENT PAD

AS-BUILT AND EROSION & SEDIMENT CONTROL IMPROVEMENT PLAN

SOUTHWEST & WEST UNION DISTRICTS, DODDRIDGE COUNTY, WEST VIRGINIA
WHITE OAK CREEK-SOUTH FORK HUGHES RIVER & ARNOLD CREEK WATERSHED

OXFORD USGS 7.5 QUAD MAP(S)



SITE ENTRANCE

SCALE 1" = 400'

WEST VIRGINIA STATE TRANS COORDINATE SYSTEM
NORTH ARCTIC, NAD 83 HORIZON
ESTABLISHED BY SURVEY CORRECTION U.S. 4 - 7/06
POST-PROJECT AS



AS-BUILT CERTIFICATIONS
THE DRAWINGS, CONSTRUCTION NOTES, AND INSPECTION RECORDS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS REGULATION.

MISS UTILITY OF WEST VIRGINIA
1-800-235-4888
West Virginia State Law
(Section XV, Chapter 21-C)
Requires that you call two business days before you dig in the state of West Virginia
IT'S THE LAW!

Table with 4 columns: Description, Permitted, Modification, Total. Lists various site features and their impact on wetlands and streams.

Table with 6 columns: Well Name, WV North NAD 27, WV North NAD 83, UTM (METERS) Zone 17, NAD 83 Lat & Long, Permuted Location. Lists well details for the OXFORD 97 site.

Table with 6 columns: Well Name, WV North NAD 27, WV North NAD 83, UTM (METERS) Zone 17, NAD 83 Lat & Long, Permuted Location. Lists well details for the OXFORD 97 site, including the OXFORD 97 WEST PAD.

REPRODUCTION NOTE
THESE PLANS WERE CREATED TO BE PRINTED ON 24"X36" (CAN BE PRINTED ON 24"X36" OR 30"X48" PAPER).
THESE PLANS WERE CHECKED FOR COLOR PRINTING AND ANY REPRODUCTION IN GRAY SCALE OR FROM A COPY MAY RESULT IN A LOSS OF INFORMATION. ANY OTHER NOTICES WILL BE PRINTED ON THESE PLANS.



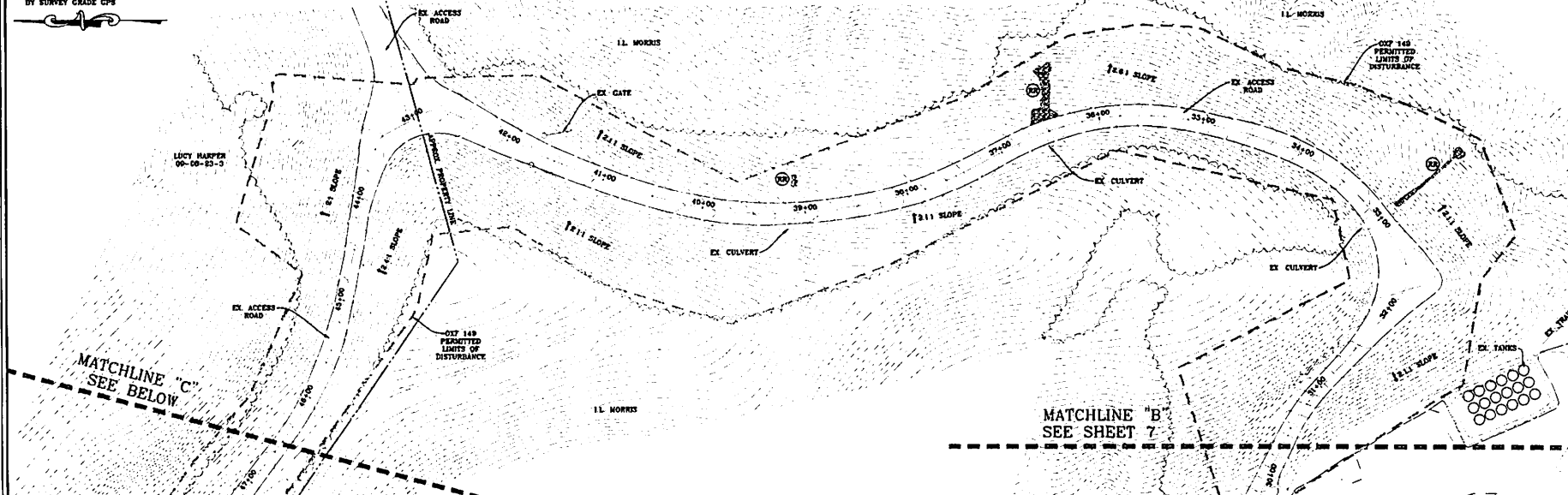
REVISION table with columns: DATE, DESCRIPTION, REVISION NUMBER. Includes Antero logo and project location information.

COVER SHEET
OXFORD 97 WELL PAD
SOUTHWEST & WEST UNION DISTRICTS, DODDRIDGE COUNTY, WEST VIRGINIA

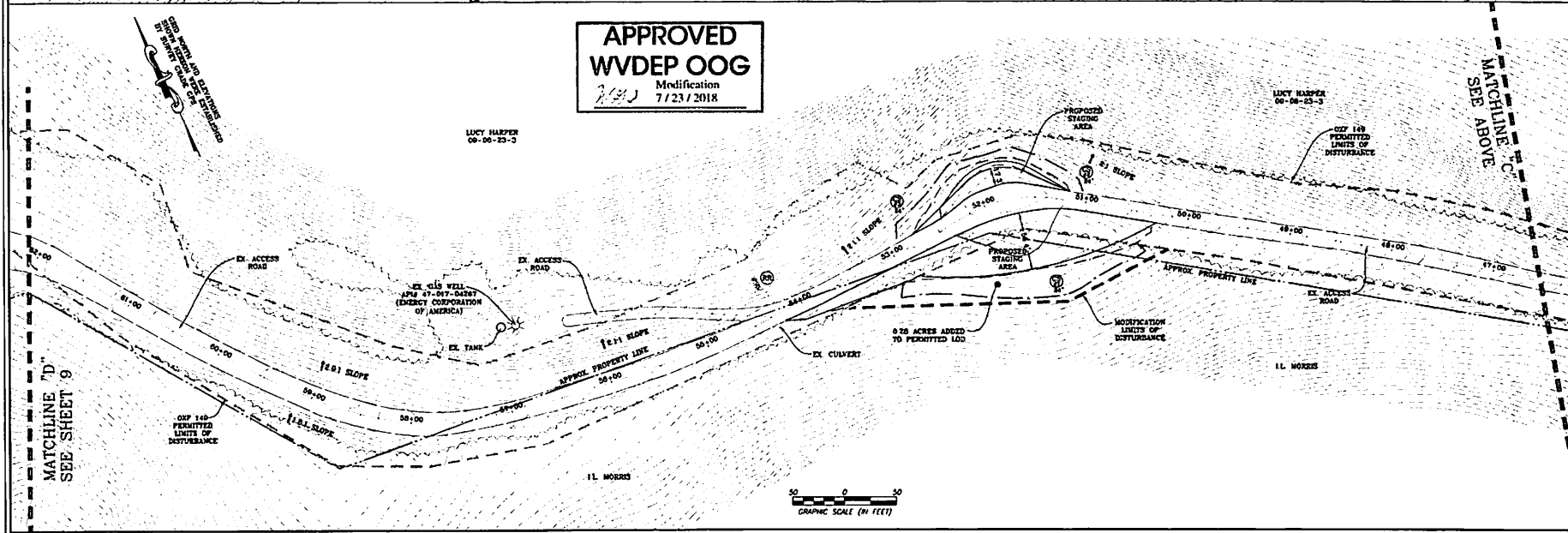
DATE: 02/14/2018
SCALE: AS SHOWN
SHEET: 1 OF 36

GRID NORTH AND ELEVATIONS
SHOWN HEREON WERE ESTABLISHED
BY SURVEY GRADE CP#

ACCESS ROAD AS-BUILT PLAN



**APPROVED
WVDEP OOG**
Modification
7/23/2018



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ENERGY ENGINEERING

Facebook: (811) 612-1151 www.NavitusEng.com

DATE	REVISION
02/15/2018	REVISED PER EXISTING GAS LINES
02/15/2018	REVISED PER LOD

THIS DOCUMENT
WAS PREPARED FOR
ANTERO RESOURCES
CORPORATION

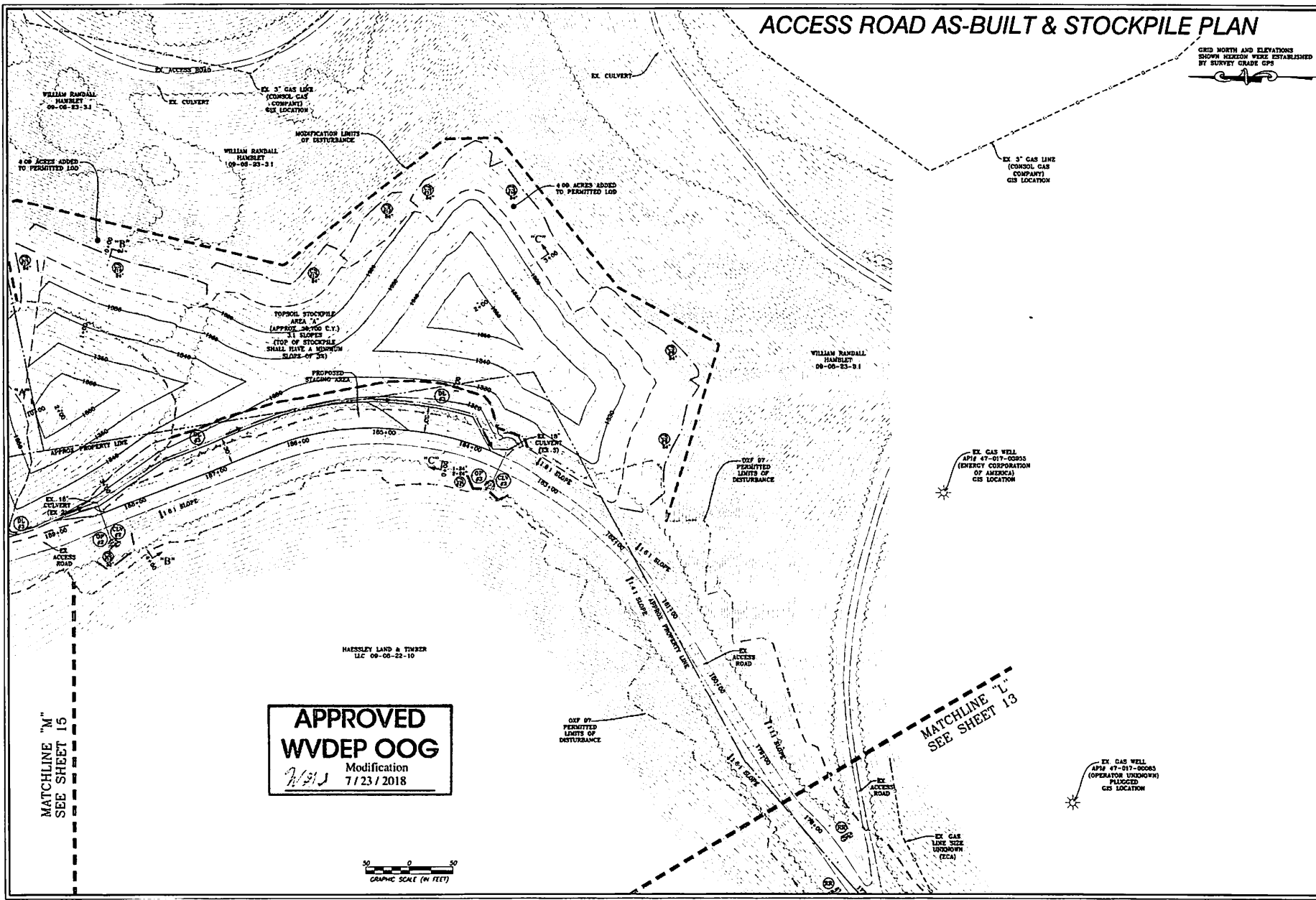
OXFORD 97
WELL PAD
SOUTHWEST & WEST UNION DISTRICTS
BODDRIDGE COUNTY, WEST VIRGINIA

02/15/2018

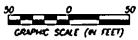
DATE: 02/14/2018
SCALE: 1" = 50'
SHEET 8 OF 36

ACCESS ROAD AS-BUILT & STOCKPILE PLAN

GRID NORTH AND ELEVATIONS SHOWN HEREON WERE ESTABLISHED BY SURVEY GRADE GPS



APPROVED WVDEP OOG
 Modification
 7/23/2018



NAVITUS
 ENERGY ENGINEERING
 Telephone: (833) 682-4151 www.navituseng.com

DATE	REVISION
02/14/2018	REVISED PER EXISTING GAS LINES
	REVISED PER EOD

Antero
 THIS DOCUMENT WAS PREPARED FOR ANTERO CORPORATION OF AMERICA/ ANTERO RESOURCES CORPORATION

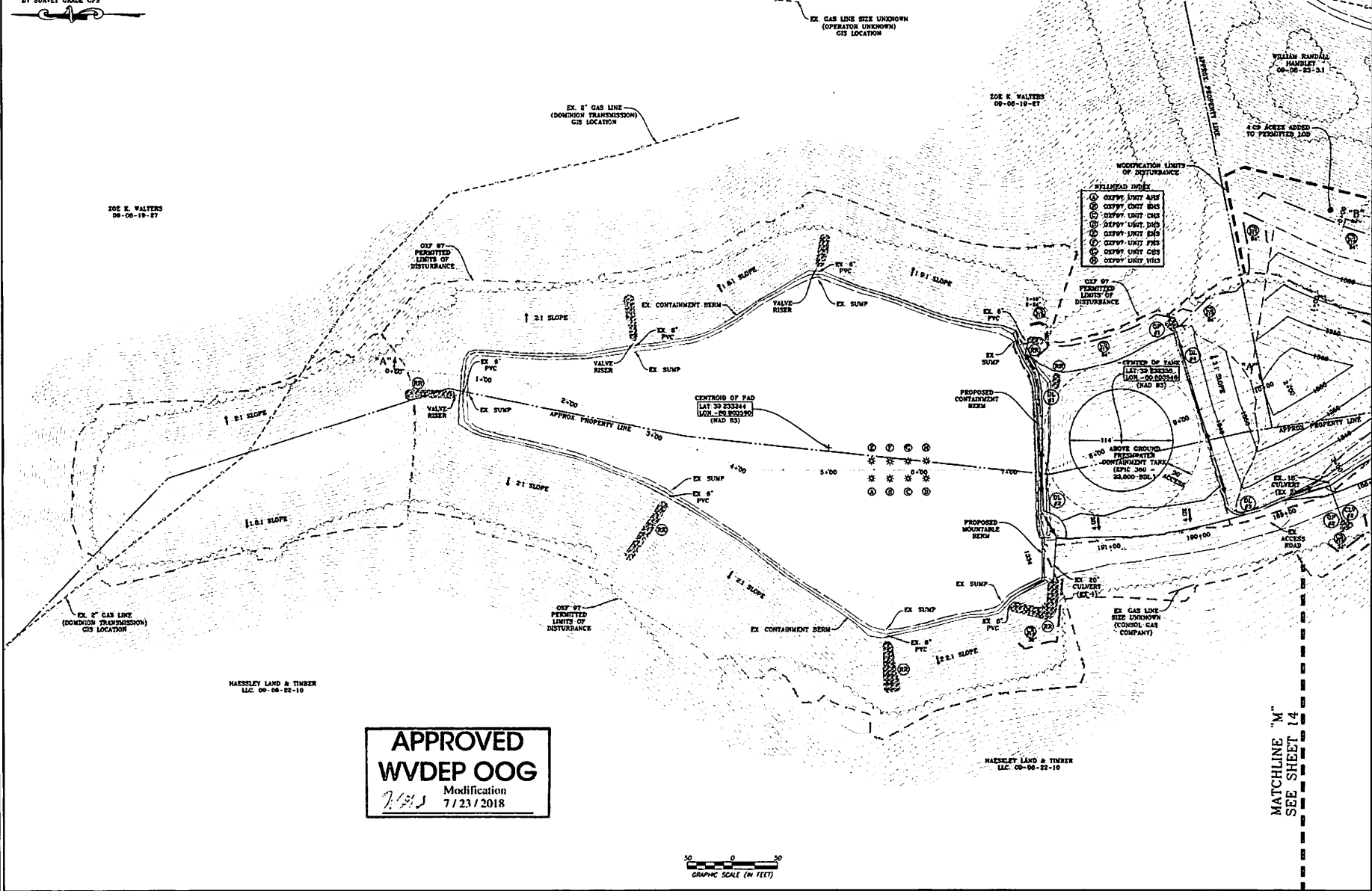
ACCESS ROAD AS-BUILT & STOCKPILE PLAN
OXFORD 97
 WELL PAD
 SOUTHWEST & WEST UNION DISTRICTS
 DODDRIDGE COUNTY, WEST VIRGINIA



02/14/2018
 DATE: 02/14/2018
 SCALE 1" = 50'
 SHEET 14 OF 36

GRID NORTH AND ELEVATIONS SHOWN HEREON WERE ESTABLISHED BY SURVEY GRADE CIPS

WELL PAD AS-BUILT & WATER CONTAINMENT PAD PLAN



- FIELD INDEX**
- OXYFUEL UNIT AHS
 - OXYFUEL UNIT BHS
 - OXYFUEL UNIT GAS
 - SHIPY UNIT BHS
 - OXYFUEL UNIT SHS
 - OXYFUEL UNIT PHS
 - OXYFUEL UNIT GHS
 - OXYFUEL UNIT VHS

APPROVED
WVDEP OOG
 Modification
 7/23/18



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DATE	REVISION
02/14/2018	REVISED PER EXISTING GAS LINES
	REVISED PER IOD

Antero

THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

OXFORD 97
 WELL PAD
 SOUTHWEST & WEST UNION DISTRICTS
 BOYD COUNTY, WEST VIRGINIA

WELL PAD AS-BUILT & WATER CONTAINMENT PAD PLAN

MATCHLINE "M"
 SEE SHEET 14

DATE: 02/14/2018
 SCALE: 1" = 50'
 SHEET 15 OF 36