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west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://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 FHS  
47-017-06584-00-00

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:  
Farm Name: HAESSLY LAND & TIMBER   
U.S. WELL NUMBER: 47-017-06584-00-00  
Horizontal 6A Fracture  
Date Issued: 7/30/2018

Promoting a healthy environment.

08/03/2018

# 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

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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](mailto:DEPOOGNotify@wv.gov).

WW-6B  
(04/15)

API NO. 47-017 - 06584  
OPERATOR WELL NO. OXF97 FHS  
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 FHS 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: 6969' TVD, Anticipated Thickness- 60 feet, Associated Pressure- 3100#

8) Proposed Total Vertical Depth: 6969' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 20115' MD

11) Proposed Horizontal Leg Length: 12896'

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

13) Method to Determine Fresh Water Depths: OXF97 FHS (API #47-017-06584)

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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DAE  
6/5/18

WW-6B  
(04/15)

API NO. 47- 017 - 06584  
OPERATOR WELL NO. OXF97 FHS  
Well Pad Name: Oxford 97 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#	59	59	CTS, 57 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	890	890	CTS, 1236 Cu. Ft.
Coal	9-5/8"	New	HCK-55	36#	<del>3000</del> <sup>JK</sup> 2988	<del>3000</del> <sup>JK</sup> 2988	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	<del>16120</del> <sup>JK</sup> 20115	<del>16120</del> <sup>JK</sup> 20115	4025 Cu. Ft.
Tubing						7100	
Liners							

\* From WR-35

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	Low-HIPOZ & Tail - H	H/POZ-1.44 & H-1.8
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 - 06584  
OPERATOR WELL NO. OXF97 FHS  
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 - 20,115'. 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 cementation fluid 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 bentonite mud 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.

\*Note: Attach additional sheets as needed.

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5/6/18

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4701704180000

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OXF 97 FHS

47017028550000

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Antero Resources Corporation

OXF 97 FHS - AOR



WELL SYMBOLS  
Gas Well

May 7, 2018

08/03/2018

4701706584

## OXF97 FHS (OXFORD 97 PAD) – AREA OF REVIEW 35-8-8.11 PAGE 2

UWI (API Num)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
47017041800000	BEE LIVINGSTON ETAL	5	KEY OIL COMPANY	KEY OIL INCORPORATED	5,254	4389-5150	Balltown, Riley, Benson, Alexander	Big Injun, Weir, Balltown, Bradford
47017024480000	ELLIOTT VIRGINIA	B-276	ENERGY CORP OF AMER	J & J ENTERPRISES	5,330	5244-5286	Balltown, Riley, Benson, Alexander	Big Injun, Weir, Balltown, Bradford
47017025430000	FRANCIS MICHAELS	J-106	ENERGY CORP OF AMER	J & J ENTERPRISES	5,207	4976-5208	Balltown, Riley, Benson, Alexander	Big Injun, Weir, Balltown, Bradford
47017025430001	BITCHIE N BRITTON	K-24-1	ENERGY CORP OF AMER	EASTERN AMERICAN ENE	5,207	NA		
47017028550000	PERINES SAMUEL ETAL	J-285	ENERGY CORP OF AMER	J & J ENTERPRISES	5,153	3622-4997	Balltown, Bradford, Alexander	Big Injun, Weir, Balltown, Bradford
47017034580000	FARR AGNES	1615	CONSOL GAS COMPANY	CNG DEVELOPMENT CO	5,457	3258-5162	Maxton, Big Injun, Warren, Riley, Benson, Alexander	Weir, Balltown, Bradford
47017051520000	FARR GW & A ETAL	14247	CONSOL GAS COMPANY	DOMINION EXPL&PROD	5,414	1632-5112	Lo Maxton, Big Injun, Weir, Speechly, Riley, Alexander	Balltown, Bradford

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**APPROVED**

WR-35  
Rev. 8/23/13

NAME: [Signature]

Page \_\_\_ of \_\_\_

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 47-017-06584 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 FHS  
Operator (as registered with the OOG) Noble Energy, Inc.  
Address 1000 Noble Energy Drive City Canonsburg State PA Zip 15317

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Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing as drilled plat to be submitted by CNX Easting \_\_\_\_\_  
Landing Point of Curve Northing upon completion of the well. Easting \_\_\_\_\_  
Bottom Hole Northing \_\_\_\_\_ Easting \_\_\_\_\_  
Elevation (ft) \_\_\_\_\_ 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 11/17/2014 Date drilling commenced 01/02/2015 Date drilling ceased 06/03/2015  
Date completion activities began Not completed Date completion activities ceased na  
Verbal plugging (Y/N) \_\_\_\_\_ Date permission granted \_\_\_\_\_ Granted by \_\_\_\_\_

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

Freshwater depth(s) ft 266', 503', 810' Open mine(s) (Y/N) depths \_\_\_\_\_  
Salt water depth(s) ft none noted for offsets Void(s) encountered (Y/N) depths \_\_\_\_\_  
Coal depth(s) ft NA Cavern(s) encountered (Y/N) depths \_\_\_\_\_  
Is coal being mined in area (Y/N) No

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Reviewed by: \_\_\_\_\_

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Rev. 8/23/13

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API 47-017 - 06584 Farm name Haessly Land & Timber, LLC Well number Oxf 97 FHS

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade w/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	26"	20"	58.5'	New	J-55		
Surface	17.5"	13 3/8"	889.6'	New	J-55		Y
Coal							
Intermediate 1	12.38"	9 5/8"	2988.9'	New	HCK-55		N
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5 1/2"	20,115.0'	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 <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Type 1 / Class A	830	15.6	1.18	979.4	18.5	8
Coal							
Intermediate 1	Type 1 / Class A	stage (1) 1195	15.6	Stage (1) 1.18	1410.1	18.5	8
Intermediate 2							
Intermediate 3							
Production	Type 1 / Class A	Lead 930 Tail 1720	14.5	lead 1.58 Tail 1.27	Total 3653.8	18.5	8
Tubing							

Drillers TD (ft) 20115' Loggers TD (ft) 20086'

Deepest formation penetrated Marcellus Plug back to (ft) \_\_\_\_\_

Plug back procedure \_\_\_\_\_

Kick off depth (ft) 6211'

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 No centralizers used on conductor.

8 Centralizers on Surface Casing 36 Centralizers on Intermediate String (Bow string centralizers on first two joints then every third joint to 100' from surface).

370 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 \_\_\_\_\_

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WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

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WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_

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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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# NOBLE ENERGY



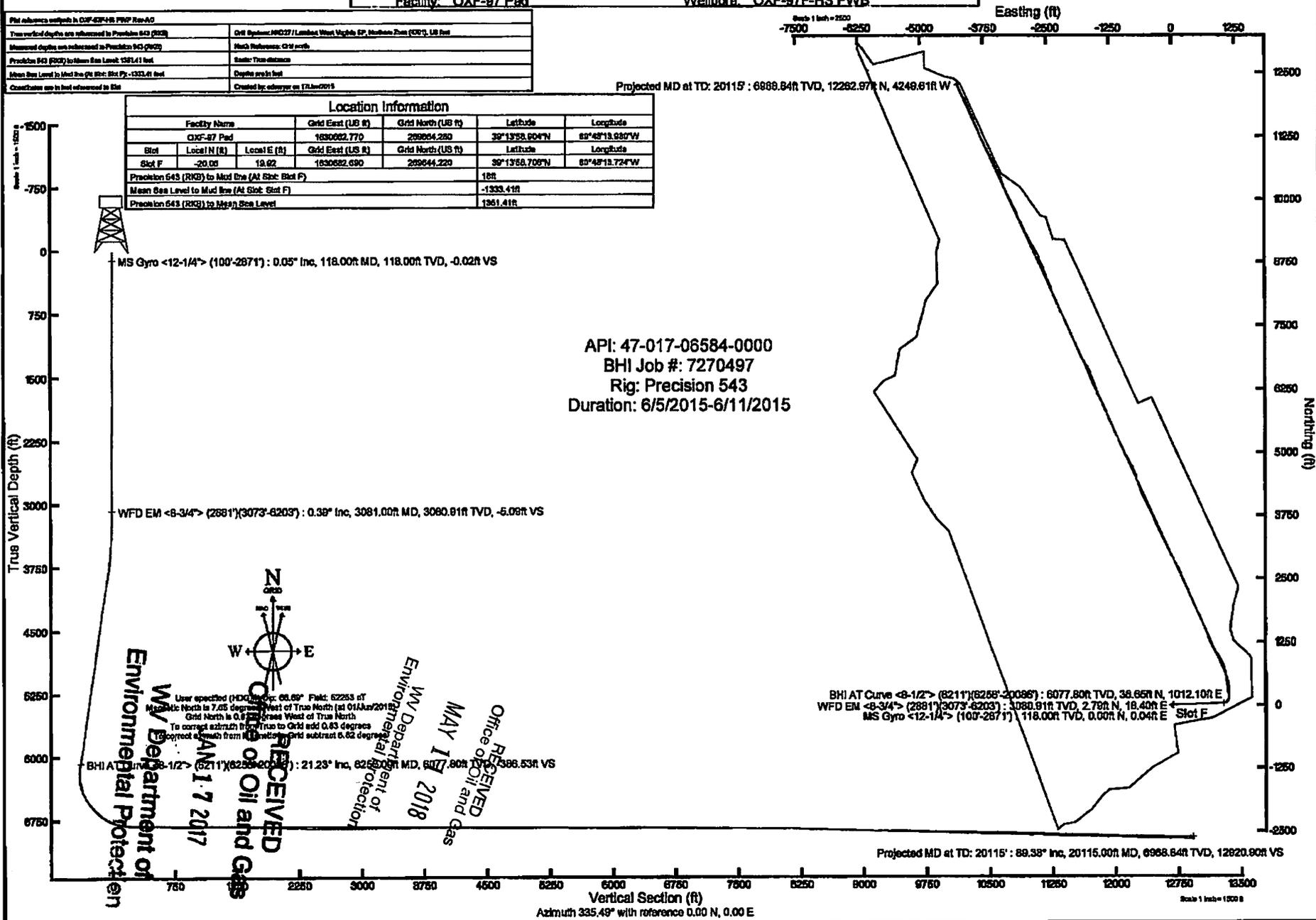
Location: Doddridge Co., WV  
 Field: Doddridge  
 Facility: OXF-97 Pad

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

Plot reference wellbore is OXF-97F-HS PWB Rev-A0	Grid System: NAD83 / Lambert West Virginia SP, Northern Zone (CON), US feet
True vertical depths are referenced to Precision 543 (RIG)	Map Reference: OXF well
Measured depths are referenced to Precision 543 (RIG)	Scale: True distance
Precision 543 (RIG) to Mean Sea Level: 1351.41 feet	Depth units: feet
Mean Sea Level to Mud line (At Slot: Slot F): -1332.41 feet	Created by: edwayer on 12/04/2015
Coordinates are in feet referenced to Ellipsoid	

Projected MD at TD: 20115' : 6888.84ft TVD, 12282.97ft N, 4249.81ft W

Location Information				
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
OXF-97 Pad	1830902.770	299064.280	39°13'58.904"N	80°48'13.980"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)
Slot F	-20.00	19.02	1830882.690	299044.220
			39°13'58.706"N	80°48'13.724"W
Precision 543 (RIG) to Mud line (At Slot: Slot F)			18ft	
Mean Sea Level to Mud line (At Slot: Slot F)			-1333.41ft	
Precision 543 (RIG) to Mean Sea Level			1361.41ft	



MS Gyro <8-1/4"> (100'-2871') : 0.05° Inc, 118.00ft MD, 118.00ft TVD, -0.02ft VS

WFD EM <8-3/4"> (2881')(3073'-8203') : 0.39° Inc, 3081.00ft MD, 3080.81ft TVD, -5.08ft VS

BHI AT Curve <8-1/2"> (8211')(8258'-20086') : 21.23° Inc, 8258.80ft MD, 8077.80ft TVD, 38.65ft N, 1012.10ft E

BHI AT Curve <8-1/2"> (8211')(8258'-20086') : 21.23° Inc, 8258.80ft MD, 8077.80ft TVD, 38.65ft N, 1012.10ft E

WFD EM <8-3/4"> (2881')(3073'-8203') : 3080.81ft TVD, 2.78ft N, 18.40ft E

MS Gyro <12-1/4"> (100'-2871') : 118.00ft TVD, 0.00ft N, 0.04ft E

Projected MD at TD: 20115' : 89.38° Inc, 20115.00ft MD, 6968.84ft TVD, 12820.90ft VS

API: 47-017-06584-0000  
 BHI Job #: 7270497  
 Rig: Precision 543  
 Duration: 6/5/2015-6/11/2015

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Azimuth 335.49° with reference 0.00 N, 0.00 E

Scale 1 inch = 1000 ft



# Actual Wellpath Report

OXF-97F-HS AWP Proj: 20115'

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## REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot F
Area	Doddridge Co., WV	Well	OXF-97F-HS
Field	Doddridge	Wellbore	OXF-97F-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	17/Jun/2015 at 11:04
Convergence at slot	0.83° West	Database/Source file	WellArchitectEasternDB/OXF-97F-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	-20.06	19.92	1630682.69	269644.22	39°13'58.708"N	80°48'13.724"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	1351.41ft
Horizontal Reference Pt	Slot	Precision 543 (RKB) to Mean Sea Level	1351.41ft
Vertical Reference Pt	Precision 543 (RKB)	Precision 543 (RKB) to Mud Line at Slot (Slot F)	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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# Actual Wellpath Report

OXF-97F-HS AWP Proj: 20115'

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

WELLPATH DATA (238 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	90.650	0.00	0.00	0.00	0.00	1630682.69	269644.22	39°13'58.708"N	80°48'13.724"W	0.00	0.000	0.00	0.00	0.00
18.00	0.000	90.650	18.00	0.00	0.00	0.00	1630682.69	269644.22	39°13'58.708"N	80°48'13.724"W	0.00	0.000	0.00	0.00	0.00
118.00	0.050	90.650	118.00	-0.02	0.00	0.04	1630682.73	269644.22	39°13'58.708"N	80°48'13.723"W	0.04	90.650	0.05	0.05	0.00
218.00	0.290	50.300	218.00	0.03	0.16	0.28	1630682.97	269644.38	39°13'58.710"N	80°48'13.720"W	0.32	60.326	0.25	0.24	-40.35
318.00	0.720	31.640	318.00	0.21	0.53	0.66	1630683.13	269644.77	39°13'58.711"N	80°48'13.715"W	0.64	49.411	0.28	0.19	-14.20
418.00	0.090	338.230	418.00	0.45	0.85	0.78	1630683.47	269645.07	39°13'58.717"N	80°48'13.714"W	1.15	42.505	0.28	-0.23	-57.81
518.00	0.120	175.590	518.00	0.43	0.82	0.76	1630683.45	269645.04	39°13'58.717"N	80°48'13.714"W	1.11	42.801	0.21	0.03	-162.64
618.00	0.320	106.720	618.00	0.15	0.63	1.03	1630683.72	269644.85	39°13'58.715"N	80°48'13.711"W	1.21	58.536	0.30	0.20	-68.87
718.00	0.180	105.220	718.00	-0.14	0.51	1.45	1630684.14	269644.73	39°13'58.714"N	80°48'13.705"W	1.54	70.650	0.14	-0.14	-1.50
818.00	0.370	81.940	818.00	0.24	0.57	1.41	1630684.52	269644.70	39°13'58.713"N	80°48'13.705"W	1.50	72.388	0.17	0.11	49.73
918.00	0.300	53.510	917.99	-0.19	0.83	2.27	1630684.96	269645.05	39°13'58.717"N	80°48'13.695"W	2.42	69.958	0.06	0.01	-12.47
1018.00	0.320	44.070	1017.99	-0.03	1.19	2.68	1630685.37	269645.41	39°13'58.720"N	80°48'13.690"W	2.93	66.120	0.05	0.02	-9.44
1118.00	0.140	62.410	1117.99	0.08	1.44	2.98	1630685.67	269645.66	39°13'58.723"N	80°48'13.686"W	3.31	64.170	0.19	-0.18	18.34
1218.00	0.500	98.670	1217.99	-0.16	1.43	3.52	1630686.21	269645.65	39°13'58.723"N	80°48'13.679"W	3.80	67.840	0.40	0.36	36.26
1318.00	0.340	74.600	1317.99	0.15	1.46	3.28	1630686.97	269645.68	39°13'58.723"N	80°48'13.669"W	3.32	71.145	0.21	0.11	-41.05
1418.00	0.400	85.430	1417.98	-0.62	1.58	4.96	1630687.65	269645.80	39°13'58.725"N	80°48'13.661"W	5.20	72.356	0.08	0.01	10.81
1518.00	0.490	44.060	1517.98	-0.58	1.91	5.60	1630688.29	269646.13	39°13'58.728"N	80°48'13.653"W	5.92	71.158	0.33	0.09	-41.37
1618.00	0.890	67.930	1617.97	-0.46	2.51	6.62	1630689.31	269646.73	39°13'58.734"N	80°48'13.640"W	7.08	69.227	0.48	0.40	23.87
1718.00	0.740	74.090	1717.96	-0.59	2.98	7.96	1630690.65	269647.20	39°13'58.739"N	80°48'13.623"W	8.50	69.478	0.17	-0.15	6.16
1818.00	0.350	90.440	1817.95	0.11	3.74	8.31	1630691.00	269647.17	39°13'58.739"N	80°48'13.605"W	9.78	72.987	0.19	0.11	30.55
1918.00	0.940	94.980	1917.94	-1.95	2.80	10.85	1630693.54	269647.02	39°13'58.738"N	80°48'13.586"W	11.21	75.530	0.13	0.09	-6.07
2018.00	0.510	90.650	2017.93	-2.55	2.72	12.12	1630694.81	269646.94	39°13'58.737"N	80°48'13.570"W	12.42	77.326	0.43	-0.43	-4.33
2118.00	0.010	90.570	2117.93	-3.00	2.71	13.18	1630695.87	269646.93	39°13'58.737"N	80°48'13.557"W	13.46	78.367	0.20	0.20	-0.08
2218.00	0.580	87.050	2217.92	-3.45	2.73	14.31	1630696.99	269646.95	39°13'58.737"N	80°48'13.542"W	14.56	79.183	0.14	-0.13	-3.52
2318.00	0.510	83.320	2317.92	-3.44	2.80	15.27	1630697.40	269646.97	39°13'58.737"N	80°48'13.530"W	15.60	79.466	0.12	-0.14	-1.17
2418.00	0.340	83.480	2417.92	-4.07	2.80	15.96	1630698.65	269647.02	39°13'58.738"N	80°48'13.521"W	16.21	80.045	0.38	-0.19	-44.84
2518.00	0.290	83.710	2517.91	-4.23	2.83	16.41	1630699.10	269647.05	39°13'58.739"N	80°48'13.516"W	16.65	80.222	0.38	-0.05	73.23
2618.00	0.770	85.940	2617.91	-4.43	2.76	16.73	1630699.42	269646.98	39°13'58.738"N	80°48'13.511"W	16.96	80.644	0.28	-0.12	-69.77
2718.00	0.290	81.730	2717.91	-4.66	2.64	17.01	1630699.70	269646.86	39°13'58.737"N	80°48'13.508"W	17.22	81.182	0.32	0.12	84.79
2818.00	0.180	80.370	2817.91	-4.84	2.52	17.31	1630700.00	269646.74	39°13'58.736"N	80°48'13.504"W	17.48	81.125	0.12	0.12	54.91

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# Actual Wellpath Report

OXF-97F-HS AWP Proj: 20115'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot F
Area	Doddridge Co., WV	Well	OXF-97F-HS
Field	Doddridge	Wellbore	OXF-97F-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (238 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]
2889.00	0.170	59.910	2888.91	-4.87	2.62	17.50	1630700.19	269646.84	39°13'58.737"N	80°48'13.502"W	17.69	81.470	0.01	-0.01	-1.35
3081.00	0.390	87.700	3080.91	-5.09	2.79	18.40	1630701.09	269647.01	39°13'58.739"N	80°48'13.490"W	18.61	81.366	0.13	0.11	14.47
3112.00	0.490	97.640	3111.91	-5.20	2.78	18.63	1630701.32	269647.00	39°13'58.738"N	80°48'13.487"W	18.84	81.515	0.40	0.32	32.06
3142.00	0.520	103.010	3141.91	-5.35	2.73	18.89	1630701.58	269646.95	39°13'58.738"N	80°48'13.484"W	19.09	81.771	0.19	0.10	17.90
3172.00	0.550	108.390	3171.90	-5.54	2.72	19.30	1630701.90	269646.80	39°13'58.736"N	80°48'13.478"W	19.44	82.140	0.41	0.22	15.13
3232.00	2.790	81.290	3231.87	-6.13	2.97	21.29	1630703.98	269647.19	39°13'58.741"N	80°48'13.454"W	21.50	82.055	2.91	2.90	-8.83
3293.00	4.020	80.990	3292.76	-7.10	3.53	24.87	1630707.56	269647.75	39°13'58.747"N	80°48'13.408"W	25.12	81.919	2.02	2.02	-0.49
3323.00	4.830	80.920	3322.67	-7.72	3.90	27.16	1630709.85	269648.12	39°13'58.751"N	80°48'13.379"W	27.44	81.837	2.70	2.70	-0.23
3354.00	5.380	84.660	3353.55	-8.55	4.24	29.89	1630712.58	269648.46	39°13'58.754"N	80°48'13.344"W	30.19	81.933	2.07	1.77	12.06
3384.00	6.540	87.060	3383.49	-9.62	4.62	33.00	1630715.90	269648.60	39°13'58.757"N	80°48'13.296"W	33.20	82.140	2.41	2.37	11.13
3445.00	7.850	91.450	3443.94	-12.70	4.43	40.33	1630723.02	269648.65	39°13'58.758"N	80°48'13.212"W	40.57	83.736	2.87	2.79	5.56
3505.00	10.130	90.360	3503.20	-16.72	4.29	49.70	1630732.39	269648.51	39°13'58.758"N	80°48'13.093"W	49.89	85.067	3.81	3.80	-1.82
3566.00	11.720	87.440	3563.09	-21.29	4.53	61.26	1630743.95	269648.75	39°13'58.762"N	80°48'12.946"W	61.43	85.768	2.76	2.61	-4.79
3626.00	13.780	85.750	3621.61	-26.04	5.34	74.47	1630757.16	269649.55	39°13'58.772"N	80°48'12.778"W	74.66	85.902	3.49	3.43	-2.82
3687.00	16.260	84.020	3620.55	-31.54	6.46	90.21	1630772.90	269650.00	39°13'58.782"N	80°48'12.578"W	90.94	85.501	3.97	3.92	-1.94
3747.00	18.740	86.110	3737.76	-37.87	7.70	108.18	1630790.86	269651.92	39°13'58.800"N	80°48'12.350"W	108.45	85.929	4.23	4.23	0.15
3807.00	21.000	87.860	3794.18	-45.36	8.75	128.54	1630811.23	269652.97	39°13'58.813"N	80°48'12.092"W	128.84	86.104	3.89	3.77	2.92
3868.00	22.630	89.240	3850.81	-54.25	9.32	151.20	1630833.88	269653.54	39°13'58.822"N	80°48'11.804"W	151.49	86.473	2.80	2.67	2.26
3928.00	22.740	89.530	3906.17	-63.62	9.57	174.34	1630857.02	269653.79	39°13'58.828"N	80°48'11.510"W	174.60	86.859	0.26	0.18	0.48
3989.00	22.800	89.590	3962.30	-73.15	9.77	197.75	1630881.90	269653.90	39°13'58.833"N	80°48'11.213"W	197.85	87.172	0.50	0.39	0.65
4049.00	22.010	88.700	4018.05	-82.23	10.12	220.42	1630903.10	269654.34	39°13'58.840"N	80°48'10.925"W	220.65	87.371	0.82	-0.65	-1.33
4114.00	21.350	88.000	4078.45	-91.56	10.81	244.42	1630927.10	269655.03	39°13'58.850"N	80°48'10.620"W	244.66	87.468	1.09	-1.02	-1.08
4175.00	20.830	88.560	4135.36	-100.07	11.47	266.36	1630949.04	269655.69	39°13'58.860"N	80°48'10.341"W	266.61	87.534	0.91	-0.85	0.92
4235.00	21.320	89.730	4191.35	-108.72	11.79	287.94	1630970.61	269656.01	39°13'58.866"N	80°48'10.067"W	288.18	87.655	1.08	0.82	1.95
4295.00	21.300	89.870	4248.37	-117.70	11.87	310.12	1630991.18	269656.00	39°13'58.871"N	80°48'09.783"W	310.35	87.600	0.90	0.70	0.34
4356.00	20.920	89.980	4304.14	-126.71	12.00	331.75	1631014.43	269656.22	39°13'58.875"N	80°48'09.510"W	331.97	87.928	0.75	-0.70	-0.78
4417.00	20.570	88.980	4361.18	-135.26	12.45	353.35	1631036.03	269656.67	39°13'58.882"N	80°48'09.236"W	353.57	87.982	0.89	-0.57	-1.92
4478.00	20.590	88.480	4417.35	-143.12	13.42	374.42	1631057.09	269657.64	39°13'58.895"N	80°48'08.968"W	374.66	87.947	1.03	0.03	-2.92
4538.00	20.710	88.440	4473.45	-150.82	14.75	395.89	1631078.57	269658.97	39°13'58.911"N	80°48'08.696"W	396.16	87.866	0.20	0.20	-0.07
4598.00	20.320	88.170	4529.55	-158.30	16.12	417.12	1631100.00	269659.22	39°13'58.924"N	80°48'08.421"W	417.00	87.900	1.05	1.00	0.00

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# Actual Wellpath Report

OXF-97F-HS AWP Proj: 20115'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot F
Area	Doddridge Co., WV	Well	OXF-97F-HS
Field	Doddridge	Wellbore	OXF-97F-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (238 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]
4659.00	21.520	87.200	4587.23	-166.78	17.14	439.62	1631122.29	269661.36	39°13'58.941"N	80°48'08.141"W	439.95	87.767	0.37	0.33	0.48
4721.00	21.580	87.020	4644.90	-175.17	18.29	462.36	1631145.04	269662.51	39°13'58.955"N	80°48'07.852"W	462.72	87.735	0.14	0.10	-0.29
4782.00	21.540	87.090	4701.63	-183.41	19.44	484.75	1631167.42	269663.66	39°13'58.970"N	80°48'07.567"W	485.14	87.703	0.08	-0.07	0.11
4842.00	20.650	86.080	4757.61	-191.19	20.72	506.30	1631188.98	269664.94	39°13'58.986"N	80°48'07.294"W	506.73	87.656	1.60	-1.48	-1.68
4903.00	20.520	86.550	4814.71	-198.86	22.05	527.71	1631210.54	269666.27	39°13'59.002"N	80°48'07.027"W	528.11	87.609	0.88	-0.31	-1.86
4963.00	20.720	88.700	4870.87	-206.88	22.86	548.82	1631231.49	269667.08	39°13'59.013"N	80°48'06.754"W	549.30	87.614	1.14	0.33	3.08
5054.00	21.630	88.990	4955.72	-219.91	23.53	581.69	1631264.35	269667.74	39°13'59.024"N	80°48'06.336"W	582.16	87.684	1.01	1.00	0.32
5148.00	21.560	88.860	5043.13	-233.67	24.17	616.28	1631298.94	269668.39	39°13'59.036"N	80°48'05.897"W	616.75	87.754	0.09	-0.07	-0.14
5239.00	21.130	88.860	5127.88	-246.81	24.83	649.39	1631332.06	269669.05	39°13'59.047"N	80°48'05.476"W	649.87	87.810	0.47	-0.47	0.00
5320.00	20.920	88.990	5212.97	-259.70	25.44	681.84	1631365.40	269669.66	39°13'59.057"N	80°48'05.062"W	681.20	87.863	0.35	-0.35	0.74
5390.00	20.600	88.590	5269.07	-268.06	25.89	702.94	1631385.60	269670.11	39°13'59.065"N	80°48'04.796"W	703.42	87.891	0.24	-0.05	-0.67
5480.00	20.310	87.610	5353.39	-280.15	26.93	734.37	1631417.04	269671.15	39°13'59.080"N	80°48'04.397"W	734.87	87.900	0.50	-0.32	-1.09
5571.00	21.460	88.770	5438.41	-292.68	27.95	766.80	1631449.46	269672.16	39°13'59.094"N	80°48'03.985"W	767.31	87.913	1.34	1.26	1.27
5661.00	21.210	87.510	5522.24	-305.29	29.01	799.52	1631482.18	269673.23	39°13'59.110"N	80°48'03.569"W	800.05	87.922	0.58	-0.28	-1.40
5752.00	20.330	86.990	5607.31	-317.02	30.41	831.74	1631514.40	269674.05	39°13'59.127"N	80°48'03.160"W	832.31	87.875	1.12	-0.97	-1.90
5843.00	19.590	84.530	5692.86	-327.55	33.35	862.70	1631545.35	269677.57	39°13'59.162"N	80°48'02.767"W	863.34	87.786	1.00	-0.81	-1.68
5935.00	20.940	84.900	5779.17	-338.04	36.28	894.43	1631577.08	269680.50	39°13'59.195"N	80°48'02.365"W	895.16	87.677	1.47	1.47	0.40
6025.00	21.820	90.130	5862.98	-350.36	37.67	927.17	1631609.83	269681.89	39°13'59.213"N	80°48'01.949"W	927.94	87.673	2.33	0.98	5.81
6116.00	21.700	91.020	5947.50	-364.66	37.33	960.91	1631643.56	269681.55	39°13'59.215"N	80°48'01.520"W	961.63	87.775	0.39	-0.13	0.98
6176.00	21.570	90.910	6032.25	-374.14	36.96	982.98	1631668.47	269681.30	39°13'59.215"N	80°48'01.097"W	983.67	87.745	1.41	0.28	-0.27
6211.00	21.370	90.720	6035.87	-379.60	36.81	995.76	1631678.41	269681.03	39°13'59.215"N	80°48'01.077"W	996.44	87.883	0.30	-0.29	-0.23
6256.00	21.230	90.440	6077.80	-386.53	36.65	1012.10	1631694.76	269680.87	39°13'59.215"N	80°48'00.870"W	1012.77	87.926	0.38	-0.31	-0.62
6294.00	20.970	86.430	6113.25	-391.86	37.02	1025.77	1631708.42	269681.24	39°13'59.221"N	80°48'00.696"W	1026.44	87.933	3.86	-0.68	-10.55
6384.00	20.890	64.270	6197.44	-397.28	45.00	1056.35	1631739.00	269689.22	39°13'59.304"N	80°48'00.309"W	1057.31	87.561	8.75	-0.09	-24.62
6473.00	20.450	56.210	6282.73	-404.46	44.57	1083.38	1631768.23	269700.71	39°13'59.327"N	80°47'59.946"W	1085.21	86.207	1.22	1.49	1.07
6563.00	25.870	30.650	6363.66	-380.68	86.22	1106.74	1631789.39	269730.44	39°13'59.719"N	80°47'59.676"W	1110.10	85.545	12.59	6.02	-28.49
6652.00	29.860	9.420	6442.52	-351.12	124.89	1120.31	1631802.96	269769.11	39°14'00.103"N	80°47'59.511"W	1127.25	83.639	11.95	4.48	-23.85
6742.00	35.600	350.660	6518.39	-307.10	173.01	1119.72	1631802.37	269817.22	39°14'00.579"N	80°47'59.527"W	1133.01	81.217	12.88	6.38	-20.84
6831.00	43.120	346.890	6587.16	-252.19	228.28	1108.60	1631791.25	269872.49	39°14'01.123"N	80°47'59.679"W	1131.86	78.364	8.86	8.45	-4.24
6921.00	41.940	346.140	6666.00	-202.10	228.28	1108.60	1631791.25	269872.49	39°14'01.123"N	80°47'59.679"W	1131.86	78.364	8.86	8.45	-4.24

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# Actual Wellpath Report

OXF-97F-HS AWP Proj: 20115'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot F
Area	Doddridge Co., WV	Well	OXF-97F-HS
Field	Doddridge	Wellbore	OXF-97F-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (238 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]
7010.00	56.310	353.830	6704.52	-122.76	361.29	1088.32	1631770.97	270005.50	39°14'02.435"N	80°47'59.961"W	1146.73	71.635	9.27	9.12	2.07
7100.00	64.150	354.660	6749.17	-48.85	438.96	1080.52	1631763.17	270083.17	39°14'03.201"N	80°48'00.074"W	1166.28	67.890	8.75	8.71	0.92
7189.00	72.060	353.440	6782.33	29.38	521.03	1071.94	1631754.59	270165.23	39°14'04.011"N	80°48'00.198"W	1191.86	64.077	8.98	8.89	-1.37
7279.00	81.140	350.730	6803.17	113.20	607.64	1059.86	1631742.51	270251.84	39°14'04.865"N	80°48'00.368"W	1221.69	60.173	10.50	10.09	-3.01
7369.00	86.190	347.910	6812.87	200.15	695.45	1044.81	1631729.46	270339.62	39°14'05.730"N	80°48'00.541"W	1258.47	56.377	10.60	10.29	-3.00
7458.00	88.800	340.510	6816.53	288.06	780.81	1018.18	1631700.83	270425.00	39°14'06.571"N	80°48'00.929"W	1283.10	52.516	8.06	2.60	-7.64
7547.00	88.860	334.910	6818.35	376.94	863.11	984.44	1631667.09	270507.30	39°14'07.379"N	80°48'01.373"W	1309.23	48.757	6.29	0.07	-6.29
7637.00	88.890	329.110	6820.12	466.72	942.54	942.23	1631624.88	270586.72	39°14'08.158"N	80°48'01.924"W	1332.73	44.991	6.44	0.03	-6.44
7726.00	87.720	323.480	6822.75	554.50	1016.51	892.89	1631575.54	270660.69	39°14'08.882"N	80°48'02.565"W	1352.98	41.295	6.46	-1.31	-6.33
7816.00	87.940	317.840	6826.16	642.96	1090.52	841.51	1631526.17	270734.50	39°14'09.600"N	80°48'03.211"W	1372.79	37.891	6.34	0.14	-6.19
7906.00	87.850	330.750	6829.47	732.27	1167.23	794.93	1631477.59	270811.40	39°14'10.358"N	80°48'03.837"W	1412.21	34.256	4.34	-0.10	4.34
7995.00	88.060	333.850	6832.64	821.07	1245.97	753.59	1631436.25	270890.14	39°14'11.130"N	80°48'04.377"W	1456.14	31.166	3.49	0.24	3.48
8085.00	89.480	338.150	6834.58	911.02	1328.15	717.00	1631399.66	270972.32	39°14'11.937"N	80°48'04.857"W	1509.33	28.362	5.03	1.58	4.78
8174.00	90.490	340.640	6834.60	999.80	1411.45	685.68	1631368.34	271055.61	39°14'12.756"N	80°48'05.271"W	1569.18	25.910	3.02	1.13	2.80
8264.00	91.190	341.600	6833.90	1087.50	1495.71	654.97	1631336.76	271139.87	39°14'13.594"N	80°48'05.667"W	1632.48	23.820	2.43	-0.10	-2.60
8353.00	90.370	337.600	6833.30	1178.50	1578.19	620.65	1631303.32	271222.35	39°14'14.394"N	80°48'06.128"W	1695.84	21.468	0.74	-0.03	-0.74
8443.00	90.430	336.080	6832.67	1268.47	1660.93	585.26	1631267.92	271305.09	39°14'15.207"N	80°48'06.593"W	1761.03	19.411	1.69	0.07	-1.69
8532.00	90.650	334.600	6831.84	1357.46	1741.81	548.13	1631230.79	271385.96	39°14'16.001"N	80°48'07.079"W	1826.02	17.468	1.68	0.25	-1.66
8622.00	89.450	334.840	6831.76	1447.45	1823.19	509.69	1631192.36	271467.34	39°14'16.800"N	80°48'07.583"W	1893.09	15.619	1.36	-1.33	0.27
8712.00	89.390	335.390	6832.70	1537.44	1904.43	471.12	1631154.49	271548.97	39°14'17.600"N	80°48'08.099"W	1972.30	13.970	0.63	-0.11	0.63
8801.00	89.020	335.890	6833.97	1626.43	1985.89	435.12	1631117.79	271630.04	39°14'18.397"N	80°48'08.560"W	2033.00	12.358	0.67	-0.37	0.56
8891.00	88.950	336.450	6835.56	1716.41	2068.21	398.76	1631081.44	271712.35	39°14'19.205"N	80°48'09.038"W	2106.30	10.913	0.63	-0.08	0.62
8981.00	88.800	336.450	6837.33	1806.38	2150.70	362.82	1631045.49	271794.84	39°14'20.015"N	80°48'09.510"W	2181.09	9.575	0.17	-0.17	0.01
9070.00	88.550	335.990	6839.39	1895.35	2232.12	326.94	1631009.62	271876.26	39°14'20.815"N	80°48'09.981"W	2255.94	8.333	0.61	-0.28	-0.54
9160.00	88.710	336.190	6841.54	1985.12	2314.39	294.90	1630975.16	271958.50	39°14'21.625"N	80°48'10.459"W	2332.55	7.144	0.54	0.14	0.59
9249.00	88.650	335.700	6843.59	2074.29	2395.67	254.31	1630936.99	272039.80	39°14'22.421"N	80°48'10.934"W	2409.13	6.059	0.54	-0.07	-0.54
9339.00	88.490	336.450	6845.83	2164.26	2477.93	217.87	1630900.56	272122.06	39°14'23.228"N	80°48'11.412"W	2487.49	5.025	0.80	-0.18	0.78
9428.00	88.400	338.400	6848.25	2253.17	2560.11	183.79	1630866.48	272204.23	39°14'24.036"N	80°48'11.860"W	2566.70	4.106	2.28	-0.10	2.28
9518.00	89.380	335.000	6849.99	2343.11	2642.79	148.32	1630831.01	272286.91	39°14'24.848"N	80°48'12.326"W	2646.95	3.212	3.95	1.09	-3.80
9608.00	89.380	335.000	6851.73	2432.99	2724.79	108.01	1630796.01	272370.00	39°14'25.660"N	80°48'12.781"W	2724.47	2.220	3.88	0.94	-3.80

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# Actual Wellpath Report

OXF-97F-HS AWP Proj: 20115'

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## REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot F
Area	Doddridge Co., WY	Well	OXF-97F-HS
Field	Doddridge	Wellbore	OXF-97F-HS AWP
Facility	OXF-97 Pad		

## WELLPATH DATA (238 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 [°]	DI.S [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
9697.00	89.450	331.200	6851.62	2521.80	2801.34	65.34	1630748.02	272445.45	39°14'26.403"N	80°48'13.410"W	2802.10	1.336	0.48	-0.10	-0.47
9786.00	89.380	330.560	6852.53	2610.51	2879.08	22.03	1630704.72	272523.20	39°14'27.165"N	80°48'13.975"W	2879.17	0.438	0.72	-0.08	-0.72
9875.00	90.030	331.720	6852.99	2699.25	2957.03	-20.93	1630661.76	272601.14	39°14'27.929"N	80°48'14.535"W	2957.10	359.594	1.49	0.73	1.30
9965.00	90.150	334.740	6852.85	2789.17	3037.37	-61.46	1630621.23	272681.48	39°14'28.717"N	80°48'15.065"W	3037.99	358.841	3.36	0.13	3.36
10055.00	90.210	335.800	6852.85	2879.17	3118.89	-99.40	1630583.30	272763.89	39°14'29.518"N	80°48'15.362"W	3120.57	358.175	0.75	0.13	0.73
10144.00	90.490	333.890	6851.87	2968.15	3199.41	-137.51	1630545.19	272843.51	39°14'30.308"N	80°48'16.061"W	3202.36	357.539	1.71	0.20	-1.70
10233.00	90.370	332.370	6851.20	3057.07	3278.79	-177.73	1630504.97	272922.89	39°14'31.086"N	80°48'16.587"W	3283.61	356.897	1.71	-0.13	-1.71
10323.00	90.310	334.940	6850.67	3147.01	3359.44	-217.67	1630465.03	273003.53	39°14'31.878"N	80°48'17.109"W	3366.48	356.293	2.86	-0.07	2.86
10412.00	90.370	336.230	6850.14	3236.01	3440.48	-254.45	1630428.25	273084.57	39°14'32.673"N	80°48'17.592"W	3449.87	355.770	1.45	0.07	1.45
10502.00	90.370	335.480	6849.51	3326.01	3522.69	-291.12	1630391.58	273166.75	39°14'33.480"N	80°48'18.075"W	3534.07	355.226	0.67	0.07	0.67
10591.00	90.220	335.100	6849.00	3415.00	3603.58	-328.18	1630354.52	273247.66	39°14'34.275"N	80°48'18.559"W	3618.49	354.796	0.69	-0.24	-0.65
10681.00	90.430	339.270	6848.49	3504.94	3686.52	-363.07	1630319.63	273330.60	39°14'35.089"N	80°48'19.018"W	3704.35	354.375	4.64	0.23	4.63
10770.00	90.150	334.700	6848.04	3593.89	3768.41	-397.86	1630284.84	273412.49	39°14'35.894"N	80°48'19.475"W	3789.35	353.973	5.14	-0.31	-5.13
10860.00	90.030	334.510	6847.90	3683.88	3849.71	-436.46	1630246.25	273493.79	39°14'36.692"N	80°48'19.981"W	3874.38	353.532	0.25	-0.13	-0.21
10950.00	90.030	334.000	6847.78	3773.77	3929.48	-477.52	1630204.85	273574.57	39°14'37.494"N	80°48'20.521"W	3957.45	353.097	0.97	0.30	0.29
11039.00	90.060	332.500	6847.78	3862.47	4007.43	-521.04	1630161.67	273651.50	39°14'38.238"N	80°48'21.085"W	4041.16	352.592	2.68	0.03	2.68
11128.00	90.000	337.050	6847.74	3951.44	4087.92	-558.96	1630123.75	273731.98	39°14'39.028"N	80°48'21.581"W	4125.96	352.214	5.11	-0.07	5.11
11218.00	90.180	335.180	6847.60	4041.43	4170.21	-595.40	1630087.31	273814.27	39°14'39.836"N	80°48'22.060"W	4212.50	351.875	2.09	0.20	-2.08
11307.00	89.660	339.520	6847.72	4130.36	4252.32	-629.67	1630053.05	273896.38	39°14'40.643"N	80°48'22.510"W	4298.69	351.577	4.91	-0.58	4.88
11397.00	90.280	345.050	6847.87	4219.89	4337.50	-668.34	1630020.18	273979.97	39°14'41.461"N	80°48'22.973"W	4387.20	351.266	5.90	0.51	1.92
11486.00	90.280	344.470	6847.58	4307.96	4423.00	-683.43	1629999.29	274067.05	39°14'42.322"N	80°48'23.225"W	4475.49	351.216	1.61	0.18	1.60
11576.00	90.120	345.870	6847.27	4396.67	4510.00	-706.46	1629976.25	274154.05	39°14'43.178"N	80°48'23.534"W	4564.99	351.097	1.57	-0.18	1.56
11665.00	90.280	338.400	6846.96	4485.01	4594.65	-733.75	1629948.97	274238.69	39°14'44.011"N	80°48'23.896"W	4652.86	350.927	8.40	0.18	-8.39
11755.00	90.280	336.770	6846.52	4574.95	4677.84	-768.06	1629914.66	274321.88	39°14'44.828"N	80°48'24.348"W	4740.48	350.676	1.81	0.00	-1.81
11845.00	90.280	335.200	6846.00	4664.93	4759.41	-806.06	1629876.86	274404.54	39°14'45.693"N	80°48'24.800"W	4827.10	350.388	1.26	0.07	3.46
11934.00	90.880	327.900	6845.95	4753.57	4836.91	-849.74	1629832.98	274480.95	39°14'46.388"N	80°48'25.415"W	4910.99	350.036	6.06	-0.45	-6.04
12024.00	90.350	328.900	6846.56	4842.89	4913.60	-896.85	1629785.88	274557.63	39°14'47.140"N	80°48'26.028"W	4994.78	349.656	1.34	-0.59	1.20
12113.00	90.850	331.970	6847.18	4931.53	4991.01	-940.74	1629741.98	274635.04	39°14'47.898"N	80°48'26.600"W	5078.89	349.326	3.34	0.56	3.29
12203.00	90.000	338.100	6847.30	5021.47	5072.82	-978.11	1629704.61	274716.85	39°14'48.701"N	80°48'27.091"W	5166.26	349.086	7.87	0.17	7.87
12293.00	90.000	338.100	6847.30	5111.47	5154.82	-1016.48	1629669.14	274799.26	39°14'49.541"N	80°48'27.591"W	5254.40	348.846	2.57	0.17	2.57

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# Actual Wellpath Report

OXF-97F-HS AWP Proj: 20115'

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## REFERENCE WELLPATH IDENTIFICATION

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

## WELLPATH DATA (238 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]
12382.00	89.720	334.040	6848.10	5200.40	5236.50	-1050.42	1629632.31	274880.52	39°14'50.309"N	80°48'28.040"W	5340.82	348.657	1.99	0.10	-1.99
12471.00	89.780	331.520	6848.48	5289.30	5315.64	-1091.13	1629591.60	274959.66	39°14'51.085"N	80°48'28.572"W	5426.47	348.400	2.83	0.07	-2.83
12561.00	89.910	333.980	6848.73	5379.19	5395.64	-1132.33	1629550.40	275039.66	39°14'51.870"N	80°48'29.110"W	5513.18	348.148	2.74	0.14	2.73
12650.00	89.850	332.550	6848.91	5468.12	5475.13	-1172.37	1629510.37	275119.14	39°14'52.649"N	80°48'29.634"W	5599.24	347.914	1.61	-0.07	-1.61
12740.00	89.940	336.600	6849.01	5556.98	5556.18	-1211.48	1629471.31	275200.28	39°14'53.445"N	80°48'30.154"W	5688.72	347.688	3.12	0.10	3.12
12829.00	90.150	340.250	6849.01	5646.97	5638.77	-1244.58	1629438.16	275282.77	39°14'54.256"N	80°48'30.582"W	5774.48	347.553	4.78	0.24	4.78
12919.00	90.220	341.060	6848.72	5736.60	5723.68	-1274.39	1629408.35	275367.69	39°14'55.091"N	80°48'30.977"W	5863.84	347.448	0.90	0.08	0.90
13008.00	90.220	337.590	6848.38	5825.39	5806.94	-1305.81	1629376.93	275450.94	39°14'55.909"N	80°48'31.391"W	5951.95	347.327	3.90	0.00	-3.90
13098.00	90.090	335.350	6848.13	5915.37	5889.45	-1341.74	1629341.00	275533.45	39°14'56.720"N	80°48'31.863"W	6040.35	347.166	2.49	-0.14	-2.49
13188.00	90.150	336.170	6847.94	6005.37	5971.40	-1378.74	1629304.00	275615.45	39°14'57.525"N	80°48'32.340"W	6128.99	346.998	1.10	0.17	1.10
13278.00	90.120	333.470	6847.73	6095.35	6052.91	-1417.08	1629265.67	275696.90	39°14'58.324"N	80°48'32.851"W	6216.57	346.824	2.92	-0.03	-2.92
13367.00	90.180	335.850	6847.50	6184.34	6133.34	-1455.17	1629227.58	275777.33	39°14'59.114"N	80°48'33.350"W	6303.60	346.653	2.67	0.07	2.67
13457.00	90.250	340.680	6847.16	6274.20	6216.91	-1488.48	1629194.26	275860.90	39°14'59.935"N	80°48'33.789"W	6392.62	346.535	5.37	0.08	5.37
13547.00	90.150	341.320	6846.85	6363.79	6302.01	-1517.78	1629164.96	275945.99	39°15'00.771"N	80°48'34.177"W	6482.21	346.459	0.72	-0.11	0.71
13637.00	90.180	336.900	6846.50	6452.99	6384.74	-1548.08	1629134.60	276029.07	39°15'01.595"N	80°48'34.578"W	6571.66	346.371	1.72	0.05	-1.72
13726.00	89.910	337.580	6846.52	6542.38	6469.28	-1581.42	1629101.32	276113.26	39°15'02.415"N	80°48'35.017"W	6659.77	346.263	1.50	-0.30	-1.47
13816.00	89.940	337.030	6846.64	6632.34	6552.31	-1616.15	1629066.60	276196.28	39°15'03.231"N	80°48'35.474"W	6748.68	346.144	0.61	0.03	-0.61
13906.00	89.820	335.080	6846.83	6722.33	6634.56	-1652.67	1629030.08	276278.53	39°15'04.039"N	80°48'35.953"W	6837.30	346.012	2.17	-0.13	-2.17
13995.00	89.690	327.150	6847.21	6811.00	6712.43	-1695.63	1628987.12	276356.39	39°15'04.802"N	80°48'36.514"W	6923.28	345.823	8.91	-0.15	-8.91
14085.00	89.420	321.030	6847.91	6897.77	6797.87	-1745.97	1628943.35	276431.18	39°15'05.532"N	80°48'37.107"W	7008.43	345.674	3.18	0.10	3.18
14175.00	89.510	332.690	6848.75	6989.09	6884.00	-1792.47	1628899.28	276507.96	39°15'06.286"N	80°48'37.773"W	7094.18	345.365	8.62	0.10	8.62
14264.00	89.480	337.770	6849.53	7078.05	6944.78	-1829.75	1628853.01	276588.74	39°15'07.079"N	80°48'38.262"W	7181.78	345.240	5.71	-0.03	5.71
14354.00	89.480	339.620	6850.35	7167.90	7028.62	-1862.45	1628820.31	276672.57	39°15'07.903"N	80°48'38.693"W	7271.19	345.159	2.06	0.00	2.06
14444.00	89.980	336.820	6851.56	7257.78	7112.18	-1895.83	1628786.93	276756.13	39°15'08.724"N	80°48'39.133"W	7360.52	345.074	3.16	-0.56	-3.11
14534.00	89.950	333.910	6853.14	7346.70	7192.30	-1932.00	1628749.00	276839.04	39°15'09.527"N	80°48'39.571"W	7449.71	344.978	3.49	0.04	3.49
14623.00	89.080	335.200	6854.67	7436.73	7274.18	-1971.87	1628710.90	276918.12	39°15'10.314"N	80°48'40.129"W	7536.71	344.833	1.66	0.11	1.66
14713.00	89.950	335.730	6856.22	7526.71	7356.04	-2009.23	1628673.53	276999.98	39°15'11.117"N	80°48'40.619"W	7625.51	344.723	0.61	-0.14	0.59
14803.00	89.980	332.320	6857.84	7616.66	7436.92	-2048.64	1628634.13	277080.86	39°15'11.911"N	80°48'41.135"W	7713.93	344.599	3.79	0.03	-3.79
14892.00	89.630	336.300	6858.92	7705.61	7517.10	-2087.21	1628595.56	277161.04	39°15'12.698"N	80°48'41.640"W	7801.49	344.482	4.53	0.73	4.47
14982.00	89.490	335.000	6859.99	7795.00	7596.00	-2126.00	1628556.00	277241.00	39°15'13.480"N	80°48'42.140"W	7888.00	344.370	0.00	0.00	0.00

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# Actual Wellpath Report

OXF-97F-HS AWP Proj: 20115'

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

WELLPATH DATA (238 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]
15072.00	89.420	333.550	6860.15	7885.59	7680.79	-2162.04	1628520.74	277324.72	39°15'14.305"N	80°48'42.622"W	7979.28	344.279	2.67	-0.30	-2.66
15161.00	89.420	332.420	6861.06	7974.50	7760.07	-2202.46	1628480.31	277404.00	39°15'15.082"N	80°48'43.150"W	8066.57	344.155	1.27	0.00	-1.27
15251.00	89.350	331.620	6862.02	8064.33	7839.55	-2244.68	1628438.09	277483.47	39°15'15.862"N	80°48'43.702"W	8154.57	344.022	0.89	-0.08	-0.89
15341.00	89.510	335.310	6862.92	8154.25	7920.05	-2284.88	1628397.90	277563.97	39°15'16.652"N	80°48'44.227"W	8243.05	343.908	4.10	0.18	4.10
15430.00	89.450	334.010	6863.04	8243.17	8000.14	-2318.99	1628363.79	277643.44	39°15'17.432"N	80°48'44.752"W	8331.53	343.794	3.85	0.15	3.85
15520.00	88.710	339.100	6865.80	8332.95	8086.43	-2350.71	1628332.07	277723.34	39°15'18.286"N	80°48'45.095"W	8421.17	343.791	0.68	-0.38	-0.57
15610.00	88.090	343.530	6868.31	8422.43	8171.63	-2379.53	1628303.25	277815.54	39°15'19.124"N	80°48'45.477"W	8511.03	343.765	4.97	-0.69	4.92
15699.00	88.120	338.860	6871.25	8510.91	8255.81	-2408.19	1628274.59	277899.72	39°15'19.952"N	80°48'45.857"W	8599.87	343.738	5.24	0.03	-5.25
15789.00	87.720	335.390	6874.52	8600.80	8338.66	-2443.15	1628239.64	277982.57	39°15'20.766"N	80°48'46.317"W	8689.20	343.670	3.88	-0.44	-3.86
15879.00	87.250	335.390	6878.00	8690.69	8421.47	-2473.70	1628205.49	278065.32	39°15'21.570"N	80°48'46.777"W	8778.53	343.602	3.34	0.14	3.35
15969.00	87.850	338.320	6881.38	8780.51	8505.08	-2511.32	1628171.46	278148.98	39°15'22.401"N	80°48'47.214"W	8868.10	343.550	0.30	0.00	-0.30
16058.00	88.460	338.940	6884.24	8869.33	8587.92	-2543.74	1628139.05	278231.81	39°15'23.215"N	80°48'47.642"W	8956.73	343.501	0.98	0.69	0.70
16148.00	88.430	337.030	6886.69	8959.20	8671.32	-2577.46	1628105.33	278315.21	39°15'24.034"N	80°48'48.086"W	9046.28	343.446	2.12	-0.03	-2.12
16237.00	89.380	337.930	6888.39	9048.13	8753.52	-2611.54	1628071.25	278397.41	39°15'24.841"N	80°48'48.535"W	9134.78	343.388	1.47	1.07	1.01
16326.00	89.480	337.110	6889.27	9137.07	8833.78	-2645.59	1628037.29	278479.67	39°15'25.648"N	80°48'48.984"W	9223.27	343.332	0.61	0.11	0.81
16416.00	89.420	336.010	6890.14	9227.05	8918.38	-2681.22	1628003.57	278562.26	39°15'26.461"N	80°48'49.451"W	9312.70	343.267	1.33	-0.07	-1.33
16505.00	89.510	331.800	6890.97	9315.99	8998.29	-2720.36	1627969.43	278644.17	39°15'27.245"N	80°48'49.963"W	9400.51	343.179	4.73	0.10	-4.73
16595.00	89.350	329.940	6891.86	9405.69	9076.90	-2764.17	1627935.29	278726.77	39°15'28.015"N	80°48'50.535"W	9488.45	343.063	2.07	-0.18	-2.07
16684.00	89.420	328.350	6892.82	9494.13	9153.29	-2809.81	1627901.15	278809.17	39°15'28.764"N	80°48'51.129"W	9574.85	342.935	1.79	0.08	-1.79
16774.00	89.050	327.790	6894.15	9582.82	9232.01	-2853.34	1627867.01	278891.67	39°15'29.533"N	80°48'51.722"W	9662.79	342.823	0.80	0.36	0.97
16864.00	89.610	333.340	6896.49	9673.74	9312.57	-2893.41	1627832.87	278974.17	39°15'30.326"N	80°48'52.321"W	9751.71	342.740	0.48	-0.04	-0.48
16953.00	89.580	335.250	6898.67	9762.69	9392.73	-2932.01	1627798.79	279056.59	39°15'31.112"N	80°48'52.927"W	9839.72	342.664	2.12	-0.03	2.12
17043.00	89.650	336.600	6900.84	9852.66	9474.87	-2968.73	1627764.08	279138.73	39°15'31.919"N	80°48'53.689"W	9929.07	342.603	1.52	0.08	1.52
17132.00	89.110	334.840	6902.58	9941.64	9555.98	-3005.31	1627729.49	279199.84	39°15'32.715"N	80°48'53.689"W	10017.42	342.542	2.04	0.52	-1.98
17221.00	89.080	334.190	6903.99	10030.61	9633.27	-3043.07	1627695.12	279261.13	39°15'33.511"N	80°48'54.451"W	10105.85	342.471	0.84	-0.03	0.84
17311.00	89.080	338.350	6905.44	10120.57	9718.60	-3079.95	1627660.86	279322.46	39°15'34.311"N	80°48'54.668"W	10194.97	342.416	4.73	0.00	4.73
17400.00	89.080	334.510	6906.87	10209.53	9800.15	-3115.53	1627626.28	279383.80	39°15'35.112"N	80°48'55.136"W	10283.46	342.364	4.31	0.00	-4.31
17490.00	89.050	333.030	6908.33	10299.48	9880.87	-3155.30	1627591.51	279444.00	39°15'35.904"N	80°48'55.656"W	10372.44	342.290	1.64	-0.03	-1.64
17579.00	88.980	335.220	6909.86	10388.43	9960.93	-3194.13	1627556.88	279504.78	39°15'36.690"N	80°48'56.165"W	10460.53	342.221	2.46	-0.08	2.46
17669.00	88.980	335.220	6911.40	10477.38	10040.99	-3232.71	1627522.11	279565.27	39°15'37.481"N	80°48'56.754"W	10548.57	342.156	1.35	0.00	1.35

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# Actual Wellpath Report

OXF-97F-HS AWP Proj: 20115'

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

## WELLPATH DATA (238 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]
17758.00	88.770	333.870	6913.31	10567.36	10122.16	-3271.80	1627411.02	279766.00	39°15'38.272"N	80°48'57.182"W	10637.80	342.088	0.23	-0.17	-0.16
17848.00	88.740	336.000	6915.26	10657.33	10203.66	-3309.91	1627372.90	279847.50	39°15'39.072"N	80°48'57.682"W	10727.08	342.028	2.37	-0.03	2.37
17938.00	88.740	340.830	6917.24	10747.16	10287.31	-3343.01	1627339.81	279931.14	39°15'39.894"N	80°48'58.118"W	10816.86	341.998	5.37	0.00	5.37
18027.00	88.400	341.070	6919.46	10835.73	10371.41	-3372.05	1627310.77	280015.23	39°15'40.720"N	80°48'58.503"W	10905.81	341.989	0.47	-0.38	0.27
18117.00	88.180	335.140	6922.01	11014.49	10536.33	-3441.22	1627241.60	280180.15	39°15'42.340"N	80°48'59.413"W	11084.05	341.913	0.63	-0.18	-0.61
18206.00	88.340	338.290	6927.46	11104.41	10619.10	-3476.45	1627206.37	280262.91	39°15'43.153"N	80°48'59.876"W	11173.67	341.873	2.99	0.18	2.99
18385.00	88.250	336.740	6930.11	11193.31	10701.29	-3510.47	1627172.35	280345.11	39°15'43.961"N	80°49'00.324"W	11262.37	341.838	1.74	-0.10	-1.74
18475.00	88.340	332.850	6932.79	11283.25	10782.67	-3548.77	1627134.05	280426.48	39°15'44.759"N	80°49'00.826"W	11351.64	341.783	4.32	0.10	-4.32
18564.00	88.250	331.440	6935.44	11374.81	10861.82	-3589.31	1627092.41	280508.12	39°15'45.531"N	80°49'01.368"W	11438.55	341.738	1.30	0.19	-1.30
18654.00	88.170	331.520	6938.29	11461.79	10940.36	-3633.29	1627049.54	280584.17	39°15'46.305"N	80°49'01.930"W	11527.89	341.629	0.17	-0.14	0.09
18743.00	88.180	328.740	6941.16	11550.34	11017.49	-3677.58	1627005.25	280661.29	39°15'47.061"N	80°49'02.507"W	11615.06	341.541	3.12	0.07	-3.12
18833.00	88.520	334.520	6943.75	11640.07	11096.61	-3720.31	1626962.52	280740.41	39°15'47.837"N	80°49'03.065"W	11703.66	341.465	6.43	0.38	6.42
18922.00	88.550	335.480	6946.03	11729.03	11177.25	-3757.91	1626924.92	280821.05	39°15'48.629"N	80°49'03.558"W	11792.06	341.417	1.08	0.03	1.08
19012.00	88.350	335.210	6948.32	11817.94	11259.76	-3792.38	1626882.37	280904.08	39°15'49.447"N	80°49'04.044"W	11881.74	341.366	1.11	-0.07	-1.11
19101.00	88.490	338.220	6950.61	11907.77	11343.16	-3824.86	1626837.98	280986.95	39°15'50.258"N	80°49'04.440"W	11970.67	341.366	1.11	-0.07	-1.11
19191.00	88.520	336.650	6952.96	11997.68	11426.24	-3859.38	1626793.46	281070.03	39°15'51.075"N	80°49'04.895"W	12060.42	341.337	1.74	0.03	-1.74
19280.00	88.680	338.010	6955.13	12086.61	11508.34	-3893.67	1626749.17	281152.12	39°15'51.881"N	80°49'05.346"W	12149.18	341.308	1.54	0.18	1.53
19369.00	89.320	337.130	6956.68	12175.53	11590.59	-3927.62	1626705.21	281234.37	39°15'52.689"N	80°49'05.793"W	12237.98	341.280	1.22	0.72	-0.99
19459.00	89.300	336.380	6957.80	12263.40	11671.88	-3960.17	1626661.47	281315.93	39°15'53.477"N	80°49'06.242"W	12327.75	341.255	1.24	0.07	1.28
19549.00	88.860	333.160	6959.28	12355.42	11755.86	-3998.76	1626618.09	281399.63	39°15'54.312"N	80°49'06.728"W	12417.34	341.214	5.71	-0.44	-5.69
19638.00	88.860	333.720	6961.05	12444.34	11835.45	-4038.54	1626574.30	281479.22	39°15'55.093"N	80°49'07.249"W	12505.51	341.159	0.63	0.00	0.63
19728.00	88.710	336.000	6962.96	12534.31	11916.90	-4076.77	1626530.08	281560.67	39°15'55.892"N	80°49'07.750"W	12594.94	341.114	2.54	-0.17	2.53
19817.00	88.710	333.940	6964.96	12623.28	11997.52	-4114.41	1626488.44	281641.28	39°15'56.683"N	80°49'08.243"W	12683.41	341.071	2.31	0.00	-2.31
19907.00	89.200	332.500	6966.55	12713.15	12077.45	-4154.95	1626447.89	281721.61	39°15'57.471"N	80°49'08.774"W	12772.35	341.016	1.71	0.01	-1.60
19996.00	89.420	335.200	6967.58	12802.14	12157.73	-4194.17	1626408.68	281801.49	39°15'58.255"N	80°49'09.287"W	12860.85	340.967	3.04	0.18	3.03
20086.00	89.380	330.410	6968.52	12892.01	12237.75	-4235.29	1626364.56	281881.51	39°15'59.040"N	80°49'09.825"W	12949.91	340.910	5.32	-0.04	-5.32
20115.00	89.380	330.410	6968.84	12920.00	12262.97	-4249.61	1626323.24	281906.72	39°15'59.287"N	80°49'10.012"W	12978.42	340.887	0.00	0.00	0.00

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# Actual Wellpath Report

OXF-97F-HS AWP Proj: 20115'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot F
Area	Doddridge Co., WV	Well	OXF-97F-HS
Field	Doddridge	Wellbore	OXF-97F-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-97F-HS LP Rev-2		6820.00	711.34	1011.97	1631694.62	270355.53	39°14'05.883"N	80°48'00.995"W	point
OXF-97F-HS BHL Rev-2		6992.00	12267.83	-4257.07	1626425.78	281911.59	39°15'59.334"N	80°49'10.107"W	point
OXF-97 LL		7198.41	20.06	-19.92	1630662.77	269664.28	39°13'58.904"N	80°48'13.980"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: OXF-97F-HS AWB Ref Wellpath: OXF-97F-HS AWP Proj: 20115'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.00	2889.00	Generic gyro - northseeking (Standard)	01 MS Gyro <12-1/4"> (100'-2871')	OXF-97F-HS AWB
2889.00	6211.00	ISCWSA MWD, Rev. 2 (Standard)	02 WFD EM <8-3/4"> (2881')(3073'-6203')	OXF-97F-HS AWB
6211.00	20086.00	NaviTrak (AT Curve Short Spaced)	03 BHL AT Curve <8-1/2"> (6211')(6256'-20086')	OXF-97F-HS AWB
20086.00	20115.00	Blind Drilling (std)	Projection to bit	OXF-97F-HS AWB

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# Actual Wellpath Report

OXF-97F-HS AWP Proj: 20115'

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

## COMMENTS

Wellpath general comments  
API: 47-017-06584-0000  
BHI Job #: 7270497  
Rig: Precision 543  
Duration: 6/5/2015-6/11/2015  
MS Gyro <12-1/4"> (100'-2871')  
WFD EM <8-3/4"> (2881')(3073'-6203')  
BHI AT Curve <8-1/2"> (6211')(6256'-20086')  
Projected MD at TD: 20115'

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WW-9  
(4/16)

API Number 47 - 017 - 06584  
Operator's Well No. OXF97 FHS

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Artero Resources Corporation OP Code 4945C7C82

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 tanked 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 - Oil/SHF 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-1032-88), 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 Luis Cardy, Director, Environmental & Regulatory Compliance on behalf of:  
Company Official (Typed Name) Gretchen Kover  
Company Official Title Senior Environmental & Regulatory Manager

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Subscribed and sworn before me this 10th day of MAY, 2018

*[Signature]*  
My commission expires \_\_\_\_\_

MEGAN GRIFFITH  
NOTARY PUBLIC  
STATE OF COLORADO  
NOTARY ID 20184011666  
MY COMMISSION EXPIRES MARCH 13, 2022

Notary Public  
3/13/2022

08/03/2018

Form WW-9

Operator's Well No. OXF97 FHS

**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" (19.90 acres) + Well Pad (7.04 acres) + Water Containment Pad (1.00 acres) + Excess/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 (Oxford 97 Pad Design)</small>		<small>See attached Table IV-4A for additional seed type (Oxford 97 Pad Design)</small>	
<small>*or type of grass seed requested by surface owner</small>		<small>*or type of grass seed requested by surface owner</small>	

**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: [Signature]

Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Title: O: I + Gas Inspector

Date: 6/5/18

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.

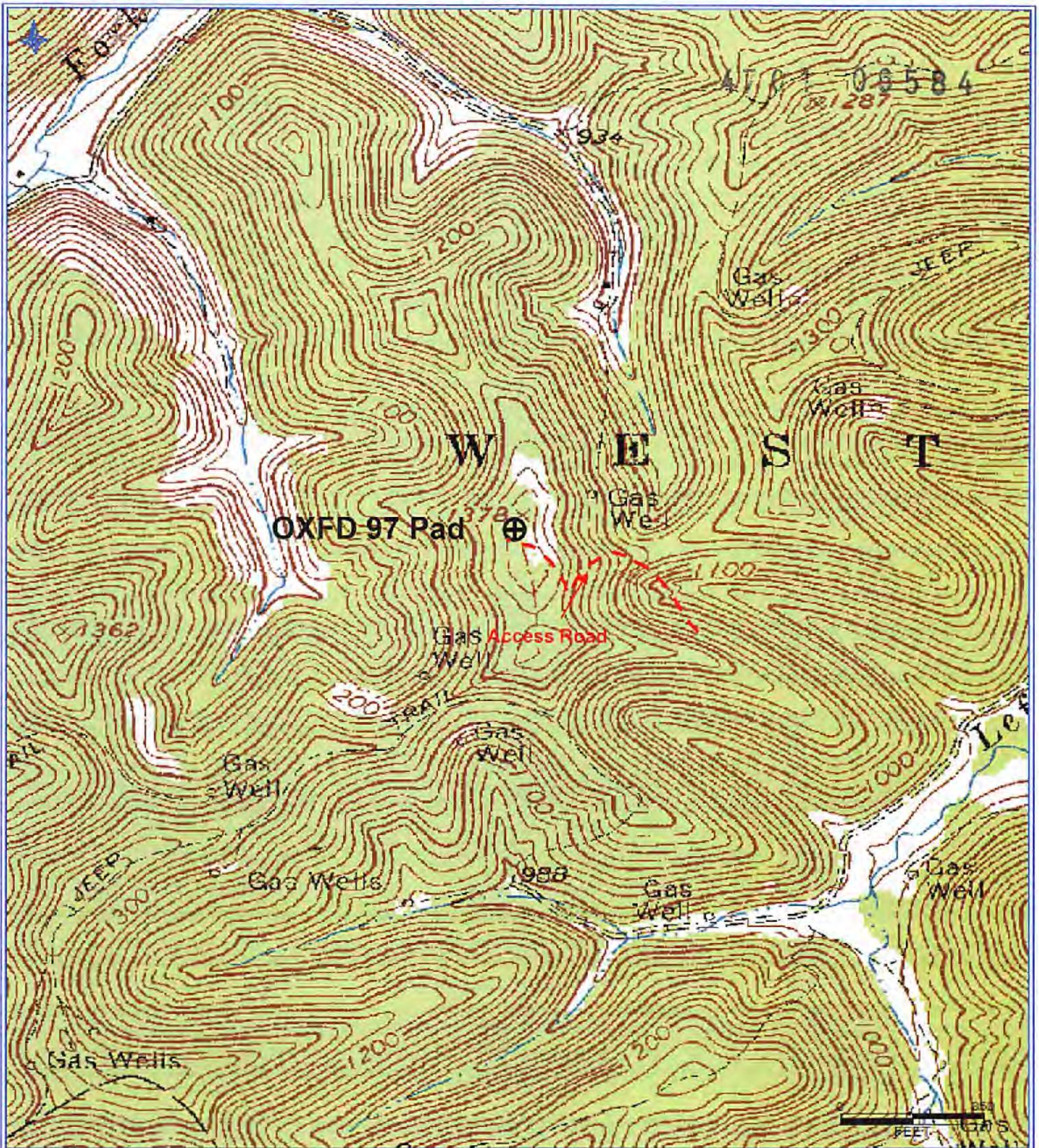
#### **Alternate Route:**

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 1<sup>st</sup> 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**

*DAF*  
*6/5/18*

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**Antero Resources Corporation**

Appalachian Basin

OXFD 97 Unit

Doddridge County

Quadrangle: Oxford

Watershed: Middle Island Creek

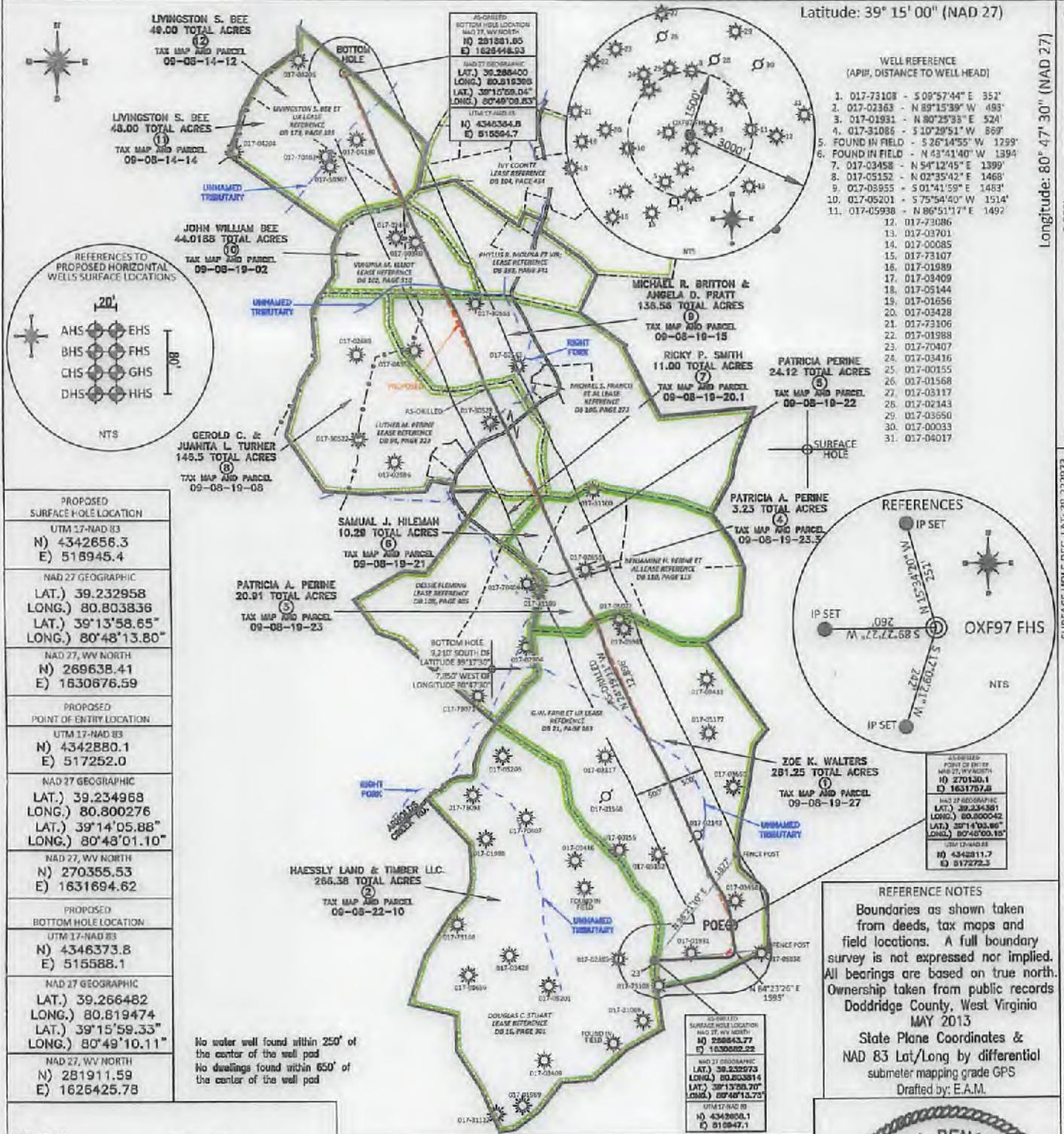
District: West Union

Date: 5-7-2018

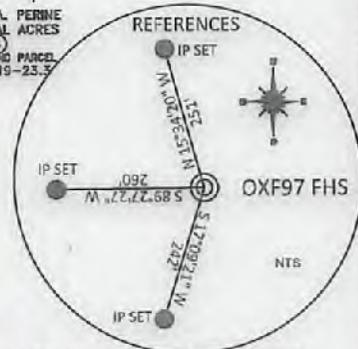
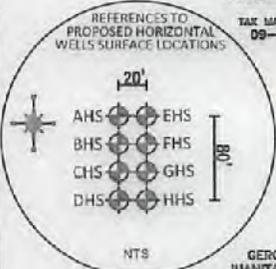
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08/03/2018

SURFACE HOLE DEC. LONG: 80.803814  
 SURVEYED LONG: 80° 48' 13.73" 3.440'  
 Latitude: 39° 15' 00" (NAD 27)  
 Longitude: 80° 47' 30" (NAD 27)



- WELL REFERENCE (API#, DISTANCE TO WELL HEAD)
- 017-73108 - S 09°57'44" E 352'
  - 017-02363 - N 89°15'39" W 493'
  - 017-01931 - N 80°29'33" E 524'
  - 017-31086 - S 10°29'51" W 869'
  - FOUND IN FIELD - S 26°14'55" W 1299'
  - FOUND IN FIELD - N 43°41'40" W 1394'
  - 017-03458 - N 54°12'45" E 1399'
  - 017-05152 - N 02°35'42" E 1468'
  - 017-05955 - S 01°41'59" E 1483'
  - 017-05201 - S 75°51'00" W 1514'
  - 017-05938 - N 86°51'17" E 1492'
  - 017-73086
  - 017-03701
  - 017-00085
  - 017-73107
  - 017-01989
  - 017-03409
  - 017-05144
  - 017-01656
  - 017-03428
  - 017-73106
  - 017-01988
  - 017-70407
  - 017-03436
  - 017-00155
  - 017-01568
  - 017-03117
  - 017-02143
  - 017-03650
  - 017-00033
  - 017-04017



PROPOSED SURFACE HOLE LOCATION UTM 17-NAD 83 N) 4342656.3 E) 518945.4
NAD 27 GEOGRAPHIC LAT.) 39.232958 LONG.) 80.803836 LAT.) 39°13'58.65" LONG.) 80°48'13.80"
NAD 27, WV NORTH N) 269638.41 E) 1630676.59
PROPOSED POINT OF ENTRY LOCATION UTM 17-NAD 83 N) 4342880.1 E) 517252.0
NAD 27 GEOGRAPHIC LAT.) 39.234968 LONG.) 80.800276 LAT.) 39°14'05.88" LONG.) 80°48'01.10"
NAD 27, WV NORTH N) 270365.53 E) 1631694.62
PROPOSED BOTTOM HOLE LOCATION UTM 17-NAD 83 N) 4346373.8 E) 515588.1
NAD 27 GEOGRAPHIC LAT.) 39.266482 LONG.) 80.819474 LAT.) 39°15'59.33" LONG.) 80°49'10.11"
NAD 27, WV NORTH N) 281911.59 E) 1626425.78

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

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 #: 2358  
 SCALE: PLAT - 1" = 2000'  
 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 WVDEP  
 OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304

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

WATERSHED: HEADWATERS MIDDLE ISLAND CREEK 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: D.W. FARRIS et al, DOUGLAS C. STUART, BENJAMINE K. PERINE et al, DESSE FLEMMING, MICHAEL S. FRANCIS et al, LUTHER M. PERINE, VIRGINIA M. ELKOT, LIVINGSTON S. BEE et al ACREAGE: 282.00 +/-, 286.00 +/-, 823.00 +/-, 88.00 +/-, 87.50 +/-

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: 6,969' TMD: 20,115'  
 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

DATE: February 14, 2018  
 OPERATOR'S WELL #: OXF97 FHS  
 API WELL #: 47 17 06584  
 STATE COUNTY PERMIT

08/03/2018

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
<b><u>G.W. Farr, et ux Lease</u></b>			
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
<b>CNX Gas Company</b>	<b>Antero Resources Corporation</b>	<b>Assignment</b>	<b>0387/0216</b>
<b><u>Benjamine H. Perine, et al Lease</u></b>			
Benjamine H. Perine, et al	Key Oil Company	1/8	0104/0409
Key Oil Company	J&J Enterprises	Assignment	0141/090
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
<b>Antero Resources Appalachian Corporation</b>	<b>Antero Resources Corporation</b>	<b>Name Change</b>	<b>Exhibit 1</b>
<b><u>Luther M. Perine Lease</u></b>			
Luther M. Perine	Ole Colony Development Co.	1/8	094/0223
Ole Colony Development Co.	Penn Resources Inc.	Assignment	0111/0553
Penn Resources Inc.	Justin L. Henderson	Assignment	0105/0496
Justin L. Henderson	Antero Resources Appalachian Corporation	Assignment	0289/0490
<b>Antero Resources Appalachian Corporation</b>	<b>Antero Resources Corporation</b>	<b>Name Change</b>	<b>Exhibit 1</b>
<b><u>Michael S. Francis, et ux Lease</u></b>			
Michael S. Francis, et ux	Key Oil Co.	1/8	0106/0273
Key Oil Company	J&J Enterprises	Assignment	0141/090
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
<b>Antero Resources Appalachian Corporation</b>	<b>Antero Resources Corporation</b>	<b>Name Change</b>	<b>Exhibit 1</b>
<b><u>Virginia M. Elliot Lease</u></b>			
Virginia M. Elliot	Justin M. Henderson	1/8	0102/0510
Justin M. Henderson	W.B. Berry	Assignment	0110/0533
W.B. Berry	J&J Enterprises	Assignment	0111/0718
J&J Enterprises	Eastern American Energy Corporation	Assignment	0211/0137
Eastern American Energy Corporation	Eastern Corporation of America	Assignment	0240/0498
Eastern Corporation of America	Antero Resources Appalachian Corporation	Assignment	0307/0321
<b>Antero Resources Appalachian Corporation</b>	<b>Antero Resources Corporation</b>	<b>Name Change</b>	<b>Exhibit 1</b>

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WV Department of Environmental Protection

\*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 FHS

**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.

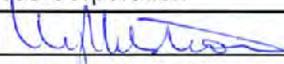
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**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

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.

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

4701 06584

FILED

JUN 10 2013

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



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

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)

6. 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

7. Signature information (See below *\*Important Legal Notice Regarding Signature\**):

Print Name of Signer: Alvyn A. Schopp Title/Capacity: Authorized Person  
Signature: *Alvyn A. Schopp* Date: June 10, 2013

*\*Important Legal Notice Regarding Signature\** For West Virginia Code §31D-1-129. 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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MAY 11 2013  
WV Department of Environmental Protection



May 10, 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 57<sup>th</sup> Street SE  
Charleston, WV 25304

RE: OXF97 FHS  
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 FHS 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 FHS 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".

Tyler Adams  
Landman

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WV Department of  
Environmental Protection

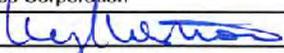
08/03/2018

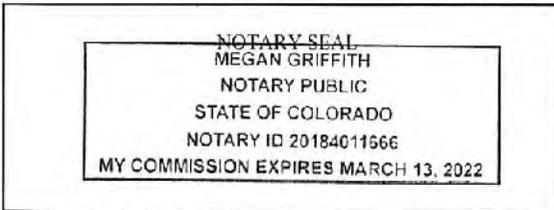


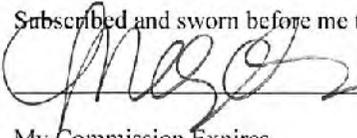
WW-6AC  
(1/12)

**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>mstanton@anteroresources.com</u>



Subscribed and sworn before me this 10<sup>th</sup> day of MAY 2018  
  
 Notary Public  
 My Commission Expires 3/13/2022

**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](mailto:depprivacyofficer@wv.gov).

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 Office of Oil and Gas  
 MAY 11 2018  
 WV Department of  
 Environmental Protection

WW-6A  
(9-13)

API NO. 47- 017 - 06584  
 OPERATOR WELL NO. OXF97 FHS  
 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:** ~~5/10/2018~~ **Date Permit Application Filed:** 5/10/2018

**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.

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

SURFACE OWNER(s)  
 Name: Zoe Katryn Waters  
 Address: 9407 Scratch Court  
Wilmington, NC 28412  
 Name: Haessly Land & Timber LLC  
 Address: 25 Sheets Run Road  
Marietta, OH 45750

COAL OWNER OR LESSEE  
 Name: NO DECLARATIONS ON RECORD WITH COUNTY  
 Address: \_\_\_\_\_

COAL OPERATOR  
 Name: NO DECLARATIONS ON RECORD WITH COUNTY  
 Address: \_\_\_\_\_

SURFACE OWNER(s) (Road and/or Other Disturbance)  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

WATER PURVEYOR(s)/OWNER(s) OF WATER WELL, SPRING OR OTHER WATER SUPPLY SOURCE  
 Name: NONE IDENTIFIED WITHIN 1500'  
 Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments or Pits)  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

\*Please attach additional forms if necessary

WV Department of Environmental Protection

WW-6A  
(8-13)

API NO. 47- 017 - 06584  
OPERATOR WELL NO. OXF97 FHS  
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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

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**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, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to 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

08/03/2018

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API NO. 47- 017 - 06584  
 OPERATOR WELL NO. OXF97 FHS  
 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 57<sup>th</sup> St. SE  
 Charleston, WV 25304  
 (304) 926-0450

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 Environmental Protection

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 - 06584  
OPERATOR WELL NO. OXF97 FHS  
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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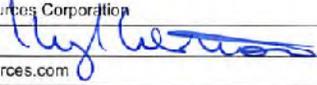
08/03/2018

WW-6A  
(8-13)

API NO. 47- 017 - 06584  
OPERATOR WELL NO. OXF97 FHS  
Well Pad Name: Oxford 97 Pad

**Notice is hereby given by:**

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

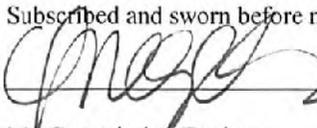


Address: 1615 Wynkoop Street  
Denver, CO 80202  
Facsimile: 303-357-7315

**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](mailto:depprivacyofficer@wv.gov).

MEGAN GRIFFITH  
NOTARY PUBLIC  
STATE OF COLORADO  
NOTARY ID 20184011665  
MY COMMISSION EXPIRES MARCH 13, 2022

Subscribed and sworn before me this 10<sup>th</sup> day of May 2018.  
  
\_\_\_\_\_  
Notary Public  
My Commission Expires 3/13/2022

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WV Department of  
Environmental Protection

**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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 Environmental Protection

WW-6A4  
(1/12)

4701-00584

Operator Well No. OXF97 FHS  
Multiple Wells on Oxford 97 Pad

**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:** 01/09/2017 **Date Permit Application Filed:** 05/10/2018

**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 Waters  
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: West Virginia  
County: Doddridge  
District: West Union  
Quadrangle: Oxford 7.5'  
Watershed: Headwaters Middle Island Creek

UTM NAD 83 Easting: 518947.1m  
Northing: 4342856.1m  
Public Road Access: Waco Rd.  
Generally used farm name: Haessly Land & Timber, LLC

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**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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://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: mstanton@anteroresources.com  
Facsimile: 303-357-7315

Authorized Representative: Mallory Stanton  
Address: 1615 Wynkoop St.  
Denver, CO 80202  
Telephone: 303-357-7182  
Email: mstanton@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. 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](mailto: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:** 05/10/2018      **Date Permit Application Filed:** 05/10/2018

**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. Waters

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:	West Virginia	UTM NAD 83	Easting:	516947.1m
County:	Doddridge		Northing:	4342656.1m
District:	West Union	Public Road Access:	Waco Rd.	
Quadrangle:	Oxford 7.5'	Generally used farm name:	Haessly Land & Timber, LLC	
Watershed:	Headwaters Middle Island Creek			

**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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

Well Operator: Antero Resources Corporation

Telephone: (303) 357-7310

Email: mstanton@anteroresources.com

Address: 1515 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 of your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

08/03/2018

4701706584



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

May 10, 2018

Jill M. Newman  
Deputy Commissioner

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

Subject: DOH Permit for the OXF97 Pad, Doddridge County  
OXF97 FHS 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,

A handwritten signature in blue ink that reads "Gary K. Clayton".

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

Cc: Megan Griffith  
Antero Resources Corporation  
CH, OM, D-4  
File

RECEIVED  
MAY 11 2018  
WV Department of  
Environmental Protection

# List of Anticipated Additives Used for Fracturing or Stimulating Well

4701706584

4701706584

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
Sillica, 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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Office of Oil and Gas  
MAY 11 2018  
WV Department of  
Environmental Protection

**SHEET INDEX**

- 1 - COVER SHEET
- 2 - CONSTRUCTION AND BULK CONTROLS NOTES
- 3 - DETAILS
- 4 - MATERIAL QUANTITIES
- 5 - STORM DRAINAGE & FILL COMPUTATIONS
- 6 - OVERALL SHEET BINDER AND VOLUMES
- 7-12 - ACCESS ROAD AS-BUILT PLAN
- 13 - ACCESS ROAD AS-BUILT & STOCKPILE PLAN
- 14 - ACCESS ROAD AS-BUILT & WATER CONTAINMENT PAD PLAN
- 15 - WELL PAD AS-BUILT & WATER CONTAINMENT PAD PLAN
- 16 - WELL PAD & WATER CONTAINMENT PAD DRAINING PLAN
- 17-21 - ACCESS ROAD IMPROVEMENTS
- 22-23 - ACCESS ROAD IMPROVEMENTS
- 24-25 - ACCESS ROAD IMPROVEMENTS
- 26-27 - WELL PAD & WATER CONTAINMENT PAD DETAILS
- 28 - WELL PAD & WATER CONTAINMENT PAD & STOCKPILE SCHEDULES
- 29-34 - CONSTRUCTION DETAILS
- 35 - WELL PAD & WATER CONTAINMENT PAD REDEMPTION PLAN

**LOCATION COORDINATES:**

MOORE ROAD ENTRANCE  
 NAD 83 UTM ZONE 17  
 LATITUDE: 38.232504 LONGITUDE: -80.003500 (NAD 83)  
 N 4342801.9 E 588957.6 UTM ZONE 17 METERS  
 UTM 17N 17E  
 CENTER OF WELL PAD  
 NAD 83 UTM ZONE 17  
 LATITUDE: 38.232504 LONGITUDE: -80.003500 (NAD 83)  
 N 4342801.9 E 588957.6 UTM ZONE 17 METERS  
 UTM 17N 17E



# 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)



WEST VIRGINIA STATE PLANE COORDINATE SYSTEM  
 NAD 83 UTM ZONE 17  
 UTM 17N 17E  
 SCALE: 1" = 2000'  
 WEST-PROJECTION

**GENERAL DESCRIPTION:**

THE ACCESS ROADS AND WELL PAD ARE BEING UPGRADED AND THE WATER CONTAINMENT PAD IS BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF MINERAL MARCELLUS SHALE GAS RESERVES.

**FLOODPLAIN NOTES:**

THE SITE IS LOCATED WITHIN FEMA FLOOD ZONE X (PER FEMA FLOOD MAP 4401002R02C).

**MISS UTILITY STATEMENT:**

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

**ENTRANCE PERMIT:**

ANTERO RESOURCES CORPORATION HAS OBTAINED AN ENCROACHMENT PERMIT (FROM MW-102) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

**ENVIRONMENTAL NOTES:**

STREAM AND WETLAND DELINEATIONS WERE PERFORMED IN NOVEMBER, 2017 BY ALISTAR ECOLOGY TO DETERMINE THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY JURISDICTION OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). ON NOVEMBER 16, 2017 STREAM AND WETLAND DELINEATION MAPS WERE PREPARED BY ALISTAR ECOLOGY AND SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE MAP DOES NOT IN ANY WAY REPRESENT A GUARANTEED DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE DESIGNATED BY THE USACE OR THE WVDEP.

**PROJECT CONTACTS:**

**MAJOR PERSONS - LAND OWNER**  
 CELL: (604) 428-0515

**OPERATOR**  
 ANTERO RESOURCES CORPORATION  
 333 WHITE OAK BLVD  
 HUNTSVILLE, WV 25939  
 PHONE: (304) 642-4100  
 FAX: (304) 642-4102

**PROJECT MANAGER - ENVIRONMENTAL ENGINEER**  
 OFFICE: (304) 642-4000 CELL: (304) 476-3720

**ENVIRONMENTAL SCIENTIST**  
 OFFICE: (304) 642-4000 CELL: (304) 908-2424

**PROJECT MANAGER - CONSTRUCTION SUPERVISOR**  
 CELL: (604) 222-6544

**ROBERT B. WALKER - FIELD ENGINEER**  
 OFFICE: (304) 642-4100 CELL: (304) 697-7400

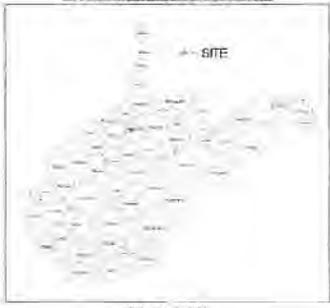
**RESTRICTIONS NOTES:**

1. THERE ARE NO LAKES, PONDS OR RESERVOIRS WITHIN 100 FEET OF THE WELL PAD AND LUM. THERE ARE 2 WETLANDS AND 1 PERENNIAL STREAM ADJACENT TO THE EXISTING ACCESS ROAD THAT HAVE REMAINED UNDISTURBED.
2. THERE ARE NO NATURALLY PRODUCING TRIBUTARY STREAMS WITHIN 100 FEET OF THE WELL PAD AND LUM.
3. THERE ARE NO DISCHARGING INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE WELL PAD AND LUM.
4. THERE ARE NO ADJACENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELLS BEING DRILLED.
5. THERE ARE NO OCCURRING DRINKING WATER WELLS WITHIN 665 FEET OF THE CENTER OF THE WELL PAD.
6. THERE ARE NO OCCURRING BUILDINGS LARGER THAN 4500 SQUARE FEET WITHIN 665 FEET OF THE CENTER OF THE WELL PAD.

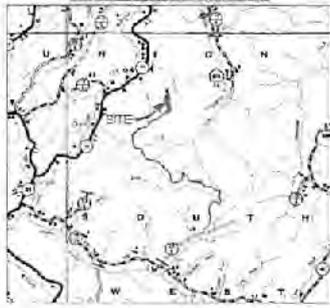
**REPRODUCTION NOTICE**

THIS IS A LEGAL WELL CONSTRUCTION PLAN PREPARED BY ANTERO RESOURCES CORPORATION. IT IS THE PROPERTY OF ANTERO RESOURCES CORPORATION AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION AND COMMUNICATION SYSTEMS, WITHOUT PERMISSION IN WRITING FROM ANTERO RESOURCES CORPORATION.

WEST VIRGINIA COUNTY MAP



WVDEP COUNTY ROAD MAP



**AS-BUILT CERTIFICATIONS:**

THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS REG. 25.8.

MISS UTILITY OF West Virginia  
 1 800 345 4848  
 West Virginia State Law  
 (Section XIV, Chapter 24-C)  
 Requires that you call two  
 business days before you dig in  
 the state of West Virginia.  
**IT'S THE LAW!**

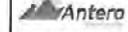
OXFORD 97 LIMITS OF DISTURBANCE AREA (S)			
Total Area	Permitted	Available	Total
OXF 149 Access Road "A" (10.807)	2.44	0.28	24.74
OXF 149 Access Road "C" (8.282)	19.65	0.20	11.00
Well Pad	7.04	0.00	7.04
Water Containment Pad	1.00	0.00	1.00
Excav/Topsoil Material Stockpiles	2.72	2.16	6.56
<b>Total Affected Area</b>	<b>54.85</b>	<b>4.37</b>	<b>59.22</b>
<b>Total Wooded Acres Disturbed</b>	<b>15.80</b>	<b>4.31</b>	<b>20.10</b>
<b>Impacts to H. Morris</b>			
OXF 149 Access Road "A" (4.852)	0.16	0.24	8.42
<b>Total Affected Area</b>	<b>0.16</b>	<b>0.24</b>	<b>8.42</b>
<b>Total Wooded Acres Disturbed</b>	<b>0.00</b>	<b>0.24</b>	<b>0.24</b>
<b>Impacts to Lucy Hopper (09-08-23-3)</b>			
OXF 149 Access Road "A" (0.192)	0.04	0.04	16.20
OXF 97 Access Road "B" (0.07)	0.51	0.00	0.51
<b>Total Affected Area</b>	<b>0.63</b>	<b>0.04</b>	<b>16.87</b>
<b>Total Wooded Acres Disturbed</b>	<b>0.31</b>	<b>0.04</b>	<b>0.35</b>
<b>Impacts to Hanesley Land &amp; Timber LLC (09-07-05-4)</b>			
OXF 97 Access Road "B" (0.00)	0.00	0.00	2.00
<b>Total Affected Area</b>	<b>0.00</b>	<b>0.00</b>	<b>2.00</b>
<b>Total Wooded Acres Disturbed</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Impacts to Hanesley Land &amp; Timber LLC (09-08-22-4)</b>			
OXF 97 Access Road "B" (0.00)	1.44	0.00	1.44
<b>Total Affected Area</b>	<b>1.44</b>	<b>0.00</b>	<b>1.44</b>
<b>Total Wooded Acres Disturbed</b>	<b>0.20</b>	<b>0.00</b>	<b>0.20</b>
<b>Impacts to William Ranshaw (09-04-22-1)</b>			
OXF 97 Access Road "B" (0.00)	17.61	0.77	17.78
Excav/Topsoil Material Stockpiles	0.49	3.53	4.12
<b>Total Affected Area</b>	<b>13.10</b>	<b>3.70</b>	<b>16.80</b>
<b>Total Wooded Acres Disturbed</b>	<b>4.76</b>	<b>3.73</b>	<b>8.49</b>
<b>Impacts to Hanesley Land &amp; Timber LLC (09-08-22-10)</b>			
OXF 97 Access Road "B" (1.024)	2.05	2.23	3.21
Well Pad	3.04	0.00	3.04
Water Containment Pad	0.4	0.00	0.41
Excav/Topsoil Material Stockpiles	1.23	0.16	1.39
<b>Total Affected Area</b>	<b>8.30</b>	<b>0.39</b>	<b>8.69</b>
<b>Total Wooded Acres Disturbed</b>	<b>0.03</b>	<b>0.30</b>	<b>0.33</b>
<b>Impacts to Joe K. Waters (09-08-19-2)</b>			
Well Pad	2.30	0.00	3.37
Water Containment Pad	1.30	0.00	0.50
Excav/Topsoil Material Stockpiles	3.05	0.00	1.00
<b>Total Affected Area</b>	<b>5.00</b>	<b>0.00</b>	<b>5.00</b>
<b>Total Wooded Acres Disturbed</b>	<b>3.95</b>	<b>0.00</b>	<b>3.95</b>

Well Name	WV North NAD 27	WV North NAD 83	UTM (METERS) Zone 17	NAD 83 Lat & Long
OXF97 Well AHS (Disturb) A/N 47-017-0648E1	N 20982.02 E 132020.31	N 20982.02 E 132020.25	N 142062.30 E 132020.25	LAT 38 42 59 N LONG 80 48 13 W
OXF97 Well BHS (Disturb) A/N 47-017-0648E2	N 20982.02 E 132020.36	N 20982.02 E 132020.22	N 142062.30 E 132020.22	LAT 38 42 59 N LONG 80 48 13 W
OXF97 Well CHS (Disturb) A/N 47-017-0648E3	N 20982.02 E 132020.41	N 20982.02 E 132020.25	N 142062.30 E 132020.25	LAT 38 42 59 N LONG 80 48 13 W
OXF97 Well DHS (Disturb) A/N 47-017-0648E4	N 20982.02 E 132020.46	N 20982.02 E 132020.25	N 142062.30 E 132020.25	LAT 38 42 59 N LONG 80 48 13 W
OXF97 Well EHS (Disturb) A/N 47-017-0648E5	N 20982.02 E 132020.51	N 20982.02 E 132020.25	N 142062.30 E 132020.25	LAT 38 42 59 N LONG 80 48 13 W
OXF97 Well FHS (Disturb) A/N 47-017-0648E6	N 20982.02 E 132020.56	N 20982.02 E 132020.25	N 142062.30 E 132020.25	LAT 38 42 59 N LONG 80 48 13 W
OXF97 Well GHS (Disturb) A/N 47-017-0648E7	N 20982.02 E 132020.61	N 20982.02 E 132020.25	N 142062.30 E 132020.25	LAT 38 42 59 N LONG 80 48 13 W
OXF97 Well IHS (Disturb) A/N 47-017-0648E8	N 20982.02 E 132020.66	N 20982.02 E 132020.25	N 142062.30 E 132020.25	LAT 38 42 59 N LONG 80 48 13 W

Well Name	WV North NAD 27	WV North NAD 83	UTM (METERS) Zone 17	NAD 83 Lat & Long
OXF97 Well AHS (Disturb) A/N 47-017-0648E1	N 20982.02 E 132020.31	N 20982.02 E 132020.25	N 142062.30 E 132020.25	LAT 38 42 59 N LONG 80 48 13 W
OXF97 Well BHS (Disturb) A/N 47-017-0648E2	N 20982.02 E 132020.36	N 20982.02 E 132020.22	N 142062.30 E 132020.22	LAT 38 42 59 N LONG 80 48 13 W
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OXF97 Well EHS (Disturb) A/N 47-017-0648E5	N 20982.02 E 132020.51	N 20982.02 E 132020.25	N 142062.30 E 132020.25	LAT 38 42 59 N LONG 80 48 13 W
OXF97 Well FHS (Disturb) A/N 47-017-0648E6	N 20982.02 E 132020.56	N 20982.02 E 132020.25	N 142062.30 E 132020.25	LAT 38 42 59 N LONG 80 48 13 W
OXF97 Well GHS (Disturb) A/N 47-017-0648E7	N 20982.02 E 132020.61	N 20982.02 E 132020.25	N 142062.30 E 132020.25	LAT 38 42 59 N LONG 80 48 13 W
OXF97 Well IHS (Disturb) A/N 47-017-0648E8	N 20982.02 E 132020.66	N 20982.02 E 132020.25	N 142062.30 E 132020.25	LAT 38 42 59 N LONG 80 48 13 W
Well Pad Elevation	2333.9			



DATE	REVISION	BY	CHKD
	REVISED FOR TESTING, SEE INSTRUMENTS		
	REVISED FOR OOG		



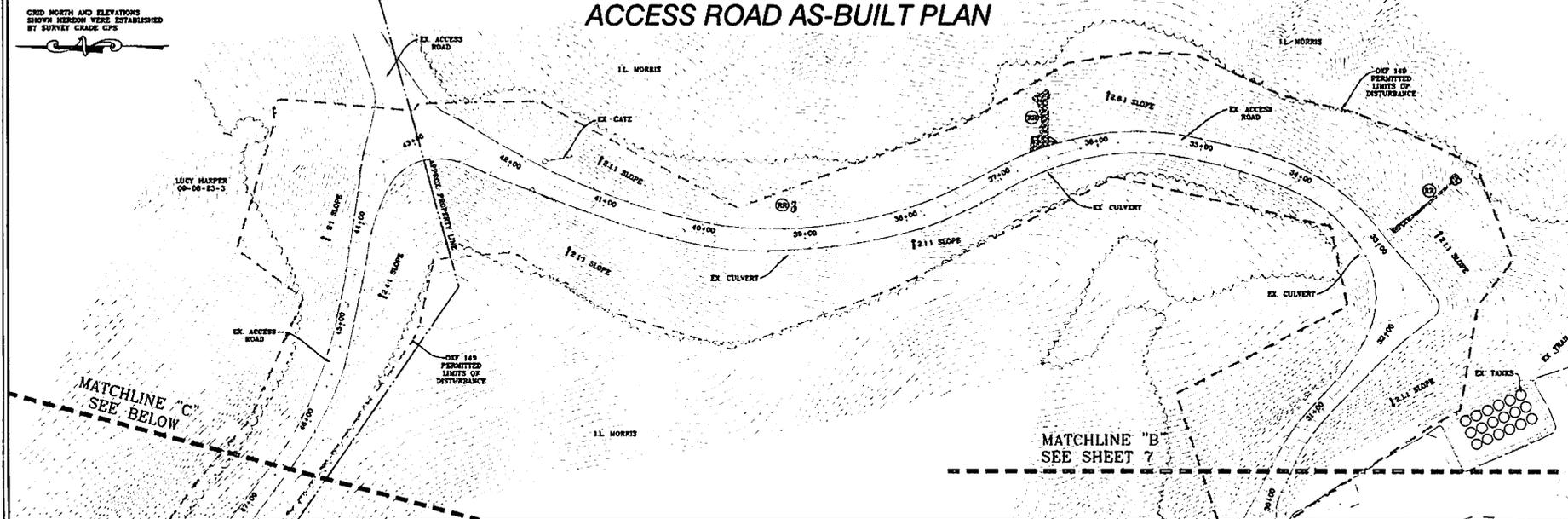
THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

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

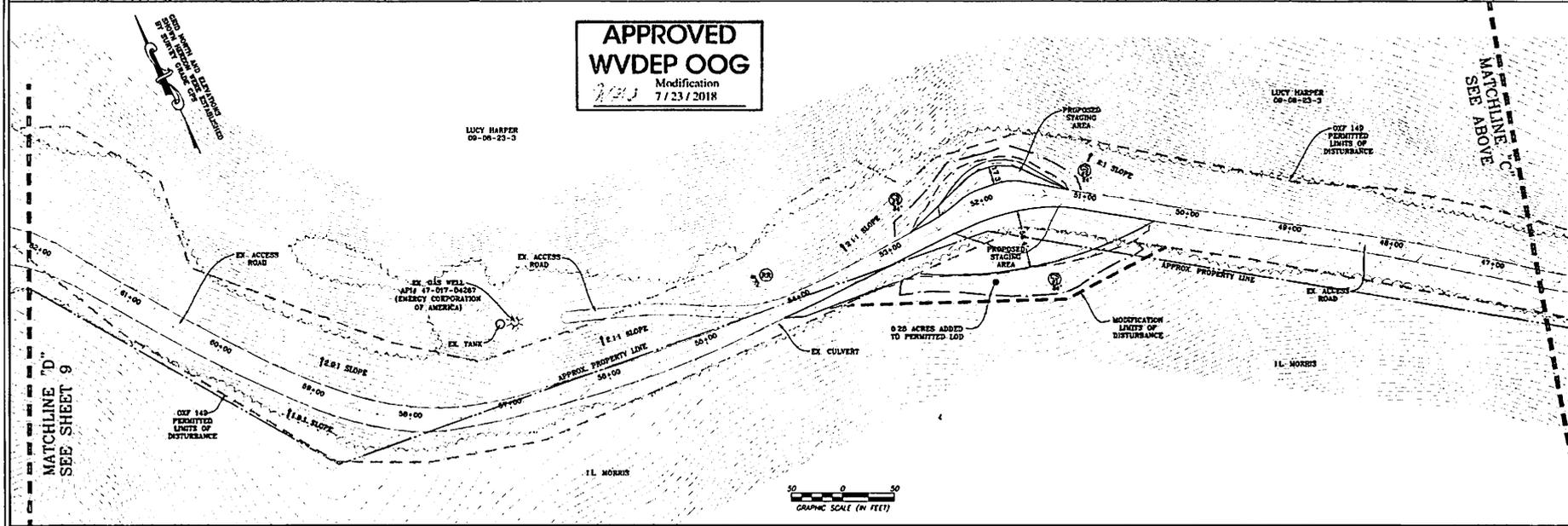


DATE: 02/14/2018  
 SCALE: AS SHOWN  
 SHEET 1 OF 30

# ACCESS ROAD AS-BUILT PLAN



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



**NAVATUS**  
 ENERGY ENGINEERING

Telephone: (336) 852-4185 | www.NavatusEng.com

DATE	REVISION	BY	DATE
02/13/2018	REVISED PER CAD LINES		
	REVISED PER LUD		

**Antero**  
 THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

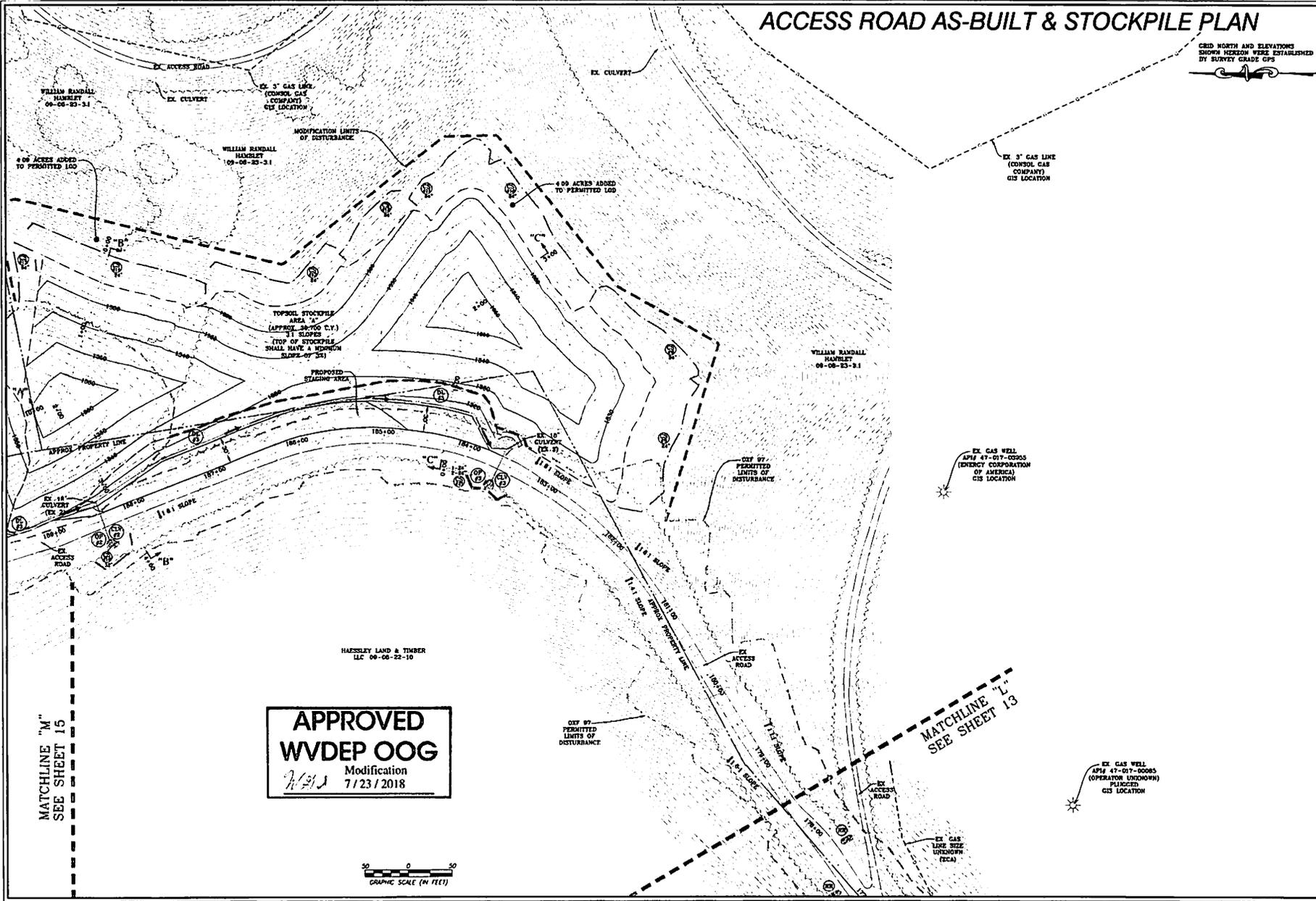
ACCESS ROAD AS-BUILT PLAN  
**OXFORD 97**  
 WELL PAD  
 SOUTHWEST & WEST UNION DISTRICTS  
 BOBBIDGE COUNTY, WEST VIRGINIA



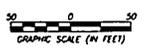
DATE: 02/14/2018  
 SCALE: 1" = 50'  
 SHEET 8 OF 38

# 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

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

**Antero**  
 THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

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



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

# WELL PAD AS-BUILT & WATER CONTAINMENT PAD PLAN

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

EX. GAS LINE SIZE UNKNOWN (OPERATOR UNKNOWN) GIS LOCATION

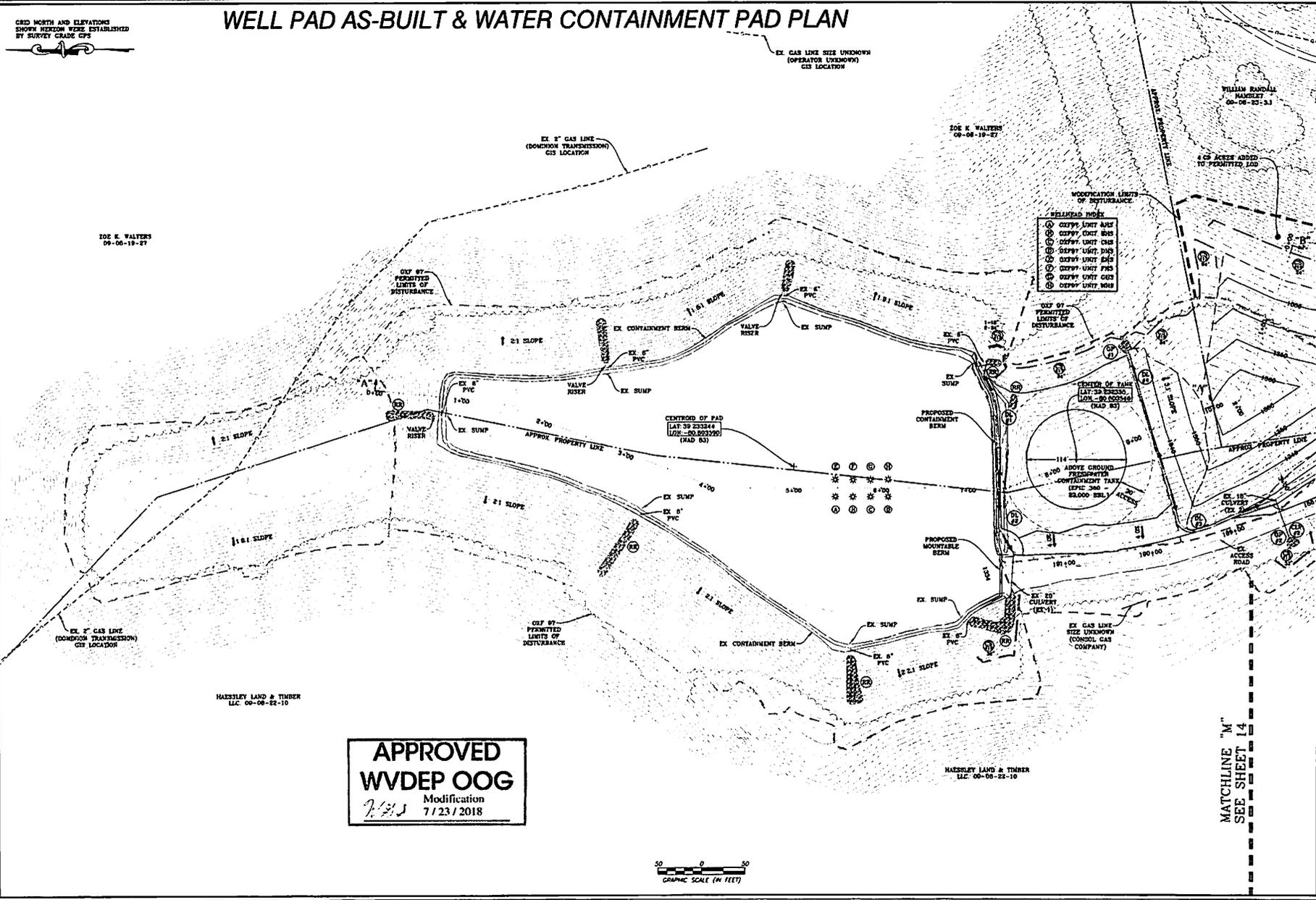
EX. 8" GAS LINE (CONDORION TRANSMISSION) GIS LOCATION

DOE K. WALTERS 09-08-19-27

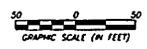
DOE K. WALTERS 09-08-19-27

WILLIAM RANDALL HANDELY 00-06-22-10

- WELLHEAD INDEX**
- ⊙ OXYFY UNIT AHS
  - ⊙ OXYFY UNIT BHS
  - ⊙ OXYFY UNIT CHS
  - ⊙ OXYFY UNIT DMS
  - ⊙ OXYFY UNIT FHS
  - ⊙ OXYFY UNIT GHS
  - ⊙ OXYFY UNIT IHS



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



## NAVITUS ENERGY ENGINEERING

Telephone: (833) 681-1151 | www.NavitusEng.com

DATE	REVISION
02/14/2018	REVISED PER EXISTING GAS LINES
02/15/2018	REVISED PER IJD

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

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

MATCHLINE "M" SEE SHEET 14