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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)

Friday, October 12, 2018  
 WELL WORK PERMIT  
 Horizontal 6A / Fracture

ANTERO RESOURCES CORPORATION  
 1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit approval for OXFD13EHS  
 47-017-06578-00-00

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: OXFD13EHS  
 Farm Name: MORRIS, I.L.  
 U.S. WELL NUMBER: 47-017-06578-00-00  
 Horizontal 6A Fracture  
 Date Issued: 10/12/2018

WW-6B  
(04/15)

API NO. 47-017 - 06578  
OPERATOR WELL NO. OXFD13EHS  
Well Pad Name: Oxford 13 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 - Doddridge Southwest New Milton 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: OXFD13EHS Well Pad Name: Oxford 13 Pad

3) Farm Name/Surface Owner: I.L. (Ike) Morris Public Road Access: CR 40

4) Elevation, current ground: 1152' Elevation, proposed post-construction: 1152'

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: 6816' TVD, Anticipated Thickness- 60 feet, Associated Pressure- 3250#

8) Proposed Total Vertical Depth: 6816' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 13695 MD

11) Proposed Horizontal Leg Length: 5892'

12) Approximate Fresh Water Strata Depths: 290'

13) Method to Determine Fresh Water Depths: OXFD13EHS (API #47-017-06578)

14) Approximate Saltwater Depths: 2175', 2510'

15) Approximate Coal Seam Depths: 294', 1650'

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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JUN 29 2018

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6/25/18

WW-6B  
(04/15)

API NO. 47- 017 - 06578  
OPERATOR WELL NO. OXFD13EHS  
Well Pad Name: Oxford 13 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#	85'	85'	CTS, 82 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	1150'	1150'	CTS, 1598 Cu. Ft.
Coal	9-5/8"	New	HCK-55	36#	2894'	2894'	CTS, 1178 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	13680'	13680'	3235 Cu. Ft
Tubing							
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	Lead-HPOZ & TMI - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

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**PACKERS**

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

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DAF  
6/25/14

WW-6B  
(10/14)

API NO. 47- 017 - 06578

OPERATOR WELL NO. OXFD13EHS

Well Pad Name: Oxford 13 Pad

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

This well has been drilled to TD - 13695'. 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): 16.34 existing acres

22) Area to be disturbed for well pad only, less access road (acres): 6.68 existing acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

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

Conductor: no additives, Class A cement.

Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake

Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

\*Note: Attach additional sheets as needed.

DAF  
6/25/18

WW-9  
(4/16)

API Number 47 - 017 - 06578  
Operator's Well No. OXFD13EHS

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 494507062

Watershed (HUC 10) South Fork Hughes River Quadrangle New Milton 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 - Dust/Silt/ Foam, Production - Water Based Mud

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

Additives to be used in drilling medium? Please See Attachment

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

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

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

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

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

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

Company Official Signature Gretchen Kohler

Company Official (Typed Name) Gretchen Kohler

Company Official Title Senior Environmental & Regulatory Manager

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Office of Oil and Gas  
JUN 29 2018  
WV Department of Environmental Protection

Subscribed and sworn before me this 13 day of June, 2018  
[Signature] Notary Public

My commission expires 3/29/2022

KARIN COX  
NOTARY PUBLIC  
STATE OF COLORADO  
NOTARY ID 20184014150  
MY COMMISSION EXPIRES MARCH 29, 2022

**Antero Resources Corporation**

Proposed Revegetation Treatment: Acres Disturbed 16.34 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 (6.27 acres) + Well Pad (6.68 acres) + Staging Area (0.44 acres) + Excess/Topsoil Material Stockpiles (2.69 acres) = 16.34 Total Affected Acres

**Seed Mixtures**

<b>Temporary</b>		<b>Permanent</b>	
Seed Type	lbs/acre	Seed Type	lbs/acre
<u>Annual Ryegrass</u>	<u>40</u>	<u>Crownvetch</u>	<u>10-15</u>
<u>Field Bromegrass</u>	<u>40</u>	<u>Tall Fescue</u>	<u>30</u>
<small>See attached Table IV-3 for additional seed type (Oxford 13 Pad Design)</small>		<small>See attached Table IV-4A for additional seed type (Oxford 13 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: 

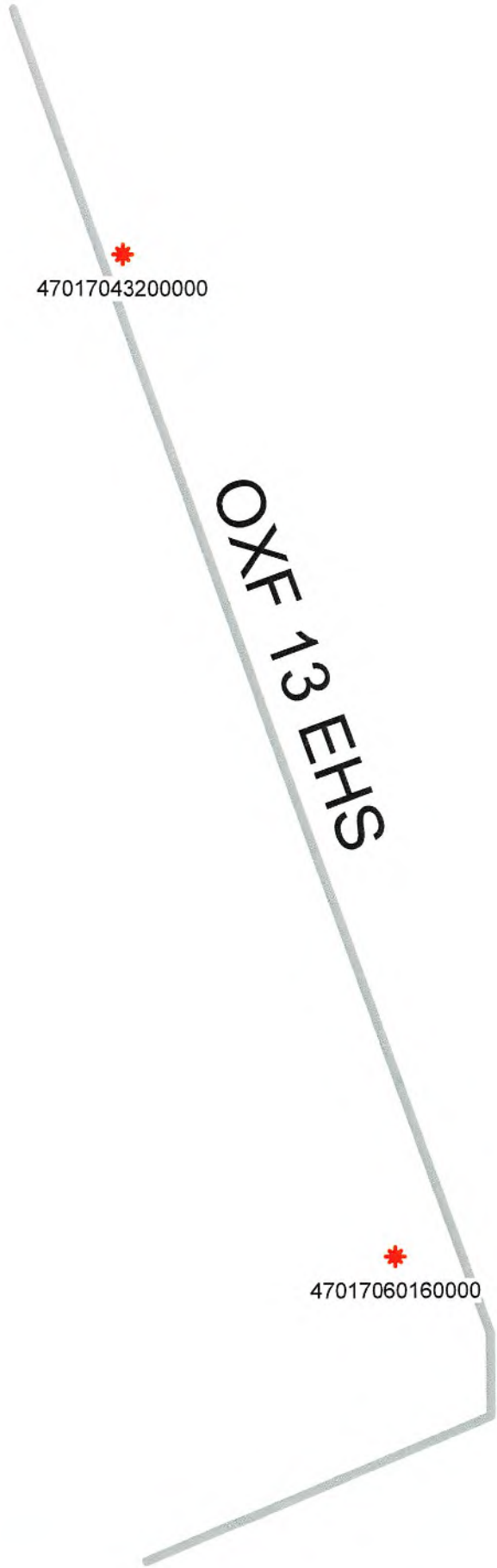
Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Title: Oil & Gas Inspector Date: 6/25/18

Field Reviewed?  Yes  No



4701706578 F



Antero Resources Corporation

OXF 13 EHS - AOR



WELL SYMBOLS  
Gas Well

June 11, 2018

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WV Department of  
Environmental Protection

10/12/2018

OXFD13EHS (OXFORD 13 PAD) - AREA OF REVIEW 35-8-5.11 PAGE 2

LWI (APRN#)	Well Name	Well Number	Operator	Historical Operator	T/D	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Productive Formation(s) not perf'd
4701704320000	HUDAK EDWARD ET AL	2	KEY OIL COMPANY	KEY OIL INCORPORATED	5,436	3281 - 3284	Warren, Bradford, Riley, Alexander	Big Injun, Weir, Bradford, Baltozen
4701705960000	FARR CAROLYN	1	KEY OIL COMPANY	KEY OIL COMPANY	5,511	3477 - 3482	Warren, Bradford, Riley, Alexander	Big Injun, Weir, Bradford, Baltozen

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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**  
**3314 Swinger Hollow**  
**New Milton, WV 26411**

# Well Site Safety Plan

## Antero Resources

**Well Name:** OXFD13 Unit AHS, BHS, CHS, DHS, EHS, FHS, and IHS

**Pad Location:** OXFORD 13 PAD  
Doddridge County/Southwest & New  
Milton District

**GPS Coordinates:**

**Entrance** - Lat 39°10'12.1"/Long -80°45'00.7" (NAD83)  
**Pad Center** - Lat 39°10'07.2"/Long -80°51'51.5" (NAD83)

**Driving Directions:** From old post office/store in Oxford: Head east on S Fork of Hughes River toward Taylor Drain Rd for 1/2 miles. Turn right to stay on S Fork Hughes River for 5.7 miles. Slight left onto Cain Run for 0.2 miles. Turn right to stay on Cain Run for 0.7 miles. Lease road will be on your left.

**Alternate Route:** From the intersection HWY 50 & WV 18. Head east on WV-18 S toward Brushy Fork for 9.3 miles. Turn right onto Porto Rico Rd for 0.7 miles. Continue onto Toms Fork for 0.7 miles. Continue straight onto Co Rte 54/1 for 2.5 miles. Turn left onto Cain Run for 0.7 miles. Lease road will be on your left.

*Antero*  
6/25/18

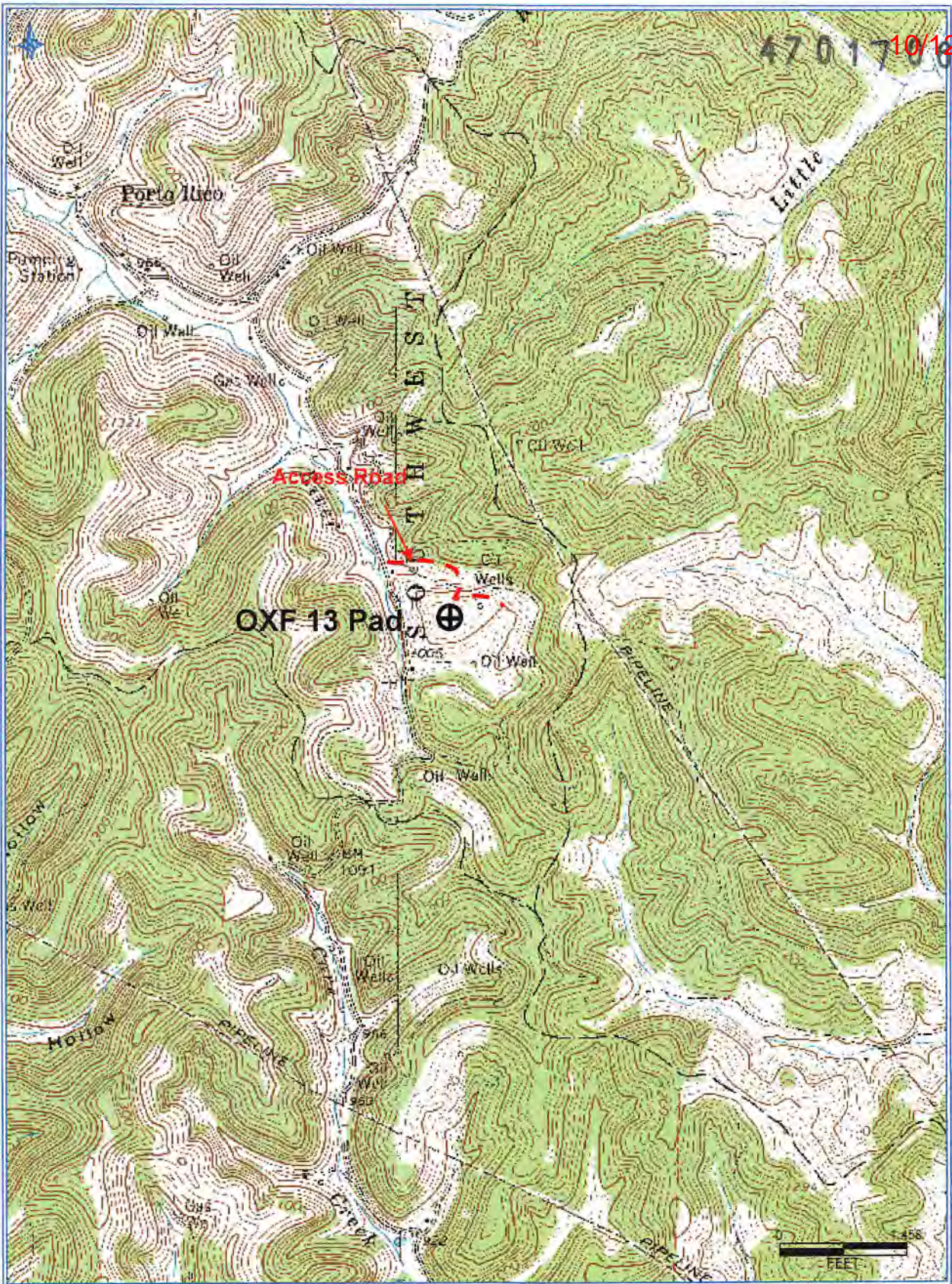
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**EMERGENCY (24 HOUR) CONTACT 1-800-878-1373**

4701700378E 10/12/2018



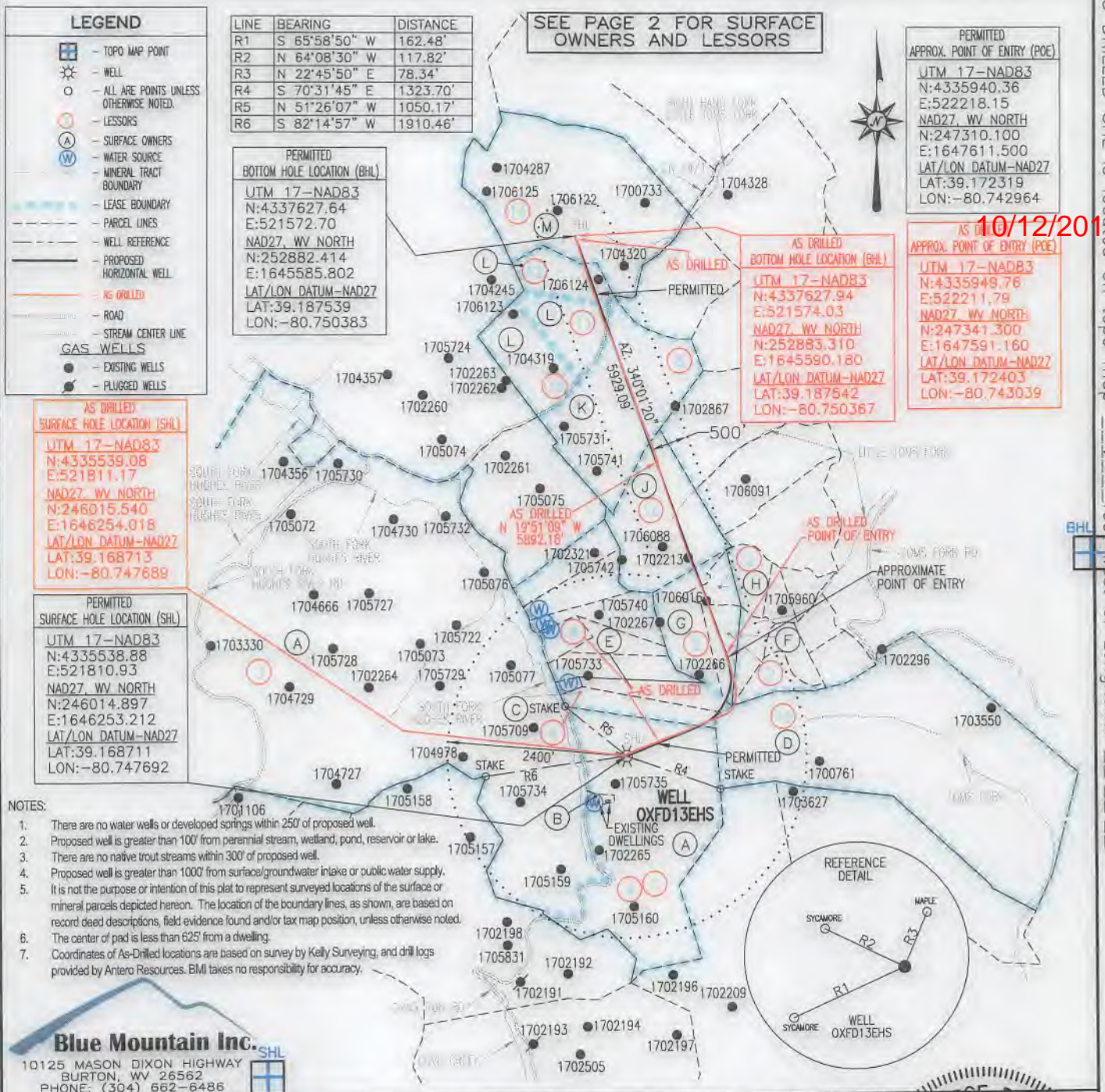
**Antero Resources Corporation**  
 Appalachian Basin  
 OXF 13 Pad  
 Ritchie County

Quadrangle: New Milton  
 Watershed: South Fork Hughes River  
 District: Doddridge  
 Date: 6-11-2018

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AS DRILLED BHL is located on topo map 7,541 feet south of Latitude: 39° 12' 30"  
 AS DRILLED SHL is located on topo map 14,382 feet south of Latitude: 39° 12' 30"

AS DRILLED BHL is located on topo map 55 feet west of Longitude: 80° 42' 30"  
 AS DRILLED SHL is located on topo map 11,107 feet west of Longitude: 80° 42' 30"

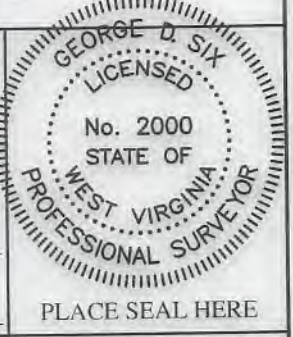


FILE #: OXFD13EHS  
 DRAWING #: OXFD13EHS  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/2500  
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

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: *George D. Six*

R.P.E.: \_\_\_\_\_ L.L.S.: P.S. No. 2000



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP

OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304

DATE: FEBRUARY 05, 2018

OPERATOR'S WELL #: OXFD13EHS

API WELL #: 47 17 06578 F  
 STATE COUNTY PERMIT

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

WATERSHED: SOUTH FORK HUGHES RIVER ELEVATION: 1,152.4'±

COUNTY/DISTRICT: DODDRIDGE / SOUTHWEST QUADRANGLE: NEW MILTON, WV 7.5' (SHL) & OXFORD, WV 7.5' (BHL)

SURFACE OWNER: I. L. (IKE) MORRIS ACREAGE: 6603.75±

OIL & GAS ROYALTY OWNER: S. W. STOUT ET AL, J. P. MORGAN CHASE BANK & CLARENCE E. SIGLEY, TRUSTEE ACREAGE: 1349.310±

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,816'± TMD: 13,695'±

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

# OXFD13EHS

## PAGE 2 OF 2

10/12/2018

	SURFACE OWNER	DIST-TM/PAR
A	I. L. (IKE) MORRIS	7-10/2
B	JERRY L. & SHARON LEGGETT (SURV)	7-15/3.1
C	TYLER GARRETT BUNTING C/O LENORA BUNTING	7-15/1
D	I. L. (IKE) MORRIS	6-18/2
E	LINEY MCKINNEY	7-15/1.6
F	CHARLES ALAN SCHNEIDER C/O CHARLES SCHNEIDER	6-18/1.5
G	CHARLES ALAN SCHNEIDER	6-18/1.6
H	CHARLES A. SCHNEIDER	6-18/1.4
J	DEBRA KAY HUDAK	6-14/17
K	DEBRA KAY HUDAK	7-11/6
L	KEY OIL COMPANY	7-11/1
M	GREGORY B. & DEBRA A. REDIFER (SURV)	6-14/1

PARCEL	LESSOR
1&4	S.W. STOUT ET AL
2	CHARLES E. SIGLEY, SR. TRUSTEE FOR CAROLYN E. FARR TRUST
6	ED HUDAK
10,11, 12&14	GENEVIEVE STOUT SUMMERS
15	CHARLES E. SIGLEY, SR. TRUSTEE FOR CAROLYN E. FARR TRUST
16	HAROLD S. YOST, ET UX

PERMITTED SURFACE HOLE LOCATION (SHL)	PERMITTED APPROX. POINT OF ENTRY (POE)	PERMITTED BOTTOM HOLE LOCATION (BHL)
<u>UTM 17-NAD83</u> N:4335538.88 E:521810.93 <u>NAD27, WV NORTH</u> N:246014.897 E:1646253.212 <u>LAT/LON DATUM-NAD27</u> LAT:39.168711 LON:-80.747692	<u>UTM 17-NAD83</u> N:4335940.36 E:522218.15 <u>NAD27, WV NORTH</u> N:247310.100 E:1647611.500 <u>LAT/LON DATUM-NAD27</u> LAT:39.172319 LON:-80.742964	<u>UTM 17-NAD83</u> N:4337627.64 E:521572.70 <u>NAD27, WV NORTH</u> N:252882.414 E:1645585.802 <u>LAT/LON DATUM-NAD27</u> LAT:39.187539 LON:-80.750383
<u>AS DRILLED</u> <u>SURFACE HOLE LOCATION (SHL)</u> <u>UTM 17-NAD83</u> N:4335539.08 E:521811.17 <u>NAD27, WV NORTH</u> N:246015.540 E:1646254.018 <u>LAT/LON DATUM-NAD27</u> LAT:39.168713 LON:-80.747689	<u>AS DRILLED</u> <u>APPROX. POINT OF ENTRY (POE)</u> <u>UTM 17-NAD83</u> N:4335949.76 E:522211.79 <u>NAD27, WV NORTH</u> N:247341.300 E:1647591.160 <u>LAT/LON DATUM-NAD27</u> LAT:39.172403 LON:-80.743039	<u>AS DRILLED</u> <u>BOTTOM HOLE LOCATION (BHL)</u> <u>UTM 17-NAD83</u> N:4337627.94 E:521574.03 <u>NAD27, WV NORTH</u> N:252883.310 E:1645590.180 <u>LAT/LON DATUM-NAD27</u> LAT:39.187542 LON:-80.750367

FEBRUARY 05, 2018

WW-6A1  
(5/13)

Operator's Well No. OXFD13EHS

**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>Genevieve Stout Summers Lease</u>				
	Genevieve Stout Summers	Interstate Drilling Inc	1/8	0177/0623
	Murvin Oil Company	Key Oil Company	Assignment	0178/0085
	Key Oil Company	Antero Resources Appalachian Corporation	Assignment	0256/0285
	Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

\*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.

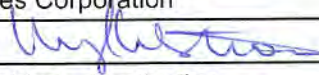
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Office of Oil and Gas  
JUN 14 2018  
WV Department of  
Environmental Protection

**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

Operator's Well Number

OXFD13EHS

FRAC PERMIT API #47-017-06578

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>S.W Stout et al Lease</u></b>			
S.W Stout , et al	M.G. Zinn	1/8	11/464
M.G. Zinn	The Carter Oil Company	Assignment	14/127
The Carter Oil Company	Hope Natural Gas Company	Assignment	42/410
Hope Natural Gas Company	Consolidated Gas Supply Corporation	Assignment	143/345
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	135/583
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Assignment	328/398
CNG Transmission Corporation	Dominion Transmission Corporation	Assignment	328/393
Dominion Transmission Corporation	CNX Gas Company LLC	Assignment	293/252
CNX Gas Company LLC	<b>Antero Resources Corporation</b>	<b>Assignment</b>	<b>348/700</b>
<b><u>Charles E. Sigley, Sr. Trustee For Carolyn E. Farr Trust Lease</u></b>			
Charles E. Sigley, Sr. Trustee for Carolyn E. Farr Trust	Clarence E Sigley Sr. Individually	1/8	270/466
Clarence E Sigley Sr. Individually	Antero Resources Appalachian Corporation	Assignment	271/556
Antero Resources Appalachian Corporation	<b>Antero Resources Corporation</b>	<b>Name Change</b>	<b>EXHIBIT 1</b>
<b><u>Harold S. Yost et ux Lease</u></b>			
Harold S Yost, et ux	Rockford Energy LLC	1/8	405/307
Rockford Energy LLC	<b>Antero Resources Corporation</b>	<b>Assignment</b>	<b>438/19</b>
<b><u>Ed Hudak Lease</u></b>			
Ed Hudak	Key Oil Company	1/8	178/515
Key Oil Company	Antero Resources Appalachian Corporation	Assignment	276/526
Antero Resources Appalachian Corporation	<b>Antero Resources Corporation</b>	<b>Name Change</b>	<b>EXHIBIT 1</b>

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



FORM WW-6A1  
EXHIBIT 1

10/12/2018

4701706578F

FILED

JUN 10 2013



Penney Barker, Manager  
Corporations Division  
IN THE OFFICE OF  
Tel: (304)558-8000  
Fax: (304)558-8381  
SECRETARY OF STATE  
Website: www.wvso.com  
E-mail: business@wvso.com

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

APPLICATION FOR  
AMENDED CERTIFICATE  
OF AUTHORITY

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

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

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

- Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
- Date Certificate of Authority was issued in West Virginia: 6/25/2008
- Corporate name has been changed to: Antero Resources Corporation  
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)
- Name the corporation elects to use in WV: Antero Resources Corporation  
(due to home state name not being available)
- Other amendments: \_\_\_\_\_  
(attach additional pages if necessary)
- Name and phone number of contact person. (This is optional; however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)  
Alvyn A. Schopp (303) 367-7310  
Contact Name Phone Number
- Signature information (See below \*Important Legal Notice Regarding Signature\*):  
Print Name of Signer: Alvyn A. Schopp Title/Capacity: Authorized Person  
Signature: [Handwritten Signature] Date: June 10, 2013

**\*Important Legal Notice Regarding Signature:** 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.

Form CF-4

Issued by the Office of the Secretary of State

RECEIVED  
Office of the Secretary of State  
Office of Environmental Protection  
Revised 4/13  
JUN 11 4 58 PM '13  
WV Department of Environmental Protection

FRAC PERMIT APN 47-011-0657-  
10/12/2018  
47 0 1 7 0 6 5 7 8 F



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

June 12, 2018

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: OXFD13EHS  
Quadrangle: New Milton 7.5'  
Doddridge County/Southwest District, West Virginia

Mr. Martin:

Antero Resources Corporation (Antero) is submitting the following application for a new well work permit for the OXFD13EHS 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 OXF13EHS horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

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

Tyler Adams  
Landman

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JUN 14 2018  
WV Department of  
Environmental Protection

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

**Date of Notice Certification:** 06/12/2018

**API No.** 47- 017 - 06578

**Operator's Well No.** OXFD13EHS

**Well Pad Name:** Oxford 13 Pad

**Notice has been given:**

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

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>521811m</u>
County: <u>Doddridge</u>		Northing: <u>4335539m</u>
District: <u>Southwest</u>	Public Road Access: <u>CR 40</u>	
Quadrangle: <u>New Milton 7.5'</u>	Generally used farm name: <u>I.L. (Ike) Morris</u>	
Watershed: <u>South Fork Hughes River</u>		

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

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 40px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p><b>OOG OFFICE USE ONLY</b></p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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**Required Attachments:**

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

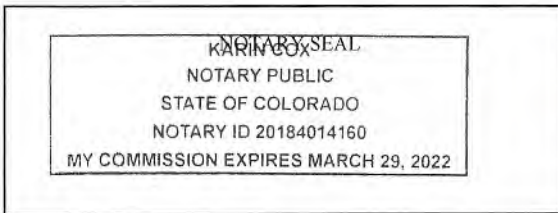
JUN 14 2018  
 WV Department of  
 Environmental Protection

10/12/2018

**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> <i>[Signature]</i>		<u>Denver, CO 80202</u>
Its:	<u>Senior Vice President - Production</u>	Facsimile:	<u>303-357-7315</u>
Telephone:	<u>303-357-7182</u>	Email:	<u>kcox@anteroresources.com</u>



Subscribed and sworn before me this 12 day of June 2018.

*[Signature]*

Notary Public

My Commission Expires 3/29/2022

**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 [deprivacyofficer@wv.gov](mailto:deprivacyofficer@wv.gov).

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Office of Oil and Gas  
JUN 14 2018  
WV Department of  
Environmental Protection

WW-6A  
(9-13)

API NO. 47- 017 - 06578 **10/12/2018**  
 OPERATOR WELL NO. OXFD13EHS  
 Well Pad Name: Oxford 13 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:** 6/13/2018 **Date Permit Application Filed:** 6/13/2018

**Notice of:**

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

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

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

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

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

SURFACE OWNER(s)  
 Name: I.L. Morris  
 Address: PO Box 397  
Glenville, WV 26351  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

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: I.L. Morris  
 Address: PO Box 397  
Glenville, WV 26351  
 Name: Tyler and Lenora Bunting  
 Address: PO Box 105  
Smithburg, WV 26436

WATER PURVEYOR(s)/OWNER(s) OF WATER WELL, SPRING OR OTHER WATER SUPPLY SOURCE  
 Name: PLEASE SEE ATTACHMENT  
 Address: \_\_\_\_\_

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

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

\*Please attach additional forms if necessary

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 Office of Oil and Gas  
 JUN 14 2018

WW-6A  
(8-13)

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Office of Oil and Gas

API NO. 47- 017 - 06578 10/12/2018  
OPERATOR WELL NO. OXFD13EHS  
Well Pad Name: Oxford 13 Pad

JUN 14 2018

**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).

**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

WW-6A  
(8-13)

API NO. 47-017 - 06578 10/12/2018  
OPERATOR WELL NO. OXFD13EHS  
Well Pad Name: Oxford 13 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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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.**

WW-6A  
(8-13)

API NO. 47- 017 - 06578 **10/12/2018**  
 OPERATOR WELL NO. OXFD13EHS  
 Well Pad Name: Oxford 13 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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WW-6A  
(8-13)

API NO. 47- 017 - 06578 **10/12/2018**  
OPERATOR WELL NO. OXFD13EHS  
Well Pad Name: Oxford 13 Pad

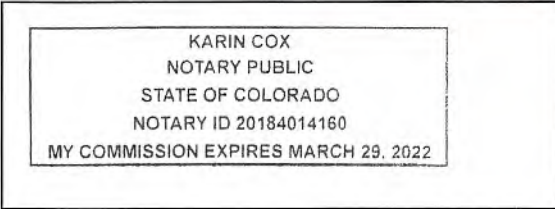
**Notice is hereby given by:**

Well Operator: Antero Resources Corporation  
Telephone: (303) 357-7310  
Email: kcox@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 [deprivacyofficer@wv.gov](mailto:deprivacyofficer@wv.gov).



Subscribed and sworn before me this 13 day of June 2018.

Karin Cox Notary Public

My Commission Expires 3/29/2022

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# WW-6A Notice of Application Attachment (Oxford 13 Pad):

## List of Owners with Proposed Disturbance associated with Oxford 13 Well Pad:

### WATER SOURCE OWNERS –

**Owner:** Jeffrey & Liney McKinney  
**Address:** 2616 Rube Leggett Rd  
New Milton, WV 26411

**Owner:** CNX Gas Co. LLC  
**Address:** 1000 Consol Energy Dr  
Canonsburg, PA 15317

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# Oxford 13 Pad Water Well Map

## West Virginia Doddridge County Southwest District

47 0 1 7 0 6 5 7 8



TM 11-8  
William L. Jones  
Trust

TM 18-1.4  
Charles A.  
Schneider

Water Well  
LAT: 39° 10' 24.0"  
LON: 80° 45' 04.2"

TM 15-1.4  
Jerry & Sharon  
Leggett

TM 18-1.5  
Charles A.  
Schneider

TM 18-1.1  
Jack & Wanda  
Wright

TM 15-1.2  
Kevin & Teresa  
Mullen

TM 15-1.3  
Kevin & Teresa  
Mullen

TM 18-1.6  
Charles A.  
Schneider

TM 15-1.5  
Marie E. Hyde &  
Richard A. Baker

TM 15-1.1  
Jeffrey & Liney  
McKinney  
Water Well  
LAT: 39° 10' 17.1"  
LON: 80° 45' 01.1"

TM 15-1.6  
Liney McKinney

TM 18-1  
Jack & Wanda  
Wright

**TM 15-1.1**  
**Jeffrey and Liney McKinney**  
**2616 Rube Leggett Rd**  
**New Milton, WV 26411**

TM 15-1  
Tyler G. Bunting

TM 18-2  
IL Morris

TM 10-2  
IL Morris

Water Well  
LAT: 39° 10' 01.5"  
LON: 80° 44' 56.6"

N 30°11' W 1937.5'  
N 37°20' W 1214.5'  
S 33°24' W 737.5'

TM 15-3.1  
CNX Gas Co. LLC  
**TM 15-3.1**  
**CNX Gas Co. LLC (TM 15-3.1)**  
**1000 Consol Energy Dr**  
**Canonsburg, PA 15317**

2000'

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(Cove Dist.) TM 2-1  
CNX Gas Co. LLC



47017065785 10/12/2018

**CERTIFIED MAIL RECEIPT**  
**OXFD13 AHS-FHS,IHS - OXFORD 13 PAD**  
**WW-6A NOTICE OF APPLICATION**  
**TO SURFACE OWNER**

cut on dotted line.

**Instructions**

1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. **DO NOT PHOTO COPY OR ALTER LABEL.**
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, **DO NOT TAPE OVER BARCODE.** Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

**Click-N-Ship® Label Record**

<b>USPS TRACKING # :</b>	
<b>9405 5036 9930 0248 9038 03</b>	
Trans. #: 437084039	Priority Mail® Postage: <b>\$6.70</b>
Print Date: 06/12/2018	Total: <b>\$6.70</b>
Ship Date: 06/13/2018	
Expected Delivery Date: 06/16/2018	
<b>From:</b> KARIN COX ANTERO RESOURCES 1615 WYNKOOP ST DENVER CO 80202-1106	
<b>To:</b> I.L MORRIS PO BOX 397 GLENNVILLE WV 26351-0397	
<small>* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.</small>	



Thank you for shipping with the United States Postal Service!  
Check the status of your shipment on the USPS Tracking® page at usps.com

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**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:** 10/10/2017      **Date Permit Application Filed:** 06/13/2018

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**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: I.L. Morris  
Address: PO Box 397  
Glennville, WV 26351

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

**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      UTM NAD 83      Easting: 521811m  
County: Doddridge      Northing: 4335539m  
District: Southwest      Public Road Access: CR-40  
Quadrangle: New Milton 7.5'      Generally used farm name: I.L Morris  
Watershed: South Fork Hughes River

**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: kcox@anteroresources.com  
Facsimile: 303-357-7315

Authorized Representative: Karin Cox  
Address: 1615 Wynkoop St.  
Denver, CO 80202  
Telephone: 303-357-7310  
Email: kcox@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).

WW-6A5  
(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:** 06/13/2018 **Date Permit Application Filed:** 06/13/2018

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

- CERTIFIED MAIL  
RETURN RECEIPT REQUESTED
- HAND  
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: I. L. Morris  
Address: PO Box 397  
Glennville, WV 26351

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

**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: 521811m  
County: Doddridge Northing: 4335539m  
District: Southwest Public Road Access: CR 40  
Quadrangle: New Milton 7.5' Generally used farm name: I. L. (Ike) Morris  
Watershed: South Fork Hughes River

**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 Address: 1615 Wynkoop Street  
Telephone: (303) 357-7310 Denver, CO 80202  
Email: kcox@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).



10/12/2018  
4701706578E

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

June 12, 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

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Subject: DOH Permit for the OXFD 13 Well Pad, Doddridge County  
OXFD13EHS Well Site

Dear Mr. Martin,

This well site will be accessed from Permit #04-2014-0079 transferred to Antero Resources for access to the State Road for a well site located off of Doddridge County 40 SLS.

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

Very Truly Yours,

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

Cc: Karin Cox  
Antero Resources  
CH, OM, D-4  
File

# List of Anticipated Additives Used for Fracturing or Stimulating Well

10/12/2018  
4701706578F

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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LOCATION COORDINATES

ACCESS ROAD ENTRANCE  
LATITUDE: 39.476030 LONGITUDE: -80.760180 (NAD 83)  
LATITUDE: 39.469550 LONGITUDE: -80.760557 (NAD 27)  
E: 4336573.88 E: 524594.09 (UTM ZONE 17, METERS)

CENTRE OF WELL PAD  
LATITUDE: 39.469999 LONGITUDE: -80.747627 (NAD 83)  
LATITUDE: 39.469550 LONGITUDE: -80.747628 (NAD 27)  
N: 4335524.46 E: 521809.42 (UTM ZONE 17, METERS)

GENERAL DESCRIPTION

THIS ACCESS ROAD AND WELL PAD HAVE BEEN CONSIDERED AS AN ADDITIONAL WETLANDS SHALL BE WELLS.

FLOODPLAIN NOTES

THE SITE IS LOCATED IN FLOODZONE "X" PER FEMA FLOOD MAP 4504010202C.

MISS UTILITY STATEMENT

ANTERO RESOURCES CORPORATION HAS NOTIFIED MISS UTILITY OF WEST VIRGINIA FOR THE LOCATION OF UTILITIES PRIOR TO THIS DESIGN.

ENTRANCE PERMIT

ANTERO RESOURCES CORPORATION HAS OBTAINED AN ENTRANCE PERMIT FROM NM-50R 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 JULY, 2016 BY KLEINFELDER 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). THE JULY 29, 2016 STREAM AND WETLAND DELINEATION INDEX MAP WAS PREPARED BY KLEINFELDER AND SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE MAP DOES NOT IN ANY WAY REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDMADE LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP.

IT IS STRONGLY RECOMMENDED THAT THE APPROPRIATE AGENCIES BE CONSULTED IN AN EFFORT TO OBTAIN WRITTEN CONFIRMATION OF THE DELINEATION SHOWN ON THIS DRAWING PRIOR TO CONSTRUCTION ON THE PROPERTY DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL AND STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS TO WATERS OF THE U.S., INCLUDING WETLAND FILLS AND STREAM CHANNELS.

PROJECT CONTACTS

CHARLES E. COMPTON III - SURVEYING COORDINATOR  
CELL: (304) 710-8440  
OPERATOR: ANTERO RESOURCES CORPORATION  
636 ARLY OAKS RD  
BRIDGEFORD, WV 26330  
PHONE: (304) 942-4199  
FAX: (304) 942-4109  
ENGINEER/SURVEYOR: NAVTUS ENGINEERING, INC.  
CYRUS S. KEMP, PE - PROJECT MANAGER/ENGINEER  
OFFICE: (800) 698-4185 CELL: (304) 566-8747  
ENVIRONMENTAL: KLEINFELDER  
MATT ALDRICH - PROJECT MANAGER  
(724) 773-7072 CELL: (609) 947-5299  
GEO/TECHNICAL: PENNSYLVANIA SOIL & ROCK, INC.  
CHRISTOPHER W. SANCOS - PROJECT ENGINEER  
OFFICE: (412) 372-8888 CELL: (412) 569-0662

RESTRICTIONS NOTES

- 1. THERE ARE NO LARGE PONDS OR RESERVOIRS WITHIN 500 FEET OF THE WELL PAD AND LOD. THERE ARE WETLAND AREAS THAT HAVE BEEN PERMITTED BY THE APPROPRIATE AGENCIES. THERE IS A PERENNIAL STREAM ADJACENT TO THE ACCESS ROAD WHICH HAS BEEN IDENTIFIED AND Delineated.
- 2. THERE ARE NO NATURALLY OCCURRING TRIBUTARY STREAMS WITHIN 500 FEET OF THE WELL PAD AND LOD.
- 3. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE WELL PAD AND LOD.
- 4. THERE ARE NO APPARENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELLS BEING DRILLED.
- 5. THERE IS AN EXISTING DWELLING 565 FEET FROM THE CENTER OF THE WELL PAD. A DEP WAIVER IS REQUIRED.
- 6. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 600 FEET OF THE CENTER OF THE WELL PAD.

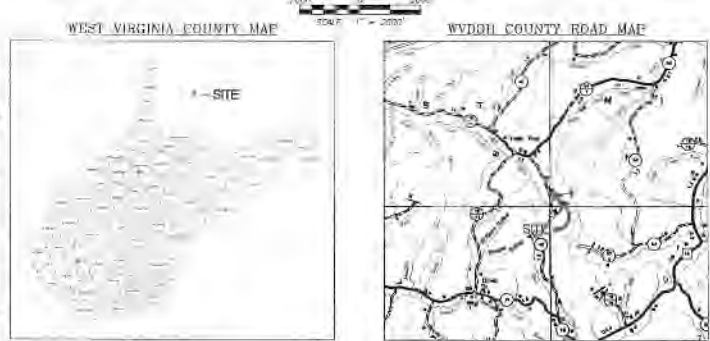
NOTES

- 1. ALL BMP'S MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL ALL AREAS WITHIN THE LIMIT OF DISTURBANCE ARE COMPLETE AND PERMANENTLY STABILIZED. MAINTENANCE MUST INCLUDE INSPECTION OF ALL EROSION AND SEDIMENT CONTROLS AFTER EACH RAINFALL EVENT IN EXCESS OF 0.5 INCH AND ON A DAILY BASIS.
- 2. THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL STABILIZATION MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. FINAL STABILIZATION MEANS THAT ALL SOIL-EROSION ACTIVITIES ARE COMPLETED, AND THAT EITHER A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT THE SURFACE HAS BEEN STABILIZED BY HARD COVER SUCH AS CONCRETE OR BITUMENS. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.
- 3. ALL PERMANENT SEDIMENT CONTROL MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE REGULATORY AGENCIES.
- 4. ANY AREAS DISTURBED BY REMOVAL OF CONTROLS SHALL BE REPAIRED, STABILIZED AND PERMANENTLY SEALED.
- 5. THE AS-BUILT INFORMATION SHOWN HEREON REFLECTS DATA FROM ANTERO RECEIVED ON 16, 2017. THE WELL PAD AS-BUILT INFORMATION SHOWN HEREON REFLECTS FIELD DATA COLLECTED RELATING TO THE FINAL GRADING OF THE WELL PAD AREA AND PRODUCTION EQUIPMENT AS OF JULY 18, 2016. NAVTUS ENGINEERING IS NOT RESPONSIBLE FOR ANY CHANGES MADE TO THE SITE AFTER THE ABOVE MENTIONED DATES.
- 6. THE EXISTING CONTAMINANT PFW AROUND THE WELL PAD SHALL BE REPAIRED AS NECESSARY TO PREVENT FURTHER CONTAMINATION OF ALL FIELDS PRIOR TO DRILLING OPERATIONS.
- 7. THE EXISTING CONFERENCES TO THE WELL PAD SHALL HAVE THE MOUNTAIN BEARS RETAINED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FIELDS PRIOR TO DRILLING OPERATIONS.



OXFORD 13 WELL PAD AS-BUILT AND EROSION & SEDIMENT CONTROL IMPROVEMENT PLAN

SOUTHWEST & NEW MILTON DISTRICT, DODDRIDGE COUNTY, WEST VIRGINIA WHITE OAK CREEK - SOUTH FORK HUGHES RIVER WATERSHED



AS-BUILT CERTIFICATIONS: THE DRAWINGS, CONSTRUCTION NOTES, AND REPORTS DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF THE AIR AND GAS RES. 33-19

Table with columns: Stream and Impact Cause, Culvert Fill (LF), Inlets/Outlets Structures (LF), Confirmed/ E&S Controls, Temp. Disturb., Temp. Distance to L.O.D. (LF), Total Impact (LF).

Table with columns: Wetland and Impact Cause, Area within L.O.D. (SF), Temporary Disturbance (SF), Total Impact (AC).

MISS Utility of West Virginia 1-800-245-4848 West Virginia State Law (Section XIV Chapter 24-1G) Requires that you call two business days before you dig in the state of West Virginia. IT'S THE LAW!!

REPRODUCTION NOTE THESE DRAWINGS WERE CREATED TO BE PRINTED ON 24"X36" (JOB) B1 PAPERS THAT SHALL BE AVAILABLE FOR 10-15 DAY LEAD TIME TO ORDER.

SHEET INDEX table with columns: #, COVER SHEET, LEGEND, MATERIAL QUANTITIES, STORM DRAINAGE & P&S COMPUTATIONS, OVERALL PLAN SHEET INDEX & VOLUMES, WELL PAD & ACCESS ROAD AS-BUILT PLAN, ACCESS ROAD & STOCKPILE AS-BUILT SECTIONS, WELL PAD GRADING PLAN, ACCESS ROAD AS-BUILT FINISH & SECTIONS, WELL PAD STAGING AREA & STOCKPILE AS-BUILT SECTIONS, CONSTRUCTION DETAILS, WELL PAD & ACCESS ROAD RECLAMATION PLAN, ACCESS ROAD & STOCKPILE RECLAMATION PLAN.

Table with columns: Well Name, WW North NAD 83, WW North NAD 27, UTM (METERS) Zone 17, UTM (METERS) Zone 17, NAD 83 Lat. & Long.

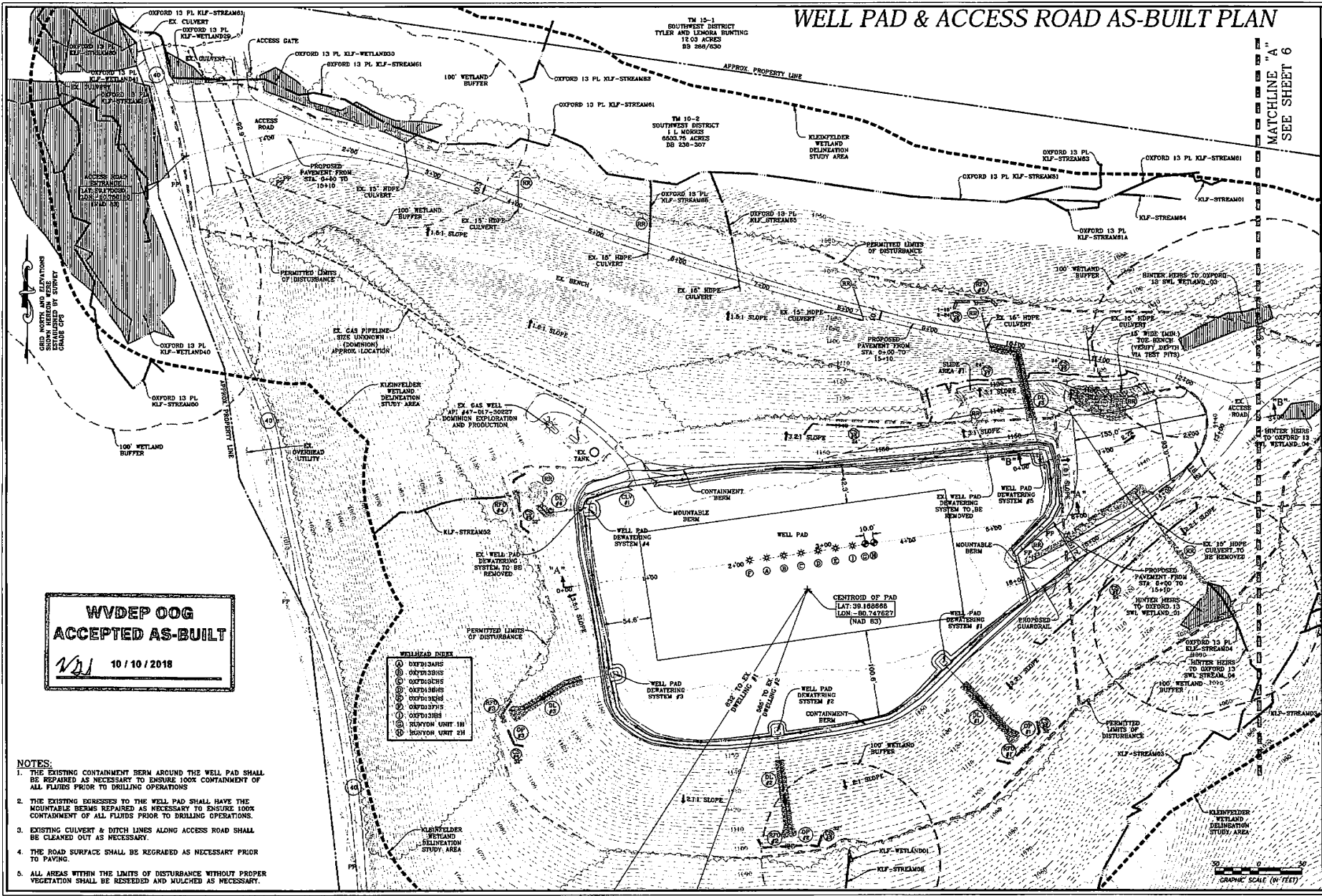
Table with columns: Well Name, WW North NAD 83, WW North NAD 27, UTM (METERS) Zone 17, UTM (METERS) Zone 17, NAD 83 Lat. & Long.

Table with columns: Well Name, WW North NAD 83, WW North NAD 27, UTM (METERS) Zone 17, UTM (METERS) Zone 17, NAD 83 Lat. & Long.

Table with columns: OXFORD 13 LIMITS OF DISTURBANCE AREA (AC), Total Site, Access Road (1.810), Staging Area, Excess/Topsoil Material Stockpiles, Total Affected Area, Total Wooded Acres Disturbed, Impacts to LL Morris TM 10-2, Access Road (1.810), Staging Area, Well Pad, Excess/Topsoil Material Stockpiles, Total Affected Area, Total Wooded Acres Disturbed, Impacts to LL Morris TM 10-2, Access Road (1.810), Staging Area, Excess/Topsoil Material Stockpiles, Total Affected Area, Total Wooded Acres Disturbed.

NAVITUS ENERGY ENGINEERING logo and contact information. Includes revision table with columns: DATE, REVISION, and description of revisions.

# WELL PAD & ACCESS ROAD AS-BUILT PLAN



MATCHLINE "A"  
SEE SHEET 6

**NAVATUS**  
ENERGY ENGINEERING

DATE	REVISION
07/09/2016	REVISED PER WELLS
07/12/2016	REVISED PER WY DEP COMMENTS
07/27/2016	REVISED PER WELL PAD REVISION
08/02/2016	REVISED PER WETLAND DELINEATION
08/05/2016	REVISED PER WETLAND DELINEATION



THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

WELL PAD & ACCESS ROAD AS-BUILT PLAN  
**OXFORD 13**  
WELL PAD  
SOUTHWEST & NEW MILTON DISTRICT  
DODDRIEGE COUNTY, WEST VIRGINIA



DATE 10/04/2017  
SCALE: 1" = 50'  
SHEET 5 OF 19

**WVDEP OOG  
ACCEPTED AS-BUILT**  
10/10/2018

- WETLAND RIDES**
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- NOTES:**
- THE EXISTING CONTAINMENT BERM AROUND THE WELL PAD SHALL BE REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.
  - THE EXISTING EGRESSSES TO THE WELL PAD SHALL HAVE THE MOUNTABLE BERMS REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.
  - EXISTING CULVERT & DITCH LINES ALONG ACCESS ROAD SHALL BE CLEANED OUT AS NECESSARY.
  - THE ROAD SURFACE SHALL BE REGRADED AS NECESSARY PRIOR TO PAVING.
  - ALL AREAS WITHIN THE LIMITS OF DISTURBANCE WITHOUT PROPER VEGETATION SHALL BE RESEDED AND MULCHED AS NECESSARY.