



west virginia department of environmental protection

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

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

January 11, 2017
PERMIT MODIFICATION APPROVAL
Horizontal 6A / Horizontal 6A Well - 1

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for PIPER UNIT 2H
47-085-10292-00-00

Lateral Extension

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before 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: PIPER UNIT 2H
Farm Name: DARRELL A. NOLAND ET AL
U.S. WELL NUMBER: 47-085-10292-00-00
Horizontal 6A / Horizontal 6A Well - 1
Date Issued: January 11, 2017

Promoting a healthy environment.

01/13/2017

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

1) Well Operator: Antero Resources Corporation 494507062 085 - Ritchie Clay Pennsboro 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Piper Unit 2H Well Pad Name: Existing Noland Pad

3) Farm Name/Surface Owner: Darrell A. Noland, et al Public Road Access: CR 50/22

4) Elevation, current ground: 1143' Elevation, proposed post-construction: 1143'

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: 6500' TVD, Anticipated Thickness- 75 feet, Associated Pressure- 2800#

8) Proposed Total Vertical Depth: 6500' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 15500' MD

11) Proposed Horizontal Leg Length: 7961'

12) Approximate Fresh Water Strata Depths: 54', 135', 227'

13) Method to Determine Fresh Water Depths: Fresh Water Depths from Penns Park Unit 1H (API# 47-085-10099) on same pad.

14) Approximate Saltwater Depths: 1658', 1705', 1747'

15) Approximate Coal Seam Depths: 798', 1225'

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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API# 47-085-10292 PERMIT MODIFICATION

18)

CASING AND TUBING PROGRAM

| TYPE | <u>Size (in)</u> | <u>New or Used</u> | <u>Grade</u> | <u>Weight per ft. (lb/ft)</u> | <u>FOOTAGE: For Drilling (ft)</u> | <u>INTERVALS: Left in Well (ft)</u> | <u>CEMENT: Fill-up (Cu. Ft.)/CTS</u> |
|--------------|------------------|--------------------|--------------|-------------------------------|-----------------------------------|-------------------------------------|--------------------------------------|
| Conductor | 20" | New | H-40 | 94# | 40' | 40' | CTS, 38 Cu. Ft. |
| Fresh Water | 13-3/8" | New | J-55/H-40 | 54.5#/48# | 300' | 300' | CTS, 417 Cu. Ft. |
| Coal | 9-5/8" | New | J-55 | 36# | 2450' | 2450' | CTS, 998 Cu. Ft. |
| Intermediate | | | | | | | |
| Production | 5-1/2" | New | P-110 | 20# | 15500' | 15500' | 3855 Cu. Ft. |
| Tubing | 2-3/8" | New | N-80 | 4.7# | | 7100' | |
| Liners | | | | | | | |

| TYPE | <u>Size (in)</u> | <u>Wellbore Diameter (in)</u> | <u>Wall Thickness (in)</u> | <u>Burst Pressure (psi)</u> | <u>Anticipated Max. Internal Pressure (psi)</u> | <u>Cement Type</u> | <u>Cement Yield (cu. ft./k)</u> |
|--------------|------------------|-------------------------------|----------------------------|-----------------------------|---|----------------------|---------------------------------|
| Conductor | 30" | 24" | 0.438" | 1530 | 50 | Class A | 1.18 |
| Fresh Water | 13-3/8" | 17-1/2" | 0.38"/0.33" | 2730/1730 | 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" | 0.361" | 12,630 | 2500 | Lead-HPOZ & 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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 WV Department of
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 Page 2 of 3
 01/13/2017

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

Drill, perforate, fracture a new 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): 18.62 acres

22) Area to be disturbed for well pad only, less access road (acres): 8.85 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:

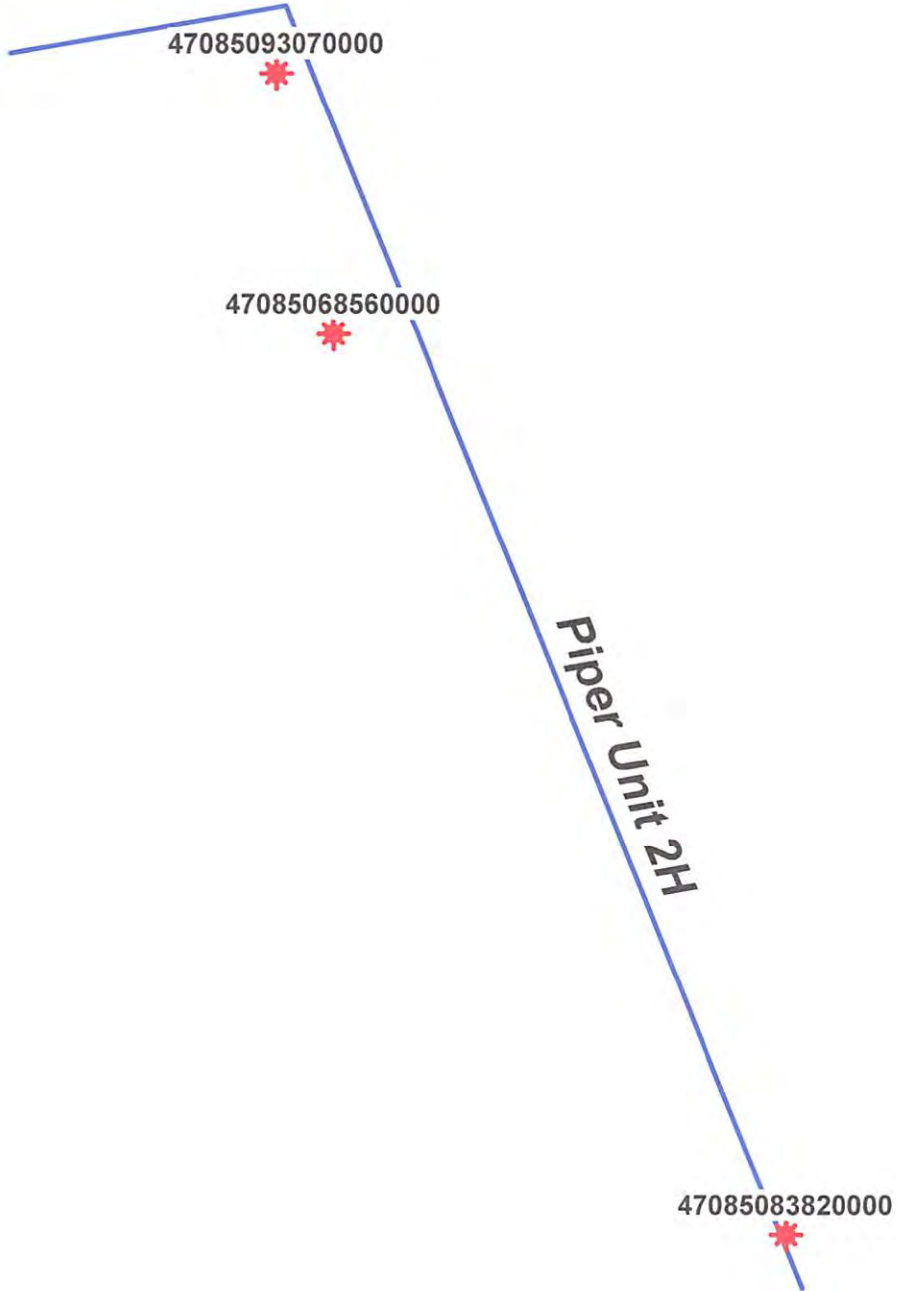
Conductor: blowhole clean with air, run casing, 10 bbls fresh water.
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.
Intermediate: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

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WV Department of
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Page 3 of 3
01/13/2017



AOR Western-Piper Units



PIPER UNIT 2H (NOLAND PAD) - AREA OF REVIEW 35-8-5.11 PAGE 2

| UWI (API/Num) | Well Name | Operator | TD | ELEV_GR | TD (SSTVD) | Gross Perf Interval (ft) | Producing Formations | Productible formations not perf'd |
|----------------|----------------------------|----------------------|------|---------|------------|--------------------------|--------------------------|---|
| 47085093070000 | DULANEY R | KEY OIL COMPANY | 5344 | 1030 | -4314 | 4593-5170 | Riley, Benson, Alexander | Keener, Big Injun, Weir, Berea, Gordon, Warren, Speechley, Balltown, Bradford |
| 47085088560000 | HUMPHREY R A ET UX | LIPPZAN PETRO INCOR. | 5300 | 1076 | -4224 | 3463-5200 | Lower Huron, Angola | Keener, Big Injun, Weir, Berea, Gordon, Warren, Speechley, Balltown, Bradford, Alexander, Riley, Benson |
| 47085083820000 | TEMBEL MICHAEL D & DEBRA K | ENERGY CORP OF AMER | 5217 | 960 | -4257 | 4433-5079 | Riley, Benson, Alexander | Keener, Big Injun, Weir, Berea, Gordon, Warren, Speechley, Balltown, Bradford |

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| Grantor, lessor, etc. | Grantee, lessee, etc. | Royalty | Book/Page |
|---|--|-----------------------------------|---------------------------------|
| <u>The Haught Family Trust Lease</u> | | | |
| The Haught Family Trust, Ira M. Haught, Trustee | Antero Resources Corporation | 1/8+ | 0272/0974 |
| <u>Mary V. Wedekamm Lease</u> | | | |
| Mary V. Wedekamm | Kepco, Inc. | 1/8 | 0161/0687 |
| Kepco, Inc. | Union Drilling, Inc. | Merger | Corporation Record 0004/0322 |
| Union Drilling, Inc. | Equitable Resources Exploration, Inc. | Merger | Corporation Record 0004/0673 |
| Equitable Resources Exploration, Inc. | Equitable Resources Energy Company | Confirmatory Deed & Assignment | 0230/0047 |
| Equitable Resources Energy Company | Mike Ross, Inc. | Assignment | 0223/0575 |
| Mike Ross, Inc. | Antero Resources Appalachian Corporation | Assignment | 0262/0164 |
| Antero Resources Appalachian Corporation | Antero Resources Corporation | Name Change | Exhibit 1 |
| <u>C.E. Giebell Lease</u> | | | |
| C.E. Giebell | Gene Stalnaker | 1/8 | 0161/0644 |
| Gene Stalnaker | Angus Energy, Inc. | Assignment | 0212/0137 |
| Angus Energy, Inc. | Stalnaker Energy, Inc. | Merger/Name Change | CR 0006/0225 |
| Stalnaker Energy, Inc. | Antero Resources Appalachian Corporation | Assignment | 0263/1065 |
| Antero Resources Appalachian Corporation | Antero Resources Appalachian Corporation | Name Change | Exhibit 1 |
| <u>Byron Taylor, et al Lease</u> | | | |
| Byron Taylor, et al | Key Oil Company | 1/8 | 0239/0402 |
| Key Oil Company | Antero Resources Appalachian Corporation | *Partial Assignment | 0253/0747 |
| Antero Resources Appalachian Corporation | Antero Resources Corporation | Name Change | Exhibit 1 |
| <u>Steven Edge Lease</u> | | | |
| Steven Edge | Antero Resources Corporation | 1/8+ | 0278/0790 |
| <u>James E. Vogt, et ux Lease</u> | | | |
| James Vogt, et ux | Antero Resources Corporation | 1/8+ | 0276/0421 |
| <u>Orma Johnson Trust Lease</u> | | | |
| Orma M. Wilson Johnson Declaration of Trust by Orma M. Wilson Johnson, Trustee | Antero Resources Corporation | 1/8+ | 0282/0154 |
| <u>Hummer Properties, LLC Lease</u> | | | |
| Hummer Properties, LLC | Antero Resources Corporation | 1/8+ | 0267/0662 |

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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.

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|---|------------------------------|---------|-----------|
| <u>Dennis Sellers Lease</u> Dennis Sellers | Antero Resources Corporation | 1/8+ | 0268/0755 |
| <u>Cinda Fleming Lease</u> Cinda Fleming | Antero Resources Corporation | 1/8+ | 0290/0708 |
| <u>Becky Barker Lease</u> Becky Barker | Antero Resources Corporation | 1/8+ | 0299/0563 |
| <u>Sara M. Bennett Lease</u> Sara M. Bennett | Antero Resources Corporation | 1/8+ | 0277/0752 |
| <u>Fondella Beachler Lease</u> Fondella Beachler | Antero Resources Corporation | 1/8+ | 0280/0498 |
| <u>Charity Gas, Inc. Lease</u> Charity Gas, Inc. | Antero Resources Corporation | 1/8+ | 0301/0306 |
| <u>Charity Gas, Inc. Lease</u> Charity Gas, Inc. | Antero Resources Corporation | 1/8+ | 0300/0306 |
| <u>Stephen Brookover Lease</u> Stephen Brookover | Antero Resources Corporation | 1/8+ | 0272/1081 |
| <u>Richard J. McGrady, et ux Lease</u> Richard J. McGrady, et ux | Antero Resources Corporation | 1/8+ | 0300/0667 |
| <u>David R. Hogue Lease</u> David R. Hogue | Antero Resources Corporation | 1/8+ | 0270/0860 |
| <u>Gina K. Collins Lease</u> Gina K. Collins | Antero Resources Corporation | 1/8+ | 0280/0735 |
| <u>David R. Hogue Lease</u> David R. Hogue, et ux | Antero Resources Corporation | 1/8+ | 0299/0563 |
| <u>Olin F. Ingram Lease</u> Olin F. Ingram, LE and Megan Ingram, Remainderman | Antero Resources Corporation | 1/8+ | 0281/0737 |

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| <u>Glover E. Mullenix, et al Lease</u> Glover Elmer Mullenix and Hae K. Mullenix | Antero Resources Corporation | 1/8+ | 0269/0603 |
| <u>Stephen G. Doak Lease</u> Stephen G. Doak | Antero Resources Corporation | 1/8+ | 0275/0954 |
| <u>Wm. H. Ingram, Sr. Lease</u> William H. Ingram, Sr. | Antero Resources Corporation | 1/8+ | 0269/0603 |
| <u>Wm. H. Ingram, Jr. Lease</u> William H. Ingram, Jr. | Antero Resources Corporation | 1/8+ | 0270/0332 |
| <u>Michael Nichols Lease</u> Michael Nichols | Antero Resources Corporation | 1/8+ | 0270/0631 |
| <u>David E. Wilson Lease</u> David E. Wilson | Antero Resources Corporation | 1/8+ | 0275/0752 |
| <u>Margie Jones Lease</u> Margie Jones | Antero Resources Corporation | 1/8+ | 0279/0230 |
| <u>S & H Properties, LLC Lease</u> S & H Properties, LLC | Antero Resources Corporation | 1/8+ | 0270/1028 |
| <u>Rebecca J. Lanham Lease</u> Rebecca J. Lanham | Antero Resources Corporation | 1/8+ | 0271/0611 |
| <u>WK Properties, LLC Lease</u> WK Properties, LLC | Antero Resources Corporation | 1/8+ | 0298/0825 |
| <u>John T. Kosphino Lease</u> John T. Kosphino | Antero Resources Corporation | 1/8+ | 0274/0776 |
| <u>Lawrence E. George Lease</u> Lawrence E. George | Antero Resources Corporation | 1/8+ | 0269/0340 |
| <u>Nancy H. Hoffman Lease</u> Nancy H. Hoffman | Antero Resources Corporation | 1/8+ | 0275/0024 |
| <u>Shirley A. Cottrill Lease</u> Shirley A. Cottrill | Antero Resources Corporation | 1/8+ | 0275/0008 |

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| Hummer Properties, LLC Lease Hummer Properties, LLC | Antero Resources Corporation | 1/8+ | 0300/0462 |
| Stephen A. Metz Lease Stephen A. Metz | Antero Resources Corporation | 1/8+ | 0300/0639 |
| Gregory Scott Fullen Lease Gregory Scott Fullen | Antero Resources Corporation | 1/8+ | 0278/0630 |
| Margaret G. Lemasters Lease Margaret G. Lemasters | Antero Resources Corporation | 1/8+ | 0272/0198 |
| Pennsboro Church of God Lease Pennsboro Church of God | Antero Resources Corporation | 1/8+ | 0270/1052 |
| Pennsboro Church of Christ Lease Pennsboro Church of Christ | Antero Resources Corporation | 1/8+ | 0301/0301 |
| Gary W. McCloy Lease Gary W. McCloy | Antero Resources Corporation | 1/8+ | 0299/0977 |
| Lawrence J. Manning Lease Lawrence J. Manning | Antero Resources Corporation | 1/8+ | 0271/0248 |
| Terry M. Shaver, et ux Lease Terry m. Shaver, et ux | Antero Resources Corporation | 1/8+ | 0300/0182 |
| Pennsboro Church of Christ Lease Pennsboro Church of Christ | Antero Resources Corporation | 1/8+ | 0274/0151 |
| William J. Britton, et al Lease William J. Britton & Renee Britton | Antero Resources Corporation | 1/8+ | 0302/0214 |
| Scott A. Hammond Lease Scott A. Hammond | Antero Resources Corporation | 1/8+ | 0299/0573 |
| Tammy L. Greene Lease Tammy L. Greene | Antero Resources Corporation | 1/8+ | 0299/0327 |
| Steven D. Davis, et ux Lease Steven D. Davis, et ux | Antero Resources Corporation | 1/8+ | 0273/0312 |

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| <u>Meghan A. Clovis Lease</u> Meghan A. Clovis | Antero Resources Corporation | 1/8+ | 0300/0224 |
| <u>Kathryn E. Summers Lease</u> Kathryn E. Summers | Antero Resources Corporation | 1/8+ | 0278/0750 |
| <u>Pamela J. Yeater Lease</u> Pamela J. Yeater | Antero Resources Corporation | 1/8+ | 0300/0164 |
| <u>Trustees of the Pennsboro United Methodist Church of Christ Lease</u> Trustees of the Pennsboro United Methodist Church | Antero Resources Corporation | 1/8+ | 0300/0889 |
| <u>Ricky E. Jones Lease</u> Ricky E. Jones | Antero Resources Corporation | 1/8+ | 0269/0596 |
| <u>Virgil H. Wilson Lease</u> Virgil H. Wilson | Antero Resources Corporation | 1/8+ | 0270/0326 |
| <u>Howard C. Heflin Lease</u> Howard C. Heflin | Antero Resources Corporation | 1/8+ | 0268/0950 |
| <u>Ronald Miracle Lease</u> Ronald Miracle | Antero Resources Corporation | 1/8+ | 0268/0389 |
| <u>Jerry A. Donely Lease</u> Jerry A. Donely | Antero Resources Corporation | 1/8+ | 0270/0153 |
| <u>Jerry A. Donely Lease</u> Jerry A. Donely | Antero Resources Corporation | 1/8+ | 0299/0332 |
| <u>Bradley Bailey, et al Lease</u> Bradley Bailey, et al | Antero Resources Corporation | 1/8+ | 0270/0367 |
| <u>WVSRA Lease</u> West Virginia State Rail Authority | Antero Resources Corporation | 1/8+ | 0253/0409 |
| <u>Waco Oil & Gas Lease</u> Waco Oil & Gas | Antero Resources Corporation | 1/8+ | 0299/0172 |
| <u>David R. Kelley, et ux Lease</u> David R. Kelley, et ux | Antero Resources Corporation | | 0270/1046 |

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CONTINUED ON NEXT PAGE

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| <u>Betty J. Helm Lease</u> Betty J. Helm | Antero Resources Corporation | 1/8+ | 0270/1008 |
| <u>Laura M. Husk Lease</u> Laura M. Husk | Antero Resources Corporation | 1/8+ | 0301/0438 |
| <u>Jesse Lee Jones Lease</u> Jesse Lee Jones, et al | Antero Resources Corporation | 1/8+ | 0300/0105 |
| <u>Judy Richards Lease</u> Judy Richards | Antero Resources Corporation | 1/8+ | 0270/0806 |
| <u>Leon Utter, Jr., et al Lease</u> Leon Utter, Jr., et al | Antero Resources Corporation | 1/8+ | 0270/0655 |

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| Lease Name or Number | Grantor, Lessor, etc. | Grantee, Lessee, etc. | Royalty | Book/Page |
|-------------------------------------|--|--|-------------|-----------|
| Michael Terrell, et ux Lease | Michael Terrell, et ux | Eastern American Energy Corporation | 1/8 | 0220/0038 |
| | Eastern American Energy Corporation | Energy Corporation of America | Merger | 0006/0450 |
| | Energy Corporation of America | Antero Resources Appalachian Corporation | Assignment | 0257/0377 |
| | 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.

**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: Robert S. Tucker 
 Its: VP of Geology

**FORM WW-6A1
EXHIBIT 1**

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
E-mail: 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:

1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
2. Date Certificate of Authority was issued in West Virginia: 6/25/2008
3. Corporate name has been changed to: Antero Resources Corporation
(Attach one **Certified Copy of Name Change** as filed in home State of incorporation.)
4. Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)
5. 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) 367-7310
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 §311-1-129. 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

WV/012 - 04/16/2012 Website: www.wvsos.com

RECEIVED
Office of Oil and Gas
NOV 14 2016
WV Department of
Environmental Protection

01/13/2017

LATITUDE 39°20'00"

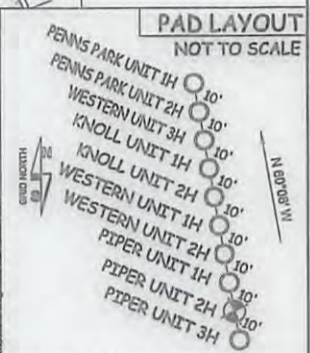
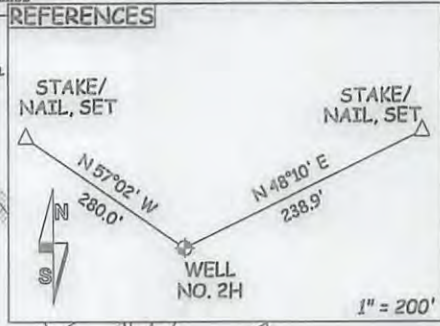
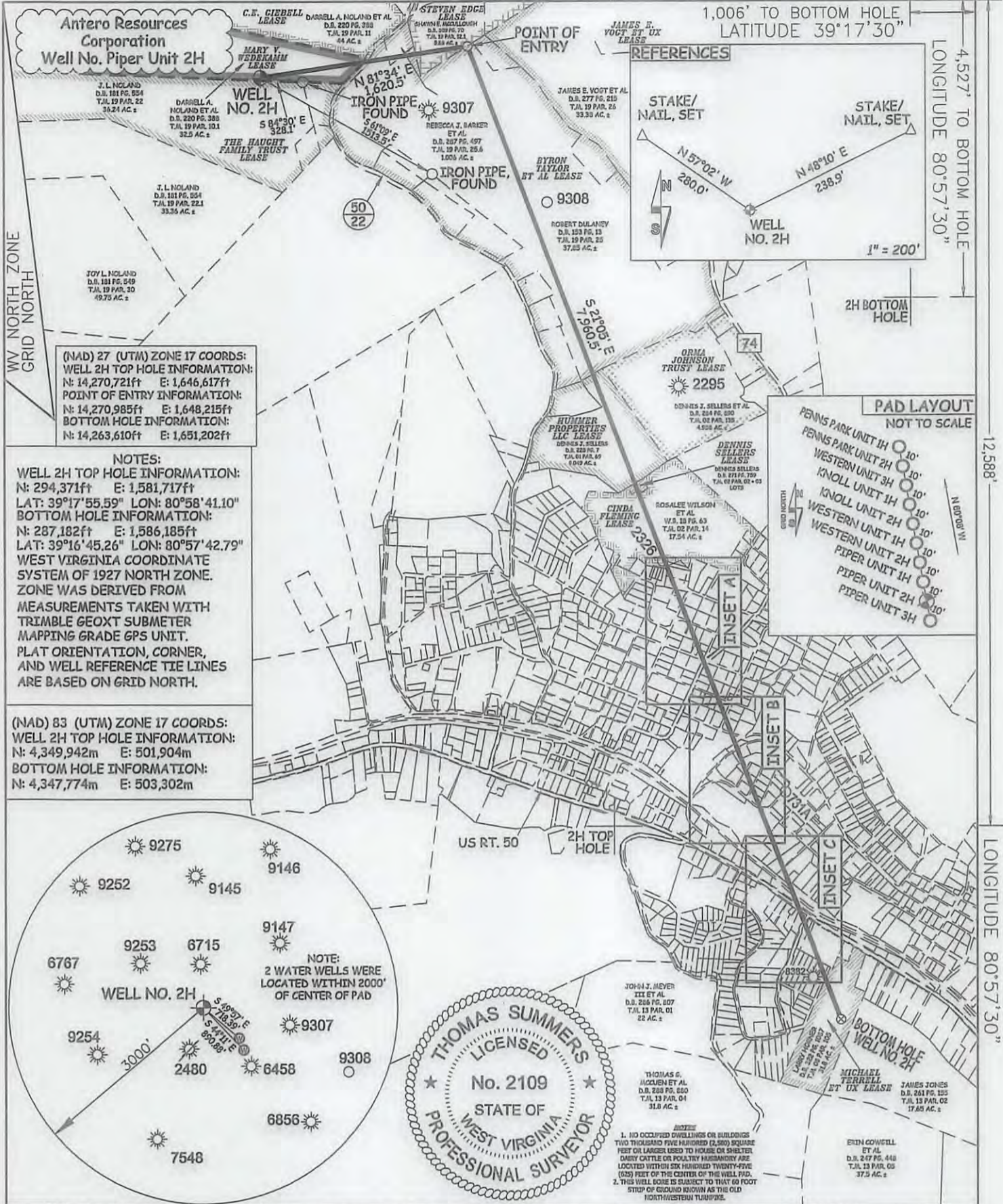
5,589'

1,006' TO BOTTOM HOLE
LATITUDE 39°17'30"

4,527' TO BOTTOM HOLE
LONGITUDE 80°57'30"

12,588'

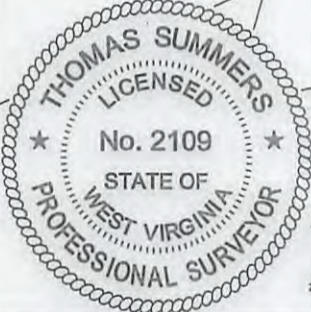
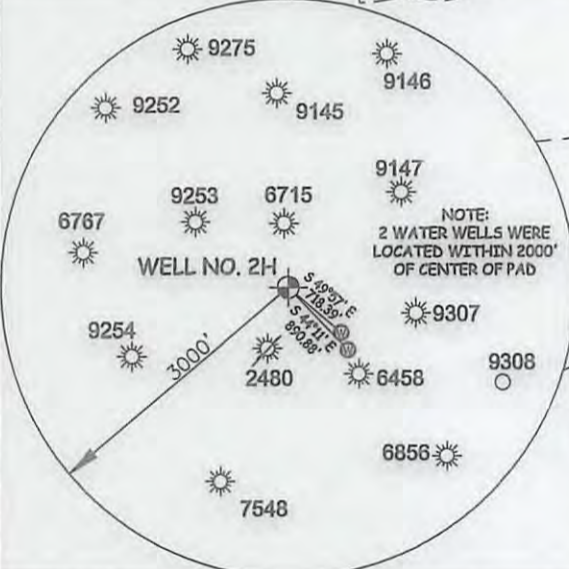
LONGITUDE 80°57'30"



(NAD) 27 (UTM) ZONE 17 COORDS:
WELL 2H TOP HOLE INFORMATION:
N: 14,270,721ft E: 1,646,617ft
POINT OF ENTRY INFORMATION:
N: 14,270,985ft E: 1,648,215ft
BOTTOM HOLE INFORMATION:
N: 14,263,610ft E: 1,651,202ft

NOTES:
WELL 2H TOP HOLE INFORMATION:
N: 294,371ft E: 1,581,717ft
LAT: 39°17'55.59" LON: 80°58'41.10"
BOTTOM HOLE INFORMATION:
N: 287,182ft E: 1,586,185ft
LAT: 39°16'45.26" LON: 80°57'42.79"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 2H TOP HOLE INFORMATION:
N: 4,349,942m E: 501,904m
BOTTOM HOLE INFORMATION:
N: 4,347,774m E: 503,302m



NOTES:
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,000) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HARBORING ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
2. THIS WELL BORE IS SUBJECT TO THAT 60 FOOT STRIP OF GROUND KNOWN AS THE OLD HOLLYWOOD TOWNSHIP.

JOB # 16-005WA
DRAWING # PIPER2HR1
SCALE 1" = 1000'

MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

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

WELL TYPE: OIL ___ GAS LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION STORAGE ___ DEEP ___ SHALLOW
LOCATION: ELEVATION 1,159' ORIGINAL - 1,143' AS DRILLED WATERSHED NORTH FORK HUGHES RIVER
QUADRANGLE PENNSBORO 7.5 DISTRICT CLAY COUNTY RITCHIE

SURFACE OWNER DARRELL A. NOLAND ET AL ACREAGE 32.5 ACRES +/-
OIL & GAS ROYALTY OWNER SEE ATTACHED PAGES FOR LEASE INFORMATION LEASE ACREAGE SEE ATTACHED PAGES

PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER REDRILL ___ FRACTURE OR STIMULATE
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL ___
(SPECIFY) MOD-BHL PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,500' TVD 15,500 MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
DENVER, CO 80202 CHARLESTON, WV 25313

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 RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC
266 HUSHERS RUN RD PENNSBORO WEST VIRGINIA 26415

LEGEND

- Surface Owner Boundary Lines +/-
- Interior Surface Tracts +/-
- Existing Fence
- Rebar, Found

THOMAS SUMMERS P.S. 2109

DATE 11/07/16

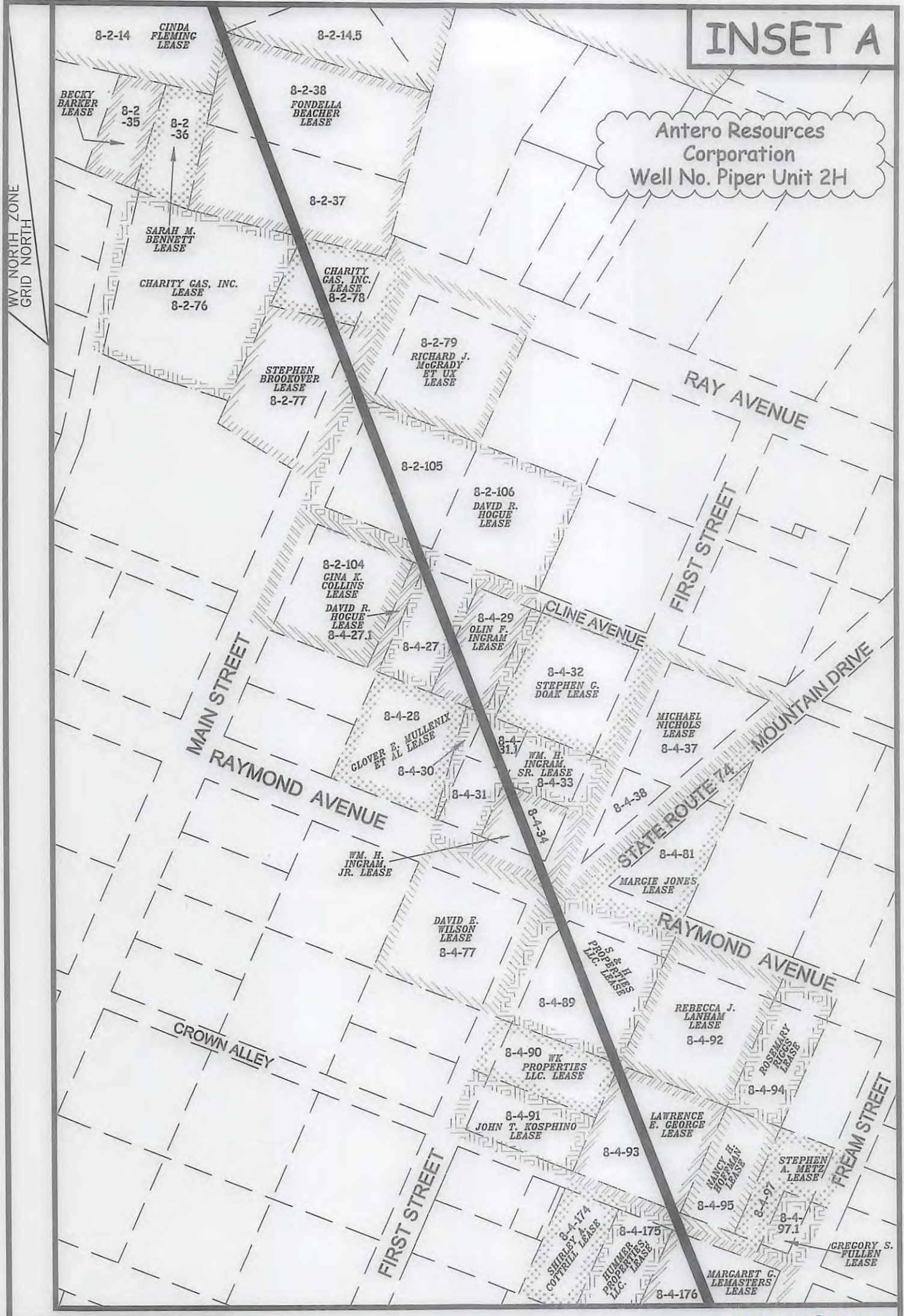
OPERATOR'S WELL# PIPER UNIT 2H
API WELL # 47 - 085 - 10292 MD

STATE COUNTY PERMIT

RECEIVED
Department of Environmental Protection

INSET A

Antero Resources Corporation
Well No. Piper Unit 2H



P.O. BOX 17
 PENNSBORO, WV 26415
 304-659-1717

SCALE: 1-INCH = 100-FEET



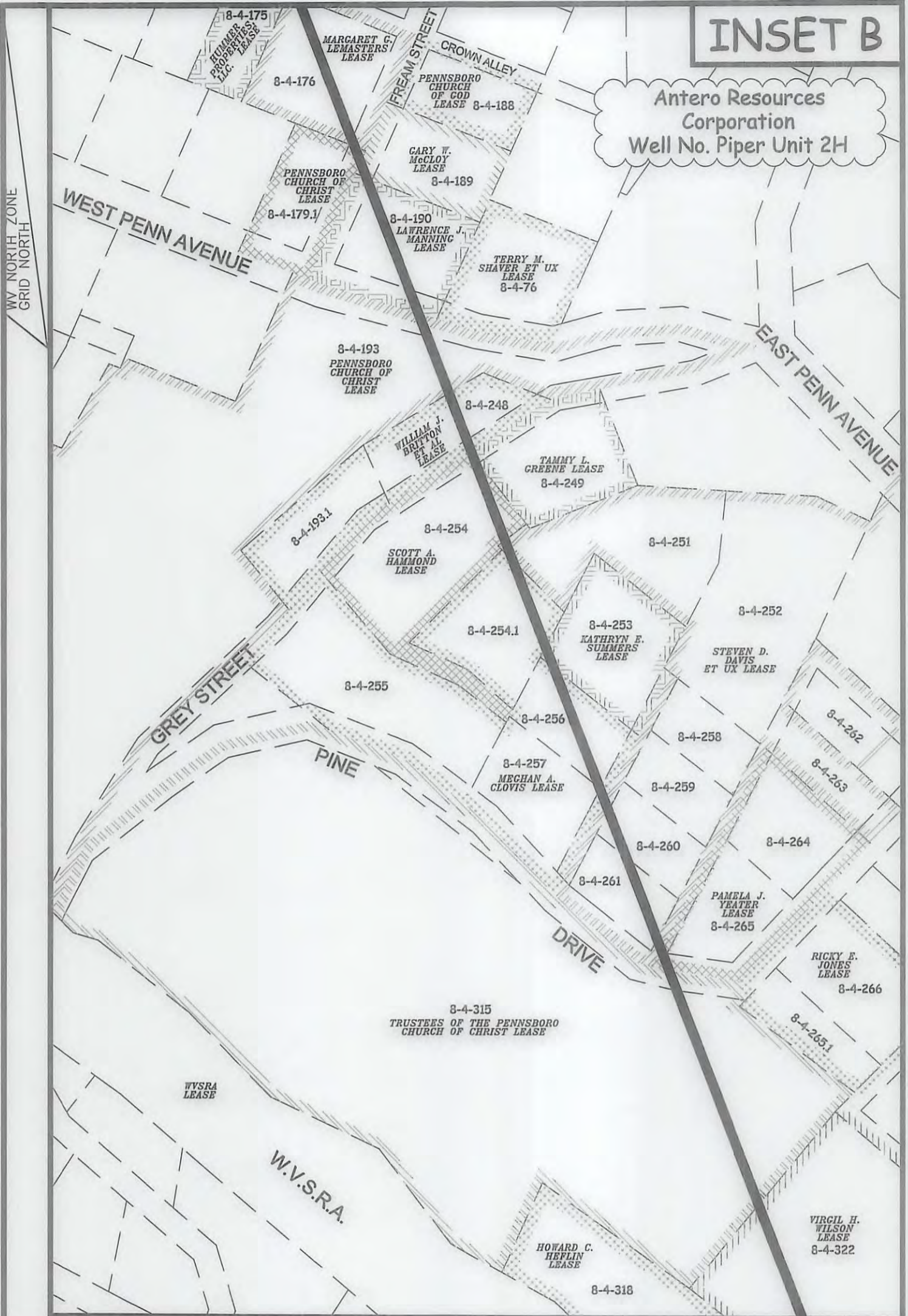
85-10292 MOD
 01/13/2017

RECEIVED
 Office of Oil and Gas
 FILE: 16-005WA
 JOB: PIPER2H INSETA
 DRAFTED BY: J.B.S. 11/07/16

| LEGEND | |
|--------|-----------------------------|
| | Piper 2H Lateral |
| | Interior Surface Tracts +/- |

INSET B

Antero Resources Corporation
Well No. Piper Unit 2H



P.O. BOX 17
PENNSBORO, WV 26415
304-659-1717

SCALE: 1-INCH = 100-FEET



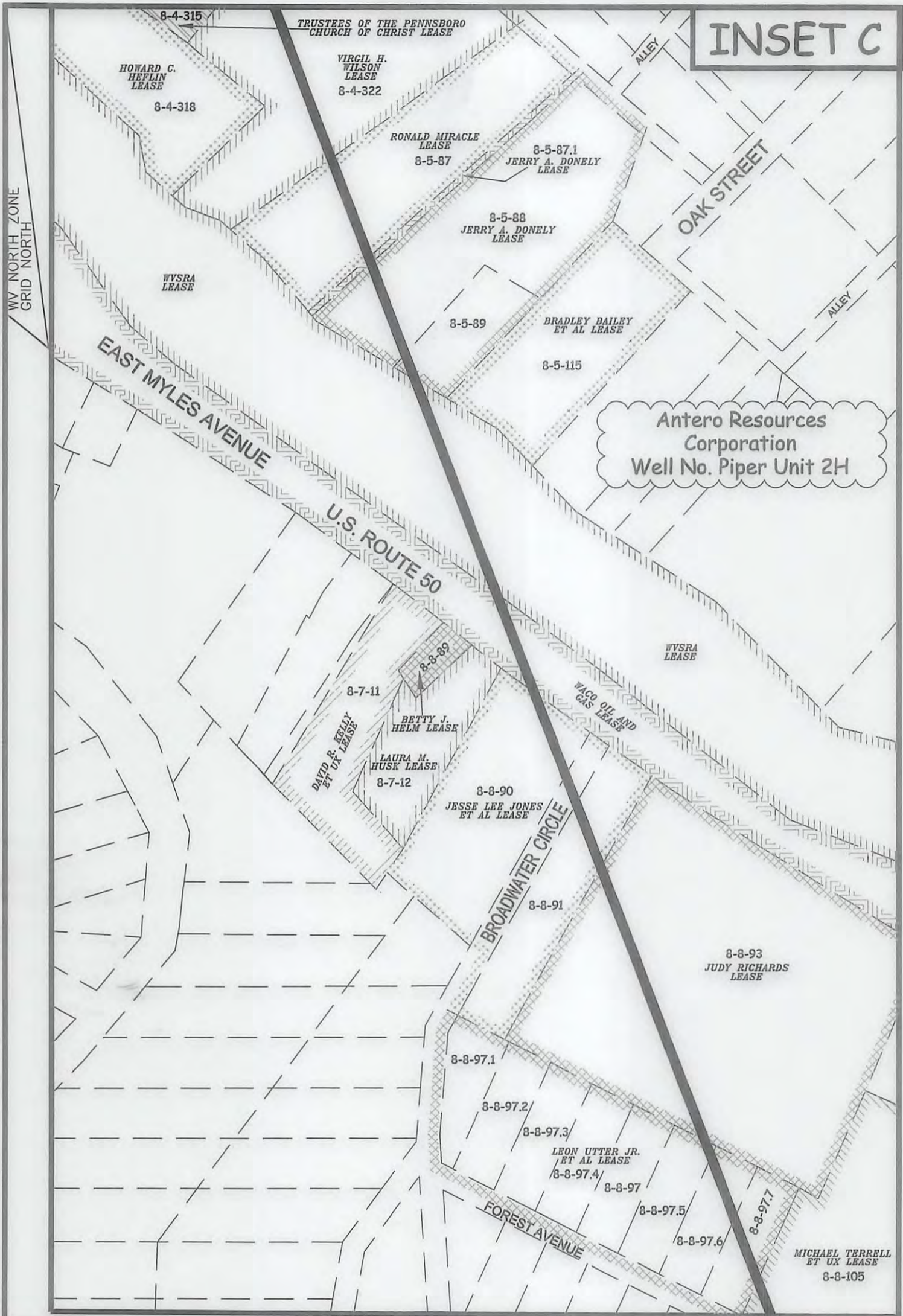
85-10292 MOD
01/13/2017

RECEIVED
Office of Oil and Gas

FILE: 16-005WA
JOB: PIPER2H INSETB
DRAFTED BY: T.B.S. 11/07/16

| WV DeLEGEND | |
|-------------|-----------------------------|
| | Piper 2H Lateral |
| | Interior Surface Tracts +/- |

INSET C



P.O. BOX 17
 PENNSBORO, WV 26415
 304-659-1717

SCALE: 1-INCH = 100-FEET



85-10292-MOD
 01/13/2017

RECEIVED
 Office of Oil and Gas
 FILE: 16-005WA
 JOB: PIPER2H INSETC
 DRAFTED BY: T.B.S. 11/07/16

| LEGEND | |
|--------|-----------------------------|
| | Piper 2H Lateral |
| | Interior Surface Tracts +/- |