

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

Harold D. Ward, Cabinet Secretary www.dep.wv.gov

Tuesday, October 4, 2022 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for PETER 2H

47-017-06934-00-00

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: PETER 2H

Farm Name: JEFFREY D & CRAIG A HILL ET AL

U.S. WELL NUMBER: 47-017-06934-00-00

Horizontal 6A New Drill
Date Modification Issued: 10/04/2022

Promoting a healthy environment.

WW-6B (04/15) CK # 4012944

API NO. 47- 017 - 06934

OPERATOR WELL NO. Peter Unit 2H MOD

Well Pad Name: Lemley Pad

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

| 1) Well Operator: Antero Res | sources Corporat | 494507062 | 017-Doddrid | Grant | Smithburg 7.5' |
|---|---------------------|-----------------------|------------------------------------|-------------------------|---|
| | | Operator ID | County | District | Quadrangle |
| 2) Operator's Well Number: Pe | eter Unit 2H MOD | Well P | ad Name: Lemle | ey Pad | |
| 3) Farm Name/Surface Owner: | Phillip N. Hill, et | al Public Ro | oad Access: Holl | ow Run R | Rd |
| 4) Elevation, current ground: | 1304' AS BUILT EI | evation, proposed | d post-construction | on: | |
| 5) Well Type (a) Gas X Other | Oil | Un | derground Storag | ge | |
| X27 | allow X x | Deep | - | | 50W |
| 6) Existing Pad: Yes or No Ye | s | | | | 101412024 |
| 7) Proposed Target Formation(s Marcellus Shale: 7600' TVD, A | | | THE RESIDENCE AND PARTY AND PARTY. | the first of the second | |
| 8) Proposed Total Vertical Dep | th: 7600' TVD | | | | |
| 9) Formation at Total Vertical I | Depth: Marcellus | | | | |
| 10) Proposed Total Measured D | epth: 17,300' M | 1D | | | |
| 11) Proposed Horizontal Leg Le | ength: 8354.1 | | | | |
| 12) Approximate Fresh Water S | strata Depths: | 291', 345, 366' | 790' | | |
| 13) Method to Determine Fresh | Water Depths: 4 | 7-017-04998, 47-017-0 | 4719. Depths have bee | en adjusted ac | cording to surface elevations. |
| 14) Approximate Saltwater Dep | ths: 1460', 1673' | ', 1700', 1710' | | | |
| 15) Approximate Coal Seam De | epths: 980' | | | | |
| 16) Approximate Depth to Poss | ible Void (coal mi | ne, karst, other): | None Anticipat | ed | |
| 17) Does Proposed well location directly overlying or adjacent to | | ns Yes | No. | X | |
| (a) If Yes, provide Mine Info: | Name: | | | 0 | RECEIVED ffice of Oil and Gas |
| | Depth: | | | | SEP 2.6 2022 |
| | Seam: | | | | |
| | Owner: | | | Envi | W Department of ronmental Protection |

API NO. 47- 017 - 06934

OPERATOR WELL NO. Peter Unit 2H MOD

Well Pad Name: Lemley 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 | X60 | 78.67# | 100' | 100' | CTS, 96 Cu. Ft. |
| Fresh Water | 13-3/8" | New | J/K-55 | 54.5# | 840' | 840' | CTS, 583 Cu. Ft. |
| Coal | 9-5/8" | New | J/K-55 | 36# | 3200' | 3200' | CTS, 1303 Cu. Ft. |
| Intermediate | | | | | | | |
| Production | 5-1/2" | New | P-110Cy | 20# | 17300' | 17300' | 3432 Cu. Ft |
| Tubing | 2-3/8" | New | N-80 | 4.7# | | 7100' | |
| Liners | | | | | | | |

50W 10/4/2012

| ТҮРЕ | 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-H/POZ & Tail - H | H/POZ~1.44 & H~1.8 |
| Tubing | 2-3/8" | 4.778" | 0.19" | 11,200 | | | |
| Liners | | | | | | | |

PACKERS

| Kind: | N/A | RECEIVED Office of Oil and Gas |
|-------------|-----|--|
| Sizes: | N/A | SEP 2 6 2022 |
| Depths Set: | N/A | WV Department of Environmental Protection |

WW-6B (10/14)

API NO. 47- 017 - 06934

OPERATOR WELL NO. Peter Unit 2H MOD Well Pad Name: Lemley Pad

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.

*Antero will be air drilling the fresh water string which makes it difficult to determine when fresh water is encountered. Therefore, we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.

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): 27.26 acres
- **4.31** acres 22) Area to be disturbed for well pad only, less access road (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.

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SEP 21 2022

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

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 + 0.07 montal Protection

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FI-160 + 0.2% ACCR 47 + 0.5% C-20 + 0.07 montal Protection

25) Proposed borehole conditioning procedures:

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

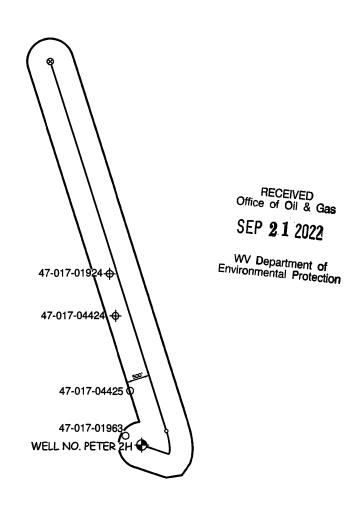
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

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.

LEMLEY PAD ANTERO RESOURCES CORPORATION



WILLOW LAND SURVEYING, PLLC P.O. BOX 17, PENNSBORO, WV 26415

(304) 659-1717

DATE: 09/19/22

DRAWN BY: D.L.P.

JOB #: 22-005WA FILE: PETER2HAOR.DWG 0'

SCALE: 1-INCH = 2000-FEET

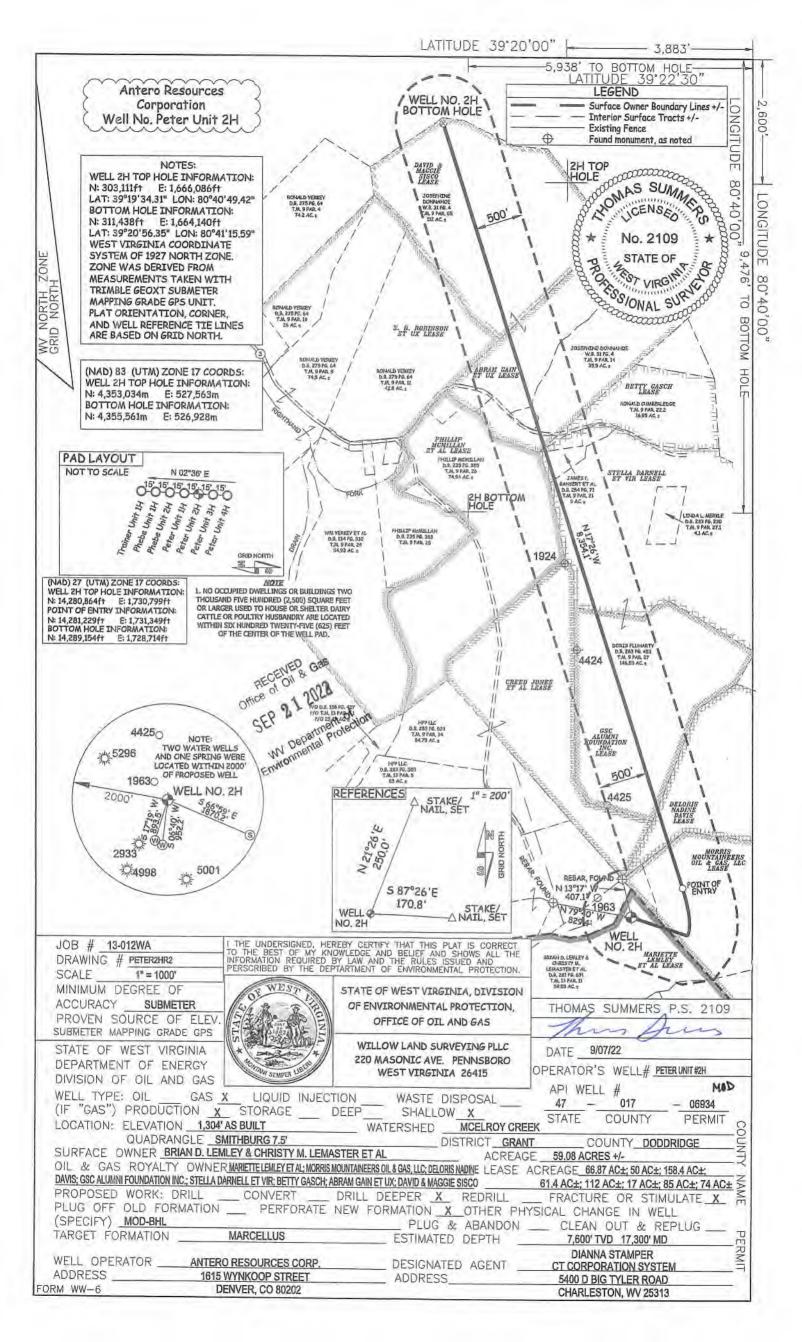
2000' 4000'

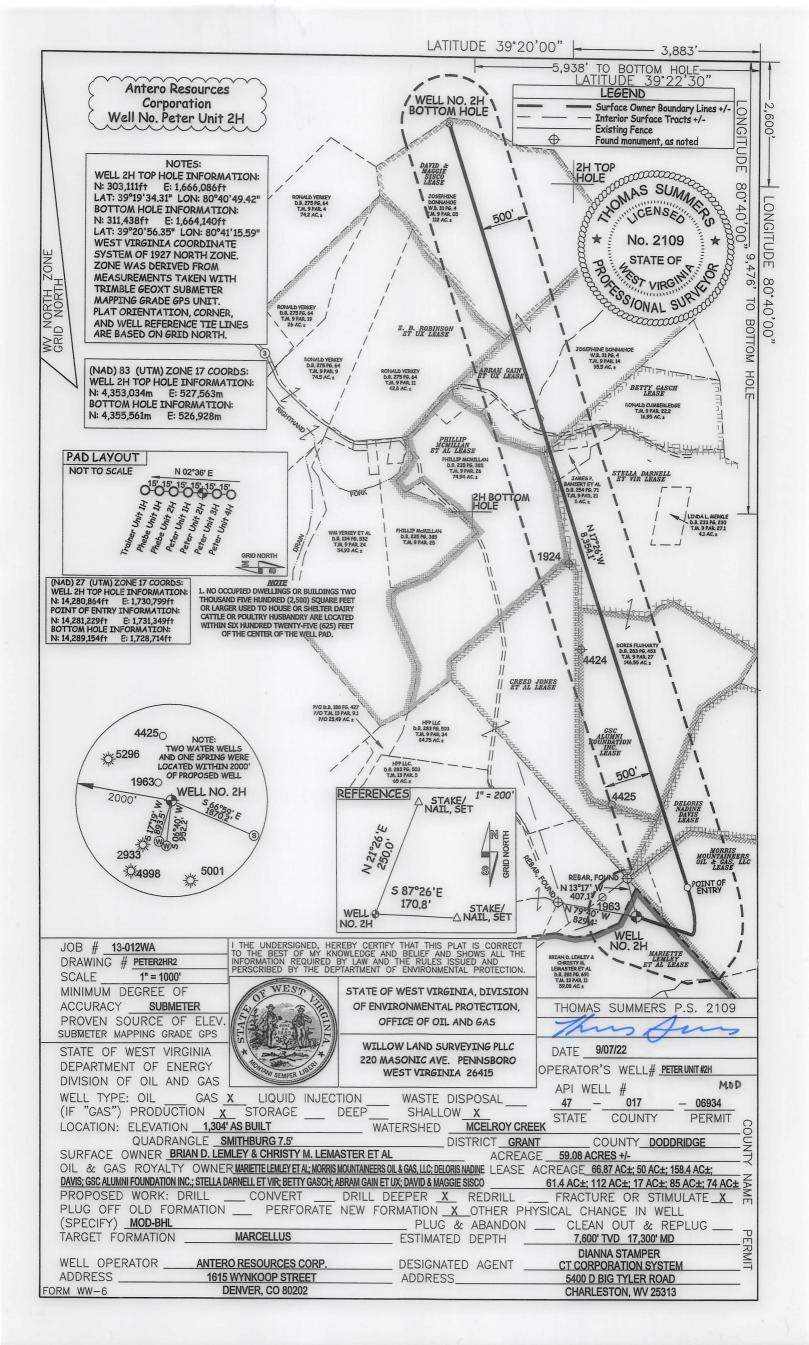
6000'

| UWI (APINum) | Well Name | Well Number | Operator | Historical Operator | TD | Perforated Interval (shallowest, deepest) | Perforated Formation(s) | Producible Formation(s) not perf'd |
|----------------|--------------------------------------|-------------|----------------------|---------------------|-------|---|---------------------------------------|------------------------------------|
| 47017019630000 | W BOYCE | 5124 | DOMINION TRANSMISION | HOPE NATURAL GAS | 2,294 | | Big Injun, Squaw | Alexander, Berea |
| 47017044250000 | GLENVILLE STATE COLLEGE ALUMNI FOUND | 1 | ROSS & WHARTON GAS | JACK PROD | 5,718 | 2194 - 5558 | Big injun, Bayard, Riley, Benson, Elk | Alexander, Berea |
| 47017044240000 | PRATT JAMES I & MARY D ET AL | 1 | JACK PROD | JACK PROD | . 1 | | | |
| 47017019240000 | S DARNELL | 1530 | DIVERSIFIED PROD LLC | HOPE NATURAL GAS | 2,254 | | Big Injun | Alexander, Berea |

WV Department of Environmental Protection

Office of Oil & Gas SEP **21** 2022





Antero Resources Appalachian Corporation

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 |
|--|--|---------------------------|--------------------------|
| Mariette Lemley, et al Lease | | | |
| Mariette Lemley, et al | S&K Land Company | 1/8 | 0114/0075 |
| S&K Land Company | Mert Development, Inc. | Assignment | 0115/0110 |
| Mert Development, Inc. | Continental Reserves 1980-E | Assignment | 0123/0022 |
| Continental Reserves 1980-E | Appalachian Energy Development Corporation | Assignment | 0150/0251 |
| Appalachian Energy Development Corporation | Appalachian Energy Reserves, Inc | Affidavit of Identity | 0019/0210 |
| Appalachian Energy Reserves, Inc. | Jay Shearer | Assignment | 0179/0146 |
| Jay Shearer | Clowser Production Company | Assignment | 0285/0420 |
| Clowser Production Company | Antero Resources Appalachian Corporation | Assignment | 0285/0417 |
| Antero Resources Appalachian Corporation | Antero Resources Corporation | Name Change | 0046/0523 |
| / Morris Mountaineers Oil & Gas LLC Lease | | | |
| Morris Mountaineers Oil & Gas LLC | Antero Resources Corporation | 1/8+ | 503/354 |
| Deloris Nadine Davis Lease | and the Dark State Commenced | D. | . State of |
| Deloris Nadine Davis | Jay Bee Production Company | 1/8+ | 215/229 |
| Jay Bee Production | Antero Resources Appalachian Corporation | Assignment | 301/373 |
| Antero Resources Appalachian Corporation | Antero Resources Corporation | Name Change | 46/523 |
| ✓ GSC Alumni Foundation Inc Lease | Eastern American Energy Corporation Oil & Gelegater American Energy Corporation Oil & Gelegater American Energy Corporation Oil & Gelegater American Energy Corporation Office of Oil & Gelegater American Energy Corporation | is | 30000 |
| GSC Alumni Foundation Inc | Eastern American Energy Corporation of Oil & | 1/8 | 178/59 |
| Eastern American Energy Corporation | Edward Mullooly | Assignment | 175/640 |
| Edward Mullooly | OFD W. L. | Assignment | 182/54 |
| S.W. Jack Ventures | Jack Production Inc | Assignment | 180/344 |
| Jack Production Inc | Mike Descine | Accionment | 257/461 |
| Mike Ross Inc | Antero Resources Appalachian Corporation Pro | tection Assignment | 267/401 |
| Antero Resources Appalachian Corporation | Antero Resources Appalachian Corporation artment | Name Change | 46/523 |
| ✓ Stella Darnell et vir Lease | | | 2272 |
| Stella Darnell et vir | Hope Natural Gas Company | 1/8 | 23/47 |
| Hope Natural Gas Company | CNG Transmission Corporation | Confirmatory Deed | 143/345 |
| CNG Transmission Corporation | Dominion Transmission Inc | Certificate of Authority | 58/362 |
| Dominion Transmission Inc | Antero Resources Appalachian Corporation | Partial Assignment | 230/113 |
| Antero Resources Appalachian Corporation | Antero Resources Corporation | Name Change | 46/523 |
| Betty Casch Lease | E-1110 A-1-7 | 440 | 400/000 |
| Betty Casch | Drilling Appalachian Corporation | 1/8 | 182/328 |
| Drilling Appalachian Corporation Antero Resources Appalachian Corporation | Antero Resources Appalachian Corporation Antero Resources Corporation | Assignment Name Change | 262/600 46/523 |
| | | | |
| Abram Gain et ux Lease Abram Gain et ux | Hope Natural Gas Company | 1/8 | 23/46 |
| Hope Natural Gas Company | Consolidated Gas Supply Corporation | Merger | 143/345 |
| Consolidated Gas Supply Corporation | Consolidated Gas Supply Corporation Consolidated Gas Transmission Corporation | Assignment | 135/583 |
| Consolidated Gas Supply Corporation Consolidated Gas Transmission Corporation | CNG Transmission Corporation | Merger | 51/795 |
| CNG Transmission Corporation | Dominion Transmission Inc | Merger | 58/362 |
| Dominion Transmission Inc | Antero Resources Appalachian Corporation | Assignment | 230/113 |
| Sommon managinosion ino | Autoro i resources Appaiaonian Corporation | Assignment | 230/113 |

^{*}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.

Name Change

46/523

Antero Resources Corporation

Operator's Well Number

Peter Unit 2H MOD

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)

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Grantor, lessor, etc.

Grantee, lessee, etc.

Royalty

Book/Page

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| | Lease Name or Number | Grantor, Lessor, etc. | Grantee, Lessee, etc. | Royalty | Book/Page |
|---|----------------------------|-----------------------|------------------------------|---------|-----------|
| 1 | David & Maggie Sisco Lease | David & Maggie Sisco | Antero Resources Corporation | 1/8+ | 460/52 |

*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.

Office of Oil & Gas

SEP 21 2022

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.

| Antero Resources Corporation |
|------------------------------|
| Tim Rady |
| Senior Vice President - Land |
| |



Stansberry, Wade A <wade.a.stansberry@wv.gov>

Modification Horizontal H6A Well Work Permit (47-017-06933, 47-017-06934, 47-017-06935, 47-017-06936, 47-017-06939)

1 message

Stansberry, Wade A <wade.a.stansberry@wv.gov>

Wed, Oct 5, 2022 at 7:34 AM

To: Mallory Stanton <mstanton@anteroresources.com>, Diane Blair <dblair@anteroresources.com>, Dani DeVito <ddevito@shalepro.com>, David Sponaugle <dsponaug@assessor.state.wv.us>, "Ward, Samuel D" <samuel.d.ward@wv.gov>, "Blevins, Cragin" <cragin.blevins@wv.gov>

I have attached a copy of the newly issued well permit number(s). This will serve as your copy.

47-017-06933 - PETER UNIT 1H 47-017-06934 - PETER UNIT 2H 47-017-06935 - PETER UNIT 3H 47-017-06936 - PETER UNIT 4H 47-017-06939 - TRAINER UNIT 1H

If you have any questions, then please contact us here at the Office of Oil and Gas.

Thank you,

Wade A. Stansberry

Environmental Resource Specialist 3

West Virginia Department of Environmental Protection

Office of Oil & Gas

601 57th St. SE

Charleston, WV 25304

(304) 926-0499 ext. 41115

(304) 926-0452 fax

Wade.A.Stansberry@wv.gov

5 attachments

47-017-06934 - mod.pdf 1923K

47-017-06935 - mod.pdf 1936K

47-017-06936 - mod.pdf 1949K

47-017-06939 - mod.pdf 2272K

47-017-06933 - mod.pdf 1986K