

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

Monday, March 11, 2024 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for GIRARDI UNIT 1H

47-103-03634-00-00

Extended Lateral Length

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: GIRARDI UNIT 1H

Farm Name: ANTERO RESOURCES CORPORATION

U.S. WELL NUMBER: 47-103-03634-00-00

Horizontal 6A New Drill

Date Modification Issued: 3/11/2024

Promoting a healthy environment.

| API NO. 47- 103 | _ 03634 | |
|-------------------|------------|---------------------|
| OPERATOR W | ELL NO. | Girardi Unit 1H MOD |
| Well Pad Nar | me: Fluhar | ty Pad |

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

| 1) Well Opera | tor: Antero | Resources | Corporal | 494507062 | 103 - Wetze | Green | Porter Falls 7.5' |
|------------------------------------|------------------------------|----------------------------------|---------------------------|--|--|--------------------|---------------------------------|
| • | | | | Operator ID | County | District | Quadrangle |
| 2) Operator's ' | Well Numbe | er: Girardi Ur | nit 1H MO | D Well Pad | Name: Fluha | rty Pad | |
| 3) Farm Name | /Surface Ov | vner: David | Smith | Public Road | d Access: Co F | Rd 28 | |
| 4) Elevation, c | urrent groui | nd: 1214' | Ele | evation, proposed p | oost-construction | on: 1181' | - PROPOSED |
| 5) Well Type | (a) Gas Other | x | Oil | | rground Storag | - | |
| | (b)If Gas | Shallow | Χ | Deep | | | |
| | | Horizontal | X | | | | |
| 6) Existing Pac | d: Yes or No | Yes | | | | | |
| 7) Proposed Ta Marcellus Sh | arget Forma nale: 7300' T | tion(s), Depth VD, Anticipate | (s), Antici d Thicknes | pated Thickness ar ss- 55 feet, Associa | nd Expected Protected Protected Pressure- 28 | essure(s): 850# | |
| 8) Proposed To | tal Vertical | Depth: 730 | 0' TVD | | | | RECEIVED |
| 9) Formation a | t Total Vert | ical Depth: | Marcellus | | | 5.85 10 | Office of Oil and Cas- |
| 10) Proposed T | otal Measu | red Depth: | 26400' ME |) | | | MAR 1 1 2024 |
| 11) Proposed H | Iorizontal L | eg Length: | 16046' * | Open to modifica | tion at a later | date | WV Department of |
| 12) Approxima | te Fresh Wa | ater Strata De | pths: | 307' | | | Environmental Protection |
| 13) Method to 14) Approxima | | | | 7103012450000 Offset well | records. Depths have I | been adjusted a | ccording to surface elevations. |
| 15) Approxima | te Coal Sea | m Depths: N | /A | | | | |
| 16) Approxima | te Depth to | Possible Void | l (coal mir | ne, karst, other): N | lone Anticipate | ed | |
| 17) Does Propo directly overlyi | | | | Yes | No | X | |
| (a) If Yes, pro | vide Mine l | nfo: Name: | | | | | |
| | | Depth: | | | | | |
| | | Seam: | | | | | |
| | | Owner | : | | | | |

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API NO. 47- 103 _ 03634

OPERATOR WELL NO. Girardi Unit 1H MOD

Well Pad Name: Fluharty Pad

18)

CASING AND TUBING PROGRAM

| ТҮРЕ | 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# | 100' | 100' | CTS, 96 Cu. Ft. |
| Fresh Water | 13-3/8" | New | J-55 | 54.5# | 357' | 357' | CTS, 372 Cu. Ft. |
| Coal | 9-5/8" | New | J-55 | 36# | 2900' | 2900' | CTS, 1181 Cu. Ft. |
| Intermediate | | | | | | | |
| Production | 5-1/2" | New | P110-ICY | 23# | 26400' | 26400' | CTS, 5725 Cu. Ft. |
| Tubing | 2-3/8" | New | N-80 | 4.7# | | | |
| 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" | 0.375" | 2250 | 50 | Class A/L | ~1.18 |
| Fresh Water | 13-3/8" | 17-1/2" | 0.38" | 2730 | 1000 | Class A/L | ~1.18 |
| Coal | 9-5/8" | 12-1/4" | 0.352" | 3520 | 1500 | Class A/L | ~1.18 |
| Intermediate | | | | | | | |
| Production | 5-1/2" | 8-3/4" & 8-1/2" | 0.415" | 14,360 | 2500 | Class G/H | ~1.8 |
| Tubing | 2-3/8" | 4.778" | 0.19" | 11,200 | | | |
| Liners | | | | | | | |

PACKERS

| | ACREAD | RECEIVE |
|-------------|--------|------------------------|
| Kind: | N/A | Office of Oil and |
| Sizes: | N/A | MAR 1 1 2024 |
| Depths Set: | N/A | Environmental Projects |

Page 2 of 3

OPERATOR WELL NO. Girardi Unit 1H MOD

Well Pad Name: Fluharty Pad

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

Drill a new horizontal shallow well into the 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): 45.48 acres

22) Area to be disturbed for well pad only, less access road (acres): 11.67 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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24) Describe all cement additives associated with each cement type:

Conductor: no additives, Class A/L cement.

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

Intermediate: Class A/L 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

WV Department of Environmental Protection

MAR 1 1 2024

Production: Tail cement- Class G/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.

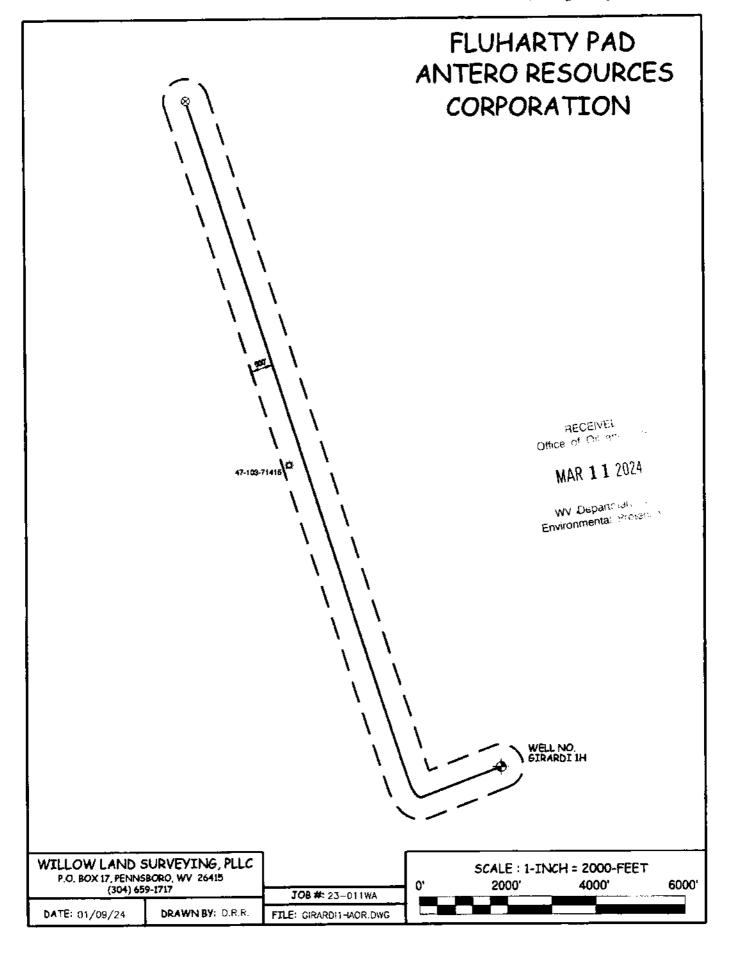
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

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.

Page 3 of 3



| UWI (APINum) | Well Name | Well Number | Operator | Historical Operator | TD | Perforated Interval (shallowest, deepest) | Perforated Formation(s) | Producible Formation(s) not perf'd |
|----------------|-----------------|-------------|--------------------|---------------------|-------|---|-------------------------|------------------------------------|
| 47103714150000 | T J J SNODGRASS | 1 | MCCORMICK O&G CORP | MCCORMICK O&G CORP | 2,957 | | | Weir, Benson, Alexander |

office of Oil and Gass MAR 11 2024

WV Department of Environmental Protection

ESTIMATED DEPTH

ADDRESS.

DESIGNATED AGENT

7,300' TVD 26,400' MD

KEVIN ELLIS

535 WHITE OAK BLVD

BRIDGEPORT, WV 26330

RMIT

TARGET FORMATION

ADDRESS

OPERATOR _

MARCELLUS

ANTERO RESOURCES CORP.

1615 WYNKOOP ST.

DENVER, CO 80202

03/15/2024

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 |
|---|----------------------------------|--------------|------------|
| AA: David Lee Smith Lease | | | |
| David Lee Smith | Antero Resources Corporation | 1/8+ | 273A/0442 |
| T: David Lee Smith Lease | | | |
| David Lee Smith | Antero Resources Corporation | 1/8+ | 273A/0442 |
| U: Robert Barry Myers, Sr. Lease | | | |
| Robert Barry Myers, Sr. | Gastar Exploration USA, Inc. | 1/8 | 103A/0273 |
| Gastar Exploration USA, Inc. | Stone Energy Corporation | Assignment | 152A/0521 |
| Stone Energy Corporation | EQT Production Company | Assignment | 183A/0305 |
| EQT Production Company | Antero Resources Corporation | Assignment | 230A/0783 |
| S: Abram C. Gawthrop and Nancy K. Gawthrop Lease | | | |
| Abram C. Gawthrop and Nancy K. Gawthrop | Antero Resources Corporation | 1/8+ | 188A/0349 |
| R: WVMC, LLC. Lease | | | |
| WVMC, LLC. | Antero Resources Corporation | 1/8+ | 288A/0349 |
| Q: Spring Creek Energy Partners Lease | | | |
| Spring Creek Energy Partners | Antero Resources Corporation | 1/8+ | 0208/0732 |
| O: Five Star Resources Lease | | | |
| Five Star Resources | Antero Resources Corporation | 1/8+ | 329A/0248 |
| N: Michael Scott Whiteman Lease | | | |
| Michael Scott Whiteman | Antero Resources Corporation | 1/8+ | 287A/0210 |
| M: Coastal Forest Resources Company Lease | | | |
| Coastal Forest Resources Company | Drilling Appalachian Corporation | 1/8+ | 092A/0906 |
| Drilling Appalachian Corporation | Antero Resources Corporation | Assignment | 177A/0451 |
| J: David R. Thomas Et Ux Lease | | | |
| David R. Thomas Et Ux | Antero Resources Corporation | 1/8+ | 335A/0920 |
| G: CSX Transportation, Inc. Lease | | | |
| CSX Transportation, Inc. | Antero Resources Corporation | 1/8+ | 275A/0895 |
| B: WVDNR Lease | | 5341 | |
| WVDNR | Antero Resources Corporation | 1/8+ | 323A/0531 |
| J: David R. Thomas Et Ux Lease | | Sala Partino | |
| David R. Thomas Et Ux | Antero Resources Corporation | 1/8+ | 335A/0920 |
| 11: Brian L. Thomas and Tracey L. Thomas Lease | | 4.6 | |
| Brian L. Thomas and Tracey L. Thomas | Antero Resources Corporation | 1/8+ | 335A/0918 |
| B: WVDNR Lease | | | 2001.000 |
| WVDNR | Antero Resources Corporation | 1/8+ | 323A/0531 |
| | | | 0011-10001 |

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|---|--|------------|------------|
| I1: Brian L. Thomas and Tracey L. Thomas Lease Brian L. Thomas and Tracey L. Thomas | Antero Resources Corporation | 1/8+ | 335A/0918 |
| | The state of the s | 2/0 | 33374 0320 |
| G: CSX Transportation, Inc. Lease | | | |
| CSX Transportation, Inc. | Antero Resources Corporation | 1/8+ | 275A/0895 |
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| B: WVDNR Lease | | | |
| WVDNR | Antero Resources Corporation | 1/8+ | 323A/0531 |
| 11: Brian L. Thomas and Tracey L. Thomas Lease | | | |
| Brian L. Thomas and Tracey L. Thomas | Antero Resources Corporation | 1/8+ | 335A/0918 |
| H1: J. Wells Eakin, Et Al Lease | | | |
| J. Wells Eakin, Et Al | Sutton Exploration & Production Company, LLC | 1/8 | 090A/0234 |
| Sutton's Exploration & Production Company, LLC | Gastar Exploration USA, Inc. | Assignment | 102A/0524 |
| Gastar Exploration USA, Inc. | Gastar Exploration Inc. | Merger | 0013/0270 |
| Gastar Exploration Inc. | TH Exploration II, LLC | Assignment | 173A/0431 |
| TH Exploration II, LLC | Antero Resources Corporation | Assignment | 270A/0067 |
| H2: J. Wells Eakin, Et Al Lease | | | |
| J. Wells Eakin, Et Al | Sutton Exploration & Production Company, LLC | 1/8 | 090A/0234 |
| Sutton's Exploration & Production Company, LLC | Gastar Exploration USA, Inc. | Assignment | 102A/0524 |
| Gastar Exploration USA, Inc. | Gastar Exploration Inc. | Merger | 0013/0270 |
| Gastar Exploration Inc. | TH Exploration II, LLC | Assignment | 173A/0431 |
| TH Exploration II, LLC | Antero Resources Corporation | Assignment | 270A/0067 |
| B: WVDNR Lease | | | |
| WVDNR | Antero Resources Corporation | 1/8+ | 323A/0531 |
| E: Chesapeake Appalachia LLC. Lease | | | |
| Chesapeake Appalachia LLC. | SWN Production Company LLC. | 1/8 | 157A/0640 |
| SWN Production Company LLC. | Antero Exchange Properties LLC. | Assignment | 177A/0533 |
| Antero Exchange Properties LLC. | Antero Resources Corporation | Merger | 0013/0311 |
| | | | 5525,5521 |
| G: CSX Transportation, Inc. Lease | | | |
| CSX Transportation, Inc. | Antero Resources Corporation | 1/8+ | 275A/0895 |

^{*}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.

"Pooling/Unitization – Antero has filed a horizontal well unitization application with the West Virginia Oil and Gas Conservation Commission that seeks to pool certain owners in this tract.

^{*}Co-tenancy utilization – Antero is utilizing the Co-tenancy Modernization and Majority Protection Act to proceed with development of certain royalty owners' interests in this tract.

WW-6A1 (5/13)

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| Lease Name or Number | Grantor, Lessor, etc. | Grantee, Lessee, etc. | Royalty | Book/Page |
|-----------------------------|---------------------------------|--------------------------------|------------|-----------|
| E: Chesapeake Appalachia LL | .C. Lease | | | |
| | Chesapeake Appalachia LLC. | SWN Production Company LLC. | 1/8 | 157A/0640 |
| | SWN Production Company LLC. | Antero Exchange Poperties LLC. | Assignment | 177A/0533 |
| | Antero Exchange Properties LLC. | Antero Resources Corporation | Merger | 0013/0311 |

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**Pooling/Unitization – Antero has filed a horizontal well unitization application with the West Virginia Oil and Gas Conservation Commission that seeks to pool certain owners in this tract.

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

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Office of Oil and Gas

FEB 28 2024

WV Department of Environmental Protection

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: Tim Rady

Its: Senior Vice President of Land