

State of West Virginia  
Department of Environmental Protection - Office of Oil and Gas  
Well Operator's Report of Well Work

API 47-017 - ~~0000~~ 6856 County Doddridge District West Union  
Quad West Union 7.5' Pad Name Alexander Pad Field/Pool Name -----  
Farm name Antero Resources Corporation Well Number Edgar Unit 3H  
Operator (as registered with the OOG) Antero Resources Corporation  
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4354081m Easting 519362m  
Landing Point of Curve Northing 4354353m Easting 519786m  
Bottom Hole Northing 4357244m Easting 518647m

Elevation (ft) 1181' GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine

Mud Type(s) and Additive(s)  
Air - Foam & 4% KCL  
Mud - Polymer

Date permit issued 9/19/2017 Date drilling commenced 1/18/2018 Date drilling ceased 6/23/2018  
Date completion activities began 11/9/2018 Date completion activities ceased 12/23/2018  
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft None Identified Open mine(s) (Y/N) depths \_\_\_\_\_  
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths No  
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

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Reviewed by:  
**Reviewed**  
*[Signature]*  
5/28/19

# Hydraulic Fracturing Fluid Product Component Information Disclosure

|                                |                              |
|--------------------------------|------------------------------|
| Job Start Date:                | 11/9/2018                    |
| Job End Date:                  | 11/24/2018                   |
| State:                         | West Virginia                |
| County:                        | Doddridge                    |
| API Number:                    | 47-017-06856-00-00           |
| Operator Name:                 | Antero Resources Corporation |
| Well Name and Number:          | Edgar 3H                     |
| Latitude:                      | 39.33585600                  |
| Longitude:                     | -80.77550800                 |
| Datum:                         | NAD83                        |
| Federal Well:                  | NO                           |
| Indian Well:                   | NO                           |
| True Vertical Depth:           | 6,875                        |
| Total Base Water Volume (gal): | 19,199,107                   |
| Total Base Non Water Volume:   | 0                            |



## Hydraulic Fracturing Fluid Composition:

| Trade Name  | Supplier     | Purpose      | Ingredients | Chemical Abstract Service Number (CAS #) | Maximum Ingredient Concentration in Additive (% by mass)** | Maximum Ingredient Concentration in HF Fluid (% by mass)** | Comments        |
|-------------|--------------|--------------|-------------|--|--|--|-----------------|
| Fresh Water | Operator     | Base Fluid   |             |  |  |  |                 |
|             |              |              | Water       | 7732-18-5                                | 100.00000  | 88.43214   | Density = 8.330 |
| Ingredients | Listed Above | Listed Above |             |  |  |  |                 |
|             |              |              | Water       | 7732-18-5                                | 100.00000  | 0.14301  |                 |

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|   |             |                  |  |  |              |  |  |  |  |
|---|-------------|------------------|--|--|--------------|--|--|--|--|
| SP BREAKER  | Halliburton | Breaker          |  |  |              |  |  |  |  |
|   |             |                  |  |  | Listed Below |  |  |  |  |
| HYDROCHLORIC ACID                                   | Halliburton | Solvent          |  |  |              |  |  |  |  |
|   |             |                  |  |  | Listed Below |  |  |  |  |
| EXCELERATE PS-2                                     | Halliburton | Friction Reducer |  |  |              |  |  |  |  |
|   |             |                  |  |  | Listed Below |  |  |  |  |
| SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676) | Halliburton | Proppant         |  |  |              |  |  |  |  |
|   |             |                  |  |  | Listed Below |  |  |  |  |
| SAND-PREMIUM WHITE-40/70, BULK                      | Halliburton | Proppant         |  |  |              |  |  |  |  |
|   |             |                  |  |  | Listed Below |  |  |  |  |
| WG-36 GELLING AGENT                                 | Halliburton | Gelling Agent    |  |  |              |  |  |  |  |
|   |             |                  |  |  | Listed Below |  |  |  |  |
| SCALECHECK LP-70                                    | Halliburton | Scale Inhibitor  |  |  |              |  |  |  |  |
|   |             |                  |  |  | Listed Below |  |  |  |  |
| SAND-PREMIUM WHITE-30/50 BULK                       | Halliburton | Proppant         |  |  |              |  |  |  |  |

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|   |             |                     |  |             |              |          |  |  |  |
|---|-------------|---------------------|--|-------------|--------------|----------|--|--|--|
| FDP-S1296-17  | Halliburton | Corrosion Inhibitor |  |             | Listed Below |          |  |  |  |
| MC B-8614   | Halliburton | Biocide             |  |             | Listed Below |          |  |  |  |
| Items above are Trade Names with the exception of Base Water. Items below are the individual ingredients. |             |                     |  |             |              |          |  |  |  |
|   |             |                     | Crystalline silica, quartz   | 14808-60-7  | 100.00000    | 11.36764 |  |  |  |
|   |             |                     | Guar gum   | 9000-30-0   | 100.00000    | 0.02213  |  |  |  |
|   |             |                     | Inorganic salt   | Proprietary | 30.00000     | 0.02011  |  |  |  |
|   |             |                     | Acrylamide acrylate polymer  | Proprietary | 30.00000     | 0.02011  |  |  | Denise Tuck,<br>Halliburton, 3000 N.<br>Sam Houston Pkwy E.,<br>Houston, TX 77032,<br>281-871-6226 |
|   |             |                     | Hydrotreated light petroleum distillate                              | 64742-47-8  | 30.00000     | 0.02011  |  |  |  |
|   |             |                     | Hydrochloric acid  | 7647-01-0   | 15.00000     | 0.01290  |  |  |  |
|   |             |                     | Ethylene glycol  | 107-21-1    | 60.00000     | 0.00867  |  |  |  |
|   |             |                     | Glutaraldehyde   | 111-30-8    | 30.00000     | 0.00294  |  |  |  |
|   |             |                     | Telmer   | Proprietary | 10.00000     | 0.00145  |  |  |  |
|   |             |                     | Sodium persulfate  | 7775-27-1   | 100.00000    | 0.00065  |  |  |  |
|   |             |                     | Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides | 68424-85-1  | 5.00000      | 0.00049  |  |  |  |
|   |             |                     | Methanol   | 67-56-1     | 100.00000    | 0.00016  |  |  |  |
|   |             |                     | Sodium polyacrylate  | 9003-04-7   | 1.00000      | 0.00014  |  |  |  |
|   |             |                     | Ethanol  | 64-17-5     | 1.00000      | 0.00010  |  |  |  |
|   |             |                     | Modified thiourea polymer  | Proprietary | 30.00000     | 0.00005  |  |  |  |
|   |             |                     | Phosphoric acid  | 7664-38-2   | 0.10000      | 0.00001  |  |  |  |

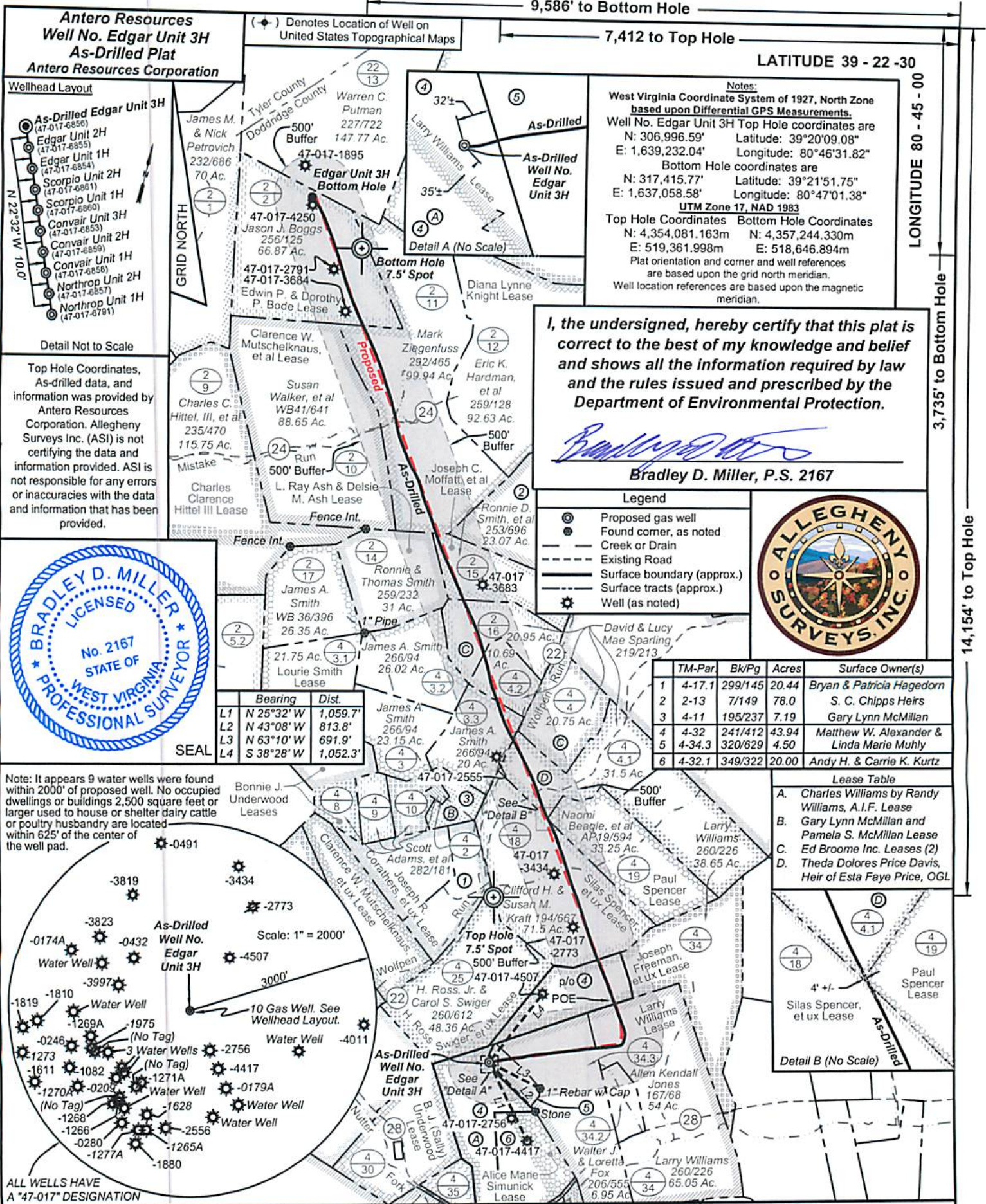
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|  |  |  |                      |             |         |         |  |  |  |  |
|--|--|--|----------------------|-------------|---------|---------|--|--|--|--|
|  |  |  |                      |             |         |         |  |  |  |  |
|  |  |  | Propargyl alcohol    | 107-19-7    | 5.00000 | 0.00001 |  |  |  |  |
|  |  |  | Ethoxylated alcohols | Proprietary | 5.00000 | 0.00001 |  |  |  |  |
|  |  |  | Acrylic acid         | 79-10-7     | 0.01000 | 0.00000 |  |  |  |  |
|  |  |  | Sodium sulfate       | 7757-82-6   | 0.10000 | 0.00000 |  |  |  |  |

\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water  
 \*\* Information is based on the maximum potential for concentration and thus the total may be over 100%  
 \*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.  
 Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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**Antero Resources**  
**Well No. Edgar Unit 3H**  
**As-Drilled Plat**  
**Antero Resources Corporation**

**Wellhead Layout**

As-Drilled Edgar Unit 3H  
 Edgar Unit 2H (47-017-6856)  
 Edgar Unit 1H (47-017-6855)  
 Scorpion Unit 2H (47-017-6854)  
 Scorpion Unit 1H (47-017-6860)  
 Convair Unit 3H (47-017-6853)  
 Convair Unit 2H (47-017-6859)  
 Convair Unit 1H (47-017-6858)  
 Northrop Unit 2H (47-017-6857)  
 Northrop Unit 1H (47-017-6791)

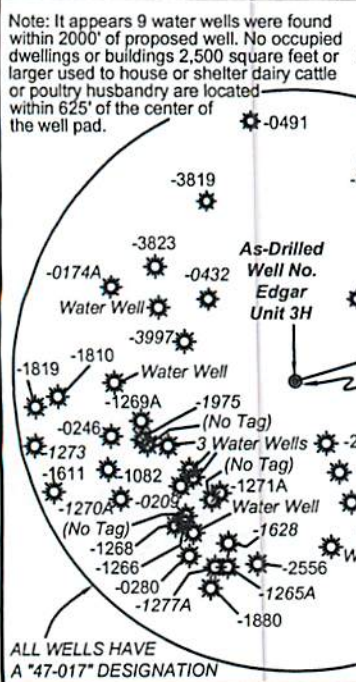
**Detail Not to Scale**

Top Hole Coordinates, As-drilled data, and information was provided by Antero Resources Corporation. Allegheny Surveys Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

**BRADLEY D. MILLER**  
**LICENSED**  
**No. 2167**  
**STATE OF WEST VIRGINIA**  
**PROFESSIONAL SURVEYOR**

**SEAL**

| Bearing       | Dist.    |
|---------------|----------|
| L1 N 25°32' W | 1,059.7' |
| L2 N 43°08' W | 813.8'   |
| L3 N 63°10' W | 691.9'   |
| L4 S 38°28' W | 1,052.3' |



FILE NO: 40-30-WU-14  
 DRAWING NO: Edgar 3H Well Plat  
 SCALE: 1" = 1500'  
 MINIMUM DEGREE OF ACCURACY: Submeter  
 PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
**OIL AND GAS DIVISION**

DATE: October 8 20 18  
 Operator's Well No. Edgar Unit 3H  
 API WELL NO  
 47 - 017 - 06856  
 STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION: As-Drilled Grade - 1181' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union  
 DISTRICT: West Union COUNTY: Doddridge  
 SURFACE OWNER: Matthew W. Alexander & Linda Marie Muhly Paul Spencer, et ux; Edwin P. & Dorothy P. Bode Joseph C. Moffatt, et al; Diana Lynne Knight; Ed Broome, Inc. ACREAGE: 43.94 33.25; 66; 283; 30 115; 63.087  
 ROYALTY OWNER: Theda Dolores Price Davis, Heir of Esta Faye Price OGL; Lourie Smith LEASE NO: ACREAGE: 23; 72; 60; 428.51

PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 6,844' TVD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 17,769' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
 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 prescribed by the Department of Environmental Protection.

*Bradley D. Miller*  
**Bradley D. Miller, P.S. 2167**

**Legend**

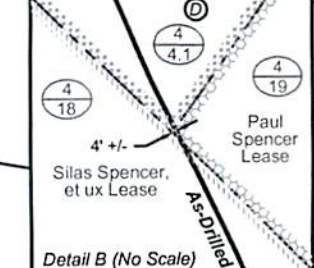
- Proposed gas well
- Found corner, as noted
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Surface tracts (approx.)
- Well (as noted)



| TM-Par   | Bk/Pg   | Acres | Surface Owner(s)                         |
|----------|---------|-------|--|
| 1 4-17.1 | 299/145 | 20.44 | Bryan & Patricia Hagedorn                |
| 2 2-13   | 7/149   | 78.0  | S. C. Chipps Heirs                       |
| 3 4-11   | 195/237 | 7.19  | Gary Lynn McMillan                       |
| 4 4-32   | 241/412 | 43.94 | Matthew W. Alexander & Linda Marie Muhly |
| 5 4-34.3 | 320/629 | 4.50  |  |
| 6 4-32.1 | 349/322 | 20.00 | Andy H. & Carrie K. Kurtz                |

**Lease Table**

A. Charles Williams by Randy Williams, A.I.F. Lease  
 B. Gary Lynn McMillan and Pamela S. McMillan Lease  
 C. Ed Broome Inc. Leases (2)  
 D. Theda Dolores Price Davis, Heir of Esta Faye Price, OGL



Notes:  
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
 Well No. Edgar Unit 3H Top Hole coordinates are N: 306,996.59' Longitude: 80°20'09.08" E: 1,639,232.04'  
 Bottom Hole coordinates are N: 317,415.77' Longitude: 80°21'51.75" E: 1,637,058.58' Longitude: 80°47'01.38"  
 UTM Zone 17, NAD 1983  
 Top Hole Coordinates N: 4,354,081.163m E: 519,361.998m  
 Bottom Hole Coordinates N: 4,357,244.330m E: 518,646.894m  
 Plat orientation and corner and well references are based upon the grid north meridian.  
 Well location references are based upon the magnetic meridian.

9,586' to Bottom Hole  
 7,412 to Top Hole  
 LATITUDE 39 - 22 - 30  
 LONGITUDE 80 - 45 - 00  
 3,735' to Bottom Hole  
 14,154' to Top Hole

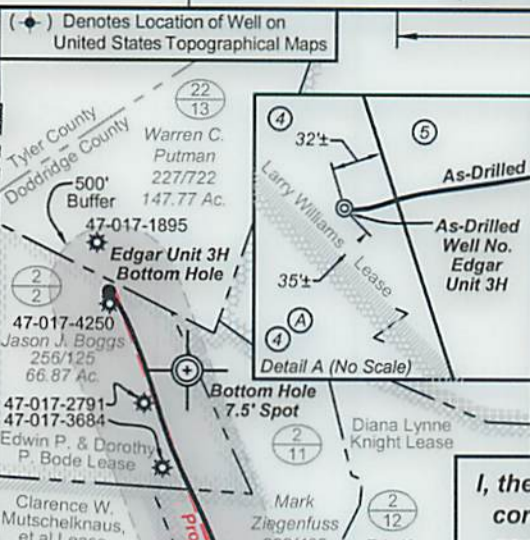
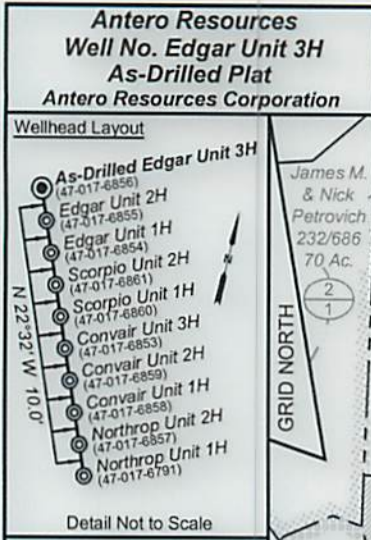
9,586' to Bottom Hole

7,412 to Top Hole

LATITUDE 39 - 22 - 30

LONGITUDE 80 - 45 - 00

14,154' to Top Hole



**Notes:**  
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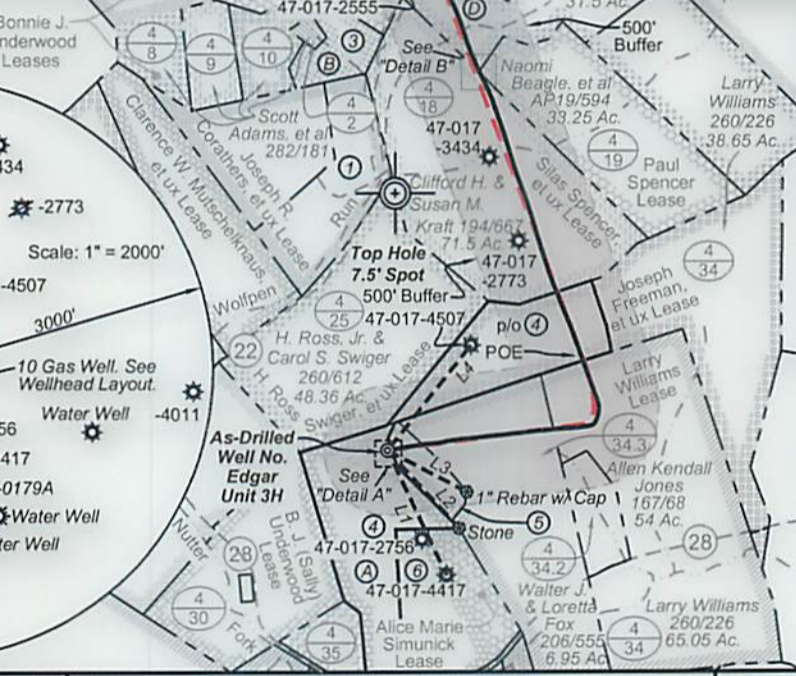
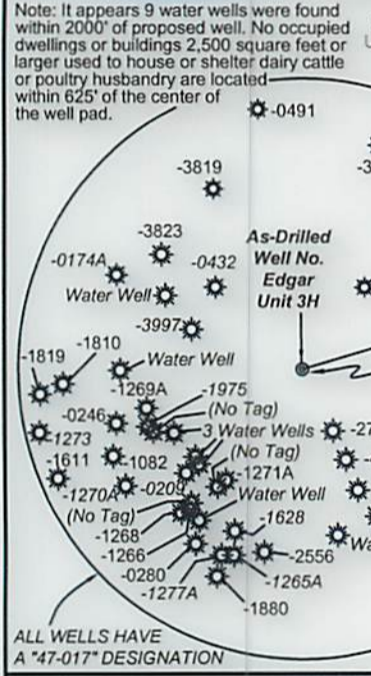
**Legend**

- Proposed gas well
- Found corner, as noted
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Surface tracts (approx.)
- Well (as noted)



| Bearing       | Dist.    |
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| TM-Par | Bk/Pg  | Acres   | Surface Owner(s)                               |
|--------|--------|---------|--|
| 1      | 4-17.1 | 299/145 | 20.44 Bryan & Patricia Hagedorn                |
| 2      | 2-13   | 7/149   | 78.0 S. C. Chipps Heirs                        |
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| 4      | 4-32   | 241/412 | 43.94 Matthew W. Alexander & Linda Marie Muhly |
| 5      | 4-34.3 | 320/629 | 4.50   |
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- Gary Lynn McMillan and Pamela S. McMillan Lease
- Ed Broome Inc. Leases (2)
- Theda Dolores Price Davis, Heir of Esta Faye Price, OGL

FILE NO: 40-30-WU-14  
DRAWING NO: Edgar 3H Well Plat  
SCALE: 1" = 1500'  
MINIMUM DEGREE OF ACCURACY: Submeter  
PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

**STATE OF WEST VIRGINIA**  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**OIL AND GAS DIVISION**

DATE: October 8 20 18  
Operator's Well No. Edgar Unit 3H  
API WELL NO  
47 - 017 - 06856  
STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
(IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION: As-Drilled Grade - 1181' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union  
DISTRICT: West Union COUNTY: Doddridge  
SURFACE OWNER: Matthew W. Alexander & Linda Marie Muhly ACREAGE: 43.94 33.25; 66; 283; 30  
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 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 17,769' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
Denver, CO 80202 Charleston, WV 25313

WELL OPERATOR: Antero Resources Corporation  
 ADDRESS: 1615 Wynkoop Street  
 DENVER, CO 80202

DESIGNATED AGENT: Diana Stamber - CT Corporation System  
 ADDRESS: 5400 D Big Tyler Road  
 CHARLESTON, WV 25313

PROPOSED WORK:  PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Dilled  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG  TARGET FORMATION: Marcellus shale ESTIMATED DEPTH: 17768' MD  
 DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION

ROYALTY OWNER: Theda Dolores Price Davis, Heir of Esta Faye Price OGL; Loune Smith  
 SURFACE OWNER: & Linda Marie Murtly  
 MATTHEW W. ALEXANDER  
 DISTRICT: West Union

LOCATION: ELEVATION: As-Dilled Grade - 1181' WATERSHED: Headwaters Middle Island Creek  
 QUADRANGLE: West Union

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW

PROVEN SOURCE OF ELEVATION: WVDOT, Harmsville, WV  
 MINIMUM DEGREE OF ACCURACY: Submeter

SCALE: 1" = 1500'  
 DRAWING NO: Edgar 3H Well Plat  
 FILE NO: 40-30-WU-14

## STATE OF WEST VIRGINIA

### DEPARTMENT OF ENVIRONMENTAL PROTECTION

### OIL AND GAS DIVISION

DATE: October 8 20 18  
 OPERATOR'S Well No. Edgar Unit 3H  
 STATE COUNTY PERMIT  
 API WELL NO. 47 - 017 - 08856

LEASE NO: ACREAGE: 23.72; 60.4285  
 ACREAGE: 43.94  
 COUNTY: Doddridge  
 COUNTY: Doddridge

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW

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ROYALTY OWNER: Theda Dolores Price Davis, Heir of Esta Faye Price OGL; Loune Smith  
 SURFACE OWNER: & Linda Marie Murtly  
 MATTHEW W. ALEXANDER  
 DISTRICT: West Union

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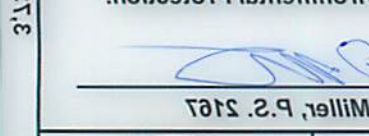
SCALE: 1" = 1500'  
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 FILE NO: 40-30-WU-14

LONGITUDE 80 - 24 - 08 EQUINOXIAL  
 LATITUDE 39 - 25 - 30  
 7,412 to Top Hole  
 9,586' to Bottom Hole

Well location references are based upon the magnetic meridian. Plat orientation and corner and well references are based upon the grid north meridian.  
 Top Hole Coordinates  
 Bottom Hole Coordinates  
 UTM Zone 17 NAD 1983  
 Bottom Hole Coordinates  
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 N: 4,327,244.330m E: 519,648.894m  
 Well No. Edgar Unit 3H  
 Bottom Hole Coordinates  
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 Latitude: 39°24'17.5" Longitude: 80°46'31.82"  
 Well No. Edgar Unit 3H  
 Top Hole Coordinates  
 N: 3,069,986.59' E: 1,639,232.04'  
 Latitude: 39°20'09.08" Longitude: 80°46'31.82"  
 based upon Differential GPS Measurements  
 West Virginia Coordinate System of 1927, North Zone

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 prescribed by the Department of Environmental Protection.

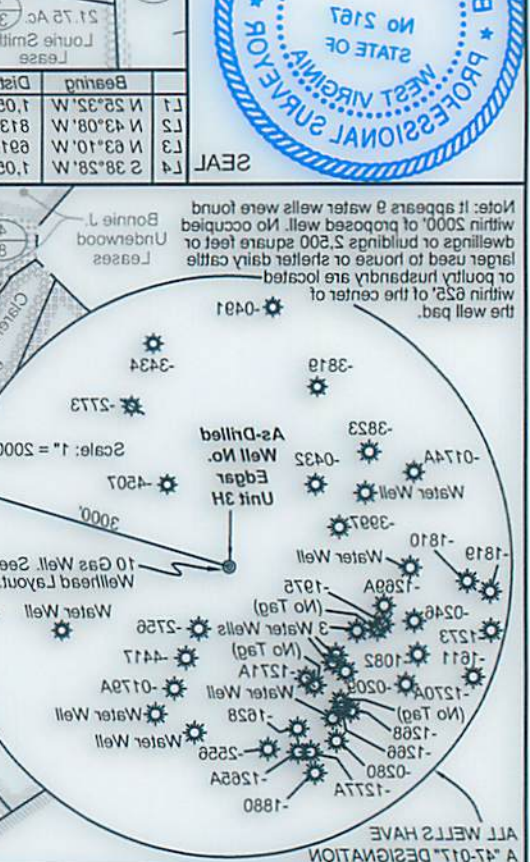
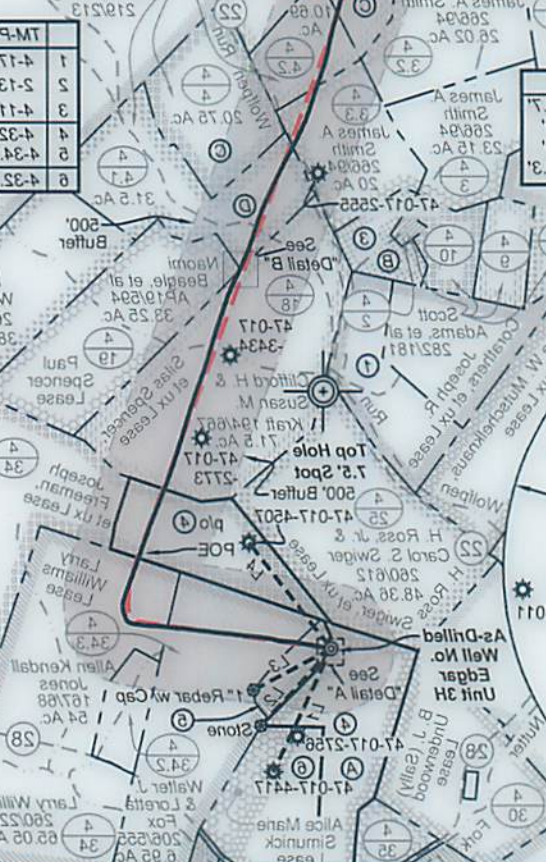
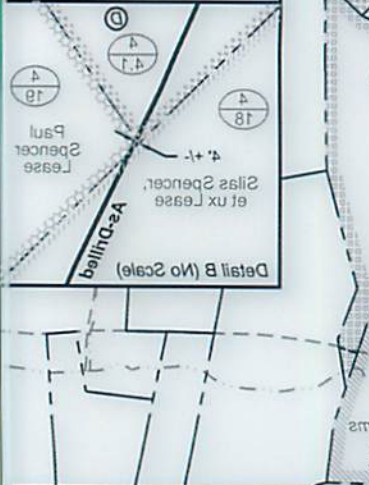
Bradley D. Miller, P.S. 2167



| Well (as noted)        | Surface boundary (approx.) | Subtract (approx.) | Found corner, as noted | Proposed gas well |
|------------------------|----------------------------|--------------------|------------------------|-------------------|
| Well No. Edgar Unit 3H | As-Dilled                  | As-Dilled          | As-Dilled              | As-Dilled         |

| Surface Owners                            | Acres | TM-Par. | Bk/Pg   |
|---|-------|---------|---------|
| Andy H. & Carle K. Kurtz                  | 20.00 | 4-32.1  | 349/352 |
| Matthew W. Alexander & Linda Marie Murtly | 4.80  | 4-32.3  | 320/329 |
| Gary Lynn McMillan                        | 7.19  | 4-11    | 192/237 |
| S. C. Clippa Hairs                        | 78.0  | 2-13    | 71/49   |
| Bryan & Patricia Hasgerton                | 20.44 | 4-17.1  | 290/145 |

| Lease Table                                      | Acres | TM-Par. | Bk/Pg   |
|--|-------|---------|---------|
| Heir of Esta Faye Price, OGL                     | 38.65 | 4-19    | 325/326 |
| Theda Dolores Price Davis                        | 38.65 | 4-19    | 325/326 |
| Ed Broome Inc. Leases (S)                        | 38.65 | 4-19    | 325/326 |
| Patricia S. McMillan Lease                       | 7.19  | 4-11    | 192/237 |
| Gary Lynn McMillan and Pamela S. McMillan Lease  | 7.19  | 4-11    | 192/237 |
| Charles Williams by Randy Williams, A.I.F. Lease | 20.44 | 4-17.1  | 290/145 |



ALL WELLS HAVE A 47-017 DESIGNATION

Note: It appears 9 water wells were found within 2000' of proposed well. No occupied buildings or buildings 2,500 square feet or larger used of house or smaller dairy cattle or poultry land parcels are located within 825' of the center of the well pad.

Information provided, ASA is certifying the data and information provided. ASA is not responsible for any errors or inaccuracies with the data and information that has been provided.

Top Hole Coordinates and A-Dilled data and information was provided by Antero Resources Corporation. All geophysical surveys (inc. ASI) is not certifying the data and information provided. ASA is not responsible for any errors or inaccuracies with the data and information that has been provided.

Detail Not to Scale

Wellpad Layout

Antero Resources Corporation  
 Well No. Edgar Unit 3H  
 As-Dilled Plat