

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



API 47-095-02183 County Tyler District Ellsworth  
Quad Shirley 7.5' Pad Name Weigle East Pad Field/Pool Name -----  
Farm name Edwin C. Weigle Well Number Hawkeye 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 4368532m Easting 512676m  
Landing Point of Curve Northing 4368318.71m Easting 512501.78m  
Bottom Hole Northing 4365153m Easting 513643m

Elevation (ft) 817' 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

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Date permit issued 6/25/2014 Date drilling commenced 10/23/2014 Date drilling ceased 5/20/2015  
Date completion activities began 7/2/2015 Date completion activities ceased 4/2/2016  
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 194', 366' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 842', 1027', 1199' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

**APPROVED**  
Reviewed by:  
NAME: [Signature]  
DATE: 9/8/16 10/28/2016

API 47-095 02183

Farm name Edwin C. Weigle

Well number Hawkeye Unit 3H

| CASING STRINGS            | Hole Size     | Casing Size | Depth   | New or Used | Grade wt/ft | Basket Depth(s) | Did cement circulate (Y/N)<br>* Provide details below* |
|---------------------------|---------------|-------------|---------|-------------|-------------|-----------------|--|
| Conductor                 | 30"           | 20"         | 60'     | New         | 94#/J-55    | N/A             | Y  |
| Surface                   | 17-1/2"       | 13-3/8"     | 529'    | New         | 68#/J-55    | N/A             | Y  |
| Coal                      |               |             |         |             |             |                 |  |
| Intermediate 1            | 12-1/4"       | 9-5/8"      | 2583'   | New         | 36#/J-55    | N/A             | Y  |
| Intermediate 2            |               |             |         |             |             |                 |  |
| Intermediate 3            |               |             |         |             |             |                 |  |
| Production                | 8-3/4"/8-1/2" | 5-1/2"      | 17,955' | New         | 23#/P-110   | N/A             | Y  |
| Tubing                    |               | 2-3/8"      | 6534'   |             | 4.7#/N-80   |                 |  |
| Packer type and depth set | N/A           |             |         |             |             |                 |  |

Comment Details \_\_\_\_\_

| CEMENT DATA    | Class/Type of Cement | Number of Sacks               | Slurry wt (ppg)          | Yield (ft <sup>3</sup> /sks) | Volume (ft <sup>3</sup> ) | Cement Top (MD)                | WOC (hrs) |
|----------------|----------------------|-------------------------------|--------------------------|------------------------------|---------------------------|--------------------------------|-----------|
| Conductor      | Class A              | 170 sx                        | 15.6                     | 1.18                         | 58 Cu. Ft.                | 0'                             | 8 Hrs.    |
| Surface        | Class A              | 648 sx                        | 15.6                     | 1.18                         | 367 Cu. Ft.               | 0'                             | 8 Hrs.    |
| Coal           |                      |                               |                          |                              |                           |                                |           |
| Intermediate 1 | Class A              | 956 sx                        | 15.6                     | 1.18                         | 809 Cu. Ft.               | 0'                             | 8 Hrs.    |
| Intermediate 2 |                      |                               |                          |                              |                           |                                |           |
| Intermediate 3 |                      |                               |                          |                              |                           |                                |           |
| Production     | Class H              | 889 sx (Lead), 1601 sx (Tail) | 13.5 (Lead), 15.2 (Tail) | 1.44 (Lead), 1.80 (Tail)     | 3636 Cu. Ft.              | -500' into Intermediate Casing | 8 Hrs.    |
| Tubing         |                      |                               |                          |                              |                           |                                |           |

Drillers TD (ft) 17,955' MD, 6397' TVD (BHL)

Loggers TD (ft) 17,904' MD

Deepest formation penetrated Marcellus

Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 5709'

\*\* This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Scardina Unit 1H API# 47-095-02183). Please reference the wireline logs submitted with Form WR-35 for the Scardina Unit 1H. Cement Bond Log has been included with this submittal.

Check all wireline logs run  caliper  density  deviated/directional  induction  neutron  resistivity  gamma ray  temperature  temperature

Well cored  Yes  No Conventional Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_

Conductor - 0

Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface

Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface

Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED N/A

10/28/2016

API 47- 095 - 02183 Farm name Edwin C. Weigle Well number Hawkeye Unit 3H

PERFORATION RECORD

| Stage No.                     | Perforation date | Perforated from MD ft. | Perforated to MD ft. | Number of Perforations | Formation(s) |
|-------------------------------|------------------|------------------------|----------------------|------------------------|--------------|
|                               |                  |                        |                      |                        |              |
| <b>SEE ATTACHED EXHIBIT 1</b> |                  |                        |                      |                        |              |
|                               |                  |                        |                      |                        |              |
|                               |                  |                        |                      |                        |              |
|                               |                  |                        |                      |                        |              |
|                               |                  |                        |                      |                        |              |
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|                               |                  |                        |                      |                        |              |
|                               |                  |                        |                      |                        |              |
|                               |                  |                        |                      |                        |              |

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

| Stage No.                     | Stimulations Date | Ave Pump Rate (BPM) | Ave Treatment Pressure (PSI) | Max Breakdown Pressure (PSI) | ISIP (PSI) | Amount of Proppant (lbs) | Amount of Water (bbls) | Amount of Nitrogen/other (units) |
|-------------------------------|-------------------|---------------------|------------------------------|------------------------------|------------|--------------------------|------------------------|----------------------------------|
|                               |                   |                     |                              |                              |            |                          |                        |                                  |
| <b>SEE ATTACHED EXHIBIT 2</b> |                   |                     |                              |                              |            |                          |                        |                                  |
|                               |                   |                     |                              |                              |            |                          |                        |                                  |
|                               |                   |                     |                              |                              |            |                          |                        |                                  |
|                               |                   |                     |                              |                              |            |                          |                        |                                  |
|                               |                   |                     |                              |                              |            |                          |                        |                                  |
|                               |                   |                     |                              |                              |            |                          |                        |                                  |
|                               |                   |                     |                              |                              |            |                          |                        |                                  |
|                               |                   |                     |                              |                              |            |                          |                        |                                  |
|                               |                   |                     |                              |                              |            |                          |                        |                                  |
|                               |                   |                     |                              |                              |            |                          |                        |                                  |
|                               |                   |                     |                              |                              |            |                          |                        |                                  |
|                               |                   |                     |                              |                              |            |                          |                        |                                  |
|                               |                   |                     |                              |                              |            |                          |                        |                                  |
|                               |                   |                     |                              |                              |            |                          |                        |                                  |

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Please insert additional pages as applicable.



**EXHIBIT 1**

| Stage No. | Perforation Date | Perforated from MD ft. | Perforated to MD ft. | Number of Perforations | Formations |
|-----------|------------------|------------------------|----------------------|------------------------|------------|
| 1         | 2-Jul-15         | 17,694                 | 17,862               | 60                     | Marcellus  |
| 2         | 15-Dec-15        | 17,494                 | 17,662               | 60                     | Marcellus  |
| 3         | 16-Dec-15        | 17,294                 | 17,462               | 60                     | Marcellus  |
| 4         | 16-Dec-15        | 17,094                 | 17,263               | 60                     | Marcellus  |
| 5         | 16-Dec-15        | 16,895                 | 17,063               | 60                     | Marcellus  |
| 6         | 16-Dec-15        | 16,695                 | 16,863               | 60                     | Marcellus  |
| 7         | 17-Dec-15        | 16,495                 | 16,663               | 60                     | Marcellus  |
| 8         | 17-Dec-15        | 16,295                 | 16,464               | 60                     | Marcellus  |
| 9         | 17-Dec-15        | 16,095                 | 16,264               | 60                     | Marcellus  |
| 10        | 17-Dec-15        | 15,896                 | 16,064               | 60                     | Marcellus  |
| 11        | 18-Dec-15        | 15,696                 | 15,864               | 60                     | Marcellus  |
| 12        | 18-Dec-15        | 15,496                 | 15,665               | 60                     | Marcellus  |
| 13        | 18-Dec-15        | 15,296                 | 15,465               | 60                     | Marcellus  |
| 14        | 19-Dec-15        | 15,097                 | 15,265               | 60                     | Marcellus  |
| 15        | 19-Dec-15        | 14,897                 | 15,065               | 60                     | Marcellus  |
| 16        | 19-Dec-15        | 14,697                 | 14,866               | 60                     | Marcellus  |
| 17        | 19-Dec-15        | 14,497                 | 14,666               | 60                     | Marcellus  |
| 18        | 20-Dec-15        | 14,298                 | 14,466               | 60                     | Marcellus  |
| 19        | 20-Dec-15        | 14,098                 | 14,266               | 60                     | Marcellus  |
| 20        | 20-Dec-15        | 13,898                 | 14,067               | 60                     | Marcellus  |
| 21        | 20-Dec-15        | 13,698                 | 13,867               | 60                     | Marcellus  |
| 22        | 21-Dec-15        | 13,499                 | 13,667               | 60                     | Marcellus  |
| 23        | 21-Dec-15        | 13,299                 | 13,467               | 60                     | Marcellus  |
| 24        | 21-Dec-15        | 13,099                 | 13,268               | 60                     | Marcellus  |
| 25        | 21-Dec-15        | 12,899                 | 13,068               | 60                     | Marcellus  |
| 26        | 22-Dec-15        | 12,700                 | 12,868               | 60                     | Marcellus  |
| 27        | 22-Dec-15        | 12,500                 | 12,668               | 60                     | Marcellus  |
| 28        | 22-Dec-15        | 12,300                 | 12,469               | 60                     | Marcellus  |
| 29        | 22-Dec-15        | 12,100                 | 12,269               | 60                     | Marcellus  |
| 30        | 23-Dec-15        | 11,901                 | 12,069               | 60                     | Marcellus  |
| 31        | 23-Dec-15        | 11,701                 | 11,869               | 60                     | Marcellus  |
| 32        | 23-Dec-15        | 11,501                 | 11,670               | 60                     | Marcellus  |
| 33        | 26-Dec-15        | 11,301                 | 11,470               | 60                     | Marcellus  |
| 34        | 26-Dec-15        | 11,102                 | 11,270               | 60                     | Marcellus  |
| 35        | 26-Dec-15        | 10,902                 | 11,070               | 60                     | Marcellus  |
| 36        | 27-Dec-15        | 10,702                 | 10,870               | 60                     | Marcellus  |
| 37        | 27-Dec-15        | 10,502                 | 10,671               | 60                     | Marcellus  |
| 38        | 27-Dec-15        | 10,302                 | 10,471               | 60                     | Marcellus  |
| 39        | 27-Dec-15        | 10,103                 | 10,271               | 60                     | Marcellus  |
| 40        | 27-Dec-15        | 9,903                  | 10,071               | 60                     | Marcellus  |
| 41        | 28-Dec-15        | 9,703                  | 9,872                | 60                     | Marcellus  |
| 42        | 28-Dec-15        | 9,503                  | 9,672                | 60                     | Marcellus  |
| 43        | 28-Dec-15        | 9,304                  | 9,472                | 60                     | Marcellus  |
| 44        | 28-Dec-15        | 9,104                  | 9,272                | 60                     | Marcellus  |
| 45        | 29-Dec-15        | 8,904                  | 9,073                | 60                     | Marcellus  |
| 46        | 29-Dec-15        | 8,704                  | 8,873                | 60                     | Marcellus  |
| 47        | 29-Dec-15        | 8,505                  | 8,673                | 60                     | Marcellus  |
| 48        | 29-Dec-15        | 8,305                  | 8,473                | 60                     | Marcellus  |
| 49        | 29-Dec-15        | 8,105                  | 8,274                | 60                     | Marcellus  |
| 50        | 30-Dec-15        | 7,905                  | 8,074                | 60                     | Marcellus  |
| 51        | 30-Dec-15        | 7,706                  | 7,874                | 60                     | Marcellus  |
| 52        | 30-Dec-15        | 7,506                  | 7,674                | 60                     | Marcellus  |
| 53        | 30-Dec-15        | 7,306                  | 7,475                | 60                     | Marcellus  |
| 54        | 30-Dec-15        | 7,106                  | 7,275                | 60                     | Marcellus  |
| 55        | 31-Dec-15        | 6,907                  | 7,075                | 60                     | Marcellus  |
| 56        | 31-Dec-15        | 6,707                  | 6,875                | 60                     | Marcellus  |

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**EXHIBIT 2**

| Stage No. | Stimulations Date | Avg Pump Rate | Avg Treatment Pressure (PSI) | Max Breakdown Pressure (PSI) | ISIP (PSI) | Amount of Proppant (lbs) | Amount of Water (bbls) | Amount of Nitrogen/ other (units) |
|-----------|-------------------|---------------|------------------------------|------------------------------|------------|--------------------------|------------------------|-----------------------------------|
| 1         | 15-Dec-15         | 61.8          | 7,456                        | N/A                          | 4,297      | 279,300                  | 7,845                  | N/A                               |
| 2         | 15-Dec-15         | 66.9          | 7,366                        | 5,769                        | 4,274      | 254,300                  | 8,096                  | N/A                               |
| 3         | 16-Dec-15         | 67.6          | 7,304                        | 5,647                        | 5,014      | 305,600                  | 7,811                  | N/A                               |
| 4         | 16-Dec-15         | 67.2          | 7,338                        | 5,872                        | 4,842      | 279,600                  | 7,496                  | N/A                               |
| 5         | 16-Dec-15         | 66.1          | 7,098                        | 5,436                        | 4,746      | 283,200                  | 7,807                  | N/A                               |
| 6         | 16-Dec-15         | 68.7          | 7,391                        | 5,847                        | 5,275      | 301,800                  | 7,711                  | N/A                               |
| 7         | 17-Dec-15         | 69.0          | 7,275                        | 5,761                        | 5,225      | 305,200                  | 7,764                  | N/A                               |
| 8         | 17-Dec-15         | 71.2          | 7,289                        | 5,286                        | 4,857      | 307,000                  | 7,750                  | N/A                               |
| 9         | 17-Dec-15         | 71.8          | 7,463                        | 5,547                        | 5,071      | 306,600                  | 7,817                  | N/A                               |
| 10        | 17-Dec-15         | 68.2          | 7,343                        | 5,350                        | 5,010      | 295,700                  | 7,637                  | N/A                               |
| 11        | 18-Dec-15         | 70.0          | 7,467                        | 5,643                        | 5,043      | 305,800                  | 7,691                  | N/A                               |
| 12        | 18-Dec-15         | 59.5          | 6,664                        | 5,250                        | 4,846      | 305,500                  | 8,229                  | N/A                               |
| 13        | 18-Dec-15         | 70.7          | 7,438                        | 5,354                        | 4,735      | 306,600                  | 7,678                  | N/A                               |
| 14        | 19-Dec-15         | 70.2          | 7,383                        | 5,325                        | 5,057      | 305,800                  | 7,671                  | N/A                               |
| 15        | 19-Dec-15         | 71.7          | 7,293                        | 5,540                        | 5,136      | 304,500                  | 7,643                  | N/A                               |
| 16        | 19-Dec-15         | 70.6          | 7,071                        | 5,643                        | 4,950      | 307,200                  | 7,644                  | N/A                               |
| 17        | 19-Dec-15         | 70.2          | 7,235                        | 5,658                        | 5,053      | 305,300                  | 7,626                  | N/A                               |
| 18        | 20-Dec-15         | 71.2          | 7,196                        | 5,393                        | 4,674      | 305,100                  | 7,610                  | N/A                               |
| 19        | 20-Dec-15         | 70.2          | 7,272                        | 5,617                        | 4,307      | 250,100                  | 7,424                  | N/A                               |
| 20        | 20-Dec-15         | 65.9          | 7,022                        | 5,507                        | 4,610      | 395,500                  | 8,312                  | N/A                               |
| 21        | 20-Dec-15         | 71.9          | 7,341                        | 5,279                        | 5,107      | 300,600                  | 7,507                  | N/A                               |
| 22        | 21-Dec-15         | 71.3          | 7,440                        | 5,286                        | 5,128      | 281,300                  | 8,322                  | N/A                               |
| 23        | 21-Dec-15         | 70.0          | 7,314                        | 5,887                        | 4,964      | 308,200                  | 7,865                  | N/A                               |
| 24        | 21-Dec-15         | 72.5          | 7,154                        | 5,548                        | 4,551      | 307,345                  | 7,563                  | N/A                               |
| 25        | 21-Dec-15         | 70.8          | 7,185                        | 5,491                        | 4,421      | 303,875                  | 7,597                  | N/A                               |
| 26        | 22-Dec-15         | 70.8          | 6,929                        | 5,701                        | 4,631      | 265,015                  | 7,557                  | N/A                               |
| 27        | 22-Dec-15         | 70.5          | 6,909                        | 5,522                        | 4,367      | 305,700                  | 7,687                  | N/A                               |
| 28        | 22-Dec-15         | 71.2          | 6,871                        | 5,693                        | 5,264      | 306,320                  | 7,495                  | N/A                               |
| 29        | 22-Dec-15         | 73.5          | 6,827                        | 5,408                        | 4,561      | 295,815                  | 7,341                  | N/A                               |
| 30        | 23-Dec-15         | 73.4          | 6,917                        | 5,404                        | 4,657      | 306,005                  | 7,474                  | N/A                               |
| 31        | 23-Dec-15         | 71.1          | 6,885                        | 5,296                        | 5,357      | 306,580                  | 7,455                  | N/A                               |
| 32        | 23-Dec-15         | 71.2          | 6,859                        | 5,350                        | 5,064      | 275,480                  | 7,975                  | N/A                               |
| 33        | 26-Dec-15         | 67.5          | 6,575                        | 5,236                        | 5,293      | 307,120                  | 7,439                  | N/A                               |
| 34        | 26-Dec-15         | 66.2          | 6,344                        | 5,429                        | 5,232      | 306,740                  | 7,438                  | N/A                               |
| 35        | 26-Dec-15         | 73.0          | 6,747                        | 5,208                        | 4,887      | 304,205                  | 8,146                  | N/A                               |
| 36        | 27-Dec-15         | 72.8          | 6,629                        | 5,308                        | 4,853      | 296,360                  | 8,124                  | N/A                               |
| 37        | 27-Dec-15         | 66.2          | 6,436                        | 5,189                        | 4,520      | 307,500                  | 7,396                  | N/A                               |
| 38        | 27-Dec-15         | 69.2          | 6,417                        | 6,022                        | 5,146      | 305,700                  | 7,357                  | N/A                               |
| 39        | 27-Dec-15         | 72.8          | 6,532                        | 5,701                        | 4,432      | 305,100                  | 7,376                  | N/A                               |
| 40        | 27-Dec-15         | 72.8          | 6,487                        | 5,869                        | 4,564      | 300,975                  | 7,270                  | N/A                               |
| 41        | 28-Dec-15         | 66.6          | 6,202                        | 5,627                        | 4,853      | 305,500                  | 7,357                  | N/A                               |
| 42        | 28-Dec-15         | 65.9          | 6,234                        | 6,319                        | 5,186      | 305,700                  | 7,623                  | N/A                               |
| 43        | 28-Dec-15         | 65.1          | 6,185                        | 5,250                        | 4,874      | 304,900                  | 7,308                  | N/A                               |
| 44        | 28-Dec-15         | 73.0          | 6,403                        | 5,417                        | 4,506      | 306,525                  | 7,289                  | N/A                               |
| 45        | 29-Dec-15         | 73.2          | 6,472                        | 5,601                        | 4,581      | 280,825                  | 7,178                  | N/A                               |
| 46        | 29-Dec-15         | 65.6          | 6,047                        | 5,501                        | 5,275      | 305,600                  | 7,249                  | N/A                               |
| 47        | 29-Dec-15         | 66.5          | 6,195                        | 5,304                        | 5,014      | 278,000                  | 7,061                  | N/A                               |
| 48        | 29-Dec-15         | 69.1          | 6,307                        | 5,497                        | 4,689      | 305,200                  | 7,232                  | N/A                               |
| 49        | 29-Dec-15         | 71.0          | 6,394                        | 5,375                        | 5,075      | 291,630                  | 7,914                  | N/A                               |
| 50        | 30-Dec-15         | 69.5          | 6,287                        | 5,912                        | 4,438      | 305,770                  | 7,210                  | N/A                               |
| 51        | 30-Dec-15         | 69.1          | 6,184                        | 5,829                        | 4,964      | 290,900                  | 7,094                  | N/A                               |
| 52        | 30-Dec-15         | 73.0          | 6,100                        | 5,429                        | 4,814      | 305,000                  | 7,200                  | N/A                               |
| 53        | 30-Dec-15         | 73.0          | 6,172                        | 5,994                        | 5,178      | 302,040                  | 7,172                  | N/A                               |
| 54        | 30-Dec-15         | 72.0          | 6,131                        | 5,461                        | 5,279      | 275,050                  | 7,828                  | N/A                               |
| 55        | 31-Dec-15         | 72.2          | 6,145                        | 5,264                        | 5,236      | 304,520                  | 7,126                  | N/A                               |
| 56        | 31-Dec-15         | 73.3          | 6,269                        | 5,436                        | 4,134      | 306,200                  | 7,134                  | N/A                               |
|           | AVG=              | 69.7          | 6,819                        | 5,536                        | 4,859      | 16,778,995               | 424,621                | TOTAL                             |

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**EXHIBIT 3**

| LITHOLOGY/ FORMATION | TOP DEPTH (TVD) | BOTTOM DEPTH (TVD) | TOP DEPTH (MD) | BOTTOM DEPTH (MD) |
|----------------------|-----------------|--------------------|----------------|-------------------|
|                      | From Surface    | From Surface       | From Surface   | From Surface      |
| Fresh Water          | 194             | N/A                | 194            | N/A               |
| Fresh Water          | 366             | N/A                | 366            | N/A               |
| Siltstone            | 0               | 227                | 0              | 227               |
| Siltstone and Coal   | est. 227        | 275                | est. 227       | 275               |
| Siltstone            | est. 275        | 411                | est. 275       | 411               |
| Sandstone            | est. 411        | 542                | est. 411       | 542               |
| Shale w. Trace Coal  | est. 542        | 567                | est. 542       | 567               |
| Shale w. Trace Coal  | est. 567        | 767                | est. 567       | 767               |
| Siltstone            | est. 767        | 807                | est. 767       | 807               |
| Shale w. Trace Coal  | est. 807        | 947                | est. 807       | 947               |
| Siltstone            | est. 947        | 1,139              | est. 947       | 1,139             |
| Sandstone            | est. 1139       | 1,201              | est. 1139      | 1,201             |
| Siltstone            | est. 1201       | 1,237              | est. 1201      | 1,237             |
| Sandstone            | est. 1237       | 1,317              | est. 1237      | 1,317             |
| Siltstone            | est. 1317       | 1,730              | est. 1317      | 1,732             |
| Big Lime             | 1,730           | 1,841              | 1,732          | 1,843             |
| Big Injun            | 1,841           | 2,326              | 1,843          | 2,328             |
| Gantz Sand           | 2,326           | 2,466              | 2,328          | 2,468             |
| Fifty Foot Sandstone | 2,466           | 2,573              | 2,468          | 2,575             |
| Gordon               | 2,573           | 2,896              | 2,575          | 2,898             |
| Fifth Sandstone      | 2,896           | 2,954              | 2,898          | 2,956             |
| Bayard               | 2,954           | 3,310              | 2,956          | 3,312             |
| Warren               | 3,310           | 3,705              | 3,312          | 3,707             |
| Speechley            | 3,705           | 4,430              | 3,707          | 4,432             |
| Bradford             | 4,430           | 4,837              | 4,432          | 4,839             |
| Benson               | 4,837           | 5,062              | 4,839          | 5,064             |
| Alexander            | 5,062           | 5,242              | 5,064          | 5,244             |
| Elk                  | 5,242           | 5,629              | 5,244          | 5,631             |
| Rhinestreet          | 5,629           | 5,946              | 5,631          | 5,980             |
| Sycamore             | 5,946           | 6,117              | 5,980          | 6,284             |
| Middlesex            | 6,117           | 6,211              | 6,284          | 6,468             |
| Burkett              | 6,211           | 6,234              | 6,468          | 6,522             |
| Tully                | 6,234           | 6,276              | 6,522          | 6,669             |
| Marcellus            | 6,276           | NA                 | 6,669          | NA                |

\*Please note Antero determines shallow formation tops based on mud logs that are only run on one well on a multi-well pad. The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

Received  
Office of Oil & Gas  
JUN 21 2016

10/28/2016

# Hydraulic Fracturing Fluid Product Component Information Disclosure



|                               |                              |
|-------------------------------|------------------------------|
| Job Start Date                | 12/15/2015                   |
| Job End Date                  | 12/31/2015                   |
| State                         | West Virginia                |
| County                        | Tyler                        |
| API Number                    | 47-095-02183-00-00           |
| Operator Name                 | Antero Resources Corporation |
| Well Name and Number          | Hawkeye 31                   |
| Longitude                     | -80.85253900                 |
| Latitude                      | 39.46627500                  |
| Datum                         | NAD83                        |
| Federal/Tribal Well           | NO                           |
| True Vertical Depth           | 6,397                        |
| Total Base Water Volume (gal) | 18,654,944                   |
| Total Base Non Water Volume   | 0                            |

## Hydraulic Fracturing Fluid Composition:

| Trade Name             | Supplier                | Purpose          | Ingredients                                  | Chemical Service Number (CAS #) | Maximum Ingredient Concentration in Additive (% by mass)** | Maximum Ingredient Concentration in HF Fluid (% by mass)** | Comments |
|------------------------|-------------------------|------------------|--|---------------------------------|--|--|----------|
| Water                  | Antero Resources        | Base Fluid       | Water  | 7732-18-5                       | 100.00000  | 90.02484   |          |
| Sand                   | U.S. Well Services, LLC | Proppant         | Crystalline Silica, quartz                   | 14808-60-7                      | 100.00000  | 9.65100  |          |
| LGC-15                 | U.S. Well Services      | Gelling Agents   | Guar Gum                                     | 9000-30-0                       | 50.00000   | 0.06799  |          |
|                        |                         |                  | Petroleum Distillates                        | 64742-47-8                      | 50.00000   | 0.06439  |          |
|                        |                         |                  | Suspending agent (solid)                     | 14808-60-7                      | 3.00000  | 0.01040  |          |
|                        |                         |                  | Surfactant                                   | 69439-51-0                      | 3.00000  | 0.00408  |          |
| HCL Acid (12.6%-18.0%) | U.S. Well Services, LLC | Bulk Acid        | Water  | 7732-18-5                       | 87.50000   | 0.06499  |          |
|                        |                         |                  | Hydrogen Chloride                            | 7647-01-0                       | 18.00000   | 0.01552  |          |
| WFRA-405               | U.S. Well Services      | Friction Reducer | Water  | 7732-18-5                       | 60.00000   | 0.03594  |          |
|                        |                         |                  | 2-Propenoic acid, polymer with 2-propenamide | 26003-06-9                      | 30.00000   | 0.01797  |          |
|                        |                         |                  | Hydrated light distillate (petroleum)        | 64742-47-8                      | 30.00000   | 0.01446  |          |
|                        |                         |                  | Ethoxyated alcohol blend                     | 68002-97-1                      | 4.00000  | 0.00240  |          |



| SL-1100    | J.S. Well Services | Scale Inhibitor   |            |  |  |           |  |         |
|------------|--------------------|---|------------|--|--|-----------|--|---------|
|            |                    | Water   | 7732-18-5  |  |  | 80.00000  |  | 0.00987 |
|            |                    | Ethylene Glycol   | 107-21-1   |  |  | 25.00000  |  | 0.00342 |
|            |                    | Copolymer of Maleic and Acrylic acid                                    | 52255-49-9 |  |  | 10.00000  |  | 0.00143 |
|            |                    | Potassium salt of diethylene triamine penta (methylene phosphonic acid) | 15827-60-8 |  |  | 7.50000   |  | 0.00122 |
|            |                    | Hexamethylene tramine penta (methylene phosphonic acid)                 | 34690-00-1 |  |  | 5.00000   |  | 0.00079 |
|            |                    | Phosphino carboxylic acid polymer                                       | 71050-62-9 |  |  | 5.00000   |  | 0.00079 |
|            |                    | Hexamethylene diamine penta (methylene phosphonic acid)                 | 23605-74-5 |  |  | 2.00000   |  | 0.00031 |
| K-BAC 1020 | J.S. Well Services | Anti-Bacterial Agent  |            |  |  |           |  |         |
|            |                    | 2,2-dibromo-3-nitropropanamide  | 10222-01-2 |  |  | 20.00000  |  | 0.00409 |
|            |                    | Deionized Water   | 7732-18-5  |  |  | 28.00000  |  | 0.00234 |
| AP One     | J.S. Well Services | Gel Breakers  |            |  |  |           |  |         |
|            |                    | Ammonium Persulfate   | 7727-54-0  |  |  | 100.00000 |  | 0.00165 |
| AI-302     | J.S. Well Services | Acid Corrosion Inhibitors   |            |  |  |           |  |         |
|            |                    | Water   | 7732-18-5  |  |  | 95.00000  |  | 0.00028 |
|            |                    | 2-Propyn-1-ol compound with methylcycirane                              | 38172-91-7 |  |  | 15.00000  |  | 0.00004 |

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water  
 \*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

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)

LATITUDE 39°30'00"

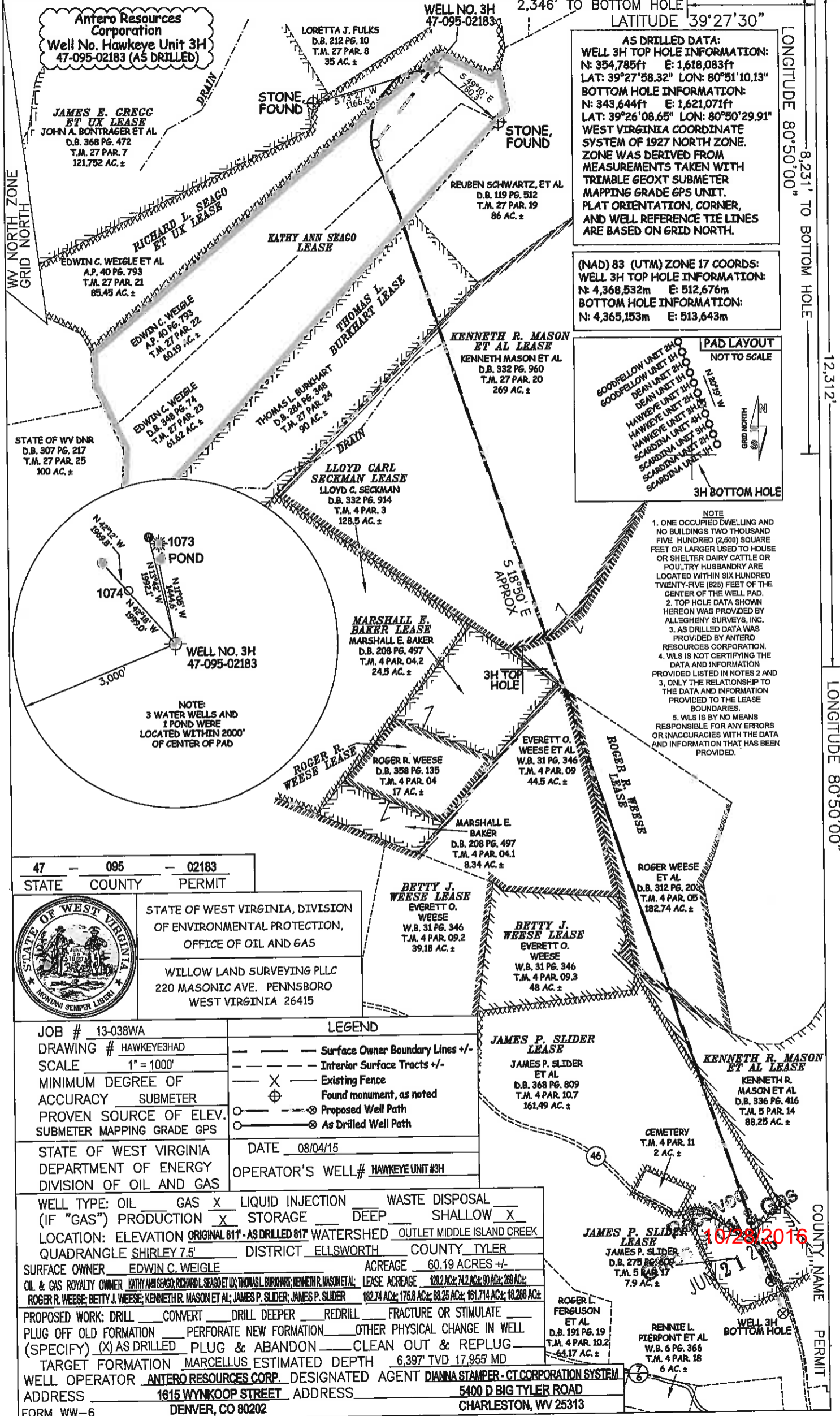
5,500'

LATITUDE 39°27'30"

LONGITUDE 80°50'00"

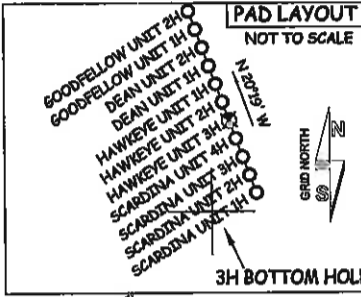
12,312'

LONGITUDE 80°50'00"

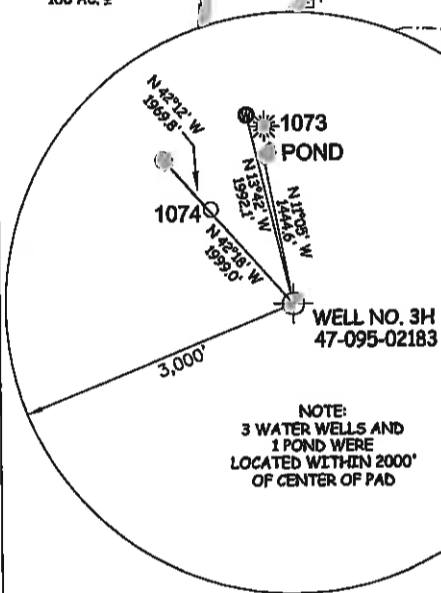


**AS DRILLED DATA:**  
**WELL 3H TOP HOLE INFORMATION:**  
 N: 354,785ft E: 1,618,083ft  
 LAT: 39°27'58.32" LON: 80°51'10.13"  
**BOTTOM HOLE INFORMATION:**  
 N: 343,644ft E: 1,621,071ft  
 LAT: 39°26'08.65" LON: 80°50'29.91"  
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM 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 3H TOP HOLE INFORMATION:**  
 N: 4,368,532m E: 512,676m  
**BOTTOM HOLE INFORMATION:**  
 N: 4,365,153m E: 513,643m



- NOTE**
- ONE OCCUPIED DWELLING AND NO BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
  - TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
  - AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
  - WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3. ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
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 STATE COUNTY PERMIT

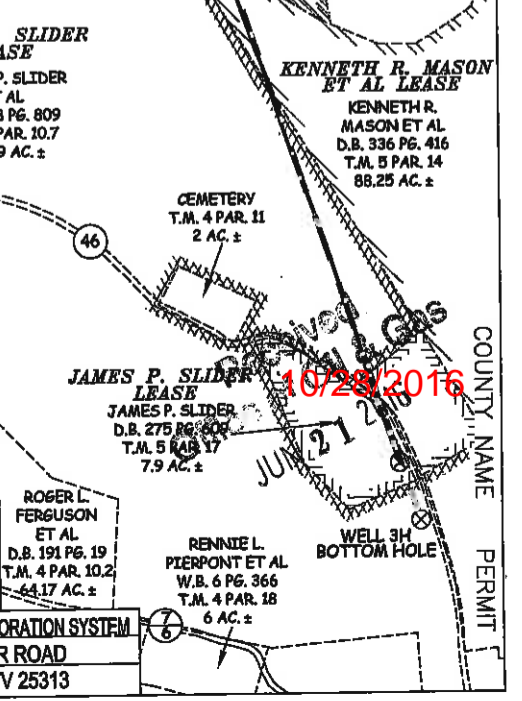
STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
 WILLOW LAND SURVEYING PLLC  
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

JOB # 13-038WA  
 DRAWING # HAWKEYE3HAD  
 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  
 DATE 08/04/15  
 OPERATOR'S WELL# HAWKEYE UNIT #3H

**LEGEND**

- Surface Owner Boundary Lines +/-
- Interior Surface Tracts +/-
- Existing Fence
- Found monument, as noted
- Proposed Well Path
- As Drilled Well Path

WELL TYPE: OIL GAS  LIQUID INJECTION WASTE DISPOSAL  
 (IF "GAS") PRODUCTION  STORAGE DEEP SHALLOW   
 LOCATION: ELEVATION ORIGINAL 811' - AS DRILLED 817' WATERSHED OUTLET MIDDLE ISLAND CREEK  
 QUADRANGLE SHIRLEY 7.5' DISTRICT ELLSWORTH COUNTY TYLER  
 SURFACE OWNER EDWIN C. WEIGLE ACREAGE 60.19 ACRES +/-  
 OIL & GAS ROYALTY OWNER KATHY ANN SEAGO, RICHARD L. SEAGO ET UX, THOMAS L. BURKHART, KENNETH R. MASON ET AL LEASE ACREAGE 128.2 AC ±, 74.2 AC ±, 90 AC ±, 288 AC ±  
 ROGER R. WEESE, BETTY J. WEESE, KENNETH R. MASON ET AL, JAMES P. SLIDER, JAMES P. SLIDER 182.74 AC ±, 175.8 AC ±, 88.25 AC ±, 161.714 AC ±, 18,288 AC ±  
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE  
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL  
 (SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG  
 TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,397' TVD 17,955' MD  
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
 ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
 DENVER, CO 80202 CHARLESTON, WV 25313



LATITUDE 39°30'00"

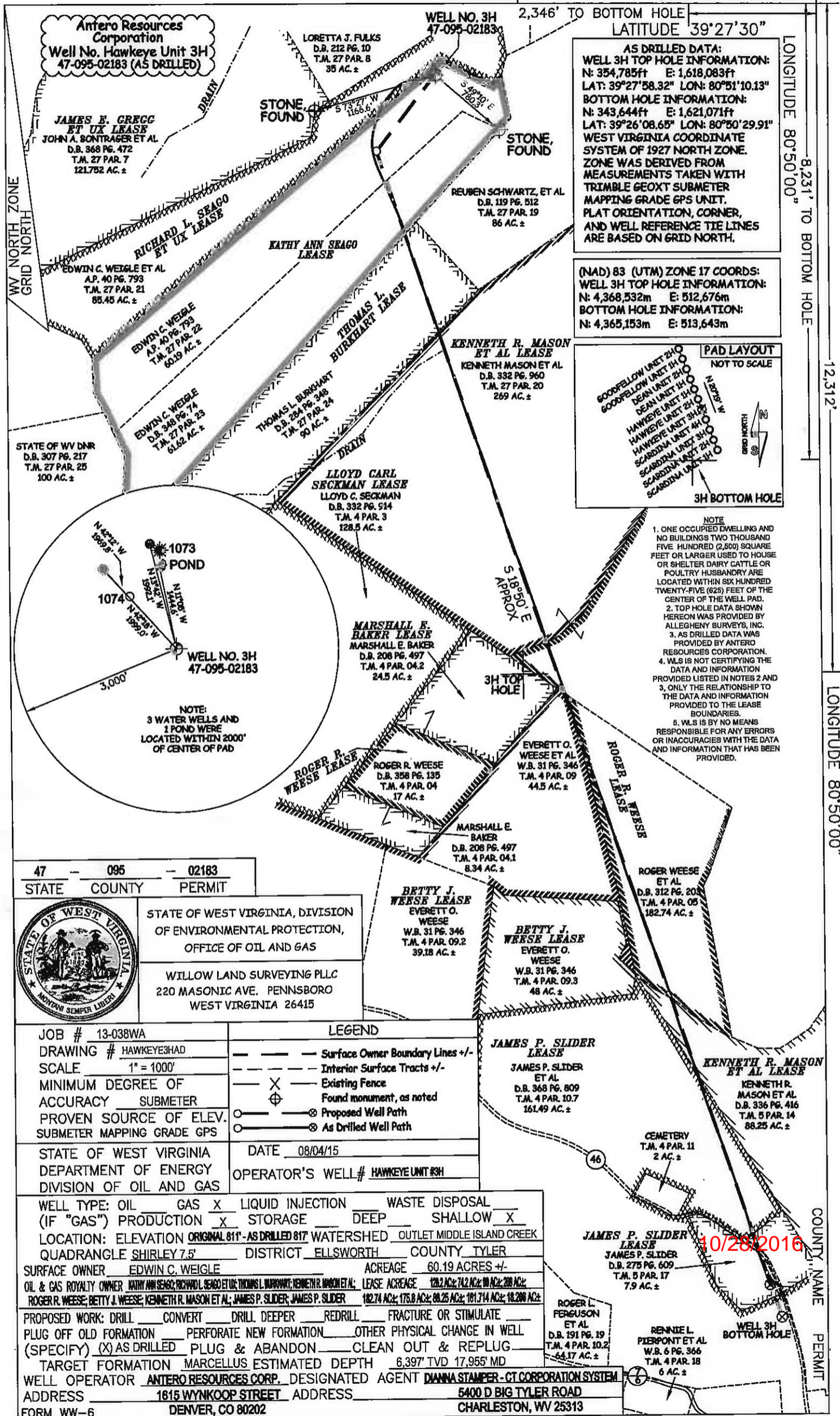
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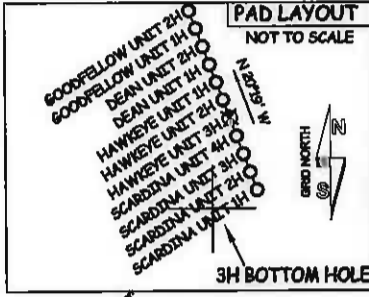
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47 - 095 - 02183  
 STATE COUNTY PERMIT



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
 WILLOW LAND SURVEYING PLLC  
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

JOB # 13-038WA  
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 STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

**LEGEND**  
 --- Surface Owner Boundary Lines +/-  
 - - - Interior Surface Tracts +/-  
 X Existing Fence  
 ⊕ Found monument, as noted  
 ○ Proposed Well Path  
 ⊙ As Drilled Well Path

DATE 08/04/15  
 OPERATOR'S WELL # HAWKEYE UNIT #3H

WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
 (IF "GAS") PRODUCTION X STORAGE \_\_\_ DEEP \_\_\_ SHALLOW X  
 LOCATION: ELEVATION ORIGINAL 811' - AS DRILLED 817' WATERSHED OUTLET MIDDLE ISLAND CREEK  
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 ROGER R. WEESE; BETTY J. WEESE; KENNETH R. MASON ET AL; JAMES P. SLIDER; JAMES P. SLIDER 182.74 AC; 175.8 AC; 88.25 AC; 101.74 AC; 18.208 AC;  
 PROPOSED WORK: DRILL \_\_\_ CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE \_\_\_  
 PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) (X) AS DRILLED PLUG & ABANDON \_\_\_ CLEAN OUT & REPLUG \_\_\_  
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 ADDRESS 1815 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
 FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

10/28/2016