



Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315

August 9, 2019

West Virginia Department of Environmental Protection
Office of Oil and Gas
601 57th Street
Charleston, WV 25304

To Whom It May Concern:

Please find enclosed the Well Operator's Report of Well Work, Form WR-35 (including As-Drilled Survey Plat, Directional Survey and FracFocus report), Discharge Monitoring Report Form WR-34 and corresponding logs for the following wells:

- Beem Unit 3H (API # 47-095-02474)—Pyle Run Pad
- Heintzman Unit 1H (API # 47-095-02526)—Pyle Run Pad
- Heintzman Unit 2H (API # 47-095-02527)—Pyle Run Pad
- Heintzman Unit 3H (API # 47-095-02528)—Pyle Run Pad
- Spock Unit 1H (API # 47-095-02478)—Pyle Run Pad
- Spock Unit 2H (API # 47-095-02427)—Pyle Run Pad
- Spock Unit 3H (API # 47-095-02428)—Pyle Run Pad

If you have any questions please feel free to contact me at (303) 357-7223.

Sincerely,

A handwritten signature in black ink, appearing to read "MGriffith", is written over a horizontal dotted line.

Megan Griffith
Permitting Agent
Antero Resources Corporation

Enclosures

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

API 47- _____ - _____ County _____ District _____
Quad _____ Pad Name _____ Field/Pool Name _____
Farm name _____ Well Number _____
Operator (as registered with the OOG) _____
Address _____ City _____ State _____ Zip _____

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing _____ Easting _____
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing _____ Easting _____

Elevation (ft) _____ 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)

Date permit issued _____ Date drilling commenced _____ Date drilling ceased _____
Date completion activities began _____ Date completion activities ceased _____
Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

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

Freshwater depth(s) ft _____ Open mine(s) (Y/N) depths _____
Salt water depth(s) ft _____ Void(s) encountered (Y/N) depths _____
Coal depth(s) ft _____ Cavern(s) encountered (Y/N) depths _____
Is coal being mined in area (Y/N) _____

Reviewed by:

API 47- _____ - _____ Farm name _____ Well number _____

| CASING STRINGS | Hole Size | Casing Size | Depth | New or Used | Grade wt/ft | Basket Depth(s) | Did cement circulate (Y/ N) * Provide details below* |
|---------------------------|-----------|-------------|-------|-------------|-------------|-----------------|---|
| Conductor | | | | | | | |
| Surface | | | | | | | |
| Coal | | | | | | | |
| Intermediate 1 | | | | | | | |
| Intermediate 2 | | | | | | | |
| Intermediate 3 | | | | | | | |
| Production | | | | | | | |
| Tubing | | | | | | | |
| Packer type and depth set | | | | | | | |

Comment Details _____

| CEMENT DATA | Class/Type of Cement | Number of Sacks | Slurry wt (ppg) | Yield (ft ³ /sks) | Volume (ft ³) | Cement Top (MD) | WOC (hrs) |
|----------------|----------------------|-----------------|-----------------|------------------------------|---------------------------|-----------------|-----------|
| Conductor | | | | | | | |
| Surface | | | | | | | |
| Coal | | | | | | | |
| Intermediate 1 | | | | | | | |
| Intermediate 2 | | | | | | | |
| Intermediate 3 | | | | | | | |
| Production | | | | | | | |
| Tubing | | | | | | | |

Drillers TD (ft) _____ Loggers TD (ft) _____
 Deepest formation penetrated _____ Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) _____

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

Well cored Yes No Conventional Sidewall
 Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

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 _____

API 47- _____ - _____ Farm name _____ Well number _____

PERFORATION RECORD

| Stage No. | Perforation date | Perforated from MD ft. | Perforated to MD ft. | Number of Perforations | Formation(s) |
|---------------------------------------|------------------|------------------------|----------------------|------------------------|--------------|
| *PLEASE SEE ATTACHED EXHIBIT 1 | | | | | |
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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) |
|---------------------------------------|-------------------|---------------------|------------------------------|------------------------------|------------|--------------------------|------------------------|----------------------------------|
| *PLEASE SEE ATTACHED EXHIBIT 2 | | | | | | | | |
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Please insert additional pages as applicable.

API 47- _____ - _____ Farm name _____ Well number _____

| <u>PRODUCING FORMATION(S)</u> | <u>DEPTHS</u> |
|-------------------------------|--------------------|
| _____ | _____ TVD _____ MD |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs
 OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY
 Estimated Orifice Pilot

| LITHOLOGY/ FORMATION | TOP DEPTH IN FT NAME TVD | BOTTOM DEPTH IN FT TVD | TOP DEPTH IN FT MD | BOTTOM DEPTH IN FT MD | DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC) |
|-------------------------|--------------------------------|------------------------------|--------------------------|-----------------------------|--|
|-------------------------|--------------------------------|------------------------------|--------------------------|-----------------------------|--|

***PLEASE SEE ATTACHED EXHIBIT 3**

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Please insert additional pages as applicable.

Drilling Contractor _____
 Address _____ City _____ State _____ Zip _____
 Logging Company _____
 Address _____ City _____ State _____ Zip _____
 Cementing Company _____
 Address _____ City _____ State _____ Zip _____
 Stimulating Company _____
 Address _____ City _____ State _____ Zip _____

Please insert additional pages as applicable.

Completed by _____ Telephone _____
 Signature _____ Title _____ Date _____

API 47-095-02528 Farm Name Tyrone L. Beem et al Well Number Heintzman Unit 3H

EXHIBIT 1

| Stage No. | Perforation Date | Perforated from MD ft. | Perforated to MD ft. | Number of Perforations | Formations |
|-----------|------------------|------------------------|----------------------|------------------------|------------|
| 1 | 3/22/2019 | 17156 | | 60 | Marcellus |
| 2 | 3/22/2019 | 17017.322 | 16850.932 | 60 | Marcellus |
| 3 | 3/22/2019 | 16815.254 | 16648.864 | 60 | Marcellus |
| 4 | 3/23/2019 | 16613.186 | 16446.796 | 60 | Marcellus |
| 5 | 3/24/2019 | 16411.118 | 16244.728 | 60 | Marcellus |
| 6 | 3/24/2019 | 16209.05 | 16042.66 | 60 | Marcellus |
| 7 | 3/24/2019 | 16006.982 | 15840.592 | 60 | Marcellus |
| 8 | 3/25/2019 | 15804.914 | 15638.524 | 60 | Marcellus |
| 9 | 3/25/2019 | 15602.846 | 15436.456 | 60 | Marcellus |
| 10 | 3/26/2019 | 15400.778 | 15234.388 | 60 | Marcellus |
| 11 | 3/26/2019 | 15198.71 | 15032.32 | 60 | Marcellus |
| 12 | 3/27/2019 | 14996.642 | 14830.252 | 60 | Marcellus |
| 13 | 3/27/2019 | 14794.574 | 14628.184 | 60 | Marcellus |
| 14 | 3/27/2019 | 14592.506 | 14426.116 | 60 | Marcellus |
| 15 | 3/28/2019 | 14390.438 | 14224.048 | 60 | Marcellus |
| 16 | 3/28/2019 | 14188.37 | 14021.98 | 60 | Marcellus |
| 17 | 3/29/2019 | 13986.302 | 13819.912 | 60 | Marcellus |
| 18 | 3/29/2019 | 13784.234 | 13617.844 | 60 | Marcellus |
| 19 | 3/30/2019 | 13582.166 | 13415.776 | 60 | Marcellus |
| 20 | 3/30/2019 | 13380.098 | 13213.708 | 60 | Marcellus |
| 21 | 3/31/2019 | 13178.03 | 13011.64 | 60 | Marcellus |
| 22 | 3/31/2019 | 12975.962 | 12809.572 | 60 | Marcellus |
| 23 | 3/31/2019 | 12773.894 | 12607.504 | 60 | Marcellus |
| 24 | 4/1/2019 | 12571.826 | 12405.436 | 60 | Marcellus |
| 25 | 4/1/2019 | 12369.758 | 12203.368 | 60 | Marcellus |
| 26 | 4/2/2019 | 12167.69 | 12001.3 | 60 | Marcellus |
| 27 | 4/2/2019 | 11965.622 | 11799.232 | 60 | Marcellus |
| 28 | 4/3/2019 | 11763.554 | 11597.164 | 60 | Marcellus |
| 29 | 4/3/2019 | 11561.486 | 11395.096 | 60 | Marcellus |
| 30 | 4/4/2019 | 11359.418 | 11193.028 | 60 | Marcellus |
| 31 | 4/4/2019 | 11157.35 | 10990.96 | 60 | Marcellus |
| 32 | 4/5/2019 | 10955.282 | 10788.892 | 60 | Marcellus |
| 33 | 4/5/2019 | 10753.214 | 10586.824 | 60 | Marcellus |
| 34 | 4/5/2019 | 10551.146 | 10384.756 | 60 | Marcellus |
| 35 | 4/6/2019 | 10349.078 | 10182.688 | 60 | Marcellus |
| 36 | 4/6/2019 | 10147.01 | 9980.62 | 60 | Marcellus |
| 37 | 4/7/2019 | 9944.942 | 9778.552 | 60 | Marcellus |
| 38 | 4/7/2019 | 9742.874 | 9576.484 | 60 | Marcellus |
| 39 | 4/7/2019 | 9540.806 | 9374.416 | 60 | Marcellus |
| 40 | 4/8/2019 | 9338.738 | 9172.348 | 60 | Marcellus |
| 41 | 4/8/2019 | 9136.67 | 8970.28 | 60 | Marcellus |
| 42 | 4/8/2019 | 8934.602 | 8768.212 | 60 | Marcellus |
| 43 | 4/9/2019 | 8732.534 | 8566.144 | 60 | Marcellus |
| 44 | 4/9/2019 | 8530.466 | 8364.076 | 60 | Marcellus |
| 45 | 4/10/2019 | 8328.398 | 8162.008 | 60 | Marcellus |
| 46 | 4/10/2019 | 8126.33 | 7959.94 | 60 | Marcellus |
| 47 | 4/10/2019 | 7924.262 | 7757.872 | 60 | Marcellus |
| 48 | 4/11/2019 | 7722.194 | 7555.804 | 60 | Marcellus |
| 49 | 4/11/2019 | 7520.126 | 7353.736 | 60 | Marcellus |
| 50 | 4/12/2019 | 7318.058 | 7151.668 | 60 | Marcellus |
| 51 | 4/12/2019 | 7115.99 | 6949.6 | 60 | Marcellus |

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 | 3/22/2019 | 75.6895 | 8190.055 | 6822 | 4196 | 287100 | 7106 | N/A |
| 2 | 3/22/2019 | 78.4096 | 8231.034 | 5704 | 4587 | 407600 | 9175 | N/A |
| 3 | 3/22/2019 | 75.0389 | 7835.862 | 5871 | 4385 | 407680 | 9056 | N/A |
| 4 | 3/23/2019 | 76.9956 | 8173.209 | 5669 | 3989 | 405920 | 9020 | N/A |
| 5 | 3/24/2019 | 77.3656 | 8053.963 | 5765 | 4138 | 405440 | 8974 | N/A |
| 6 | 3/24/2019 | 74.7705 | 8172.919 | 5829 | 3853 | 409100 | 8988 | N/A |
| 7 | 3/24/2019 | 76.4898 | 8462.985 | 5901 | 3792 | 405480 | 8867 | N/A |
| 8 | 3/25/2019 | 74.3799 | 8394.715 | 5667 | 3616 | 408200 | 8887 | N/A |
| 9 | 3/25/2019 | 74.59 | 8317.232 | 5872 | 3566 | 409000 | 8859 | N/A |
| 10 | 3/26/2019 | 74.8665 | 8320.18 | 5885 | 4076 | 405600 | 8906 | N/A |
| 11 | 3/26/2019 | 76.3431 | 8409.109 | 5866 | 3875 | 406400 | 8842 | N/A |
| 12 | 3/27/2019 | 73.2394 | 8282.742 | 5762 | 3963 | 402140 | 8856 | N/A |
| 13 | 3/27/2019 | 76.4911 | 8020.564 | 5822 | 3746 | 406700 | 8816 | N/A |
| 14 | 3/27/2019 | 75.3447 | 8299.594 | 5977 | 3846 | 404260 | 8802 | N/A |
| 15 | 3/28/2019 | 78.9997 | 8297.601 | 5912 | 3725 | 408100 | 8761 | N/A |
| 16 | 3/28/2019 | 75.811 | 8119.322 | 6410 | 3820 | 407640 | 9089 | N/A |
| 17 | 3/29/2019 | 76.211 | 8287.778 | 6040 | 3979 | 405200 | 8786 | N/A |
| 18 | 3/29/2019 | 76.994 | 8102.578 | 5982 | 3980 | 406840 | 8846 | N/A |
| 19 | 3/30/2019 | 75.7714 | 8119.878 | 5771 | 3753 | 408100 | 8739 | N/A |
| 20 | 3/30/2019 | 76.3955 | 8208.367 | 5941 | 3910 | 410040 | 8834 | N/A |
| 21 | 3/31/2019 | 81.7847 | 8110.179 | 6273 | 3870 | 408100 | 8860 | N/A |
| 22 | 3/31/2019 | 79.6167 | 8142.817 | 6115 | 4021 | 408100 | 8759 | N/A |
| 23 | 3/31/2019 | 77.2567 | 8101.587 | 6213 | 3948 | 401020 | 8775 | N/A |
| 24 | 4/1/2019 | 74.3395 | 8206.12 | 5743 | 3894 | 408240 | 8745 | N/A |
| 25 | 4/1/2019 | 79.6869 | 8166.029 | 6564 | 3952 | 412000 | 8744 | N/A |
| 26 | 4/2/2019 | 79.8281 | 7966.321 | 6005 | 3880 | 409100 | 8780 | N/A |
| 27 | 4/2/2019 | 80.2905 | 8156.168 | 5327 | 3821 | 402700 | 8677 | N/A |
| 28 | 4/3/2019 | 78.985 | 7841.509 | 6221 | 3794 | 405420 | 8680 | N/A |
| 29 | 4/3/2019 | 81.4306 | 8170 | 6206 | 3840 | 405680 | 10760 | N/A |
| 30 | 4/4/2019 | 81.7554 | 7846.716 | 6288 | 4041 | 404660 | 8786 | N/A |
| 31 | 4/4/2019 | 82.0003 | 7490.889 | 4598 | 3709 | 405560 | 8771 | N/A |
| 32 | 4/5/2019 | 80.7657 | 8019.445 | 5967 | 3954 | 400340 | 8677 | N/A |
| 33 | 4/5/2019 | 79.6 | 7848 | 5406 | 4438 | 404780 | 10274 | N/A |
| 34 | 4/5/2019 | 81.9215 | 7642.378 | 5788 | 4120 | 415380 | 8714 | N/A |
| 35 | 4/6/2019 | 77.9746 | 7979.898 | 6390 | 3615 | 406160 | 8721 | N/A |
| 36 | 4/6/2019 | 82.2331 | 7706.218 | 5714 | 4119 | 401120 | 8807 | N/A |
| 37 | 4/7/2019 | 83.4076 | 7651.029 | 5601 | 3883 | 404080 | 8587 | N/A |
| 38 | 4/7/2019 | 82.5963 | 7417.636 | 4726 | 3904 | 405480 | 8669 | N/A |
| 39 | 4/7/2019 | 81.8741 | 7492.136 | 6366 | 3877 | 406100 | 8553 | N/A |
| 40 | 4/8/2019 | 82.4532 | 7272.686 | 5817 | 3889 | 404560 | 8616 | N/A |
| 41 | 4/8/2019 | 82.3116 | 7241.667 | 4963 | 3975 | 405320 | 8612 | N/A |
| 42 | 4/8/2019 | 82.6876 | 7280.994 | 5121 | 4453 | 407300 | 8623 | N/A |
| 43 | 4/9/2019 | 82.6458 | 7252.887 | 5592 | 3867 | 409520 | 8661 | N/A |
| 44 | 4/9/2019 | 82.118 | 7153.989 | 6384 | 4380 | 406720 | 8606 | N/A |
| 45 | 4/10/2019 | 81.9348 | 7173.721 | 6653 | 3850 | 407400 | 8593 | N/A |
| 46 | 4/10/2019 | 82.8886 | 7110.532 | 6947 | 3701 | 407800 | 8597 | N/A |
| 47 | 4/10/2019 | 83.528 | 7092.104 | 5893 | 4133 | 408140 | 8609 | N/A |
| 48 | 4/11/2019 | 83.4713 | 7131.216 | 4434 | 4196 | 407180 | 8612 | N/A |
| 49 | 4/11/2019 | 82.1903 | 6969.416 | 6780 | 3924 | 410680 | 8540 | N/A |
| 50 | 4/12/2019 | 84.5987 | 7101.61 | 6306 | 4319 | 404560 | 8535 | N/A |
| 51 | 4/12/2019 | 82.9667 | 6719.761 | 5485 | 3936 | 404160 | 8474 | N/A |
| | | 78.7 | 7,947 | 5,878 | 3,953 | 18,171,380 | 397,259 | TOTAL |

EXHIBIT 3

| LITHOLOGY/ FORMATION | TOP DEPTH (TVD) | BOTTOM DEPTH (TVD) | TOP DEPTH (MD) | BOTTOM DEPTH (MD) |
|------------------------------|-----------------|--------------------|----------------|-------------------|
| | From Surface | From Surface | From Surface | From Surface |
| Silty Sandstone | 75 | 175 | 75 | 175 |
| Silty Shale | 175 | 335 | 175 | 335 |
| shaly sand | 335 | 425 | 335 | 425 |
| Shale | 425 | 855 | 425 | 855 |
| Dolomitic Shale | 855 | 1,005 | 855 | 1,005 |
| Shaly Siltstone | 1,005 | 1,105 | 1,005 | 1,105 |
| Silty Sandstone | 1,105 | 1,325 | 1,105 | 1,325 |
| Shaly Sand | 1,325 | 1,475 | 1,325 | 1,475 |
| Sandstone | 1,475 | 1,725 | 1,475 | 1,725 |
| Silty, Shaly, Sandstone | 1,725 | 1,765 | 1,725 | 1,765 |
| Sandstone, Tr Shale, Tr Coal | 1,765 | 1,805 | 1,765 | 1,805 |
| Silty Sandstone | 1,805 | 1,885 | 1,805 | 1,885 |
| Shaly Siltstone | 1,885 | 1,976 | 1,885 | 1,977 |
| Big Lime | 2,001 | 3,000 | 2,002 | 3,002 |
| Fifty Foot Sandstone | 3,000 | 3,098 | 3,002 | 3,101 |
| Gordon | 3,098 | 3,282 | 3,101 | 3,287 |
| Fifth Sandstone | 3,282 | 3,586 | 3,287 | 3,598 |
| Bayard | 3,586 | 4,054 | 3,598 | 4,093 |
| Speechley | 4,054 | 4,304 | 4,093 | 4,359 |
| Balltown | 4,304 | 4,684 | 4,359 | 4,763 |
| Bradford | 4,684 | 5,113 | 4,763 | 5,218 |
| Benson | 5,113 | 5,351 | 5,218 | 5,472 |
| Alexander | 5,351 | 6,337 | 5,472 | 6,578 |
| Sycamore | 6,197 | 6,312 | 6,390 | 6,553 |
| Middlesex | 6,312 | 6,406 | 6,553 | 6,737 |
| Burkett | 6,406 | 6,438 | 6,737 | 6,820 |
| Tully | 6,438 | 6,463 | 6,820 | 6,903 |
| Marcellus | 6,463 | NA | 6,903 | NA |

*Please note Antero determines 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.

Hydraulic Fracturing Fluid Product Component Information Disclosure

| | |
|--------------------------------|------------------------------|
| Job Start Date: | 3/22/2019 |
| Job End Date: | 4/12/2019 |
| State: | West Virginia |
| County: | Tyler |
| API Number: | 47-095-02528-00-00 |
| Operator Name: | Antero Resources Corporation |
| Well Name and Number: | Heintzman 3H |
| Latitude: | 39.40010000 |
| Longitude: | -80.90422800 |
| Datum: | NAD83 |
| Federal Well: | NO |
| Indian Well: | NO |
| True Vertical Depth: | 6,537 |
| Total Base Water Volume (gal): | 19,356,940 |
| 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 |
|------------------------|-------------------------|--------------------|--|--|--|--|----------|
| Water | Antero Resources | Carrier/Base Fluid | Water | 7732-18-5 | 100.00000 | 88.49430 | |
| Sand | U.S. Well Services, LLC | Proppant | Crystalline Silica, quartz | 14808-60-7 | 100.00000 | 11.29985 | |
| HCL Acid (12.6%-17.5%) | U.S. Well Services, LLC | Bulk Acid | Water | 7732-18-5 | 87.40000 | 0.11576 | |
| | | | Hydrogen Chloride | 7647-01-0 | 17.50000 | 0.02691 | |
| WFRA-405 | U.S. Well Services, LLC | Friction Reducer | 2-Propenoic acid, polymer with 2-propenamide | 9003-06-9 | 30.00000 | 0.01665 | |
| | | | Hydrated light distillate (petroleum) | 64742-47-8 | 30.00000 | 0.01340 | |
| LGC-15 | U.S. Well Services, LLC | Gelling Agents | Guar Gum | 9000-30-0 | 50.00000 | 0.00519 | |
| | | | Petroleum Distillates | 64742-47-8 | 60.00000 | 0.00492 | |
| | | | Suspending agent (solid) | 14808-60-7 | 3.00000 | 0.00079 | |
| | | | Surfactant | 68439-51-0 | 3.00000 | 0.00031 | |

| | | | | | | |
|---------------|-------------------------|---------------------------|---|-------------|----------|---------|
| SI-1200 | U.S. Well Services, LLC | Scale Inhibitor | | | | |
| | | | Water | 7732-18-5 | 80.00000 | 0.00568 |
| | | | Ethylene Glycol | 107-21-1 | 40.00000 | 0.00406 |
| | | | Sodium Chloride | 7647-14-5 | 10.00000 | 0.00071 |
| | | | Sodium Salt of Diethylenetriaminepenta (methylenephosphonic acid) | 68155-78-2 | 10.00000 | 0.00071 |
| Bioclear 2000 | U.S. Well Services, LLC | Anti-Bacterial Agent | | | | |
| | | | 2,2-dibromo-3-nitrilopropionamide | 10222-01-2 | 20.00000 | 0.00386 |
| | | | Deionized Water | 7732-18-5 | 28.00000 | 0.00220 |
| SI-1300 | U.S. Well Services, LLC | Scale Inhibitor | | | | |
| | | | Ethylene glycol | 107-21-1 | 40.00000 | 0.00293 |
| | | | Proprietary Scale Inhibitor | Proprietary | 20.00000 | 0.00109 |
| K-BAC 1020 | U.S. Well Services, LLC | Anti-Bacterial Agent | | | | |
| | | | 2,2-dibromo-3-nitrilopropionamide | 10222-01-2 | 21.00000 | 0.00023 |
| | | | Polyethylene glycol | 25322-68-3 | 50.00000 | 0.00022 |
| | | | Deionized Water | 7732-18-5 | 30.00000 | 0.00013 |
| AI-303 | U.S. Well Services, LLC | Acid Corrosion Inhibitors | | | | |
| | | | Ethylene glycol | 107-21-1 | 40.00000 | 0.00004 |
| | | | Cinnamaldehyde | 104-55-2 | 20.00000 | 0.00001 |
| | | | Formic acid | 64-18-6 | 20.00000 | 0.00001 |
| | | | Butyl cellosolve | 111-76-2 | 20.00000 | 0.00001 |
| | | | Polyether | 60828-78-6 | 10.00000 | 0.00001 |
| | | | Acetophenone,thiourea,formaldehyde polymer | 68527-49-1 | 5.00000 | 0.00000 |

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)

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Discharge Monitoring Report
Oil and Gas General Permit

Company Name: Antero Resources Corporation
API No: 47-095-02528 County: Tyler
District: Centerville Well No: Heintzman Unit 3H
Farm Name: Tyrone L. Beem et al
Discharge Date/s From:(MMDDYY) 05/31/19 To: (MMDDYY) 05/31/19
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 996,304

Disposal Option(s) Utilized (write volumes in gallons):

- (1) Land Application: _____ (Include a topographical map of the Area.)
(2) UIC: 130,517 Permit No. 3400923821, 3400923823, 3400923824, 3416729731, 3416729543, 3416729464, 3416729445
(3) Offsite Disposal: _____ Site Location: _____
(4) Reuse: 865,787 Alternate Permit Number: _____
(5) Centralized Facility: _____ Permit No. _____
(6) Other method: _____ (Include an explanation)

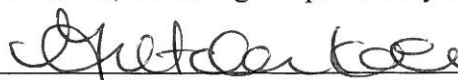
Follow Instructions below to determine your treatment category:

Optional Pretreatment test: n/a Cl- mg/l n/a DO mg/l

1. Do you have permission to use expedited treatment from the Director or his representative?
(Y/N) n/a If yes, who? _____ and place a four (4) on line 7.
If not go to line 2
2. Was Frac Fluid or flowback put into the pit? (Y/N) n/a If yes, go to line 5. If not, go to line 3.
3. Do you have a chloride value pretreatment (see above)? (Y/N) n/a If yes, go to line 4
If not, go to line 5.
4. Is the Chloride level less than 5000 mg/l? (Y/N) n/a If yes, then enter a one (1) on line 7.
5. Do you have a pretreatment value for DO? (See above) (Y/N) n/a If yes, go to line 6
If not, enter a three (3) in line 7.
6. Is the DO level greater than 2.5 mg/l?(Y/N) n/a If yes, enter a two (2) on line 7. If not, enter a three (3) on line 7.
7. n/a is the category of your pit. Use the Appropriate section.
8. Comments on Pit condition: n/a No pit on site.

Name of Principal Exec. Officer: Gretchen Kohler
Title of Officer: Senior Environmental and Regulatory Manager
Date Completed: 8/9/19

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.


Signature of a Principal Exec. Officer or Authorized agent.

Category 1
Sampling Results
API No : _____

| Parameter | Predischarge | | Discharge | | Units |
|-----------------|--------------|----------|-----------|----------|---------|
| | Limits | Reported | Limits | Reported | |
| pH | 6-10 | _____ | 6-10 | _____ | S.U |
| Settling Time | 5 | _____ | N/A | N/A | Days |
| Fe | 6 | _____ | 6 | _____ | mg/l |
| D.O. | 2.5 | _____ | 2.5 | _____ | mg/l |
| Settleable Sol. | 0.5 | _____ | 0.5 | _____ | mg/l |
| Cl | 5,000 | _____ | 5,000 | _____ | mg/l |
| Oil | Trace | _____ | Trace | _____ | Obs. |
| TOC** | | _____ | Monitor | _____ | mg/l |
| Oil and Grease | | _____ | Monitor | _____ | mg/l |
| Total Al*** | | _____ | Monitor | _____ | mg/l |
| TSS | | _____ | Monitor | _____ | mg/l |
| Total Mn | Monitor | _____ | Monitor | _____ | mg/l |
| Volume | | _____ | Monitor | _____ | Gal |
| Flow | | _____ | Monitor | _____ | Gal/min |
| Disposal Area | | _____ | Monitor | _____ | Acres |

*** Al is only reported if the pH is above 9.0

Category 2
Sampling Results
API No : _____

| Parameter | Predischarge | | Discharge | | Units |
|-----------------|--------------|----------|-----------|----------|---------|
| | Limits | Reported | Limits | Reported | |
| pH | 6-10 | _____ | 6-10 | _____ | S.U |
| Settling Time | 10 | _____ | N/A | N/A | Days |
| Fe | 6 | _____ | 6 | _____ | mg/l |
| D.O. | 2.5 | _____ | 2.5 | _____ | mg/l |
| Settleable Sol. | 0.5 | _____ | 0.5 | _____ | mg/l |
| Cl* | 12,500 | _____ | 12,500 | _____ | mg/l |
| Oil | Trace | _____ | Trace | _____ | Obs. |
| TOC** | | _____ | Monitor | _____ | mg/l |
| Oil and Grease | | _____ | Monitor | _____ | mg/l |
| Total Al*** | | _____ | Monitor | _____ | mg/l |
| TSS | | _____ | Monitor | _____ | mg/l |
| Total Mn | Monitor | _____ | Monitor | _____ | mg/l |
| Volume | | _____ | Monitor | _____ | Gal |
| Flow | | _____ | Monitor | _____ | Gal/min |
| Disposal Area | | _____ | Monitor | _____ | Acres |

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____

Date: _____

** Include a description of your aeration technique.

Aeration Code: _____

*** Al is only reported if the pH is above 9.0

Category 3
Sampling Results
API No : _____

| Parameter | Predischarge | | Discharge | | Units |
|-----------------|--------------|----------|-----------|----------|---------|
| | Limits | Reported | Limits | Reported | |
| pH | 6-10 | _____ | 6-10 | _____ | S.U |
| Settling Time | 20 | _____ | N/A | N/A | Days |
| Fe | 6 | _____ | 6 | _____ | mg/l |
| D.O. | 2.5 | _____ | 2.5 | _____ | mg/l |
| Settleable Sol. | 0.5 | _____ | 0.5 | _____ | mg/l |
| Cl* | 12,500 | _____ | 12,500 | _____ | mg/l |
| Oil | Trace | _____ | Trace | _____ | Obs. |
| TOC** | | _____ | Monitor | _____ | mg/l |
| Oil and Grease | | _____ | Monitor | _____ | mg/l |
| Total Al*** | | _____ | Monitor | _____ | mg/l |
| TSS | | _____ | Monitor | _____ | mg/l |
| Total Mn | Monitor | _____ | Monitor | _____ | mg/l |
| Volume | | _____ | Monitor | _____ | Gal |
| Flow | | _____ | Monitor | _____ | Gal/min |
| Disposal Area | | _____ | Monitor | _____ | Acres |

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____ Date: _____
 ** Include a description of your aeration technique. Aeration Code: _____
 *** Al is only reported if the pH is above 9.0.

Category 4
Sampling Results
API No: _____

| Parameter | Predischarge | | Discharge | | Units |
|--------------------------|--------------|----------|-----------|----------|-------------------|
| | Limits | Reported | Limits | Reported | |
| pH | 6-10 | _____ | 6-10 | _____ | S.U |
| Settling Time | 1 | _____ | N/A | N/A | Days |
| Fe | Monitor | _____ | Monitor | _____ | mg/l |
| D.O. | Monitor | _____ | Monitor | _____ | mg/l |
| Settleable Sol. | Monitor | _____ | Monitor | _____ | mg/l |
| Cl* | 12,500 | _____ | 12,500 | _____ | mg/l |
| Oil | Trace | _____ | Trace | _____ | Obs. |
| TOC** | | _____ | Monitor | _____ | mg/l |
| Oil and Grease | | _____ | Monitor | _____ | mg/l |
| TSS | | _____ | Monitor | _____ | mg/l |
| Total Mn | Monitor | _____ | Monitor | _____ | mg/l |
| Volume | | _____ | Monitor | _____ | Gal |
| Flow | | _____ | Monitor | _____ | Gal/min |
| Activated Carbon (0.175) | | _____ | N/A | N/A | lb/B1 |
| Date Site Reclaimed | N/A | N/A | | | 10 days from dis. |
| Disposal Area | | _____ | Monitor | _____ | Acres |

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____ Date: _____

LATITUDE 39°25'00"

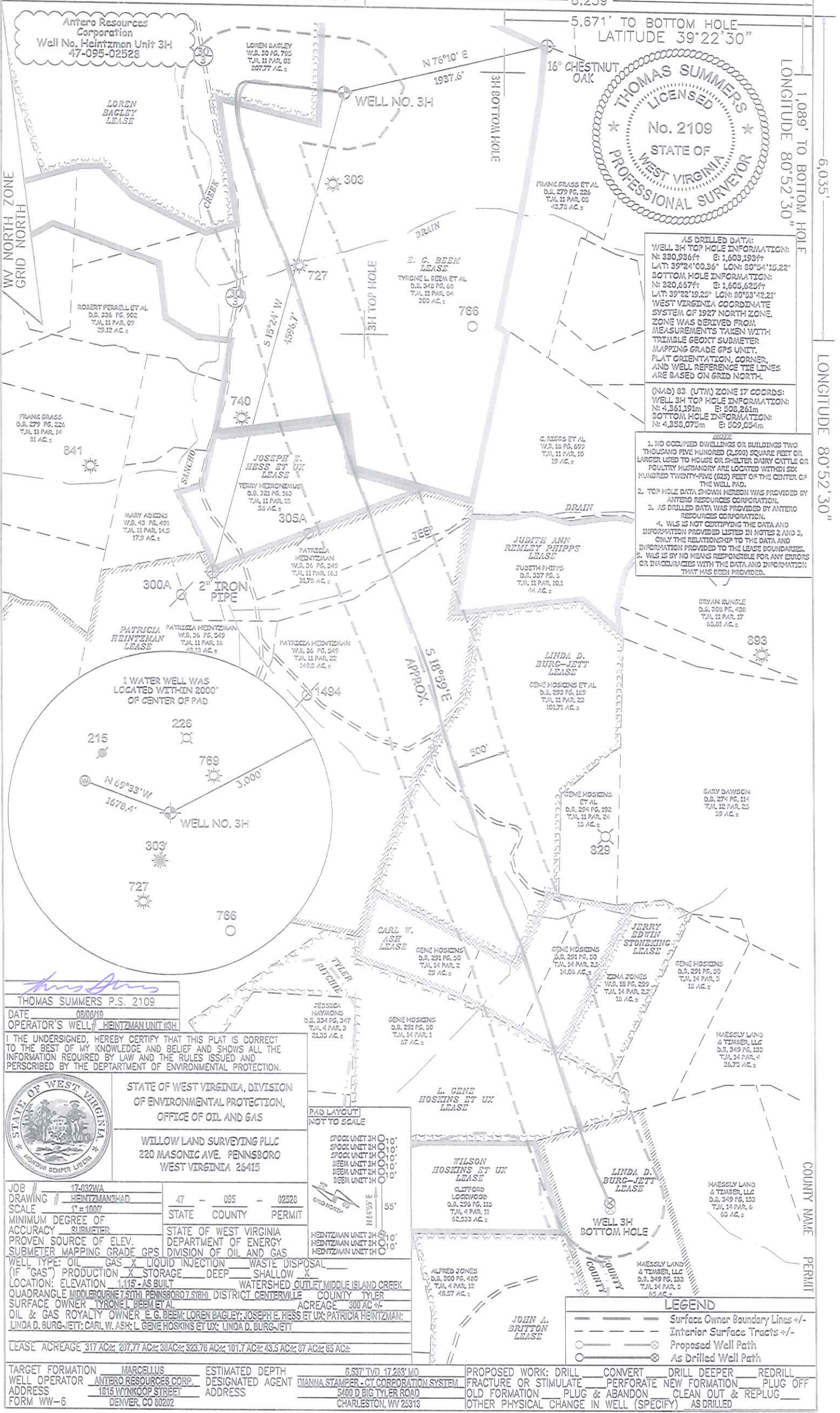
8,259'

5,671' TO BOTTOM HOLE
LATITUDE 39°22'30"

LONGITUDE 80°52'30"

6,035'

LONGITUDE 80°52'30"



AS DRILLED DATA:
 WELL 3H TOP HOLE INFORMATION:
 N: 330,936ft E: 1,603,193ft
 LAT: 39°24'00.36" LON: 80°54'15.22"
 BOTTOM HOLE INFORMATION:
 N: 320,667ft E: 1,605,625ft
 LAT: 39°22'19.25" LON: 80°53'42.21"
 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: 4,361,191m E: 506,261m
 BOTTOM HOLE INFORMATION:
 N: 4,350,075m E: 509,054m

1. NO OCCUPIED DWELLINGS OR 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.
2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
4. 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.
5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

1 WATER WELL WAS LOCATED WITHIN 2000' OF CENTER OF PAD

THOMAS SUMMERS P.S. 2109
 DATE 08/06/19
 OPERATOR'S WELL # HEINTZMAN UNIT 3H

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



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

| | | | | | | | |
|----------------------------|--|----------|--------------|------------------|----------------|---------|------------|
| JOB # | 17-032WA | STATE | 47 | COUNTY | 095 | PERMIT | 02520 |
| DRAWING # | HEINTZMAN SHAD | | | | | | |
| SCALE | 1" = 100' | | | | | | |
| MINIMUM DEGREE OF ACCURACY | SUBMETER | | | | | | |
| PROVEN SOURCE OF ELEV. | STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY | | | | | | |
| SUBMETER MAPPING GRADE GPS | DIVISION OF OIL AND GAS | | | | | | |
| WELL TYPE: | OIL | GAS | X | LIQUID INJECTION | WASTE DISPOSAL | | |
| (IF "GAS") PRODUCTION | X | STORAGE | DEEP | SHALLOW | X | | |
| LOCATION: ELEVATION | 1,115' | AS BUILT | | | | | |
| QUADRANGLE | MIDDLEBOURNE 7.5TH PENNSBORO 7.5TH | DISTRICT | CENTERSVILLE | COUNTY | TYLER | ACREAGE | 300 AC +/- |
| SURFACE OWNER | TYRONE L. BEEM ET AL | | | | | | |
| OIL & GAS ROYALTY OWNER | E. G. BEEM; LOREN BAGLEY; JOSEPH E. HESS ET UX; PATRICIA HEINTZMAN; LINDA D. BURG-JETT; CARL W. ASH; L. GENE HOSKINS ET UX; LINDA D. BURG-JETT | | | | | | |
| LEASE ACREAGE | 317 AC ±; 207.77 AC ±; 33AC ±; 323.78 AC ±; 101.7 AC ±; 43.5 AC ±; 07 AC ±; 65 AC ± | | | | | | |

| | | | |
|------------------|------------------------|------------------|--|
| TARGET FORMATION | MARCELLUS | ESTIMATED DEPTH | 6,537' TVD 17,283' MD |
| WELL OPERATOR | ANTERO RESOURCES CORP. | DESIGNATED AGENT | DIANNA STAMPER - CT CORPORATION SYSTEM |
| ADDRESS | 1815 WYCKOOP STREET | ADDRESS | 5400 D BIG TYLER ROAD |
| FORM | WW-6 | | CHARLESTON, WV 26313 |

| | | | | |
|---|----------------|--------------------|--------------|---------|
| PROPOSED WORK: | DRILL | CONVERT | DRILL DEEPER | REDRILL |
| FRACTURE OR STIMULATE | PERFORATE | NEW FORMATION | PLUG OFF | |
| OLD FORMATION | PLUG & ABANDON | CLEAN OUT & REPLUG | | |
| OTHER PHYSICAL CHANGE IN WELL (SPECIFY) | AS DRILLED | | | |