**west virginia** department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

October 04, 2013

**WELL WORK PERMIT**

**Horizontal 6A Well**

This permit, API Well Number: 47-1706362, issued to ANTERO RESOURCES CORPORATION, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.

James Martin
Chief

Operator's Well No: FARROW UNIT 2H
Farm Name: CLINE, JOHNNIE ,. ET AL
**API Well Number: 47-1706362**
**Permit Type: Horizontal 6A Well**
Date Issued: 10/04/2013



10/04/2013

API Number: 1706362

# PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

## CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE regarding this proposed activity.

2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.

3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the fill material shall be within plus or minus 2% of the optimum moisture content as determined by the standard proctor density test, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort. Each lift must meet 95 % compaction of the optimum density based on results from the standard proctor density test of the actual soils used in specific engineered fill sites. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.

4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.

5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations,* 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.

6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.

7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.

8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

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

06 511

1) Well Operator: Antero Resources Corporation | 494488557 (Operator ID) | 017-Doddridge (County) | New Milton (District) | New Milton 7.5' (Quadrangle)

2) Operator's Well Number: Farrow Unit 2H Well Pad Name: Cline Pad

3 Elevation, current ground: ~1105 Elevation, proposed post-construction: 1096'

4) Well Type: (a) Gas ■ Oil _____ Underground Storage _____

Other _____

(b) If Gas: Shallow ■ Deep _____

Horizontal ■

DCW 9-25-2013

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):

Marcellus Shale:7200' TVD, Anticipated Thickness- 60 Feet, Associated Pressure- 3250#

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7) Proposed Total Vertical Depth: 7200' TVD

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 15,600' MD

10) Approximate Fresh Water Strata Depths: 203', 214'

11) Method to Determine Fresh Water Depth: Offset well records. Depths have been adjusted according to surface elevations.

12) Approximate Saltwater Depths: 612', 1595'

13) Approximate Coal Seam Depths: 258', 809'

14) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of mine: No

16) Describe proposed well work: Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale

17) Describe fracturing/stimulating methods in detail:

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 11.97 acres

19) Area to be disturbed for well pad only, less access road (acres): 5.55 acres



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20) **CASING AND TUBING PROGRAM**

| TYPE | Size | New or Used | Grade | Weight per ft. | FOOTAGE: For Drilling | INTERVALS: Left in Well | CEMENT: Fill -up (Cu. Ft.) |
|---|---|---|---|---|---|---|---|
| Conductor | 20" | New | H-40 | 94# | 40' | 40' | CTS, 38 Cu. Ft. |
| Fresh Water | 13-3/8" | New | J-55/H-40 | 54.5#/ 48# | 300' | 300' | CTS, 417 CU. Ft. |
| Coal | 9-5/8" | New | J-55 | 36# | 2450' | 2450' | CTS, 998 Cu. Ft. |
| Intermediate | | | | | | | |
| Production | 5-1/2" | New | P-110 | 20# | 15600' | 15600' | 3898 Cu. Ft. |
| Tubing | 2-3/8" | New | N-80 | 4.7# | | 7100' | |
| Liners | | | | | | | |

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| TYPE | Size | Wellbore Diameter | Wall Thickness | Burst Pressure | Cement Type | Cement Yield |
|---|---|---|---|---|---|---|
| Conductor | 20" | 24" | 0.438" | 1530 | Class A | 1.18 |
| Fresh Water | 13-3/8" | 17-1/2" | 0.38"/0.33" | 2730/1730 | Class A | 1.18 |
| Coal | 9-5/8" | 12-1/4" | 0.352" | 3520 | Class A | 1.18 |
| Intermediate | | | | | | |
| Production | 5-1/2" | 8-3/4" & 8-1/2" | 0.361" | 12630 | Lead-H/POZ & Tail - H | H/POZ-1.44 & H-1.8 |
| Tubing | 2-3/8" | 4.778" | 0.19" | 11200 | | |
| Liners | | | | | | |

**PACKERS**

| | | | | |
|---|---|---|---|---|
| Kind: | N/A | | | |
| Sizes: | N/A | | | |
| Depths Set: | N/A | | | |

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21) Describe centralizer placement for each casing string. Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

22) Describe all cement additives associated with each cement type.

Conductor: no additives, Class A cement.

Surface: Class A cement with 2% calcium and 1/4 lb flake, 5 gallons of clay treat

Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

23) Proposed borehole conditioning procedures. Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

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

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

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API Number 47 - 017 - _____

Operator's Well No. Farrow Unit 2H 17 06362

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# STATE OF WEST VIRGINIA
# DEPARTMENT OF ENVIRONMENTAL PROTECTION
# OFFICE OF OIL AND GAS

## FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Antero Resources Corporation OP Code 494488557

Watershed (HUC 10) Tom's Fork Quadrangle New Milton 7.5'

Elevation 1096' County Doddridge District New Milton

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes X No _____

Will a pit be used for drill cuttings? Yes _____ No X

If so, please describe anticipated pit waste: No pit will be used at this site (Drilling and Flowback Fluids will be stored in tanks. Cuttings will be tanked and hauled off site.)

Will a synthetic liner be used in the pit? Yes N/A No N/A If so, what ml.?_____

DCW 8-29-2013

Proposed Disposal Method For Treated Pit Wastes:

_____ Land Application
_____ Underground Injection ( UIC Permit Number_____)
■ Reuse (at API Number Future permitted well locations when applicable. API# will be provided on Form WR-34 )
■ Off Site Disposal (Meadowfill Landfill Permit #SWF-1032-98)
_____ Other (Explain_____)

Will closed loop system be used? Yes

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Surface - Air/Freshwater, Intermediate - Dust/Stiff Foam, Production - Water Based Mud

-If oil based, what type? Synthetic, petroleum, etc. N/A

Additives to be used in drilling medium? Please See Attachment

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Stored in tanks, removed offsite and taken to landfill.

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? Meadowfill Landfill (Permit #SWF-1032-98)

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto 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 or imprisonment.

Company Official Signature _____

Company Official (Typed Name) Gerard G. Alberts

Company Official Title Environmental & Regulatory Manager

Subscribed and sworn before me this 26 day of August, 2013

_____ Notary Public

My commission expires 11/9/2016

LISA BOTTINELLI
Notary Public
State of Colorado
Notary ID 20124072365
My Commission Expires Nov 9, 2016

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Form WW-9

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Operator's Well No. Farrow Unit 2H

Antero Resources Corporation

Proposed Revegetation Treatment: Acres Disturbed 11.97 Prevegetation pH _____

Lime 2-3 Tons/acre or to correct to pH 6.5

Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)

Hay or straw or Wood Fiber (will be used where needed)

Mulch 2-3 Tons/acre

Access Road "A" (3.63) + Access Road "B" (0.32) + Well Pad (5.55) + Water Containment Pad (1.18) + Excess/ Topsoil Material Stockpiles (1.29) = 11.97 Acres

| Area I (Temporary) | | Area II (Permanent) | |
|---|---|---|---|
| Seed Type | lbs/acre | Seed Type | lbs/acre |
| Annual Ryegrass | 40 | Tall Fescue | 30 |
| *See attached Table 3 for additional seed type (Cline Pad Design Page 14) | | *See attached Table 3 for additional seed type (Cline Pad Design Page 14) | |
| *or type of grass seed requested by surface owner | | *or type of grass seed requested by surface owner | |

Attach:
Drawing(s) of road, location,pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Douglas Newlon

Comments: Pressed o Mulch install ESCS to WV Dep regulations

Title: Oil o Gas inspector Date: 9-28-2013

Field Reviewed? (_____) Yes (___✓___) No

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## *Form WW-9 Additives Attachment* 17 06362

**SURFACE INTERVAL**

1. Fresh Water
2. Soap –Foamer AC
3. Air

**INTERMEDIATE INTERVAL**

*STIFF FOAM RECIPE:*

1) 1 ppb Soda Ash / Sodium Carbonate-Alkalinity Control Agent
2) 1 ppb Conqor 404 ( 11.76 ppg) / Corrosion Inhibitor
3) 4 ppb KLA-Gard ( 9.17 ppg) / Amine Acid Complex-Shale Stabilizer
4) 1ppb Mil Pac R / Sodium Carboxymethylcellulose-Filtration Control Agent
5) 12 ppb KCL / Potassium Chloride-inorganic Salt
6) Fresh Water 80 bbls
7) Air

**PRODUCTION INTERVAL**

1. Alpha 1655
   Salt Inhibitor
2. Mil-Carb
   Calcium Carbonate
3. Cottonseed Hulls
   Cellulose-Cottonseed Pellets – LCM
4. Mil-Seal
   Vegetable, Cotton & Cellulose-Based Fiber Blend – LCM
5. Clay-Trol
   Amine Acid Complex – Shale Stabilizer
6. Xan-Plex
   Viscosifier For Water Based Muds
7. Mil-Pac (All Grades)
   Sodium Carboxymethylcellulose – Filtration Control Agent
8. New Drill
   Anionic Polyacrylamide Copolymer Emulsion – Shale Stabilizer
9. Caustic Soda
   Sodium Hydroxide – Alkalinity Control
10. Mil-Lime
    Calcium Hydroxide – Lime
11. LD-9
    Polyether Polyol – Drilling Fluid Defoamer
12. Mil Mica
    Hydro-Biotite Mica – LCM

13. Escaid 110
    Drilling Fluild Solvent – Aliphatic Hydrocarbon
14. Ligco
    Highly Oxidized Leonardite – Filteration Control Agent
15. Super Sweep
    Polypropylene – Hole Cleaning Agent
16. Sulfatrol K
    Drilling Fluid Additive – Sulfonated Asphalt Residuum
17. Sodium Chloride, Anhydrous
    Inorganic Salt
18. D-D
    Drilling Detergent – Surfactant
19. Terra-Rate
    Organic Surfactant Blend
20. W.O. Defoam
    Alcohol-Based Defoamer
21. Perma-Lose HT
    Fluid Loss Reducer For Water-Based Muds
22. Xan-Plex D
    Polysaccharide Polymer – Drilling Fluid Viscosifier
23. Walnut Shells
    Ground Cellulosic Material – Ground Walnut Shells – LCM
24. Mil-Graphite
    Natural Graphite – LCM
25. Mil Bar
    Barite – Weighting Agent
26. X-Cide 102
    Biocide
27. Soda Ash
    Sodium Carbonate – Alkalinity Control Agent
28. Clay Trol
    Amine Acid complex – Shale Stabilizer
29. Sulfatrol
    Sulfonated Asphalt – Shale Control Additive
30. Xanvis
    Viscosifier For Water-Based Muds
31. Milstarch
    Starch – Fluid Loss Reducer For Water Based Muds
32. Mil-Lube
    Drilling Fluid Lubricant

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# Water Management Plan:
## Primary Water Sources

WMP-01471 API/ID Number: 047-017-06362 Operator: Antero Resources

Farrow Unit 2H

**Important:**

For each proposed primary water source (including source intakes for purchased water sources) identified in your water management plan, and summarized herein, DEP has made an evaluation concerning water availability over the specified date range. DEP's assessment is based on the following considerations:

- Statistical analysis of historical USGS stream gauge data (transferred to un-gauged locations as necessary);
- Identification of sensitive aquatic life (endangered species, mussels, etc.);
- Quantification of known existing demands on the water supply (Large Quantity Users);
- Minimum flows required by the Army Corps of Engineers; and
- Designated stream uses.

Based on these factors, DEP has provided, for each intake location (and origination point for purchased water), a reference gauge location and discharge flow reading which must be surpassed prior to withdrawals. Additionally, DEP has established a minimum passby flow at the withdrawal location which must also be surpassed prior to withdrawals. These thresholds are considered terms of the permit and are enforceable as such.

**DEP is aware that some intake points will be used for mutiple wells and well sites. In these cases, the thresholds set by the Water Management Plan are to be interepreted as total withdrawal limits for each location over the specified date range regardless of how many wells are supported by that intake.**

For all purchased water intakes, determinations of water availability are made at the original source intake location. It is the responsibility of the Oil and Gas Operator, not the seller, to cease withdrawal of water from the seller when flows are less than the minimum gauge reading at the stream gauge referenced by the Water Management Plan in order to protect stream uses.

Note that the determinations made herein are based on the best available data, but it is impossible to predict water availability in the future. While the DEP has carefully established these minimum withdrawal thresholds, it remains the operator's responsibility to protect aquatic life at all times. Approval to withdrawal is contingent upon permission from the land owner. It is the responsibility of the operator to secure and maintain permission prior to any withdrawals.

The operator is reminded that 24-48 hours prior to withdrawing (or purchasing) water, DEP must be notified by email at DEP.water.use@wv.gov.

APPROVED SEP 2 4 2013

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## Source Summary

WMP-**01471** API Number: **047-017-06362** Operator: **Antero Resources**

**Farrow Unit 2H**

# Stream/River

Source **Ohio River @ Ben's Run Withdrawal Site** **Tyler** Owner: **Ben's Run Land Company Limited Partnership**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.46593 | -81.110781 |

☑ Regulated Stream? **Ohio River Min. Flow** Ref. Gauge ID: **9999999** **Ohio River Station: Willow Island Lock & Dam**

**Max. Pump rate (gpm): 3,360** **Min. Gauge Reading (cfs): 6,468.00** **Min. Passby (cfs)**

DEP Comments: **Refer to the specified station on the National Weather Service's Ohio River forecast website: http://www.erh.noaa.gov/ohrfc//flows.shtml**

Source **West Fork River @ JCP Withdrawal** Harrison Owner: **James & Brenda Raines**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.320913 | -80.337572 |

☑ Regulated Stream? **Stonewall Jackson Dam** Ref. Gauge ID: **3061000** **WEST FORK RIVER AT ENTERPRISE, WV**

**Max. Pump rate (gpm): 2,000** **Min. Gauge Reading (cfs): 175.00** **Min. Passby (cfs) 146.25**

DEP Comments:

Source **West Fork River @ McDonald Withdrawal** Harrison Owner: **David Shrieves**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.16761 | -80.45069 |

☑ Regulated Stream? **Stonewall Jackson Dam** Ref. Gauge ID: **3061000** **WEST FORK RIVER AT ENTERPRISE, WV**

**Max. Pump rate (gpm): 3,000** **Min. Gauge Reading (cfs): 175.00** **Min. Passby (cfs) 106.30**

DEP Comments:

◉ Source **West Fork River @ GAL Withdrawal** Harrison Owner: **David Shrieves**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.16422 | -80.45173 |

☑ Regulated Stream? **Stonewall Jackson Dam** Ref. Gauge ID: **3061000** **WEST FORK RIVER AT ENTERPRISE, WV**

**Max. Pump rate (gpm): 2,000** **Min. Gauge Reading (cfs): 175.00** **Min. Passby (cfs) 106.30**

DEP Comments:

◉ Source **Middle Island Creek @ Mees Withdrawal Site** Pleasants Owner: **Sarah E. Mees**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.43113 | -81.079567 |

☐ Regulated Stream? Ref. Gauge ID: **3114500** **MIDDLE ISLAND CREEK AT LITTLE, WV**

**Max. Pump rate (gpm): 3,360** **Min. Gauge Reading (cfs): 52.59** **Min. Passby (cfs) 47.63**

DEP Comments:

◉ Source **Middle Island Creek @ Dawson Withdrawal** Tyler Owner: **Gary D. and Rella A. Dawson**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.379292 | -80.867803 |

☐ Regulated Stream? Ref. Gauge ID: **3114500** **MIDDLE ISLAND CREEK AT LITTLE, WV**

**Max. Pump rate (gpm): 3,000** **Min. Gauge Reading (cfs): 76.03** **Min. Passby (cfs) 28.83**

DEP Comments:

- Source **McElroy Creek @ Forest Withdrawal** Tyler Owner: **Forest C. & Brenda L. Moore**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.39675 | -80.738197 |

☐ Regulated Stream? Ref. Gauge ID: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

**Max. Pump rate (gpm): 1,000** **Min. Gauge Reading (cfs): 74.77** **Min. Passby (cfs) 13.10**

DEP Comments:

- Source **Meathouse Fork @ Gagnon Withdrawal** Doddridge Owner: **George L. Gagnon and Susan C. Gagnon**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.26054 | -80.720998 |

☐ Regulated Stream? Ref. Gauge ID: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

**Max. Pump rate (gpm): 1,000** **Min. Gauge Reading (cfs): 71.96** **Min. Passby (cfs) 11.74**

DEP Comments:

- Source **Meathouse Fork @ Whitehair Withdrawal** Doddridge Owner: **Elton Whitehair**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.211317 | -80.679592 |

☐ Regulated Stream? Ref. Gauge ID: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

**Max. Pump rate (gpm): 1,000** **Min. Gauge Reading (cfs): 69.73** **Min. Passby (cfs) 7.28**

DEP Comments:

◉ Source **Tom's Fork @ Erwin Withdrawal** **Doddridge** Owner: **John F. Erwin and Sandra E. Erwin**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.174306 | -80.702992 |

☐ Regulated Stream? Ref. Gauge ID: **3114500** **MIDDLE ISLAND CREEK AT LITTLE, WV**

**Max. Pump rate (gpm): 1,000** **Min. Gauge Reading (cfs): 69.73** **Min. Passby (cfs) 0.59**

DEP Comments:

◉ Source **Arnold Creek @ Davis Withdrawal** **Doddridge** Owner: **Jonathon Davis**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.302006 | -80.824561 |

☐ Regulated Stream? Ref. Gauge ID: **3114500** **MIDDLE ISLAND CREEK AT LITTLE, WV**

**Max. Pump rate (gpm): 1,000** **Min. Gauge Reading (cfs): 69.73** **Min. Passby (cfs) 3.08**

DEP Comments:

◉ Source **Buckeye Creek @ Powell Withdrawal** **Doddridge** Owner: **Dennis Powell**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.277142 | -80.690386 |

☐ Regulated Stream? Ref. Gauge ID: **3114500** **MIDDLE ISLAND CREEK AT LITTLE, WV**

**Max. Pump rate (gpm): 1,000** **Min. Gauge Reading (cfs): 69.73** **Min. Passby (cfs) 4.59**

DEP Comments:

◉ Source **South Fork of Hughes River @ Knight Withdrawal** Ritchie Owner: **Tracy C. Knight & Stephanie C. Knight**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.198369 | -80.870969 |

☐ Regulated Stream? Ref. Gauge ID: 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV

**Max. Pump rate (gpm): 3,000** **Min. Gauge Reading (cfs): 39.80** **Min. Passby (cfs) 1.95**

DEP Comments:

◉ Source **North Fork of Hughes River @ Davis Withdrawal** Ritchie Owner: **Lewis P. Davis and Norma J. Davis**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | 39.322363 | -80.936771 |

☐ Regulated Stream? Ref. Gauge ID: 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV

**Max. Pump rate (gpm): 1,000** **Min. Gauge Reading (cfs): 35.23** **Min. Passby (cfs) 2.19**

DEP Comments:

## Source Summary

WMP- **01471** API Number: **047-017-06362** Operator: **Antero Resources**

**Farrow Unit 2H**

# Purchased Water

- Source **Ohio River @ Select Energy** **Pleasants** Owner: **Select Energy**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | 500,000 | 39.346473 | -81.338727 |

☑ Regulated Stream? **Ohio River Min. Flow** Ref. Gauge ID: **9999998** **Ohio River Station: Racine Dam**

**Max. Pump rate (gpm): 1,680** **Min. Gauge Reading (cfs): 7,216.00** **Min. Passby (cfs)**

DEP Comments: **Refer to the specified station on the National Weather Service's Ohio River forecast website: http://www.erh.noaa.gov/ohrfc//flows.shtml**

- Source **Middle Island Creek @ Solo Construction** **Pleasants** Owner: **Solo Construction, LLC**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | 1,000,000 | 39.399094 | -81.185548 |

☑ Regulated Stream? **Ohio River Min. Flow** Ref. Gauge ID: **9999999** **Ohio River Station: Willow Island Lock & Dam**

**Max. Pump rate (gpm):** **Min. Gauge Reading (cfs): 6,468.00** **Min. Passby (cfs)**

DEP Comments: **Elevation analysis indicates that this location has the same elevation as Middle Island Creek's pour point into the Ohio River. As such, it is deemed that water flow at this location is heavily influenced by the Ohio River.**

- Source **Claywood Park PSD** **Wood** Owner: **Claywood Park PSD**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | | - | - |

☑ Regulated Stream? Ref. Gauge ID: **9999998** **Ohio River Station: Racine Dam**

**Max. Pump rate (gpm):** **Min. Gauge Reading (cfs): 7,216.00** **Min. Passby (cfs)**

DEP Comments: **Elevation analysis indicates that this location has approximately the same elevation as Little Kanawha's pour point into the Ohio River. As such, it is deemed that water flow at this location is heavily influenced by the Ohio River.**

Source **Sun Valley Public Service District** Harrison Owner: **Sun Valley PSD**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 8/31/2014 | 8/31/2015 | 8,900,000 | 200,000 | - | - |

☑ Regulated Stream? **Stonewall Jackson Dam** Ref. Gauge ID: **3061000** **WEST FORK RIVER AT ENTERPRISE, WV**

**Max. Pump rate (gpm):** **Min. Gauge Reading (cfs):** **171.48** **Min. Passby (cfs)**

DEP Comments:

## Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25160 Source Name: Ohio River @ Select Energy
Select Energy

Source Latitude: 39.346473
Source Longitude: -81.338727

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 25000 County: Pleasants

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000
Max. Pump rate (gpm): 1,680
Max. Simultaneous Trucks:
Max. Truck pump rate (gpm)

- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [ ] Proximate PSD?
- [x] Gauged Stream?

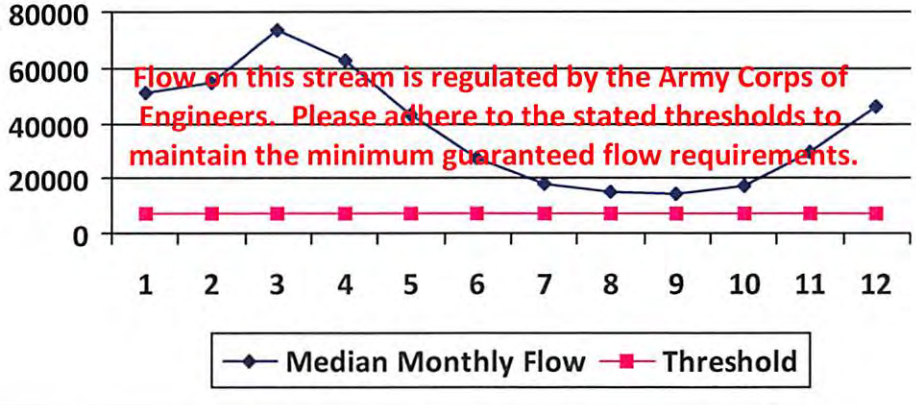
Reference Gaug 9999998 Ohio River Station: Racine Dam

Drainage Area (sq. mi.) 25,000.00

Gauge Threshold (cfs): 7216

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 50,956.00 | - | - |
| 2 | 54,858.00 | - | - |
| 3 | 73,256.00 | - | - |
| 4 | 62,552.00 | - | - |
| 5 | 43,151.00 | - | - |
| 6 | 27,095.00 | - | - |
| 7 | 17,840.00 | - | - |
| 8 | 14,941.00 | - | - |
| 9 | 14,272.00 | - | - |
| 10 | 17,283.00 | - | - |
| 11 | 29,325.00 | - | - |
| 12 | 46,050.00 | - | - |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | - |
| Upstream Demand (cfs): | 0.00 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 3.74 |
| Headwater Safety (cfs): | 0.00 |
| Ungauged Stream Safety (cfs): | 0.00 |
| Min. Gauge Reading (cfs): | - |
| Passby at Location (cfs): | - |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

# Source Detail

WMP-01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25161 | Source Name: Middle Island Creek @ Solo Construction
Solo Construction, LLC

Source Latitude: 39.399094
Source Longitude: -81.185548

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 25000 | County: Pleasants

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000

- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [x] Proximate PSD? City of St. Marys
- [x] Gauged Stream?

Max. Pump rate (gpm):
Max. Simultaneous Trucks:
Max. Truck pump rate (gpm) 0

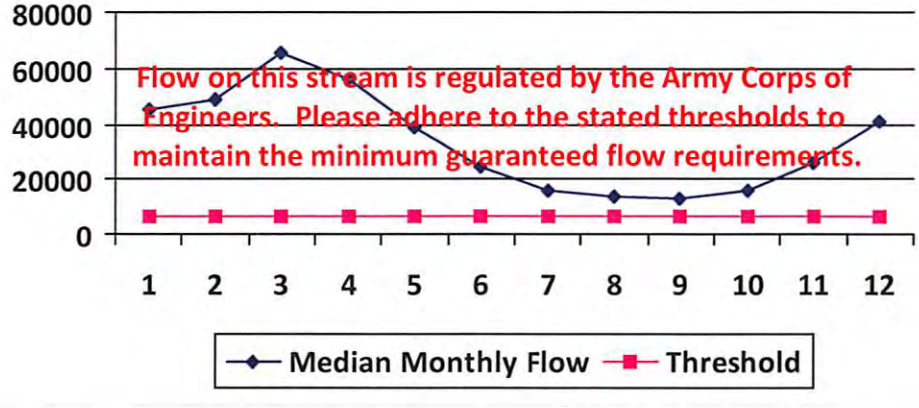
Reference Gaug 9999999 Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.) 25,000.00

Gauge Threshold (cfs): 6468

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 45,700.00 | - | - |
| 2 | 49,200.00 | - | - |
| 3 | 65,700.00 | - | - |
| 4 | 56,100.00 | - | - |
| 5 | 38,700.00 | - | - |
| 6 | 24,300.00 | - | - |
| 7 | 16,000.00 | - | - |
| 8 | 13,400.00 | - | - |
| 9 | 12,800.00 | - | - |
| 10 | 15,500.00 | - | - |
| 11 | 26,300.00 | - | - |
| 12 | 41,300.00 | - | - |

## Water Availability Profile




## Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | - |
| Upstream Demand (cfs): | 0.00 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | |
| Headwater Safety (cfs): | 0.00 |
| Ungauged Stream Safety (cfs): | 0.00 |
| Min. Gauge Reading (cfs): | - |
| Passby at Location (cfs): | - |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

# Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25162 Source Name: Claywood Park PSD

Claywood Park PSD

Source Latitude: -

Source Longitude: -

HUC-8 Code: 5030203

Drainage Area (sq. mi.): 25000 County: Wood

Anticipated withdrawal start date: 8/31/2014

Anticipated withdrawal end date: 8/31/2015

Total Volume from Source (gal): 8,900,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks: 0

Max. Truck pump rate (gpm) 0

- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream?
- [x] Proximate PSD? Claywood Park PSD
- [x] Gauged Stream?

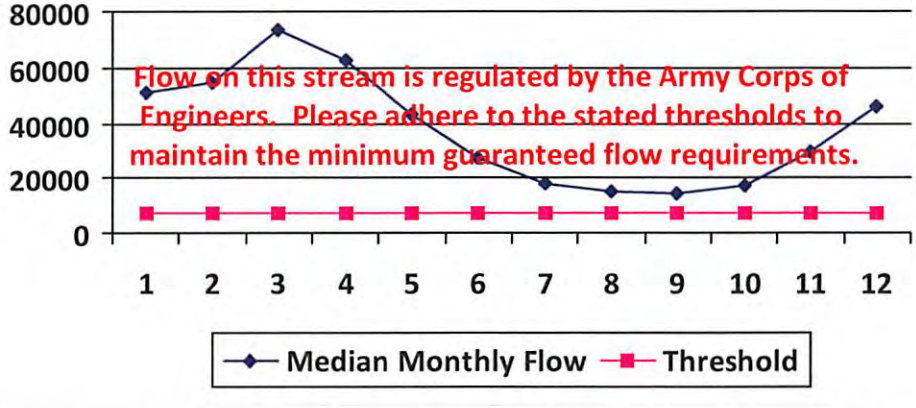
Reference Gaug 9999998 Ohio River Station: Racine Dam

Drainage Area (sq. mi.) 25,000.00

Gauge Threshold (cfs): 7216

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 50,956.00 | - | - |
| 2 | 54,858.00 | - | - |
| 3 | 73,256.00 | - | - |
| 4 | 62,552.00 | - | - |
| 5 | 43,151.00 | - | - |
| 6 | 27,095.00 | - | - |
| 7 | 17,840.00 | - | - |
| 8 | 14,941.00 | - | - |
| 9 | 14,272.00 | - | - |
| 10 | 17,283.00 | - | - |
| 11 | 29,325.00 | - | - |
| 12 | 46,050.00 | - | - |

## Water Availability Profile




## Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | - |
| Upstream Demand (cfs): | 0.00 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | |
| Headwater Safety (cfs): | 0.00 |
| Ungauged Stream Safety (cfs): | 0.00 |
| Min. Gauge Reading (cfs): | - |
| Passby at Location (cfs): | - |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

## Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25163 Source Name: Sun Valley Public Service District / Sun Valley PSD

Source Latitude: -

Source Longitude: -

HUC-8 Code: 5020002

Drainage Area (sq. mi.): 391.85 County: Harrison

Anticipated withdrawal start date: 8/31/2014

Anticipated withdrawal end date: 8/31/2015

Total Volume from Source (gal): 8,900,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Stonewall Jackson Dam
- [ ] Proximate PSD?
- [x] Gauged Stream?

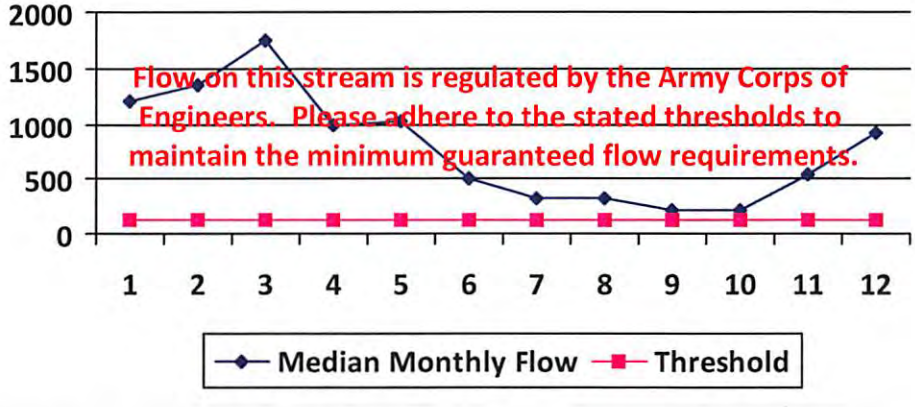
Reference Gaug: 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Drainage Area (sq. mi.): 759.00

Gauge Threshold (cfs): 234

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 1,200.75 | - | - |
| 2 | 1,351.92 | - | - |
| 3 | 1,741.33 | - | - |
| 4 | 995.89 | - | - |
| 5 | 1,022.23 | - | - |
| 6 | 512.21 | - | - |
| 7 | 331.86 | - | - |
| 8 | 316.87 | - | - |
| 9 | 220.48 | - | - |
| 10 | 216.17 | - | - |
| 11 | 542.45 | - | - |
| 12 | 926.12 | - | - |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | - |
| Upstream Demand (cfs): | |
| Downstream Demand (cfs): | |
| Pump rate (cfs): | |
| Headwater Safety (cfs): | 0.00 |
| Ungauged Stream Safety (cfs): | 0.00 |
| Min. Gauge Reading (cfs): | - |
| Passby at Location (cfs): | - |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

## Source Detail

WMP-01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25146 Source Name: Ohio River @ Ben's Run Withdrawal Site
Ben's Run Land Company Limited Partnership

Source Latitude: 39.46593
Source Longitude: -81.110781

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 25000 County: Tyler

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000
Max. Pump rate (gpm): 3,360
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [ ] Proximate PSD?
- [x] Gauged Stream?

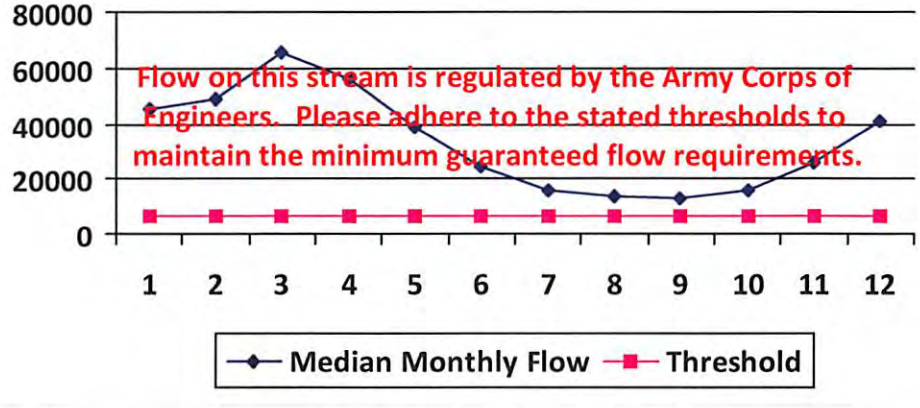
Reference Gaug 9999999 Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.) 25,000.00

Gauge Threshold (cfs): 6468

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 45,700.00 | - | - |
| 2 | 49,200.00 | - | - |
| 3 | 65,700.00 | - | - |
| 4 | 56,100.00 | - | - |
| 5 | 38,700.00 | - | - |
| 6 | 24,300.00 | - | - |
| 7 | 16,000.00 | - | - |
| 8 | 13,400.00 | - | - |
| 9 | 12,800.00 | - | - |
| 10 | 15,500.00 | - | - |
| 11 | 26,300.00 | - | - |
| 12 | 41,300.00 | - | - |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | - |
| Upstream Demand (cfs): | 0.00 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 7.49 |
| Headwater Safety (cfs): | 0.00 |
| Ungauged Stream Safety (cfs): | 0.00 |
| Min. Gauge Reading (cfs): | - |
| Passby at Location (cfs): | - |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

## Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25147 Source Name: West Fork River @ JCP Withdrawal
James & Brenda Raines

Source Latitude: 39.320913
Source Longitude: -80.337572

HUC-8 Code: 5020002

Drainage Area (sq. mi.): 532.2 County: Harrison

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000
Max. Pump rate (gpm): 2,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

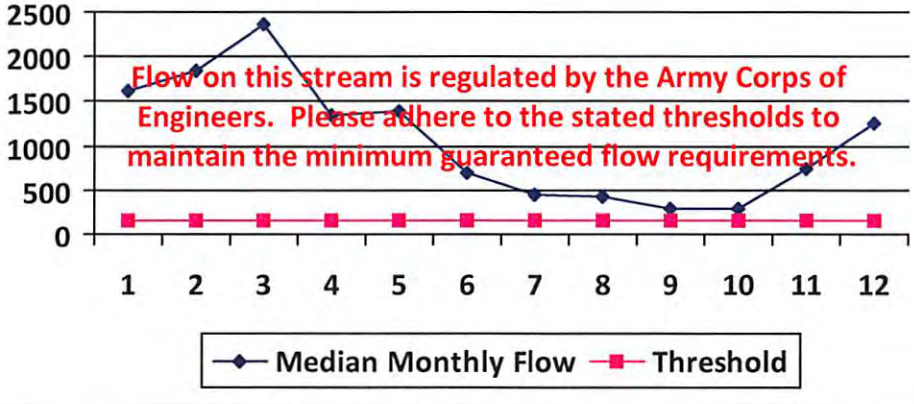
- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Stonewall Jackson Dam
- [ ] Proximate PSD?
- [x] Gauged Stream?

Reference Gaug 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Drainage Area (sq. mi.) 759.00 Gauge Threshold (cfs): 234

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 1,630.82 | - | - |
| 2 | 1,836.14 | - | - |
| 3 | 2,365.03 | - | - |
| 4 | 1,352.59 | - | - |
| 5 | 1,388.37 | - | - |
| 6 | 695.67 | - | - |
| 7 | 450.73 | - | - |
| 8 | 430.37 | - | - |
| 9 | 299.45 | - | - |
| 10 | 293.59 | - | - |
| 11 | 736.74 | - | - |
| 12 | 1,257.84 | - | - |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | - |
| Upstream Demand (cfs): | 24.29 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 4.46 |
| Headwater Safety (cfs): | 0.00 |
| Ungauged Stream Safety (cfs): | 0.00 |
| Min. Gauge Reading (cfs): | - |
| Passby at Location (cfs): | - |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

## Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25148 Source Name: West Fork River @ McDonald Withdrawal
David Shrieves

Source Latitude: 39.16761
Source Longitude: -80.45069

HUC-8 Code: 5020002

Drainage Area (sq. mi.): 314.91 County: Harrison

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000

- ☐ Endangered Species?
- ☑ Mussel Stream?
- ☐ Trout Stream?
- ☐ Tier 3?
- ☑ Regulated Stream? Stonewall Jackson Dam
- ☐ Proximate PSD?
- ☑ Gauged Stream?

Max. Pump rate (gpm): 3,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

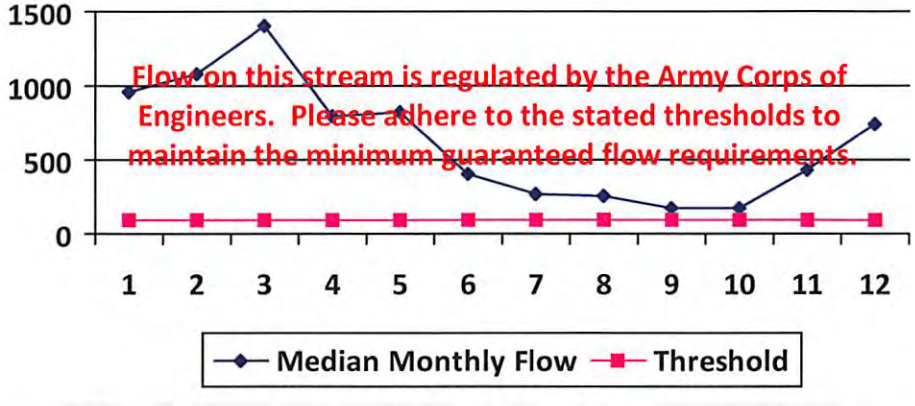
Reference Gaug 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Drainage Area (sq. mi.) 759.00

Gauge Threshold (cfs): 234

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 964.98 | - | - |
| 2 | 1,086.47 | - | - |
| 3 | 1,399.42 | - | - |
| 4 | 800.34 | - | - |
| 5 | 821.52 | - | - |
| 6 | 411.64 | - | - |
| 7 | 266.70 | - | - |
| 8 | 254.66 | - | - |
| 9 | 177.19 | - | - |
| 10 | 173.72 | - | - |
| 11 | 435.94 | - | - |
| 12 | 744.28 | - | - |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | - |
| Upstream Demand (cfs): | 24.29 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 6.68 |
| Headwater Safety (cfs): | 24.27 |
| Ungauged Stream Safety (cfs): | 0.00 |
| Min. Gauge Reading (cfs): | - |
| Passby at Location (cfs): | - |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

## Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25149 | Source Name: West Fork River @ GAL Withdrawal
David Shrieves

Source Latitude: 39.16422
Source Longitude: -80.45173

HUC-8 Code: 5020002

Drainage Area (sq. mi.): 313.67 | County: Harrison

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000
Max. Pump rate (gpm): 2,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

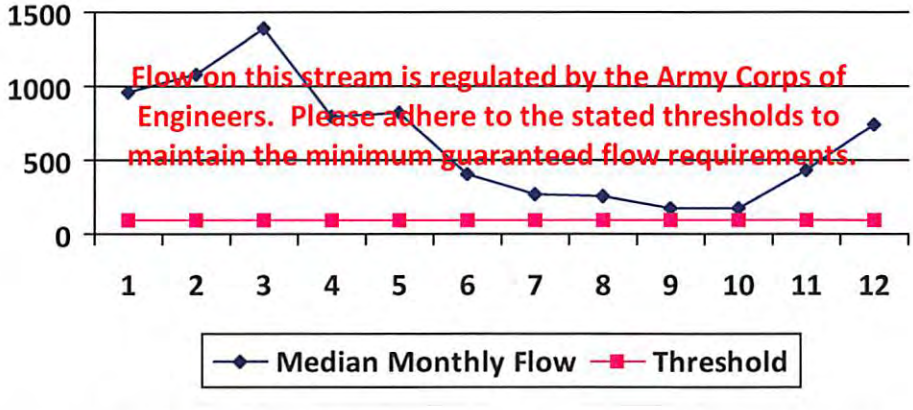
- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Stonewall Jackson Dam
- [ ] Proximate PSD?
- [x] Gauged Stream?

Reference Gaug 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Drainage Area (sq. mi.) 759.00 | Gauge Threshold (cfs): 234

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 961.18 | - | - |
| 2 | 1,082.19 | - | - |
| 3 | 1,393.91 | - | - |
| 4 | 797.19 | - | - |
| 5 | 818.28 | - | - |
| 6 | 410.02 | - | - |
| 7 | 265.65 | - | - |
| 8 | 253.65 | - | - |
| 9 | 176.49 | - | - |
| 10 | 173.04 | - | - |
| 11 | 434.22 | - | - |
| 12 | 741.35 | - | - |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | - |
| Upstream Demand (cfs): | 24.29 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 4.46 |
| Headwater Safety (cfs): | 24.18 |
| Ungauged Stream Safety (cfs): | 0.00 |
| Min. Gauge Reading (cfs): | - |
| Passby at Location (cfs): | - |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

## Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25150 | Source Name: Middle Island Creek @ Mees Withdrawal Site
Sarah E. Mees

Source Latitude: 39.43113
Source Longitude: -81.079567

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 484.78 | County: Pleasants

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000
Max. Pump rate (gpm): 3,360
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

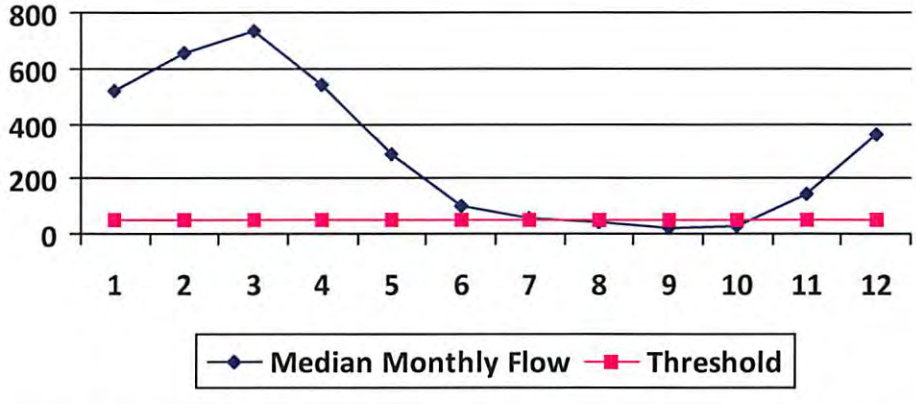
- [x] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [ ] Regulated Stream?
- [ ] Proximate PSD?
- [x] Gauged Stream?

Reference Gaug: 3114500 | MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00 | Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 519.88 | 55.12 | 465.14 |
| 2 | 653.95 | 55.12 | 599.22 |
| 3 | 731.75 | 55.12 | 677.01 |
| 4 | 543.38 | 55.12 | 488.65 |
| 5 | 286.64 | 55.12 | 231.90 |
| 6 | 100.10 | 55.12 | 45.36 |
| 7 | 56.65 | 55.12 | 1.91 |
| 8 | 46.64 | 55.12 | -8.10 |
| 9 | 23.89 | 55.12 | -30.85 |
| 10 | 30.01 | 55.12 | -24.72 |
| 11 | 146.56 | 55.12 | 91.83 |
| 12 | 358.10 | 55.12 | 303.37 |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| **Base Threshold (cfs):** | 47.63 |
| Upstream Demand (cfs): | 0.00 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 7.49 |
| Headwater Safety (cfs): | 0.00 |
| Ungauged Stream Safety (cfs): | 0.00 |
| **Min. Gauge Reading (cfs):** | **52.49** |
| **Passby at Location (cfs):** | **47.63** |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

## Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25151 | Source Name: Middle Island Creek @ Dawson Withdrawal
Gary D. and Rella A. Dawson

Source Latitude: 39.379292
Source Longitude: -80.867803

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 181.34 | County: Tyler

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000
Max. Pump rate (gpm): 3,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

- [x] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [ ] Regulated Stream?
- [ ] Proximate PSD?
- [x] Gauged Stream?

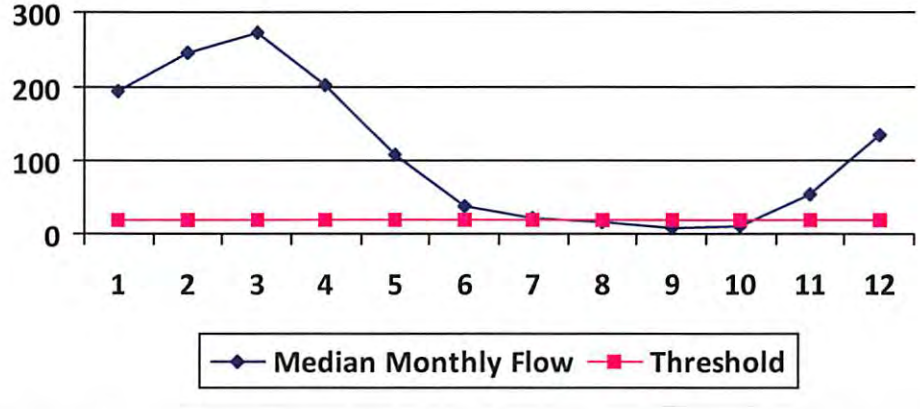
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 194.47 | 42.06 | 152.68 |
| 2 | 244.62 | 42.06 | 202.83 |
| 3 | 273.72 | 42.06 | 231.93 |
| 4 | 203.26 | 42.06 | 161.47 |
| 5 | 107.22 | 42.06 | 65.43 |
| 6 | 37.44 | 42.06 | -4.35 |
| 7 | 21.19 | 42.06 | -20.60 |
| 8 | 17.45 | 42.06 | -24.34 |
| 9 | 8.94 | 42.06 | -32.85 |
| 10 | 11.23 | 42.06 | -30.56 |
| 11 | 54.82 | 42.06 | 13.04 |
| 12 | 133.96 | 42.06 | 92.17 |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | 17.82 |
| Upstream Demand (cfs): | 13.10 |
| Downstream Demand (cfs): | 6.55 |
| Pump rate (cfs): | 6.68 |
| Headwater Safety (cfs): | 4.45 |
| Ungauged Stream Safety (cfs): | 0.00 |
| **Min. Gauge Reading (cfs):** | **76.03** |
| **Passby at Location (cfs):** | **28.82** |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

## Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25152 Source Name: McElroy Creek @ Forest Withdrawal
Forest C. & Brenda L. Moore

Source Latitude: 39.39675
Source Longitude: -80.738197

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 88.85 County: Tyler

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000
Max. Pump rate (gpm): 1,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

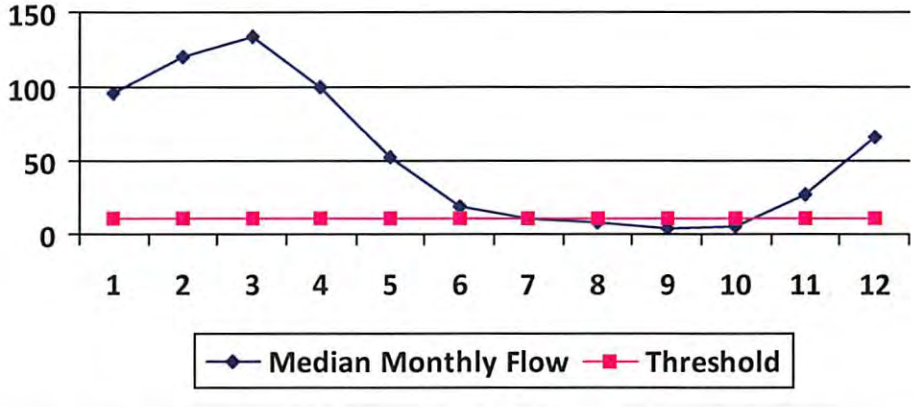
☐ Endangered Species? ☐ Mussel Stream?
☐ Trout Stream? ☐ Tier 3?
☐ Regulated Stream?
☐ Proximate PSD?
☐ Gauged Stream?

Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00 Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 95.28 | 19.78 | 75.68 |
| 2 | 119.86 | 19.78 | 100.25 |
| 3 | 134.11 | 19.78 | 114.51 |
| 4 | 99.59 | 19.78 | 79.99 |
| 5 | 52.54 | 19.78 | 32.93 |
| 6 | 18.35 | 19.78 | -1.26 |
| 7 | 10.38 | 19.78 | -9.22 |
| 8 | 8.55 | 19.78 | -11.05 |
| 9 | 4.38 | 19.78 | -15.23 |
| 10 | 5.50 | 19.78 | -14.10 |
| 11 | 26.86 | 19.78 | 7.26 |
| 12 | 65.63 | 19.78 | 46.03 |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | 8.73 |
| Upstream Demand (cfs): | 4.46 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 2.23 |
| Headwater Safety (cfs): | 2.18 |
| Ungauged Stream Safety (cfs): | 2.18 |
| **Min. Gauge Reading (cfs):** | **74.19** |
| **Passby at Location (cfs):** | **13.09** |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

## Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25153 Source Name: Meathouse Fork @ Gagnon Withdrawal
George L. Gagnon and Susan C. Gagnon

Source Latitude: 39.26054
Source Longitude: -80.720998

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 60.6 County: Doddridge

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000
Max. Pump rate (gpm): 1,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

- [x] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [ ] Regulated Stream?
- [ ] Proximate PSD?
- [ ] Gauged Stream?

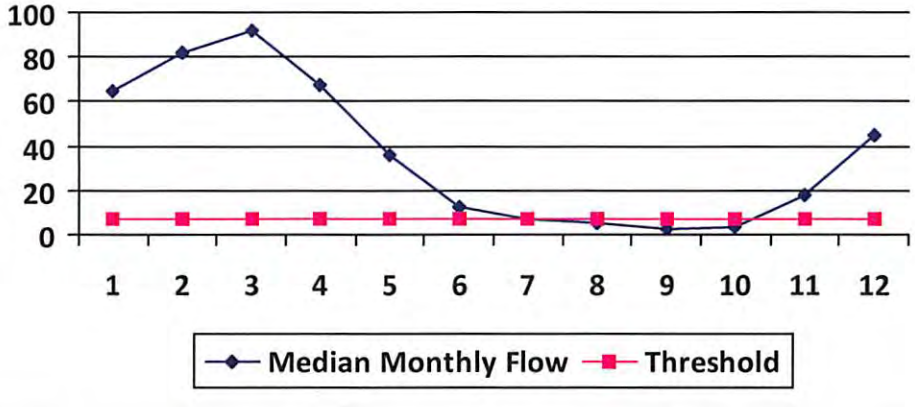
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 64.99 | 13.39 | 51.70 |
| 2 | 81.75 | 13.39 | 68.46 |
| 3 | 91.47 | 13.39 | 78.19 |
| 4 | 67.93 | 13.39 | 54.64 |
| 5 | 35.83 | 13.39 | 22.55 |
| 6 | 12.51 | 13.39 | -0.77 |
| 7 | 7.08 | 13.39 | -6.20 |
| 8 | 5.83 | 13.39 | -7.45 |
| 9 | 2.99 | 13.39 | -10.30 |
| 10 | 3.75 | 13.39 | -9.53 |
| 11 | 18.32 | 13.39 | 5.04 |
| 12 | 44.76 | 13.39 | 31.48 |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| **Base Threshold (cfs):** | 5.95 |
| Upstream Demand (cfs): | 2.23 |
| Downstream Demand (cfs): | 2.81 |
| Pump rate (cfs): | 2.23 |
| Headwater Safety (cfs): | 1.49 |
| Ungauged Stream Safety (cfs): | 1.49 |
| **Min. Gauge Reading (cfs):** | **71.96** |
| **Passby at Location (cfs):** | **11.74** |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

# Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25154 | Source Name: Meathouse Fork @ Whitehair Withdrawal
Elton Whitehair

Source Latitude: 39.211317
Source Longitude: -80.679592

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 30.37 | County: Doddridge

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000
Max. Pump rate (gpm): 1,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

- [x] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [ ] Regulated Stream?
- [ ] Proximate PSD?
- [ ] Gauged Stream?

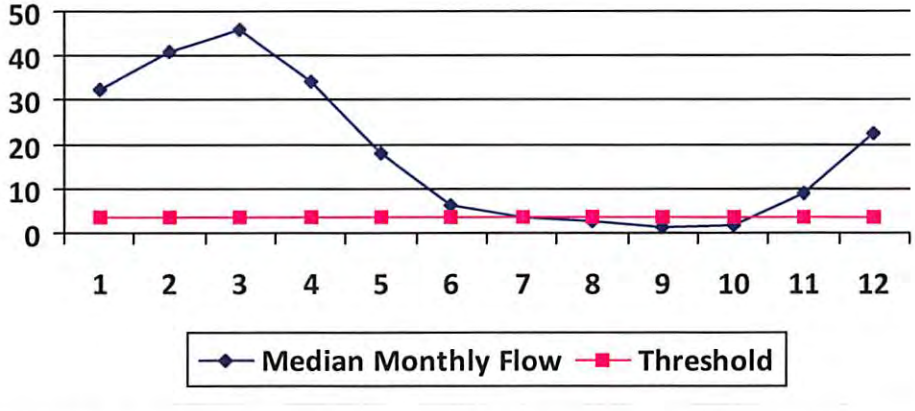
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 32.57 | 6.70 | 26.15 |
| 2 | 40.97 | 6.70 | 34.55 |
| 3 | 45.84 | 6.70 | 39.42 |
| 4 | 34.04 | 6.70 | 27.62 |
| 5 | 17.96 | 6.70 | 11.54 |
| 6 | 6.27 | 6.70 | -0.15 |
| 7 | 3.55 | 6.70 | -2.87 |
| 8 | 2.92 | 6.70 | -3.50 |
| 9 | 1.50 | 6.70 | -4.92 |
| 10 | 1.88 | 6.70 | -4.54 |
| 11 | 9.18 | 6.70 | 2.76 |
| 12 | 22.43 | 6.70 | 16.01 |

## Water Availability Profile




## Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | 2.98 |
| Upstream Demand (cfs): | 0.00 |
| Downstream Demand (cfs): | 2.81 |
| Pump rate (cfs): | 2.23 |
| Headwater Safety (cfs): | 0.75 |
| Ungauged Stream Safety (cfs): | 0.75 |
| Min. Gauge Reading (cfs): | 69.73 |
| Passby at Location (cfs): | 7.29 |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

## Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25155 Source Name: Tom's Fork @ Erwin Withdrawal
John F. Erwin and Sandra E. Erwin

Source Latitude: 39.174306
Source Longitude: -80.702992

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 4.01 County: Doddridge

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000
Max. Pump rate (gpm): 1,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

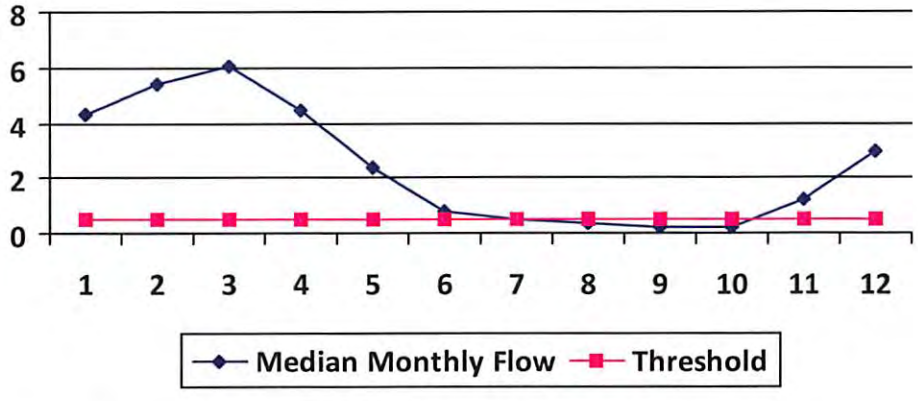
- ☐ Endangered Species?
- ☑ Mussel Stream?
- ☐ Trout Stream?
- ☐ Tier 3?
- ☐ Regulated Stream?
- ☐ Proximate PSD?
- ☐ Gauged Stream?

Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00 Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 4.30 | 2.82 | 1.88 |
| 2 | 5.41 | 2.82 | 2.98 |
| 3 | 6.05 | 2.82 | 3.63 |
| 4 | 4.49 | 2.82 | 2.07 |
| 5 | 2.37 | 2.82 | -0.05 |
| 6 | 0.83 | 2.82 | -1.60 |
| 7 | 0.47 | 2.82 | -1.96 |
| 8 | 0.39 | 2.82 | -2.04 |
| 9 | 0.20 | 2.82 | -2.23 |
| 10 | 0.25 | 2.82 | -2.18 |
| 11 | 1.21 | 2.82 | -1.21 |
| 12 | 2.96 | 2.82 | 0.54 |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| **Base Threshold (cfs):** | 0.39 |
| Upstream Demand (cfs): | 0.00 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 2.23 |
| Headwater Safety (cfs): | 0.10 |
| Ungauged Stream Safety (cfs): | 0.10 |
| **Min. Gauge Reading (cfs):** | **69.73** |
| **Passby at Location (cfs):** | **0.59** |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

# Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25156 Source Name: Arnold Creek @ Davis Withdrawal
Jonathon Davis

Source Latitude: 39.302006
Source Longitude: -80.824561

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 20.83 County: Doddridge

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000

- ☐ Endangered Species?
- ☑ Mussel Stream?
- ☐ Trout Stream?
- ☐ Tier 3?
- ☐ Regulated Stream?
- ☐ Proximate PSD?
- ☐ Gauged Stream?

Max. Pump rate (gpm): 1,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

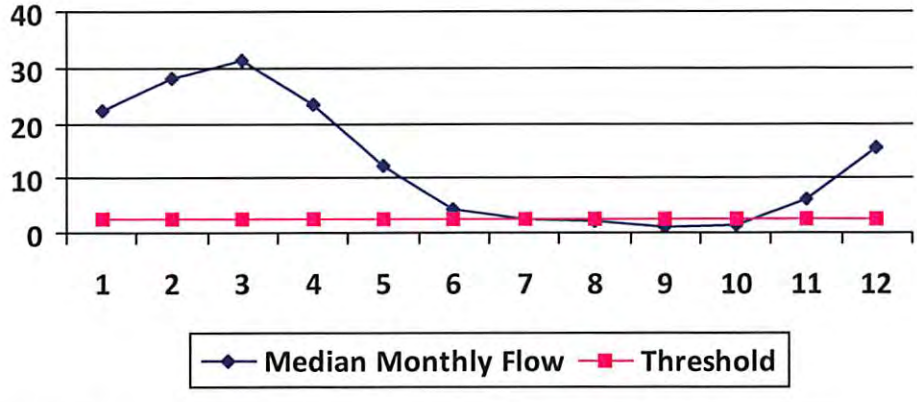
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 22.34 | 5.30 | 17.29 |
| 2 | 28.10 | 5.30 | 23.05 |
| 3 | 31.44 | 5.30 | 26.39 |
| 4 | 23.35 | 5.30 | 18.30 |
| 5 | 12.32 | 5.30 | 7.26 |
| 6 | 4.30 | 5.30 | -0.75 |
| 7 | 2.43 | 5.30 | -2.62 |
| 8 | 2.00 | 5.30 | -3.05 |
| 9 | 1.03 | 5.30 | -4.03 |
| 10 | 1.29 | 5.30 | -3.76 |
| 11 | 6.30 | 5.30 | 1.25 |
| 12 | 15.39 | 5.30 | 10.34 |

## Water Availability Profile




## Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | 2.05 |
| Upstream Demand (cfs): | 0.00 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 2.23 |
| Headwater Safety (cfs): | 0.51 |
| Ungauged Stream Safety (cfs): | 0.51 |
| **Min. Gauge Reading (cfs):** | **69.73** |
| **Passby at Location (cfs):** | **3.07** |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

# Source Detail

WMP-01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25157 Source Name: Buckeye Creek @ Powell Withdrawal
Dennis Powell

Source Latitude: 39.277142
Source Longitude: -80.690386

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 31.15 County: Doddridge

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000
Max. Pump rate (gpm): 1,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

- ☐ Endangered Species?
- ☐ Trout Stream?
- ☐ Regulated Stream?
- ☐ Proximate PSD?
- ☐ Gauged Stream?
- ☑ Mussel Stream?
- ☐ Tier 3?

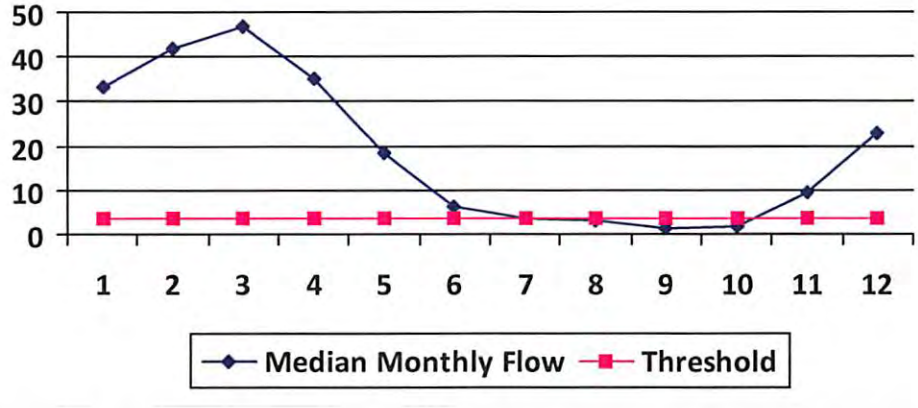
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 33.41 | 6.82 | 26.95 |
| 2 | 42.02 | 6.82 | 35.56 |
| 3 | 47.02 | 6.82 | 40.56 |
| 4 | 34.92 | 6.82 | 28.46 |
| 5 | 18.42 | 6.82 | 11.96 |
| 6 | 6.43 | 6.82 | -0.03 |
| 7 | 3.64 | 6.82 | -2.82 |
| 8 | 3.00 | 6.82 | -3.46 |
| 9 | 1.53 | 6.82 | -4.92 |
| 10 | 1.93 | 6.82 | -4.53 |
| 11 | 9.42 | 6.82 | 2.96 |
| 12 | 23.01 | 6.82 | 16.55 |

## Water Availability Profile




## Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | 3.06 |
| Upstream Demand (cfs): | 0.00 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 2.23 |
| Headwater Safety (cfs): | 0.77 |
| Ungauged Stream Safety (cfs): | 0.77 |
| Min. Gauge Reading (cfs): | 69.73 |
| Passby at Location (cfs): | 4.59 |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

# Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25158 Source Name: South Fork of Hughes River @ Knight Withdrawal
Tracy C. Knight & Stephanie C. Knight

Source Latitude: 39.198369
Source Longitude: -80.870969

HUC-8 Code: 5030203

Drainage Area (sq. mi.): 16.26 County: Ritchie

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000
Max. Pump rate (gpm): 3,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

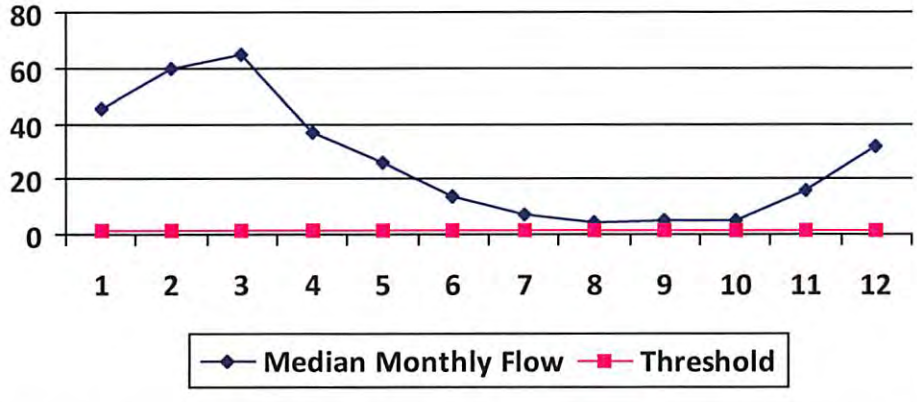
- [x] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [ ] Regulated Stream?
- [ ] Proximate PSD?
- [x] Gauged Stream?

Reference Gaug 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV

Drainage Area (sq. mi.) 229.00 Gauge Threshold (cfs): 22

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 45.67 | 14.26 | 31.44 |
| 2 | 59.55 | 14.26 | 45.31 |
| 3 | 65.21 | 14.26 | 50.97 |
| 4 | 36.87 | 14.26 | 22.63 |
| 5 | 25.86 | 14.26 | 11.63 |
| 6 | 13.90 | 14.26 | -0.33 |
| 7 | 6.89 | 14.26 | -7.34 |
| 8 | 3.98 | 14.26 | -10.25 |
| 9 | 4.79 | 14.26 | -9.45 |
| 10 | 5.20 | 14.26 | -9.04 |
| 11 | 15.54 | 14.26 | 1.30 |
| 12 | 32.06 | 14.26 | 17.82 |

## Water Availability Profile




## Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | 1.56 |
| Upstream Demand (cfs): | 5.62 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 6.68 |
| Headwater Safety (cfs): | 0.39 |
| Ungauged Stream Safety (cfs): | 0.00 |
| **Min. Gauge Reading (cfs):** | **39.80** |
| **Passby at Location (cfs):** | **1.95** |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

# Source Detail

WMP- 01471 | API/ID Number: 047-017-06362 | Operator: Antero Resources

Farrow Unit 2H

Source ID: 25159 | Source Name: North Fork of Hughes River @ Davis Withdrawal
Lewis P. Davis and Norma J. Davis

Source Latitude: 39.322363
Source Longitude: -80.936771

HUC-8 Code: 5030203

Drainage Area (sq. mi.): 15.18 | County: Ritchie

Anticipated withdrawal start date: 8/31/2014
Anticipated withdrawal end date: 8/31/2015
Total Volume from Source (gal): 8,900,000
Max. Pump rate (gpm): 1,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

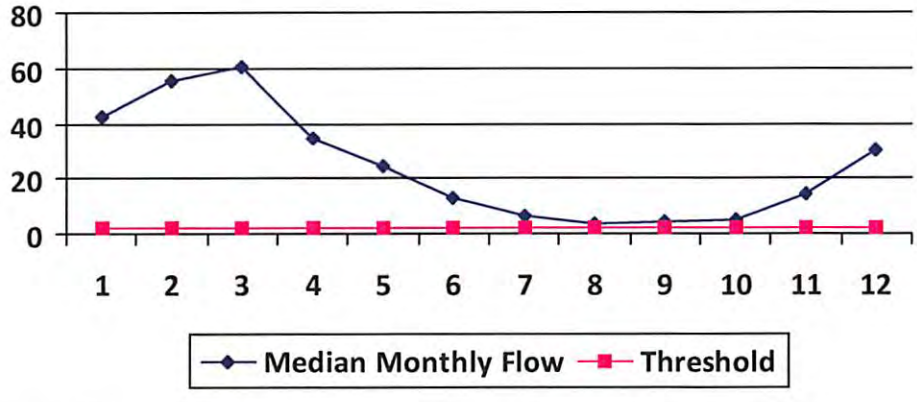
- [x] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [ ] Regulated Stream?
- [ ] Proximate PSD?
- [ ] Gauged Stream?

Reference Gaug 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV

Drainage Area (sq. mi.) 229.00 | Gauge Threshold (cfs): 22

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 42.64 | 4.42 | 38.36 |
| 2 | 55.59 | 4.42 | 51.32 |
| 3 | 60.88 | 4.42 | 56.60 |
| 4 | 34.42 | 4.42 | 30.14 |
| 5 | 24.15 | 4.42 | 19.87 |
| 6 | 12.98 | 4.42 | 8.70 |
| 7 | 6.44 | 4.42 | 2.16 |
| 8 | 3.72 | 4.42 | -0.56 |
| 9 | 4.47 | 4.42 | 0.19 |
| 10 | 4.85 | 4.42 | 0.57 |
| 11 | 14.50 | 4.42 | 10.23 |
| 12 | 29.93 | 4.42 | 25.65 |

## Water Availability Profile




## Water Availability Assessment of Location

| | |
|---|---|
| **Base Threshold (cfs):** | 1.46 |
| Upstream Demand (cfs): | 0.00 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 2.23 |
| Headwater Safety (cfs): | 0.36 |
| Ungauged Stream Safety (cfs): | 0.36 |
| **Min. Gauge Reading (cfs):** | **35.23** |
| **Passby at Location (cfs):** | **2.19** |

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

# Water Management Plan:
## Secondary Water Sources

WMP- 01471 API/ID Number 047-017-06362 Operator: Antero Resources

Farrow Unit 2H

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

## Lake/Reservior

Source ID: 25164 Source Name City of Salem Reservior (Lower Dog Run)
Public Water Provider

Source start date: 8/31/2014
Source end date: 8/31/2015

Source Lat: 39.28834 Source Long: -80.54966 County Harrison

Max. Daily Purchase (gal) 1,000,000 Total Volume from Source (gal): 8,900,000

DEP Comments:

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID: 25165 Source Name Pennsboro Lake
Source start date: 8/31/2014
Source end date: 8/31/2015
Source Lat: 39.281689 Source Long: -80.925526 County Ritchie
Max. Daily Purchase (gal) Total Volume from Source (gal): 8,900,000
DEP Comments:

Source ID: 25166 Source Name Powers Lake (Wilderness Water Park Dam)
Private Owner
Source start date: 8/31/2014
Source end date: 8/31/2015
Source Lat: 39.255752 Source Long: -80.463262 County Harrison
Max. Daily Purchase (gal) Total Volume from Source (gal): 8,900,000
DEP Comments:

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID: 25167 Source Name Powers Lake Two

Source start date: 8/31/2014
Source end date: 8/31/2015

Source Lat: 39.247604 Source Long: -80.466642 County Harrison

Max. Daily Purchase (gal)

Total Volume from Source (gal): 8,900,000

DEP Comments:

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

## Other

Source ID: 25168 Source Name: Poth Lake (Landowner Pond)
Private Owner
Source start date: 8/31/2014
Source end date: 8/31/2015
Source Lat: 39.221306 Source Long: -80.463028 County: Harrison
Max. Daily Purchase (gal): Total Volume from Source (gal): 8,900,000
DEP Comments:

Source ID: 25169 Source Name: Williamson Pond (Landowner Pond)
Source start date: 8/31/2014
Source end date: 8/31/2015
Source Lat: 39.19924 Source Long: -80.886161 County: Ritchie
Max. Daily Purchase (gal): Total Volume from Source (gal): 8,900,000
DEP Comments:

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID: 25170 Source Name Eddy Pond (Landowner Pond)
Source start date: 8/31/2014
Source end date: 8/31/2015
Source Lat: 39.19924 Source Long: -80.886161 County Ritchie
Max. Daily Purchase (gal) Total Volume from Source (gal): 8,900,000
DEP Comments:

Source ID: 25171 Source Name Hog Lick Quarry Industrial Facility
Source start date: 8/31/2014
Source end date: 8/31/2015
Source Lat: 39.419272 Source Long: -80.217941 County Marion
Max. Daily Purchase (gal) 1,000,000 Total Volume from Source (gal): 8,900,000
DEP Comments:

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

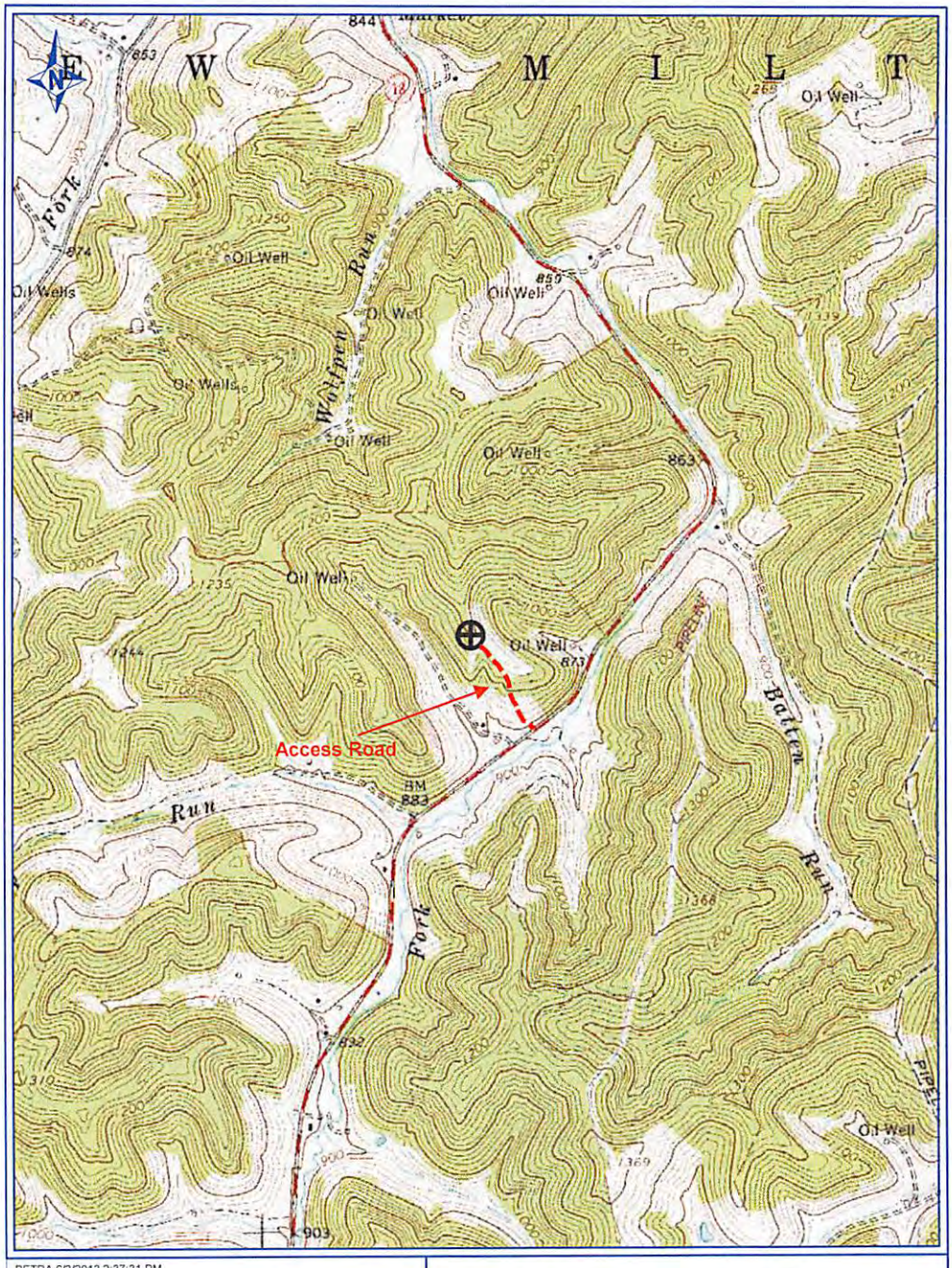
- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID: 25172 Source Name Glade Fork Mine Industrial Facility
Source start date: 8/31/2014
Source end date: 8/31/2015
Source Lat: 38.965767 Source Long: -80.299313 County Upshur
Max. Daily Purchase (gal) 1,000,000 Total Volume from Source (gal): 8,900,000
DEP Comments:

## Recycled Frac Water

Source ID: 25173 Source Name Farrow Unit 1H
Source start date: 8/31/2014
Source end date: 8/31/2015
Source Lat: Source Long: County
Max. Daily Purchase (gal) Total Volume from Source (gal): 8,900,000
DEP Comments:

17 06362




PETRA 6/3/2013 2:37:31 PM

**Antero Resources Corp**

APPALACHIAN BASIN

Farrow Unit 2H

REMARKS

QUADRANGLE: NEW MILTON
WATERSHED: TOM'S FORK
DISTRICT: NEW MILTON

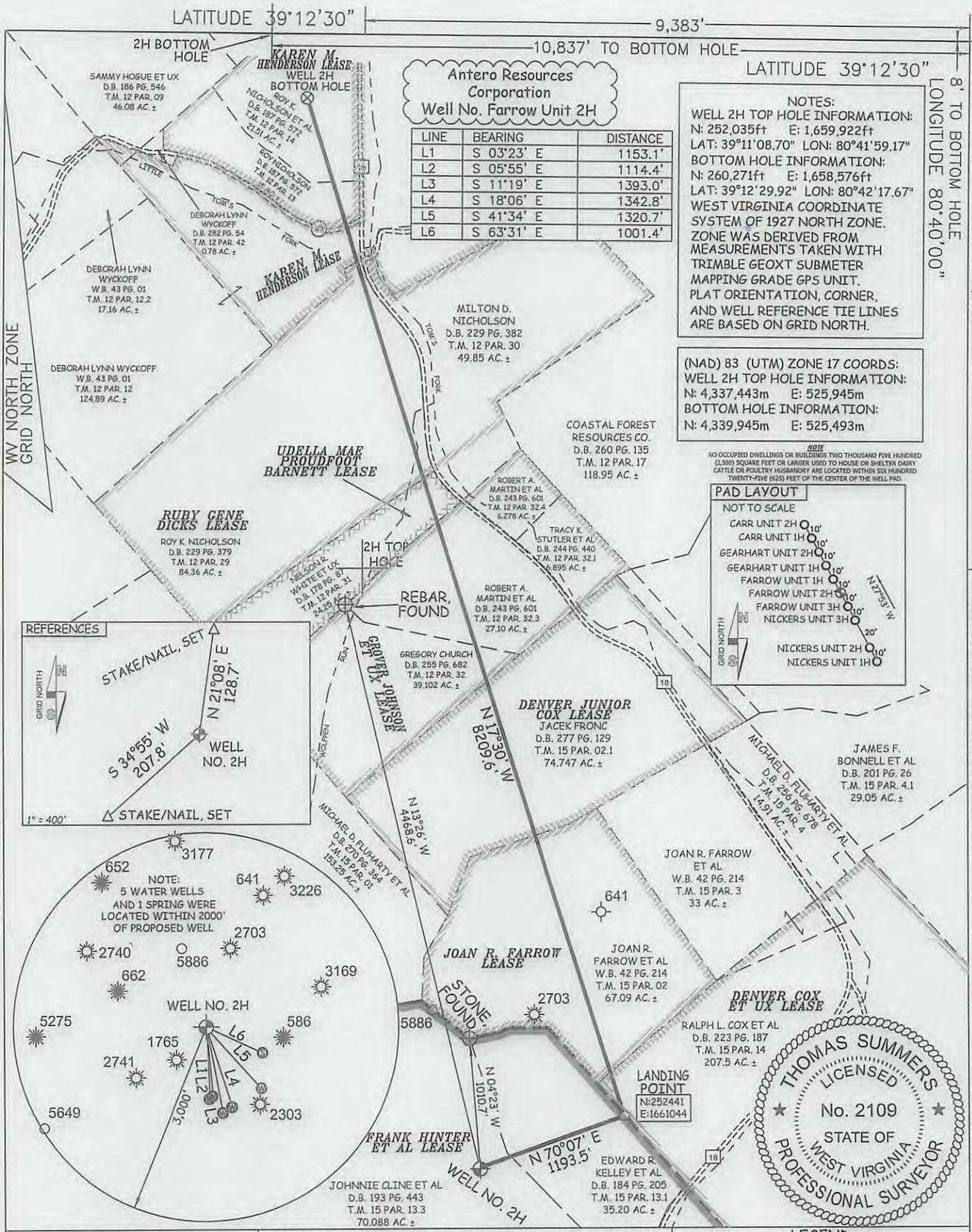
By: ECM

0 2,500 5,000

FEET



10/04/2013




| LINE | BEARING | DISTANCE |
|---|---|---|
| L1 | S 03°23' E | 1153.1' |
| L2 | S 05°55' E | 1114.4' |
| L3 | S 11°19' E | 1393.0' |
| L4 | S 18°06' E | 1342.8' |
| L5 | S 41°34' E | 1320.7' |
| L6 | S 63°31' E | 1001.4' |

JOB # 13-067WA
DRAWING # FARROW2H
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

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 DEPTARTMENT 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

LEGEND
Surface Owner Boundary Lines +/-
Interior Surface Tracts +/-
Existing Fence
Found monument, as noted

THOMAS SUMMERS P.S. 2109

DATE 08/19/13
OPERATOR'S WELL# FARROW UNIT #2H
API WELL # 47 – 017 – 06362 HGA
STATE COUNTY PERMIT

STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY
DIVISION OF OIL AND GAS

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,096' WATERSHED TOMS FORK
QUADRANGLE NEW MILTON 7.5' DISTRICT NEW MILTON COUNTY DODDRIDGE
SURFACE OWNER JOHNNIE CLINE ET AL ACREAGE 70.088 ACRES +/-
OIL & GAS ROYALTY OWNER FRANK HINTER ET AL; DENVER COX ET UX; JOAN R. FARROW; DENVER JUNIOR COX; GROVER JOHNSON ET UX; UDELLA MAE PROUDFOOT BARNETT; RUBY GENE DICKS; KAREN M. HENDERSON; KAREN M. HENDERSON LEASE ACREAGE 329.73 ACRES±; 206 ACRES±; 67 ACRES±; 80 ACRES±; 81 ACRES±; 22.485 ACRES±; 117.197 ACRES±; 84.96 ACRES±; 38.34 ACRES±
PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY) ___ PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,200' TVD 15,600' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER
ADDRESS 1625 17TH STREET ADDRESS 5400 D BIG TYLER ROAD
DENVER, CO 80202 CHARLESTON, WV 25313

FORM WW-6

COUNTY NAME PERMIT

10/04/2013