



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. Huffinan, Cabinet Secretary
www.dep.wv.gov

December 30, 2013

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-8510081, 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: MYRTLE UNIT 1H
Farm Name: QUIMBY, FRANKLIN P.
API Well Number: 47-8510081
Permit Type: Horizontal 6A Well
Date Issued: 12/30/2013

Promoting a healthy environment.

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 moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. 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.



Addendum for Antero pads in Ritchie County, WV

| | |
|-----------------|-----------|
| Myrtle Unit 1H | Edwin Pad |
| Myrtle Unit 2H | Edwin Pad |
| Miracle Unit 1H | Edwin Pad |
| Moats Unit 1H | Edwin Pad |
| Moats Unit 2H | Edwin Pad |

The following outlines the process to be undertaken by Antero Resources prior to and during completion process of wells in Ritchie County.

- Investigate all wells within 1320' of new wells - for all identified Marcellus vertical wells and any existing well(s) with an interval that is less than 1500 feet from the deepest formation drilled (including, but not specific to the Alexander formation) to the top of Marcellus:
 - Contact operator of all wells
 - Confirm well status, producing horizon, well completion/stimulation information
 - Discuss plans to stimulate the horizontal Marcellus wells and the plans for monitoring potential impact on shallow wells
 - Make sure all vertical wells (with an interval that is less than 1500 feet from the deepest formation drilled to the top of Marcellus) have adequate wellhead equipment, including pressure gauges
 - Provide shallow well operator with frac dates and develop plan for monitoring during stimulation
 - If well waters out during frac, shut it in until after stimulation, and install adequate well control equipment prior to swabbing in the impacted shallow well
- Control fracturing parameters during job to limit fracture height growth
 - Limit rate and limit pressures for each segment of fracturing stages
- Tracers demonstrate that we rarely reach offset wells at 660' offset
 - Will use tracers at each lateral

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

01 562

1) Well Operator: Antero Resources Corporation 494488557 085-Ritchie Clay Pullman 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Myrtle Unit 1H Well Pad Name: Edwin Pad

3) Farm Name/Surface Owner: Franklin P. Quimby Public Road Access: CR 10/4

4) Elevation, current ground: ~1220' Elevation, proposed post-construction: 1191'

5) Well Type (a) Gas Oil Underground Storage
Other
(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Marcellus Shale: 6800' TVD, Anticipated Thickness- 50 Feet, Associated Pressure- 3000#

8) Proposed Total Vertical Depth: 6800' TVD

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 18,100' MD

11) Proposed Horizontal Leg Length: 11,061'

12) Approximate Fresh Water Strata Depths: 116', 128', 202'

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

14) Approximate Saltwater Depths: 1366', 2140', 2254'

15) Approximate Coal Seam Depths: 194'

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

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No

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(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

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(9/13)

18) CASING AND TUBING PROGRAM

| TYPE | Size | New or Used | Grade | Weight per ft. (lb/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# | 310' | 310' | CTS, 431 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# | 18,100' | 18,100' | 4585 Cu. Ft. |
| Tubing | 2-3/8" | New | N-80 | 4.7# | | 7100' | |
| Liners | | | | | | | |

| TYPE | Size | Wellbore Diameter | Wall Thickness | Burst Pressure | Cement Type | Cement Yield (cu. ft./k) |
|--------------|---------|-------------------|----------------|----------------|-----------------------|--------------------------|
| 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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(9/13)

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

Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

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

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 18.74 acres

22) Area to be disturbed for well pad only, less access road (acres): 5.32 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers

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

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

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

24) 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

25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

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

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

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

*Note: Attach additional sheets as needed.

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Page 3 of 3

WW-9
(9/13)

API Number 47 - 085 - 10081
Operator's Well No. Myrtle Unit 1H

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) Tributary of Cabin Run Quadrangle Pullman 7.5'

Elevation 1191' County Ritchie District Clay

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

Will a pit be used? Yes No

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 No If so, what ml.? N/A

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 (Supply form WW-9 for disposal location) (Meadowfill Landfill Permit #SWF-1032-98)
- Other (Explain _____)

Will closed loop system be used? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? 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 [Signature]

Company Official (Typed Name) Gerard G. Alberts

Company Official Title Environmental & Regulatory Manager

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Subscribed and sworn before me this 20 day of Nov

[Signature]

My commission expires 11/9/2016



WV Department of Environmental Protection

Form WW-9

Operator's Well No. Myrtle Unit 1H

Antero Resources Corporation

Proposed Revegetation Treatment: Acres Disturbed 18.74 Prevegetation pH 6.0

Lime 2-4 Tons/acre or to correct to pH 6.5

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

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

Access Roads (8.48) + Drill & Water Containment Pad (5.32) + Spoil Pads (4.94) = 18.74 Acres

Seed Mixtures

| Temporary | | Permanent | |
|---|----------|---|----------|
| Seed Type | lbs/acre | Seed Type | lbs/acre |
| Tall Fescue | 45 | Tall Fescue | 45 |
| Perennial Rye Grass | 20 | Perennial Rye Grass | 20 |
| *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 (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: David Wilson

Comments: pressed & mulch all out area - maintain all O&S control during operations

Title: oil & gas inspector Date: 12-27-13

Field Reviewed Yes No
Office of Oil and Gas

DEC 27 2013

Form WW-9 Additives Attachment

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

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13. Escaid 110
Drilling Fluid Solvent – Aliphatic Hydrocarbon
14. Ligco
Highly Oxidized Leonardite – Filtration 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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Well Site Safety Plan

Antero Resources

Well Name: Hornet Unit 1H, Hornet Unit 2H, Myrtle Unit 1H, Myrtle Unit 2H, Miracle Unit 1H, Miracle Unit 2H, Kehrer Unit 1H, Kehrer Unit 2H, Moats Unit 1H, Moats Unit 2H

Pad Location: EDWIN PAD
Ritchie County/ Clay District

GPS Coordinates: Lat 39°13'49.56"/Long 80°54'10.19" (NAD83)

Driving Directions:

Head south on WV 74 for 1.3 miles. Turn left onto Lynn Camp road. Stay on Lynn Camp road for 1.3 miles. Take slight right onto County Road 10/Cabin Run road. Continue onto County road 10/4 for 2.7 miles. Turn left to stay on County Road 10/4 and continue for .4 miles. Access road on left

David Wilson
10-10-13

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Water Management Plan: Primary Water Sources



WMP- 01687

API/ID Number:

047-085-10081

Operator:

Antero Resources

Myrtle Unit 1H

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 DEC 16 2013

Source Summary

WMP-01687

API Number:

047-085-10081

Operator:

Antero Resources

Myrtle Unit 1H

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: |
|------------|-----------|--------------------|---------------------------|------------------|-------------------|
| 4/30/2017 | 4/30/2018 | 12,020,000 | | 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: |
|------------|-----------|--------------------|---------------------------|------------------|-------------------|
| 4/30/2017 | 4/30/2018 | 12,020,000 | | 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: |
|------------|-----------|--------------------|---------------------------|------------------|-------------------|
| 4/30/2017 | 4/30/2018 | 12,020,000 | | 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:
4/30/2017 4/30/2018 12,020,000 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:
4/30/2017 4/30/2018 12,020,000 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:
4/30/2017 4/30/2018 12,020,000 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: |
| 4/30/2017 | 4/30/2018 | 12,020,000 | | 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: |
| 4/30/2017 | 4/30/2018 | 12,020,000 | | 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: |
| 4/30/2017 | 4/30/2018 | 12,020,000 | | 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: |
| 4/30/2017 | 4/30/2018 | 12,020,000 | | 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: |
| 4/30/2017 | 4/30/2018 | 12,020,000 | | 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: |
| 4/30/2017 | 4/30/2018 | 12,020,000 | | 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: |
| 4/30/2017 | 4/30/2018 | 12,020,000 | | 39.198369 | -80.870969 |

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

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: |
| 4/30/2017 | 4/30/2018 | 12,020,000 | | 39.322363 | -80.936771 |

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

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

DEP Comments:

Source Summary

WMP-01687

API Number:

047-085-10081

Operator:

Antero Resources

Myrtle Unit 1H

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: |
| 4/30/2017 | 4/30/2018 | 12,020,000 | 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: |
| 4/30/2017 | 4/30/2018 | 12,020,000 | 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: |
| 4/30/2017 | 4/30/2018 | 12,020,000 | | - | - |

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: |
|------------|-----------|--------------------|---------------------------|------------------|-------------------|
| 4/30/2017 | 4/30/2018 | 12,020,000 | 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-01687

API/ID Number: 047-085-10081

Operator:

Antero Resources

Myrtle Unit 1H

Source ID: 31427

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: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 12,020,000

Trout Stream?

Tier 3?

Max. Pump rate (gpm): 1,680

Regulated Stream? Ohio River Min. Flow

Max. Simultaneous Trucks:

Proximate PSD?

Max. Truck pump rate (gpm):

Gauged Stream?

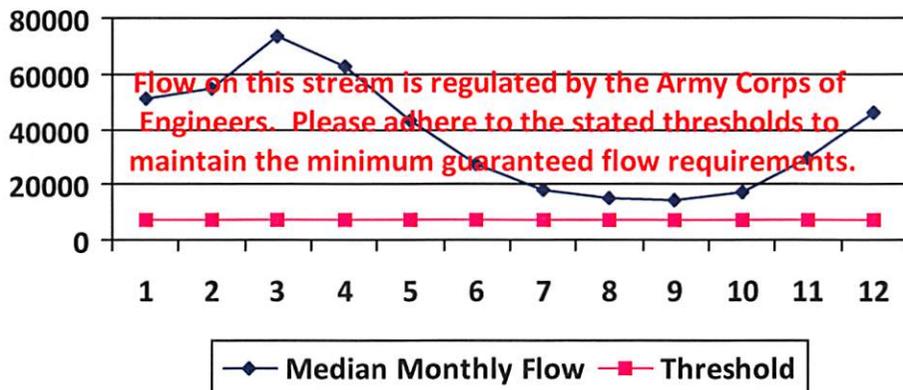
Reference Gaug 9999998 Ohio River Station: Racine Dam

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.

Source Detail

WMP- 01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31428 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: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 12,020,000

Trout Stream? Tier 3?

Max. Pump rate (gpm):

Regulated Stream? Ohio River Min. Flow

Max. Simultaneous Trucks:

Proximate PSD? City of St. Marys

Max. Truck pump rate (gpm) 0

Gauged Stream?

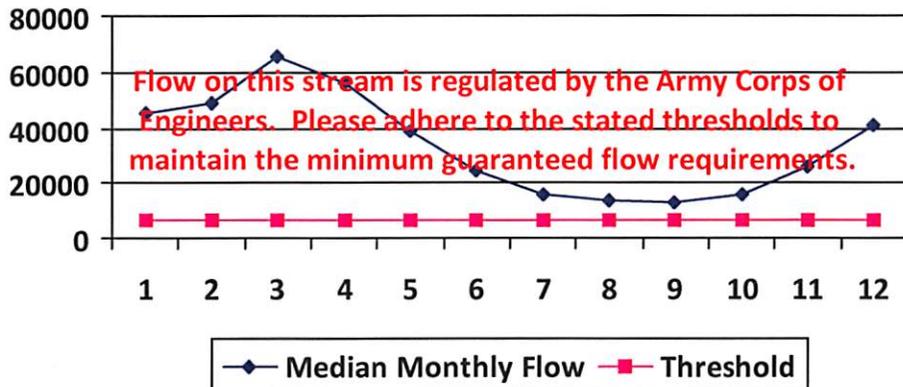
Reference Gaug 9999999 Ohio River Station: Willow Island Lock & Dam

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):

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.

Source Detail

WMP- 01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31429 Source Name: Claywood Park PSD Source Latitude: -
 Claywood Park PSD Source Longitude: -

HUC-8 Code: 5030203

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

Anticipated withdrawal start date: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 12,020,000

Trout Stream? Tier 3?

Max. Pump rate (gpm):

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD? Claywood Park PSD

Max. Truck pump rate (gpm): 0

Gauged Stream?

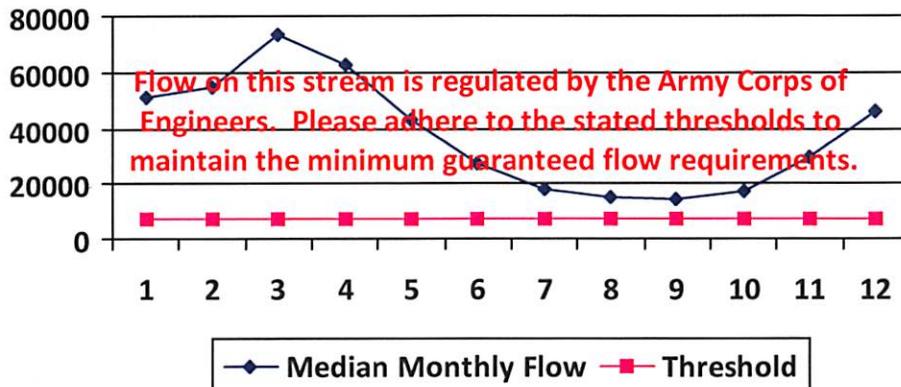
Reference Gaug: 9999998 Ohio River Station: Racine Dam

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.

Source Detail

WMP- 01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31430 Source Name: Sun Valley Public Service District Source Latitude: -
 Sun Valley PSD Source Longitude: -

HUC-8 Code: 5020002

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

Anticipated withdrawal start date: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 12,020,000

Trout Stream? Tier 3?

Max. Pump rate (gpm):

Regulated Stream? Stonewall Jackson Dam

Max. Simultaneous Trucks:

Proximate PSD?

Max. Truck pump rate (gpm):

Gauged Stream?

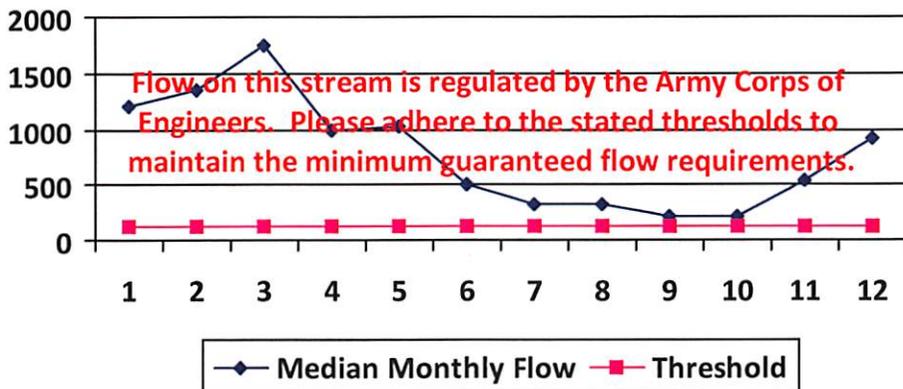
Reference Gaug: 3061000 WEST FORK RIVER AT ENTERPRISE, WV

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.

Source Detail

WMP- 01687

API/ID Number: 047-085-10081

Operator: Antero Resources

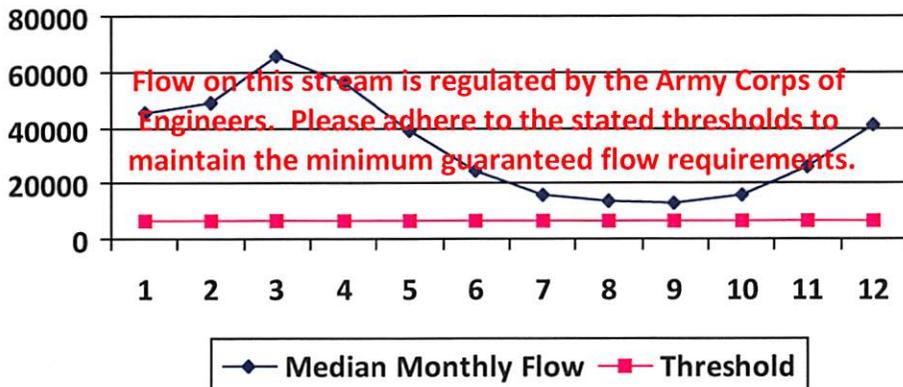
Myrtle Unit 1H

| | | |
|---|---|--|
| Source ID: 31413 | Source Name: Ohio River @ Ben's Run Withdrawal Site Ben's Run Land Company Limited Partnership | Source Latitude: 39.46593 |
| HUC-8 Code: 5030201 | Drainage Area (sq. mi.): 25000 County: Tyler | Source Longitude: -81.110781 |
| <input type="checkbox"/> Endangered Species? | <input checked="" type="checkbox"/> Mussel Stream? | Anticipated withdrawal start date: 4/30/2017 |
| <input type="checkbox"/> Trout Stream? | <input type="checkbox"/> Tier 3? | Anticipated withdrawal end date: 4/30/2018 |
| <input checked="" type="checkbox"/> Regulated Stream? | Ohio River Min. Flow | Total Volume from Source (gal): 12,020,000 |
| <input type="checkbox"/> Proximate PSD? | | Max. Pump rate (gpm): 3,360 |
| <input checked="" type="checkbox"/> Gauged Stream? | | Max. Simultaneous Trucks: 0 |
| | | 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): | 7.49 |
| Headwater Safety (cfs): | 0.00 |
| Ungauged Stream Safety (cfs): | 0.00 |
| <hr/> | |
| 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.

Source Detail

WMP-01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31414 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: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 12,020,000

Trout Stream?

Tier 3?

Max. Pump rate (gpm): 2,000

Regulated Stream? Stonewall Jackson Dam

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

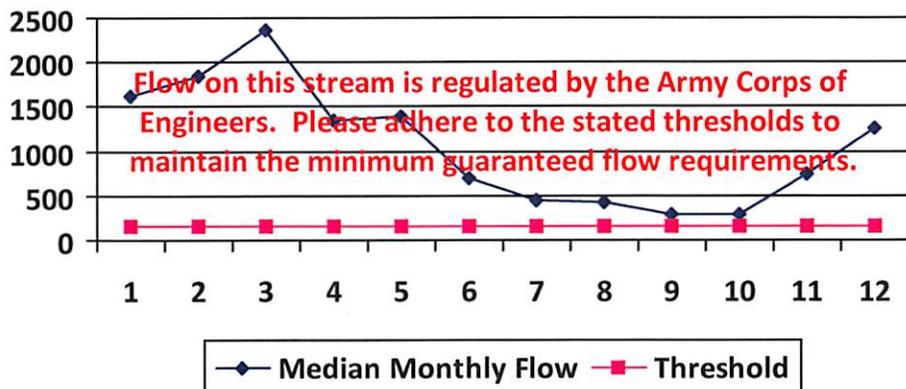
Reference Gaug: 3061000 WEST FORK RIVER AT ENTERPRISE, WV

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.

Source Detail

WMP- 01687

API/ID Number: 047-085-10081

Operator:

Antero Resources

Myrtle Unit 1H

Source ID: 31415 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: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 12,020,000

Trout Stream?

Tier 3?

Max. Pump rate (gpm): 3,000

Regulated Stream? Stonewall Jackson Dam

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

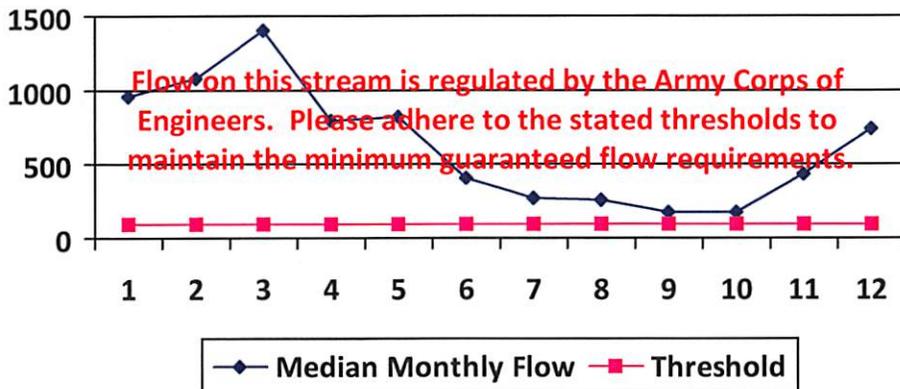
Reference Gaug: 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Drainage Area (sq. mi.): 759.00

Gauge Threshold (cfs): 234

| Month | Median monthly flow (cfs) | Threshold (+ pump) | Estimated Available water (cfs) |
|-------|---------------------------|--------------------|---------------------------------|
| 1 | 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.

Source Detail

WMP- 01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31416 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: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 12,020,000

Trout Stream?

Tier 3?

Max. Pump rate (gpm): 2,000

Regulated Stream? Stonewall Jackson Dam

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

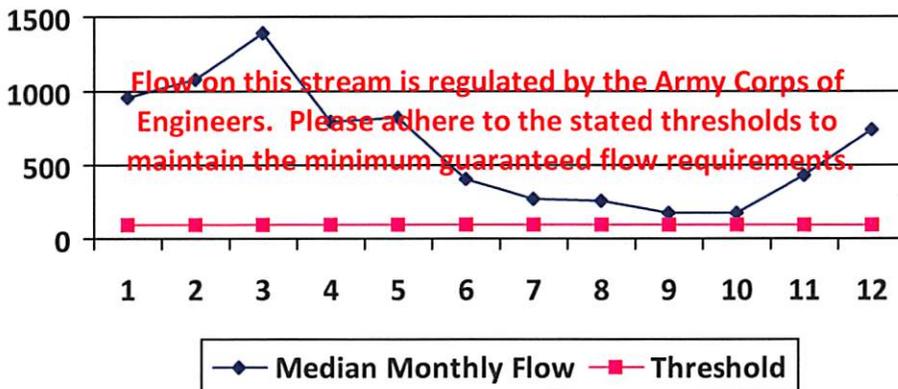
Reference Gaug: 3061000 WEST FORK RIVER AT ENTERPRISE, WV

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.

Source Detail

WMP-01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31417 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: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 12,020,000

Trout Stream?

Tier 3?

Max. Pump rate (gpm): 3,360

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

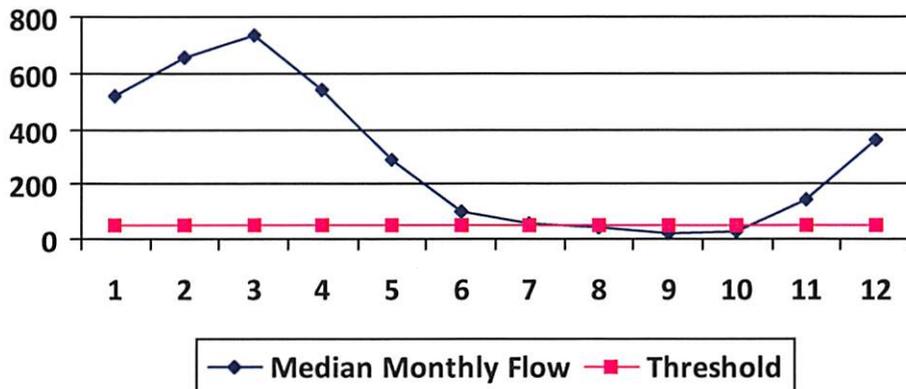
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

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.

Source Detail

WMP-01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31418 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: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 12,020,000

Trout Stream?

Tier 3?

Max. Pump rate (gpm): 3,000

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

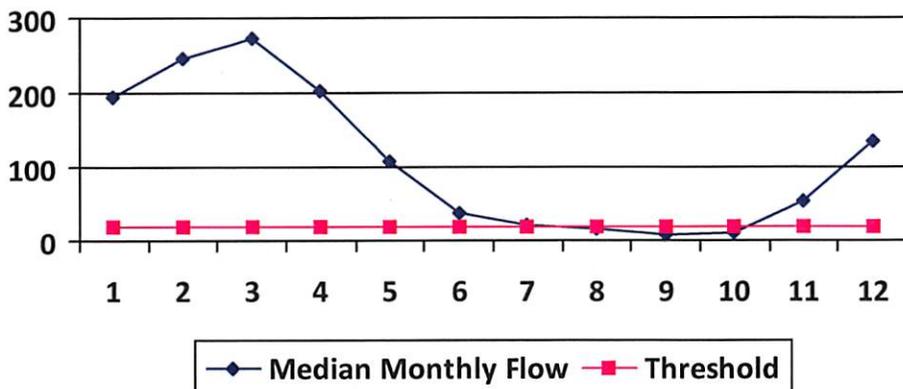
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

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- 01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31419 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: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Total Volume from Source (gal): 12,020,000

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?

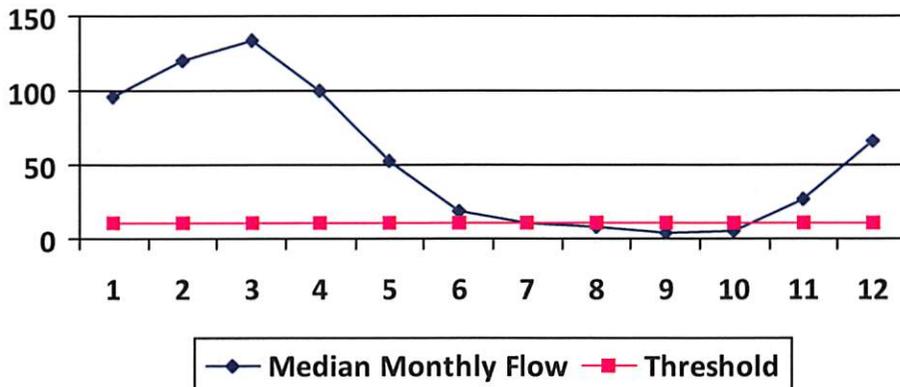
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

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.

Source Detail

WMP- 01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31420 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: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Trout Stream? Tier 3?

Total Volume from Source (gal): 12,020,000

Regulated Stream?

Max. Pump rate (gpm): 1,000

Proximate PSD?

Max. Simultaneous Trucks: 0

Gauged Stream?

Max. Truck pump rate (gpm): 0

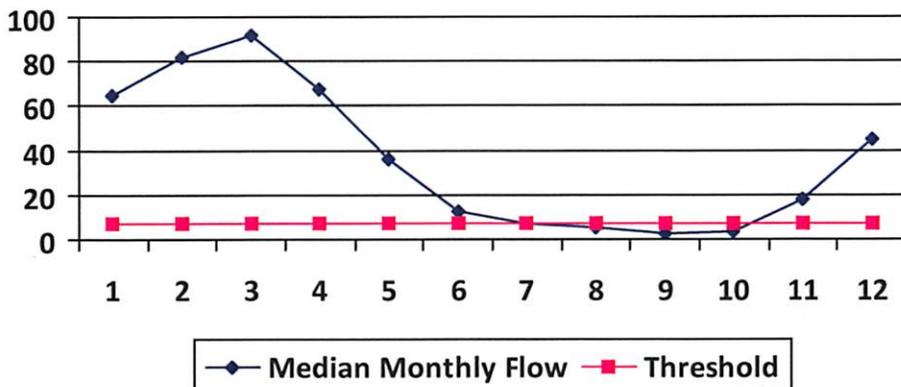
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump) | Estimated Available water (cfs) |
|-------|---------------------------|--------------------|---------------------------------|
| 1 | 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.

Source Detail

WMP- 01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31421 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: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 12,020,000

Trout Stream?

Tier 3?

Max. Pump rate (gpm): 1,000

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

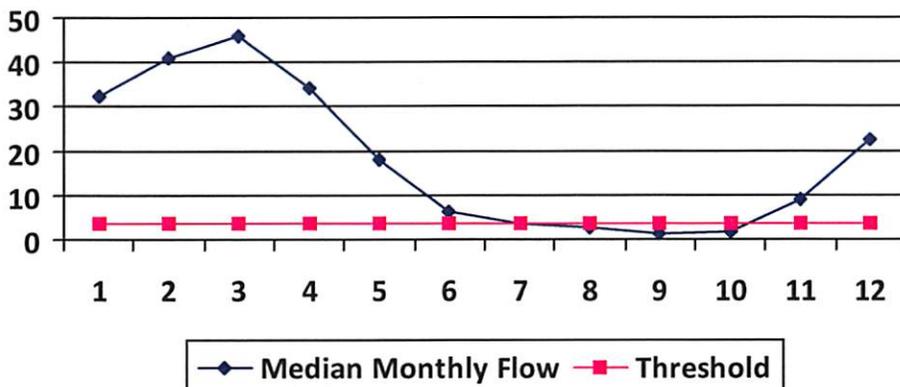
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

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.

Source Detail

WMP- 01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31422 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

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

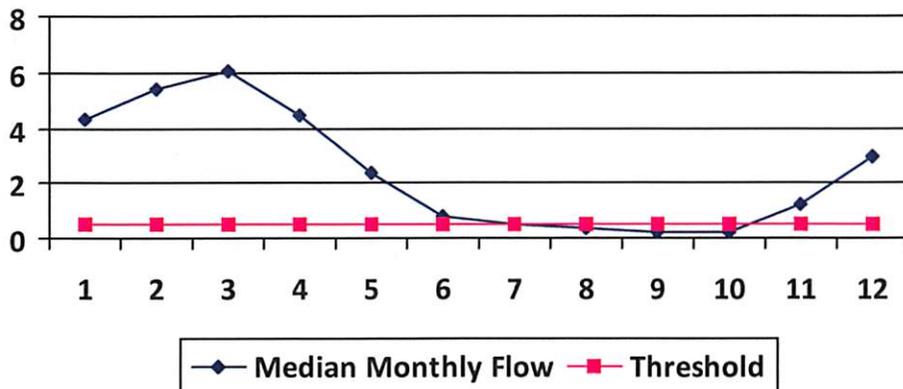
Anticipated withdrawal start date: 4/30/2017
Anticipated withdrawal end date: 4/30/2018
Total Volume from Source (gal): 12,020,000
Max. Pump rate (gpm): 1,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm): 0

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 | 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.

Source Detail

WMP-01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31423 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: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 12,020,000

Trout Stream? Tier 3?

Max. Pump rate (gpm): 1,000

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

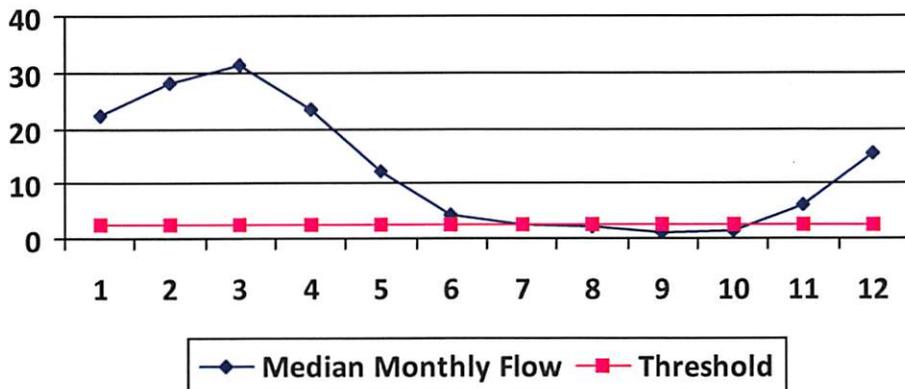
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump) | Estimated Available water (cfs) |
|-------|---------------------------|--------------------|---------------------------------|
| 1 | 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.

Source Detail

WMP- 01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31424 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: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 12,020,000

Trout Stream?

Tier 3?

Max. Pump rate (gpm): 1,000

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

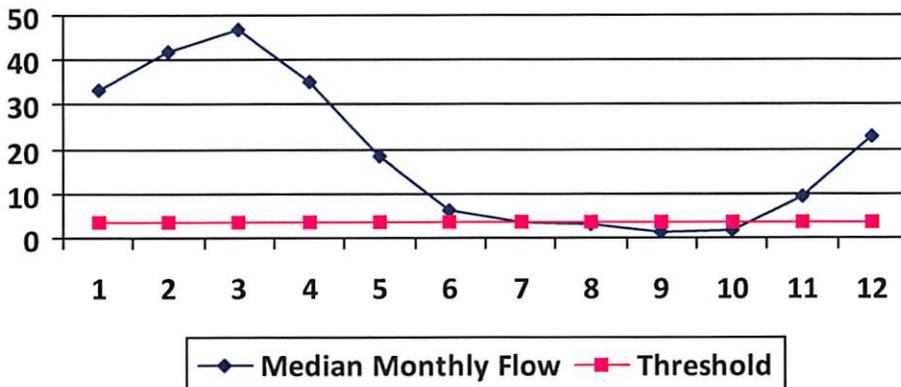
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump) | Estimated Available water (cfs) |
|-------|---------------------------|--------------------|---------------------------------|
| 1 | 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.

Source Detail

WMP- 01687 API/ID Number: 047-085-10081 Operator: Antero Resources
 Myrtle Unit 1H

Source ID: 31425 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

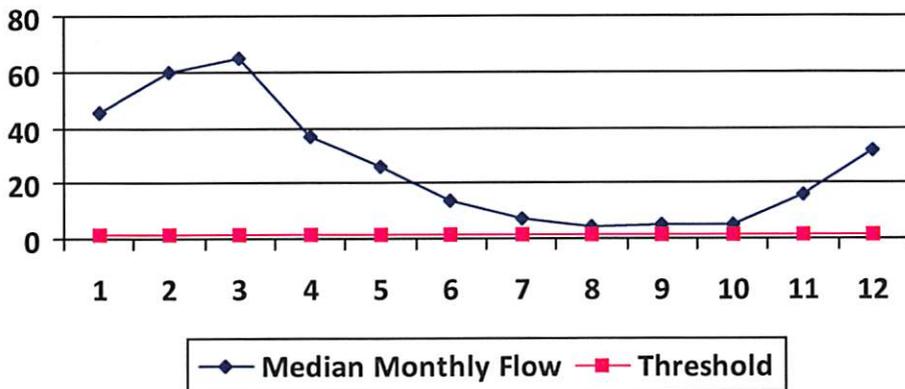
Anticipated withdrawal start date: 4/30/2017
 Anticipated withdrawal end date: 4/30/2018
 Total Volume from Source (gal): 12,020,000
 Max. Pump rate (gpm): 3,000
 Max. Simultaneous Trucks: 0
 Max. Truck pump rate (gpm): 0

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

Reference Gaug: 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.

Source Detail

WMP- 01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

Source ID: 31426 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: 4/30/2017

Anticipated withdrawal end date: 4/30/2018

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 12,020,000

Trout Stream?

Tier 3?

Max. Pump rate (gpm): 1,000

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

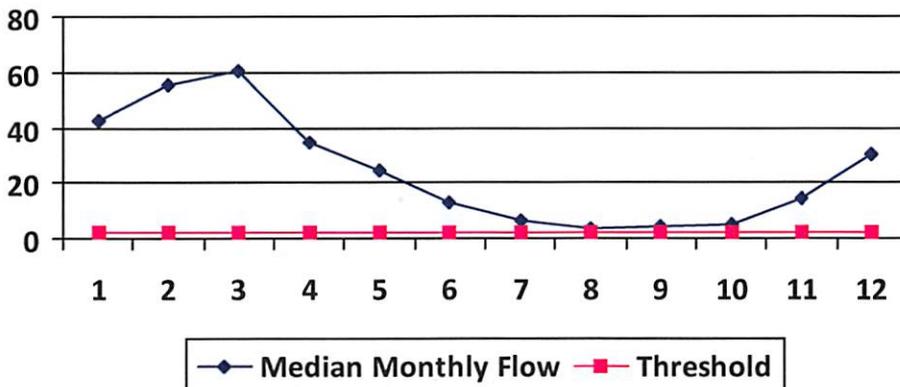
Reference Gaug: 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV

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.



Water Management Plan: Secondary Water Sources



| | | | | |
|----------------|---------------|---------------|-----------|------------------|
| WMP-01687 | API/ID Number | 047-085-10081 | Operator: | Antero Resources |
| Myrtle Unit 1H | | | | |

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/Reservoir

| | | | | | | |
|---------------------------|---|---------------------------------|---|--------|--------------------|-----------|
| Source ID: | 31431 | Source Name | City of Salem Reservoir (Lower Dog Run) | | Source start date: | 4/30/2017 |
| | | | Public Water Provider | | Source end date: | 4/30/2018 |
| Source Lat: | 39.28834 | Source Long: | -80.54966 | County | Harrison | |
| Max. Daily Purchase (gal) | 1,000,000 | Total Volume from Source (gal): | 12,020,000 | | | |
| DEP Comments: | <div style="border: 1px solid gray; height: 40px;"></div> | | | | | |

WMP-01687

API/ID Number

047-085-10081

Operator:

Antero Resources

Myrtle Unit 1H

Important:

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- 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: 31432 Source Name: Pennsboro Lake Source start date: 4/30/2017
 Source end date: 4/30/2018
 Source Lat: 39.281689 Source Long: -80.925526 County: Ritchie
 Max. Daily Purchase (gal): Total Volume from Source (gal): 12,020,000
 DEP Comments:

Source ID: 31433 Source Name: Powers Lake (Wilderness Water Park Dam) Source start date: 4/30/2017
 Private Owner Source end date: 4/30/2018
 Source Lat: 39.255752 Source Long: -80.463262 County: Harrison
 Max. Daily Purchase (gal): Total Volume from Source (gal): 12,020,000
 DEP Comments:

WMP-01687

API/ID Number: 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

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:

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- 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: | 31434 | Source Name | Powers Lake Two | | Source start date: | 4/30/2017 |
| | | | | | Source end date: | 4/30/2018 |
| Source Lat: | 39.247604 | Source Long: | -80.466642 | County | Harrison | |
| Max. Daily Purchase (gal) | | Total Volume from Source (gal): | 12,020,000 | | | |
| DEP Comments: | <div style="border: 1px solid #ccc; height: 40px;"></div> | | | | | |

WMP-01687

API/ID Number 047-085-10081

Operator: Antero Resources

Myrtle Unit 1H

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: 31435 Source Name Poth Lake (Landowner Pond) Source start date: 4/30/2017
 Private Owner Source end date: 4/30/2018

Source Lat: 39.221306 Source Long: -80.463028 County Harrison

Max. Daily Purchase (gal) Total Volume from Source (gal): 12,020,000

DEP Comments:

Source ID: 31436 Source Name Williamson Pond (Landowner Pond) Source start date: 4/30/2017
 Source end date: 4/30/2018

Source Lat: 39.19924 Source Long: -80.886161 County Ritchie

Max. Daily Purchase (gal) Total Volume from Source (gal): 12,020,000

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: 31437 Source Name Eddy Pond (Landowner Pond) Source start date: 4/30/2017
 Source end date: 4/30/2018
 Source Lat: 39.19924 Source Long: -80.886161 County Ritchie
 Max. Daily Purchase (gal) Total Volume from Source (gal): 12,020,000
 DEP Comments:

Source ID: 31438 Source Name Hog Lick Quarry Industrial Facility Source start date: 4/30/2017
 Source end date: 4/30/2018
 Source Lat: 39.419272 Source Long: -80.217941 County Marion
 Max. Daily Purchase (gal) 1,000,000 Total Volume from Source (gal): 12,020,000
 DEP Comments:

Important:

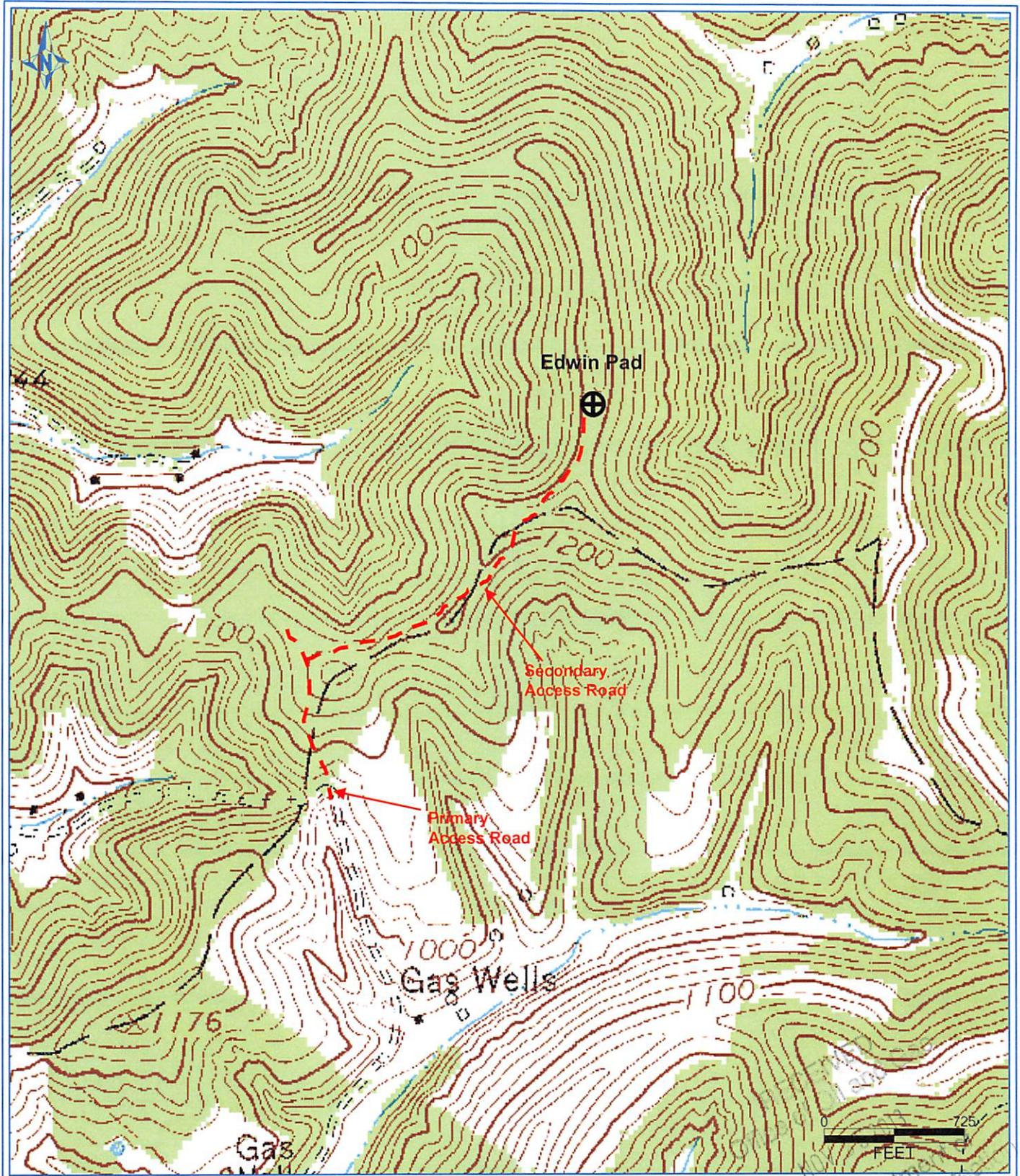
For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. 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: | 31439 | Source Name | Glade Fork Mine Industrial Facility | Source start date: | 4/30/2017 |
| | | | | Source end date: | 4/30/2018 |
| Source Lat: | 38.965767 | Source Long: | -80.299313 | County | Upshur |
| Max. Daily Purchase (gal) | 1,000,000 | Total Volume from Source (gal): | 12,020,000 | | |
| DEP Comments: | | | | | |

Recycled Frac Water

| | | | | | |
|---------------------------|---|---------------------------------|------------|--------------------|-----------|
| Source ID: | 31440 | Source Name | Various | Source start date: | 4/30/2017 |
| | | | | Source end date: | 4/30/2018 |
| Source Lat: | | Source Long: | | County | |
| Max. Daily Purchase (gal) | | Total Volume from Source (gal): | 12,020,000 | | |
| DEP Comments: | Sources include, but are not limited to: King Unit 2H | | | | |



DETRA RIG/2013 2:27:35 PM

Antero Resources Corporation
Appalachian Basin
Myrtle Unit 1H
Ritchie County
Quadrangle: Pullman
Watershed: Little Kanawha
District: Clay
Date: 8-9-2013

LATITUDE 39°15'00"

7,926'

11,311' TO BOTTOM HOLE

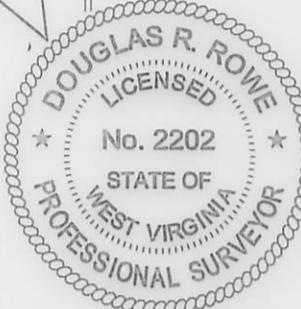
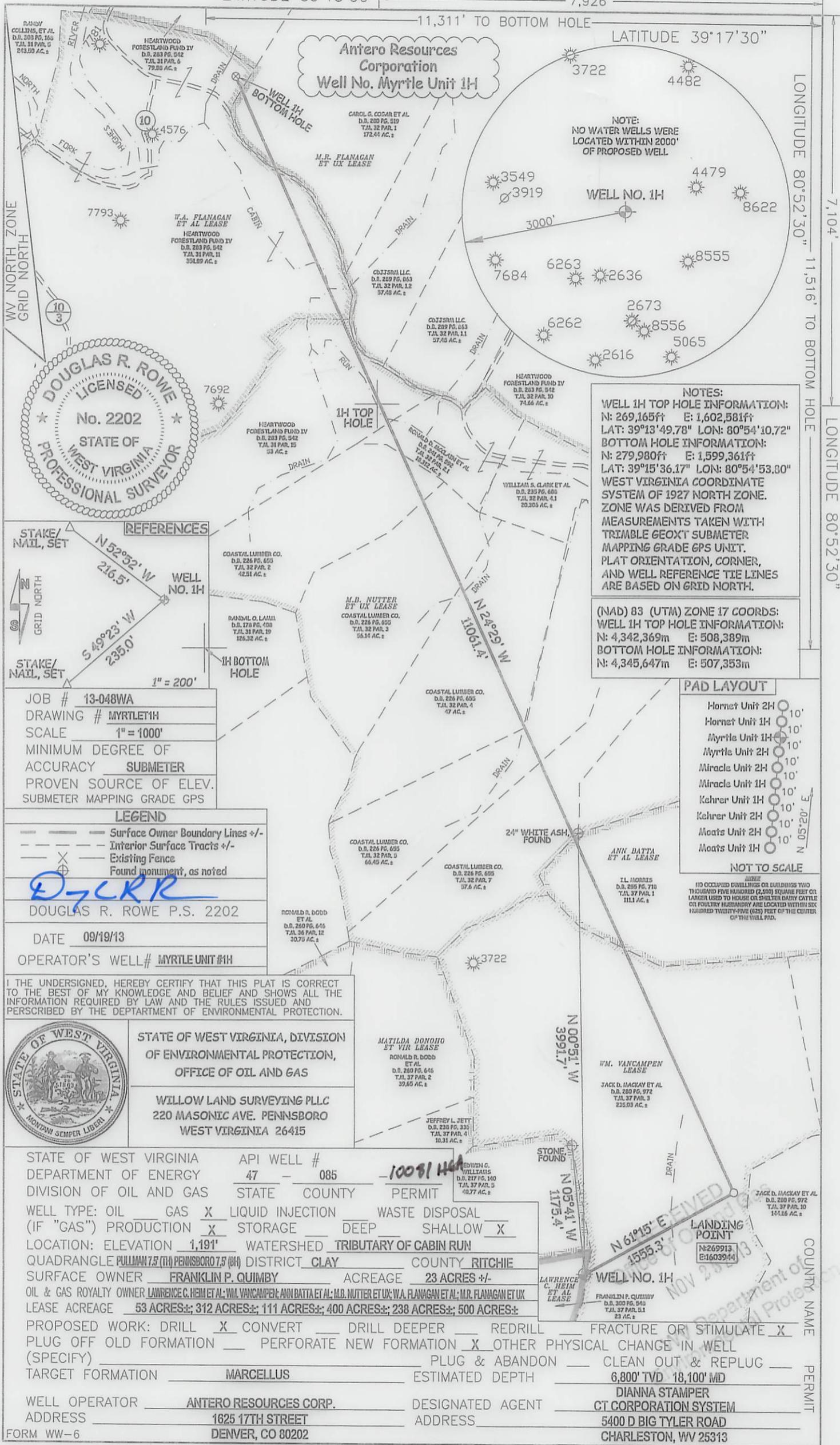
LATITUDE 39°17'30"

LONGITUDE 80°52'30"

7,104'

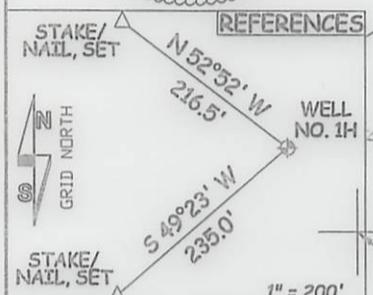
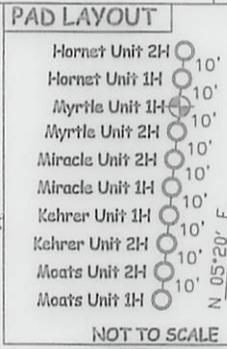
11,516' TO BOTTOM HOLE

LONGITUDE 80°52'30"



NOTES:
 WELL 1H TOP HOLE INFORMATION:
 N: 269,165ft E: 1,602,581ft
 LAT: 39°13'49.78" LON: 80°54'10.72"
 BOTTOM HOLE INFORMATION:
 N: 279,980ft E: 1,599,361ft
 LAT: 39°15'36.17" LON: 80°54'53.80"
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOX™ 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 1H TOP HOLE INFORMATION:
 N: 4,342,369m E: 508,389m
 BOTTOM HOLE INFORMATION:
 N: 4,345,647m E: 507,353m



JOB # 13-048WA
 DRAWING # MYRTLE1H
 SCALE 1" = 1000'
 MINIMUM DEGREE OF ACCURACY SUBMETER
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

LEGEND

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

DOUGLAS R. ROWE P.S. 2202

DATE 09/19/13
 OPERATOR'S WELL# MYRTLE UNIT 1H

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

| | |
|--|---------------------------------|
| STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS | API WELL # 47 - 085 - 10091 H4A |
| WELL TYPE: OIL <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> | STATE COUNTY PERMIT |
| (IF "GAS") PRODUCTION <input checked="" type="checkbox"/> STORAGE <input type="checkbox"/> DEEP <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> | |
| LOCATION: ELEVATION 1,191' WATERSHED TRIBUTARY OF CABIN RUN | |
| QUADRANGLE PULLMAN 7.5 (TH) PENNSBORO 7.5 (TH) DISTRICT CLAY COUNTY RITCHIE | |
| SURFACE OWNER FRANKLIN P. QUIMBY ACREAGE 23 ACRES +/- | |
| OIL & GAS ROYALTY OWNER LAWRENCE C. HEIM ET AL; WM. VANCAMPEN; ANN BATTIA ET AL; M.D. NUTTER ET UX; W.A. FLANAGAN ET AL; M.R. FLANAGAN ET UX | |
| LEASE ACREAGE 53 ACRES±; 312 ACRES±; 111 ACRES±; 400 ACRES±; 238 ACRES±; 500 ACRES± | |
| PROPOSED WORK: DRILL <input checked="" type="checkbox"/> CONVERT <input type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input checked="" type="checkbox"/> | |
| PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input checked="" type="checkbox"/> OTHER PHYSICAL CHANGE IN WELL (SPECIFY) | |
| TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,800' TVD 18,100' MID | |
| 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 | |

NOV 25 2013
 Department of Environmental Protection