June 25, 2013

WELL WORK PERMIT
Horizontal 6A Well

This permit, API Well Number: 47-1706254, issued to ANTERO RESOURCES APPALACHIAN 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: CHARTER UNIT 2H
Farm Name: POWELL, DENNIS H. & MELLIE
API Well Number: 47-1706254
Permit Type: Horizontal 6A Well
Date Issued: 06/25/2013

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. 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.

2. 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% (unless soil test results show a greater range of moisture content is appropriate and 95% compaction can still be achieved) 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.

3. 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.

4. 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.

5. 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.
STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
W.VA. CODE §22-6A - WELL WORK PERMIT APPLICATION  

1) Well Operator: Aniero Resources Appalachian Corporation  
Operator ID: 494488557  
County: 017- Doddridge  
Grant: Smithburg 7.5'  
District: 03  
Quadrangle: 611  

2) Operator’s Well Number: Charter Unit 2H  
Well Pad Name: Powell Pad (Existing)  
Elevation, current ground: 881'  
Elevation, proposed post-construction: 881'  

4) Well Type: (a) Gas  
(b) If Gas: Shallow  
Deep  
Horizontal  

5) Existing Pad? Yes or No: Yes  

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):  
Marcellus Shale: 6800' TVD, Anticipated Thickness: 55 Feet, Associated Pressure: 3950#  

7) Proposed Total Vertical Depth: 6800' TVD  

8) Formation at Total Vertical Depth: Marcellus  

9) Proposed Total Measured Depth: 17500' MD  

10) Approximate Fresh Water Strata Depths: 105'  
11) Method to Determine Fresh Water Depth: Neely Unit 2H (API#47-017-06060) on same pad  

12) Approximate Saltwater Depths: 1216'  

13) Approximate Coal Seam Depths: 154', 230', 273'  

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

15) Does land contain coal seams tributary or adjacent to, active mine? No  

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

*Aniero will be air drilling the fresh water string which makes it difficult to determine when freshwater is encountered, therefore we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.  

17) Describe fracturing/stimulating methods in detail:  
Aniero plans to pump slickwater into the Marcellus Shale formation in order to ready the well for production. The slickwater 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):  

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

06/28/2013  

06/28/2013  

17-06254
### CASING AND TUBING PROGRAM

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<thead>
<tr>
<th>TYPE</th>
<th>Size</th>
<th>New or Used</th>
<th>Grade</th>
<th>Weight per ft.</th>
<th>FOOTAGE: For Drilling</th>
<th>INTERVALS: Left in Well</th>
<th>CEMENT: Fill-up (Cu. Ft.)</th>
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<td>20&quot;</td>
<td>New</td>
<td>H-40</td>
<td>94#</td>
<td>40'</td>
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<td>CTS, 38 Cu. Ft.</td>
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<td>Coal</td>
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<td>36#</td>
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<tr>
<td>Production</td>
<td>5-1/2&quot;</td>
<td>New</td>
<td>P-110</td>
<td>20#</td>
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<td>4373 Cu. Ft.</td>
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<td>N-80</td>
<td>4.7#</td>
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<table>
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<th>Burst Pressure</th>
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<td>Class A</td>
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<td>17-1/2&quot;</td>
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<td>2730/1730</td>
<td>Class A</td>
<td>1.18</td>
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<td>3520</td>
<td>Class A</td>
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<td></td>
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<td></td>
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<tr>
<td>Production</td>
<td>5-1/2&quot;</td>
<td>8-3/4&quot; &amp; 8-1/2&quot;</td>
<td>0.361&quot;</td>
<td>12630</td>
<td>Lead+H/Poz &amp; Taf- H</td>
<td>H/Poz-1.44 &amp; H-1.8</td>
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</tbody>
</table>

### PACKERS

| Kind:     | N/A        |
| Sizes:    | N/A        |
| Depths Set: | N/A        |
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.
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name Antero Resources Appalachian Corporation
OP Code 494488557

Watershed Buckeye Creek
Quadrangle Smithsburg 7.5'

Elevation 881' County Doddridge
District Grant

Description of 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.)

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

Will a synthetic liner be used in the pit? N/A If so, what mil? N/A

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number)
- Reuse (at API Number Future permit well locations when applicable. API# will be provided on Form WR-34)
- Off Site Disposal (Meadowfill Landfill Permit #SWW-1622-98)
- Other (Explain)

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

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

Additives to be used? Please See Attachment

Will closed loop system be used? Yes

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

- If left in pit and plan to solidify what medium will be used? Cement, lime, 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
Cole Kilstrom
Environmental Specialist

Subscribed and sworn before me this 23rd day of March, 2013
Notary Public

My commission expires 5/28/2015
Existing Well Pad (2,12) + Existing Access Road (0.60) + Existing Topsoil Stockpile (0.48) + Existing Additional Clearing (1.88) = 6.08 Acres

Proposed Revegetation Treatment: Acres Disturbed 6.08

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)

Mulch 2-3 Tons/acre

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

Seed Mixtures

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<tr>
<th>Seed Type</th>
<th>Area I (Temporary) lbs/acre</th>
<th>Area II (Permanent) lbs/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Ryegrass</td>
<td>40</td>
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</tr>
<tr>
<td>Fox Tail/Grassy</td>
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<td>40</td>
</tr>
<tr>
<td>Perennial Rye</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Crown Vetch</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

*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: [Signature]

Comments: maintain E&S and roadway

Title: [Signature] Date: 4-9-2013

Field Reviewed? (____) Yes (____) No

[Stamp: Received Office of Oil & Gas] 06/28/2013
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 multiple wells and well sites. In these cases, the thresholds set by the Water Management Plan are to be interpreted 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.
# Source Summary

**WMP:** 01182  
**API Number:** 047-017-06254  
**Operator:** Antero Resources  
**Charter Unit 2H**

## Stream/River

### Source: Ohio River @ Ben's Run Withdrawal Site

- **Owner:** Ben's Run Land Company Limited Partnership
- **Start Date:** 3/4/2015  
- **End Date:** 3/4/2016  
- **Total Volume (gal):** 10,080,000  
- **Max. daily purchase (gal):**  
- **Intake Latitude:** 39.46593  
- **Intake Longitude:** -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](http://www.erh.noaa.gov/ohrfc/flows.shtml)

### Source: West Fork River @ JCP Withdrawal

- **Owner:** James & Brenda Raines
- **Start Date:** 3/4/2015  
- **End Date:** 3/4/2016  
- **Total Volume (gal):** 10,080,000  
- **Max. daily purchase (gal):**  
- **Intake Latitude:** 39.320913  
- **Intake Longitude:** -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

- **Owner:** David Shriever
- **Start Date:** 3/4/2015  
- **End Date:** 3/4/2016  
- **Total Volume (gal):** 10,080,000  
- **Max. daily purchase (gal):**  
- **Intake Latitude:** 39.16761  
- **Intake Longitude:** -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:**

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*west virginia department of environmental protection*

5/28/2013 3:05:43 PM
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<tr>
<th>Source</th>
<th>Owner</th>
<th>Start Date</th>
<th>End Date</th>
<th>Total Volume (gal)</th>
<th>Max. daily purchase (gal)</th>
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<tr>
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<td>David Shrievess</td>
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<td>Intake Longitude</td>
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- 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): 6.66

- DEP Comments:

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<th>End Date</th>
<th>Total Volume (gal)</th>
<th>Max. daily purchase (gal)</th>
<th>Intake Latitude</th>
<th>Intake Longitude</th>
</tr>
</thead>
</table>

- 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:

<table>
<thead>
<tr>
<th>Source</th>
<th>Owner</th>
<th>Start Date</th>
<th>End Date</th>
<th>Total Volume (gal)</th>
<th>Max. daily purchase (gal)</th>
<th>Intake Latitude</th>
<th>Intake Longitude</th>
</tr>
</thead>
</table>

- 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:
<table>
<thead>
<tr>
<th>Source</th>
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<tbody>
<tr>
<td>Tom's Fork @ Erwin Withdrawal</td>
<td>John F. Erwin and Sandra E. Erwin</td>
</tr>
<tr>
<td>Start Date: 3/4/2015</td>
<td>End Date: 3/4/2016</td>
</tr>
<tr>
<td>Total Volume (gal): 10,080,000</td>
<td>Max. daily purchase (gal): 10,080,000</td>
</tr>
<tr>
<td>Intake Latitude: 39.174306</td>
<td>Intake Longitude: -80.702992</td>
</tr>
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<td>Regulated Stream?</td>
<td>Ref. Gauge ID: 3114500</td>
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<tr>
<td>MIDDLE ISLAND CREEK AT LITTLE, WV</td>
<td></td>
</tr>
<tr>
<td>Max. Pump rate (gpm): 1,000</td>
<td>Min. Gauge Reading (cfs): 69.73</td>
</tr>
<tr>
<td>Min. Passby (cfs): 0.59</td>
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</tr>
<tr>
<td>DEP Comments:</td>
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<table>
<thead>
<tr>
<th>Source</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Arnold Creek @ Davis Withdrawal</td>
<td>Jonathon Davis</td>
</tr>
<tr>
<td>Start Date: 3/4/2015</td>
<td>End Date: 3/4/2016</td>
</tr>
<tr>
<td>Total Volume (gal): 10,080,000</td>
<td>Max. daily purchase (gal): 10,080,000</td>
</tr>
<tr>
<td>Intake Latitude: 39.302006</td>
<td>Intake Longitude: -80.824561</td>
</tr>
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<td>Regulated Stream?</td>
<td>Ref. Gauge ID: 3114500</td>
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<tr>
<td>MIDDLE ISLAND CREEK AT LITTLE, WV</td>
<td></td>
</tr>
<tr>
<td>Max. Pump rate (gpm): 1,000</td>
<td>Min. Gauge Reading (cfs): 69.73</td>
</tr>
<tr>
<td>Min. Passby (cfs): 3.08</td>
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<table>
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<tr>
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<tbody>
<tr>
<td>Buckeye Creek @ Powell Withdrawal</td>
<td>Dennis Powell</td>
</tr>
<tr>
<td>Start Date: 3/4/2015</td>
<td>End Date: 3/4/2016</td>
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<tr>
<td>Total Volume (gal): 10,080,000</td>
<td>Max. daily purchase (gal): 10,080,000</td>
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<tr>
<td>Intake Latitude: 39.277142</td>
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<td>Regulated Stream?</td>
<td>Ref. Gauge ID: 3114500</td>
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<tr>
<td>MIDDLE ISLAND CREEK AT LITTLE, WV</td>
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</tr>
<tr>
<td>Max. Pump rate (gpm): 1,000</td>
<td>Min. Gauge Reading (cfs): 69.73</td>
</tr>
<tr>
<td>Min. Passby (cfs): 4.59</td>
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<tr>
<td>DEP Comments:</td>
<td></td>
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</table>
### South Fork of Hughes River @ Knight Withdrawal

<table>
<thead>
<tr>
<th>Source</th>
<th>Owner: Tracy C. Knight &amp; Stephanie C. Knight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Date</td>
<td>3/4/2015</td>
</tr>
<tr>
<td>End Date</td>
<td>3/4/2016</td>
</tr>
<tr>
<td>Total Volume (gal)</td>
<td>10,080,000</td>
</tr>
<tr>
<td>Max. daily purchase (gal)</td>
<td></td>
</tr>
<tr>
<td>Intake Latitude</td>
<td>39.198369</td>
</tr>
<tr>
<td>Intake Longitude</td>
<td>-80.870969</td>
</tr>
</tbody>
</table>

- **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:**

---

### North Fork of Hughes River @ Davis Withdrawal

<table>
<thead>
<tr>
<th>Source</th>
<th>Owner: Lewis P. Davis and Norma J. Davis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Date</td>
<td>3/4/2015</td>
</tr>
<tr>
<td>End Date</td>
<td>3/4/2016</td>
</tr>
<tr>
<td>Total Volume (gal)</td>
<td>10,080,000</td>
</tr>
<tr>
<td>Max. daily purchase (gal)</td>
<td></td>
</tr>
<tr>
<td>Intake Latitude</td>
<td>39.322363</td>
</tr>
<tr>
<td>Intake Longitude</td>
<td>-80.936771</td>
</tr>
</tbody>
</table>

- **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:**

---

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West Virginia Department of Environmental Protection

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# Purchased Water

<table>
<thead>
<tr>
<th>Source</th>
<th>Owner</th>
<th>Start Date</th>
<th>End Date</th>
<th>Total Volume (gal)</th>
<th>Max. daily purchase (gal)</th>
<th>Intake Latitude</th>
<th>Intake Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Middle Island Creek @ Solo Construction</strong></td>
<td>Solo Construction, LLC</td>
<td>3/4/2015</td>
<td>3/4/2016</td>
<td>10,080,000</td>
<td>1,000,000</td>
<td>39.399094</td>
<td>-81.185548</td>
</tr>
</tbody>
</table>

- **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.

<table>
<thead>
<tr>
<th>Source</th>
<th>Owner</th>
<th>Start Date</th>
<th>End Date</th>
<th>Total Volume (gal)</th>
<th>Max. daily purchase (gal)</th>
<th>Intake Latitude</th>
<th>Intake Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sun Valley Public Service District</strong></td>
<td>Sun Valley PSD</td>
<td>3/4/2015</td>
<td>3/4/2016</td>
<td>10,080,000</td>
<td>200,000</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- **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):
Source ID: 16656  Source Name: Middle Island Creek @ Solo Construction
Solo Construction, LLC

HUC-8 Code: 5030201  Drainage Area (sq. mi.): 25000  County: Pleasants

- Endangered Species?
- Trout Stream?
- Regulated Stream?
- Proximate PSD?
- Gauged Stream?

Mussel Stream?  Tier 3?
Ohio River Min. Flow  City of St. Marys

Anticipated withdrawal start date: 3/4/2015
Anticipated withdrawal end date: 3/4/2016
Total Volume from Source (gal): 10,080,000
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

Water Availability Profile

How on this stream is regulated by the Army Corps of Engineers. Please adhere to the stated thresholds to maintain the minimum guaranteed flow requirements.

"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.

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Source ID: 16657  Source Name: Sun Valley Public Service District  Sun Valley PSD

HUC-8 Code: 5020002  Drainage Area (sq. mi.): 391.85  County: Harrison

Total Volume from Source (gal): 10,080,000
Max. Pump rate (gpm):

Reference Gaug 3061000  WEST FORK RIVER AT ENTERPRISE, WV
Drainage Area (sq. mi.) 759.00  Gauge Threshold (cfs): 234

Median monthly flow (cfs)

<table>
<thead>
<tr>
<th>Month</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,200.75</td>
<td>1,351.92</td>
<td>1,741.33</td>
<td>995.89</td>
<td>1,022.23</td>
<td>512.21</td>
<td>331.86</td>
<td>316.87</td>
<td>220.48</td>
<td>216.17</td>
<td>542.45</td>
<td>926.12</td>
</tr>
</tbody>
</table>

Threshold (+ pump)  Estimated Available water (cfs)

Water Availability Profile

Flow on this stream is regulated by the Army Corps of Engineers. Please adhere to the stated thresholds to maintain the minimum guaranteed flow requirements.

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 ID: 16642  Source Name: Ohio River @ Ben's Run Withdrawal Site
Ben's Run Land Company Limited Partnership

HUC-8 Code: 5030201
Drainage Area (sq. mi.): 25000  County: Tyler

☐ Endangered Species?  ☑ Mussel Stream?
☐ Trout Stream?  ☐ Tier 3?
☑ Regulated Stream?  Ohio River Min. Flow
☐ Proximate PSD?
☑ Gauged Stream?

Source Latitude: 39.46593  Source Longitude: -81.110781
Anticipated withdrawal start date: 3/4/2015
Anticipated withdrawal end date: 3/4/2016
Total Volume from Source (gal): 10,080,000
Max. Pump rate (gpm): 3,360
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

<table>
<thead>
<tr>
<th>Month</th>
<th>Median monthly flow (cfs)</th>
<th>Threshold (+ pump)</th>
<th>Estimated Available water (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>45,700.00</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>49,200.00</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>65,700.00</td>
<td>-</td>
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<tr>
<td>4</td>
<td>56,100.00</td>
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</tr>
<tr>
<td>5</td>
<td>38,700.00</td>
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</tr>
<tr>
<td>6</td>
<td>24,300.00</td>
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<td>-</td>
</tr>
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<td>7</td>
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<td>8</td>
<td>13,400.00</td>
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<tr>
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<td>12,800.00</td>
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<td>10</td>
<td>15,500.00</td>
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<tr>
<td>11</td>
<td>26,300.00</td>
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</table>

Water Availability Profile

Flow on this stream is regulated by the Army Corps of Engineers. Please adhere to the stated thresholds to maintain the minimum guaranteed flow requirements.

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.
Source Detail

WMP - 01182  API/ID Number: 047-017-06254  Operator: Antero Resources

Charter Unit 2H

Source ID: 16643  Source Name: West Fork River @ JCP Withdrawal James & Brenda Raines

HUC-8 Code: 5020002  County: Harrison


Mussel Stream?  Tier 3?

Stonewall Jackson Dam


Total Volume from Source (gal): 10,080,000

Max. Pump rate (gpm): 2,000  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

Water Availability Profile

Flow on this stream is regulated by the Army Corps of Engineers. Please adhere to the stated thresholds to maintain the minimum guaranteed flow requirements.

"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 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): -

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Source Detail

WMP: 01182  API/ID Number: 047-017-06254  Operator: Antero Resources
Charter Unit 2H

Source ID: 16644  Source Name: West Fork River @ McDonald Withdrawal
David Shrives

HUC-8 Code: 5020002  Drainage Area (sq. mi.): 314.91  County: Harrison

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

Source Latitude: 39.16761  Source Longitude: -80.45069
Total Volume from Source (gal): 10,080,000
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

<table>
<thead>
<tr>
<th>Month</th>
<th>Median monthly flow (cfs)</th>
<th>Threshold (+ pump)</th>
<th>Estimated Available water (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>1,086.47</td>
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<td>-</td>
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<td>3</td>
<td>1,399.42</td>
<td>-</td>
<td>-</td>
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<td>4</td>
<td>800.34</td>
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<td>-</td>
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<td>6</td>
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</tr>
<tr>
<td>12</td>
<td>744.28</td>
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</tr>
</tbody>
</table>

Water Availability Profile

"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.
Flow on this stream is regulated by the Army Corps of Engineers. Please adhere to the stated thresholds to maintain the minimum guaranteed flow requirements.
Source Detail

Source ID: 16646  Source Name: Middle Island Creek @ Dawson Withdrawal
Gary D. and Rella A. Dawson

HUC-8 Code: 5030201  Drainage Area (sq. mi.): 181.34  County: Tyler

- Endangered Species?
- Trout Stream?
- Regulated Stream?
- Proximate PSD?
- Gauged Stream?

Anticipated withdrawal start date: 3/4/2015
Anticipated withdrawal end date: 3/4/2016
Total Volume from Source (gal): 10,080,000
Max. Pump rate (gpm): 3,000
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

<table>
<thead>
<tr>
<th>Month</th>
<th>Median monthly flow (cfs)</th>
<th>Threshold (+ pump)</th>
<th>Estimated Available water (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>194.47</td>
<td>42.06</td>
<td>152.68</td>
</tr>
<tr>
<td>2</td>
<td>244.62</td>
<td>42.06</td>
<td>202.83</td>
</tr>
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<td>3</td>
<td>273.72</td>
<td>42.06</td>
<td>231.93</td>
</tr>
<tr>
<td>4</td>
<td>201.26</td>
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<td>161.47</td>
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<td>107.22</td>
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<td>65.43</td>
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<td>133.96</td>
<td>42.06</td>
<td>92.17</td>
</tr>
</tbody>
</table>

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.

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Source Detail

WMP: 01182  API/ID Number: 047-017-06254  Operator: Antero Resources

Charter Unit 2H

Source ID: 16647  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

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

Total Volume from Source (gal): 10,080,000
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

<table>
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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.

06/28/2013

west virginia department of environmental protection

5/28/2013 3:05:44 PM
Source Detail

Source ID: 16648  Source Name: McElroy Creek @ Sweeney Withdrawal
Bill Sweeney

Source Latitude: 39.398123  Source Longitude: -80.656808

HUC-8 Code: 5030201  County: Doddridge

Drainage Area (sq. mi.): 45.16

Endangered Species?  Mussel Stream?

Trout Stream?  Tier 3?

Regulated Stream?  Proximate PSD?

Gauged Stream?  Total Volume from Source (gal): 10,080,000


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  48.43  8.88  39.93
2  60.92  8.88  52.42
3  68.17  8.88  59.67
4  50.62  8.88  42.12
5  26.70  8.88  18.21
6  9.32  8.88  0.83
7  5.28  8.88  -3.22
8  4.34  8.88  -4.15
9  2.23  8.88  -6.27
10  2.80  8.88  -5.70
11  13.65  8.88  5.16
12  33.36  8.88  24.86

Water Availability Profile

"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 Availability Assessment of Location

Base Threshold (cfs): 4.44
Upstream Demand (cfs): 0.00
Downstream Demand (cfs): 0.00
Pump rate (cfs): 2.23
Headwater Safety (cfs): 1.11
Ungauged Stream Safety (cfs): 1.11

Min. Gauge Reading (cfs): 69.73
Passby at Location (cfs): 6.66

06/28/2013

west virginia department of environmental protection

5/28/2013 3:05:44 PM
**Source Detail**

WMP: 01182  API/ID Number: 047-017-06254  Operator: Antero Resources

Charter Unit 2H

Source ID: 16649  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

Endangered Species? ☑  Mussel Stream? ☑  Trout Stream?  Tier 3?

Regulated Stream?  Proximate PSD?  Gauged Stream?


Total Volume from Source (gal): 10,080,000

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

**Water Availability Profile**

![Water Availability Profile Graph]

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.

06/28/2013

west virginia department of environmental protection

5/28/2013 3:05:45 PM
Source Detail

WMP-01182  API/ID Number: 047-017-06254  Operator: Antero Resources
Charter Unit 2H

Source ID: 16650  Source Name: Meathouse Fork @ Whitehair Withdrawal
Elton Whitehair

HUC-8 Code: 5030201
Drainage Area (sq. mi.): 30.37  County: Doddridge

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

Source Latitude: 39.211317  Source Longitude: -80.679592
Anticipated withdrawal start date: 3/4/2015
Anticipated withdrawal end date: 3/4/2016
Total Volume from Source (gal): 10,080,000
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

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Water Availability Profile

"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 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
Source Detail

Source ID: 16651  Source Name: Tom’s Fork @ Erwin Withdrawal
John F. Erwin and Sandra E. Erwin

HUC-8 Code: 5030201  County: Doddridge

Drainage Area (sq. mi.): 4.01

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

Source Latitude: 39.174306  Source Longitude: -80.702992

Total Volume from Source (gal): 10,080,000
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

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Water Availability Profile

"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 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

06/28/2013
Source ID: 16652  Source Name: Arnold Creek @ Davis Withdrawal
                      Jonathon Davis

HUC-8 Code: 5030201
Drainage Area (sq. mi.): 20.83  County: Doddridge

☐ Endangered Species?
☒ Mussel Stream?
☐ Trout Stream?
☐ Regulated Stream?
☐ Proximate PSD?
☐ Gauged Stream?

Source Latitude: 39.302006  Source Longitude: -80.824561

Anticipated withdrawal start date: 3/4/2015
Anticipated withdrawal end date: 3/4/2016
Total Volume from Source (gal): 10,800,000
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

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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.

06/28/2013
Source Detail

Source ID: 16653  Source Name: Buckeye Creek @ Powell Withdrawal
Dennis Powell

HUC-8 Code: S030201  Drainage Area (sq. mi.): 31.15  County: Doddridge

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

Source Latitude: 39.277142  Source Longitude: -80.690386

Anticipated withdrawal start date: 3/4/2015
Anticipated withdrawal end date: 3/4/2016
Total Volume from Source (gal): 10,080,000

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

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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

Source ID: 16654    Source Name: South Fork of Hughes River @ Knight Withdrawal
Tracy C. Knight & Stephanie C. Knight

HUC-8 Code: 5030203    County: Ritchie

Drainage Area (sq. mi.): 16.26
Endangered Species?    Mussel Stream?
Trout Stream?    Tier 3?
Regulated Stream?    Proximate PSD?
Gauged Stream?

Source Latitude: 39.198369    Source Longitude: -80.870969

Anticipated withdrawal start date: 3/4/2015
Anticipated withdrawal end date: 3/4/2016
Total Volume from Source (gal): 10,080,000
Max. Pump rate (gpm): 3,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm): 0

Reference Gaug    3155220    SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV
Drainage Area (sq. mi.) 229.00    Gauge Threshold (cfs): 22

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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.

06/28/2013
Source Detail

WMP: 01182  API/ID Number: 047-017-06254  Operator: Antero Resources

Charter Unit 2H

Source ID: 16655  Source Name: North Fork of Hughes River @ Davis Withdrawal
Lewis P. Davis and Norma J. Davis

HUC-8 Code: 5030203
Drainage Area (sq. mi.): 15.18  County: Ritchie

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

Source Latitude: 39.322363  Source Longitude: -80.936771


Total Volume from Source (gal): 10,080,000
Max. Pump rate (gpm): 1,000

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

Reference Gaug 3155220  SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV
Drainage Area (sq. mi.) 229.00  Gauge Threshold (cfs): 22

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<tr>
<td>2</td>
<td>55.59</td>
<td>4.42</td>
</tr>
<tr>
<td>3</td>
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<td>4.42</td>
</tr>
<tr>
<td>4</td>
<td>34.42</td>
<td>4.42</td>
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<tr>
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<td>4.42</td>
</tr>
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<td>6</td>
<td>12.98</td>
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</tr>
<tr>
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</tr>
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<td>3.72</td>
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</tr>
<tr>
<td>12</td>
<td>29.93</td>
<td>4.42</td>
</tr>
</tbody>
</table>

Water Availability Profile

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.

06/28/2013
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

<table>
<thead>
<tr>
<th>Source ID: 16658</th>
<th>Source Name</th>
<th>City of Salem Reservoir (Lower Dog Run) Public Water Provider</th>
<th>Source start date: 3/4/2015</th>
<th>Source end date: 3/4/2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Lat: 39.28834</td>
<td>Source Long: -80.54966</td>
<td>County Harrison</td>
<td>Max. Daily Purchase (gal) 1,000,000</td>
<td>Total Volume from Source (gal): 10,080,000</td>
</tr>
</tbody>
</table>

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:

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<table>
<thead>
<tr>
<th>Source ID</th>
<th>Source Name</th>
<th>Source start date</th>
<th>Source end date</th>
<th>Source Lat</th>
<th>Source Long</th>
<th>County</th>
<th>Total Volume from Source (gal)</th>
</tr>
</thead>
</table>

DEP Comments:

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<table>
<thead>
<tr>
<th>Source ID</th>
<th>Source Name</th>
<th>Source start date</th>
<th>Source end date</th>
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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:

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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.

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Source Lat: 39.247604  Source Long: -80.466642  County: Harrison

Max. Daily Purchase (gal):  
Total Volume from Source (gal): 10,080,000

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.

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Other

Source ID: 16662  Source Name: Poth Lake (Landowner Pond)  Private Owner
Source Lat: 39.221306  Source Long: -80.463028  County: Harrison
Max. Daily Purchase (gal):  DEP Comments:
Total Volume from Source (gal): 10,080,000

Source ID: 16663  Source Name: Williamson Pond (Landowner Pond)
Source Lat: 39.19924  Source Long: -80.886161  County: Ritchie
Max. Daily Purchase (gal):  DEP Comments:
Total Volume from Source (gal): 10,080,000
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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Source ID: 16665  Source Name: Hog Lick Quarry  Industrial Facility  Source start date: 3/4/2015  Source end date: 3/4/2016  Source Lat: 39.419272  Source Long: -80.217941  County: Marion  Max. Daily Purchase (gal): 1,000,000  Total Volume from Source (gal): 10,080,000  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:

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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.

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**Source ID:** 16666  
**Source Name:** Glade Fork Mine  
**Source Type:** Industrial Facility  
**Source Lat:** 38.965767  
**Source Long:** -80.299313  
**County:** Upshur  
**Max. Daily Purchase (gal):** 1,000,000  
**Source start date:** 3/4/2015  
**Source end date:** 3/4/2016  
**Total Volume from Source (gal):** 10,080,000

**DEP Comments:**

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**Recycled Frac Water**

**Source ID:** 16667  
**Source Name:** Charter Unit 1H  
**Source Lat:**  
**Source Long:**  
**County:**  
**Max. Daily Purchase (gal):**  
**Source start date:** 3/4/2015  
**Source end date:** 3/4/2016  
**Total Volume from Source (gal):** 10,080,000

**DEP Comments:**

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west virginia department of environmental protection