



**west virginia** department of environmental protection

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

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

June 28, 2013

**WELL WORK PERMIT**

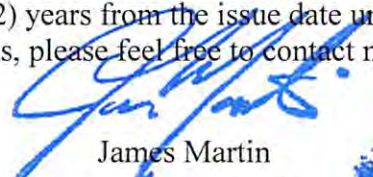
**Horizontal 6A Well**

This permit, API Well Number: 47-1706273, 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: SWIGER 1H  
Farm Name: STEWART, RANDALL & CAROLY  
**API Well Number: 47-1706273**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 06/28/2013

# 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

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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.

06/28/2013

WW - 6B  
(3/13)

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

1) Well Operator: Antero Resources Appalachian Corporation 494488557 017-Doddridge New Milton New Milton  
Operator ID County District Quadrangle

2) Operator's Well Number: Swiger Unit 1H Well Pad Name: Stewart Pad

3 Elevation, current ground: -1360' Elevation, proposed post-construction: 1332"

4) Well Type: (a) Gas  Oil  Underground Storage   
Other \_\_\_\_\_  
(b) If Gas: Shallow  Deep   
Horizontal

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):  
Marcellus Shale: 7400' TVD, Anticipated Thickness- 60 Feet, Associated Pressure- 3250#

7) Proposed Total Vertical Depth: 7400' TVD

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 16200' MD

10) Approximate Fresh Water Strata Depths: 317', 362'

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

12) Approximate Saltwater Depths: 2,345'

13) Approximate Coal Seam Depths: 825', 945', 1167', 1776'

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

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

16) Describe proposed well work: Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale  
\*Antero 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:  
Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 23.32 acres

19) Area to be disturbed for well pad only, less access road (acres): 4.22 acres

WW - 6B  
(3/13)

20)

**CASING AND TUBING PROGRAM**

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft.</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill-up (Cu. Ft.)</u>
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#	415'	415' *see above	CTS, 577 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2510'	2510'	CTS, 1022 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	16200'	16200'	4039 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

*DCW  
5-14-2013*

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield</u>
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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WW - 6B  
(3/13)

- 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.



17-6273

Form WW-9

Operator's Well No. Swiger Unit 1H

**Antero Resources Appalachian Corporation**

Proposed Revegetation Treatment: Acres Disturbed 23.32 Prevegetation pH \_\_\_\_\_

Lime 2-4 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)

Water Tank Offload Pad (0.56) + Access Road A (10.66) + Spoil Pad A (1.65) + Spoil Pad B (0.44) + Gathering/Spoil Pad C (1.42) + Spoil Pad D (0.95) + Drill Pad (4.22) + Water Tank Pad (1.70) + Water Tank Pad Road (1.72) = 23.32 Acres Seed Mixtures

Seed Type	Area I (Temporary) lbs/acre	Seed Type	Area II (Permanent) 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.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Douglas Newton

Comments: Maintain E+S to WJ DEP Erosion sediment control regulations

Title: Oil & Gas Inspector Date: 5-14-2013

Field Reviewed? ( ) Yes ( / ) No

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## Water Management Plan: Primary Water Sources



WMP- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger 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](mailto:DEP.water.use@wv.gov).

APPROVED JUN 21 2013

06/28/2013



## Source Summary

WMP- 01249

API Number: 047-017-06273

Operator: Antero Resources

Swiger Unit 1H

### Stream/River

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

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		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** Owner: **James & Brenda Raines**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		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** Owner: **David Shrieves**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		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:

06/28/2013

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

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		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 @ Dawson Withdrawal** Owner: **Gary D. and Rella A. Dawson**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		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** Owner: **Forest C. & Brenda L. Moore**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		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:

06/28/2013

Source **McElroy Creek @ Sweeney Withdrawal** Owner: **Bill Sweeney**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		39.398123	-80.656808

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:

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

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		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** Owner: **Elton Whitehair**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		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:

06/28/2013

Source **Tom's Fork @ Erwin Withdrawal**

Owner: **John F. Erwin and Sandra E. Erwin**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		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**

Owner: **Jonathon Davis**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		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**

Owner: **Dennis Powell**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		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:

06/28/2013

Source **South Fork of Hughes River @ Knight Withdrawal**

Owner: **Tracy C. Knight & Stephanie C. Knight**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		39.198369	-80.870969

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

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**

Owner: **Lewis P. Davis and Norma J. Davis**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		39.322363	-80.936771

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

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

DEP Comments:

06/28/2013

## Source Summary

WMP-01249

API Number:

047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

## Purchased Water

● Source **Ohio River @ Select Energy** Owner: **Select Energy**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000	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** Owner: **Solo Construction, LLC**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000	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** Owner: **Claywood Park PSD**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000		-	-

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.

**06/28/2013**

● Source **Sun Valley Public Service District**

Owner: **Sun Valley PSD**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/2/2014	8/2/2015	8,960,000	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:

**06/28/2013**

## Source Detail

WMP- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18552    Source Name: Ohio River @ Select Energy  
Select Energy

Source Latitude: 39.346473  
Source Longitude: -81.338727

HUC-8 Code: 5030201

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

Trout Stream?     Tier 3?

Regulated Stream?    Ohio River Min. Flow

Max. Pump rate (gpm): 1,680

Proximate PSD?

Max. Simultaneous Trucks:

Gauged Stream?

Max. Truck pump rate (gpm)

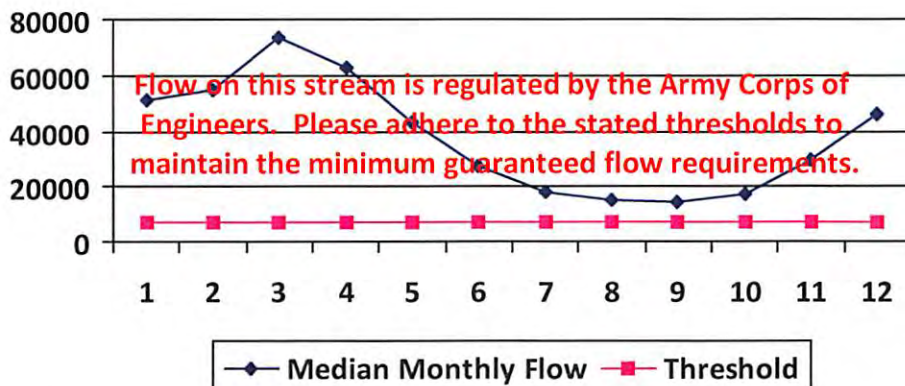
Reference Gaug 9999998    Ohio River Station: Racine Dam

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.

06/28/2013



## Source Detail

WMP- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18553    Source Name: Middle Island Creek @ Solo Construction  
Solo Construction, LLC

Source Latitude: 39.399094

Source Longitude: -81.185548

HUC-8 Code: 5030201

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

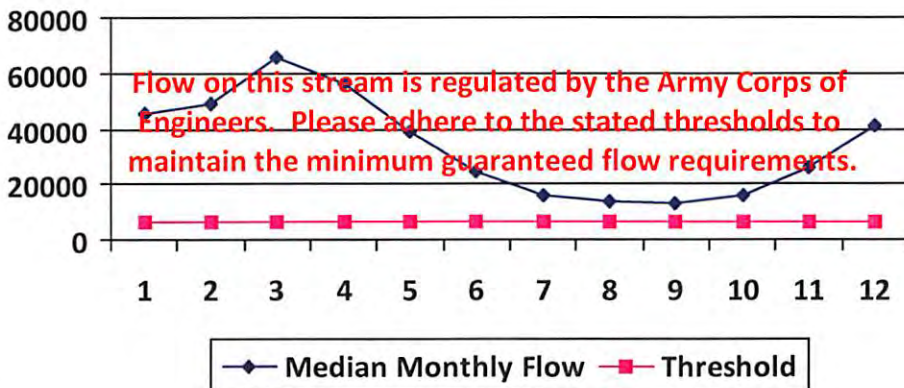
Reference Gaug: 9999999    Ohio River Station: Willow Island Lock & Dam

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.

06/28/2013

**Source Detail**

WMP-01249

API/ID Number: 047-017-06273

Operator: Antero Resources

Swiger Unit 1H

Source ID: 18554 Source Name Claywood Park PSD  
Claywood Park PSD

Source Latitude: -  
Source Longitude: -

HUC-8 Code: 5030203

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?  Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

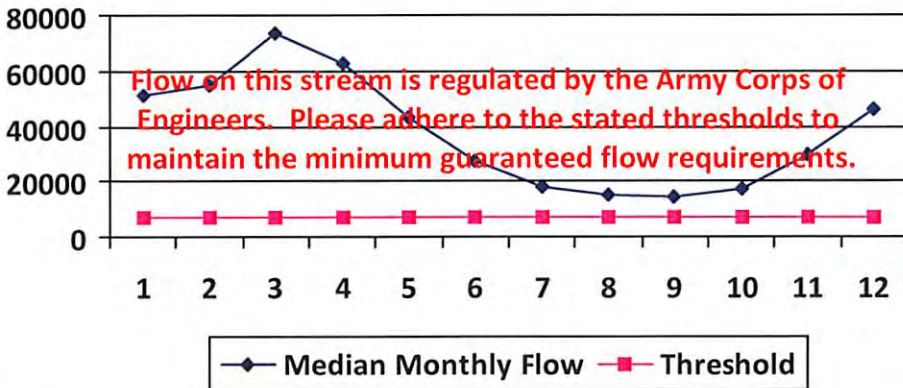
Reference Gaug 9999998 Ohio River Station: Racine Dam

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.

06/28/2013

## Source Detail

WMP- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18555    Source Name: Sun Valley Public Service District  
Sun Valley PSD

Source Latitude: -  
Source Longitude: -

HUC-8 Code: 5020002

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

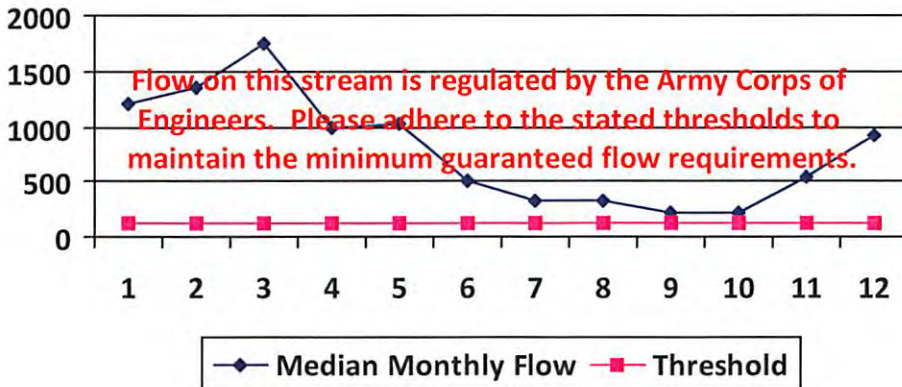
Reference Gaug: 3061000    WEST FORK RIVER AT ENTERPRISE, WV

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- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18538    Source Name: Ohio River @ Ben's Run Withdrawal Site  
 Ben's Run Land Company Limited Partnership

Source Latitude: 39.46593  
 Source Longitude: -81.110781

HUC-8 Code: 5030201

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

Trout Stream?     Tier 3?

Max. Pump rate (gpm): 3,360

Regulated Stream?    Ohio River Min. Flow

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

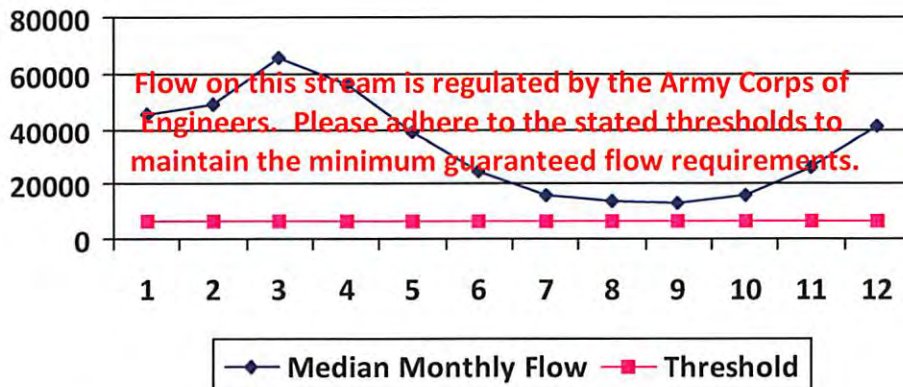
Reference Gaug: 9999999    Ohio River Station: Willow Island Lock & Dam

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):	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.

06/28/2013

## Source Detail

WMP- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18539    Source Name: West Fork River @ JCP Withdrawal  
James & Brenda Raines

Source Latitude: 39.320913  
Source Longitude: -80.337572

HUC-8 Code: 5020002

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

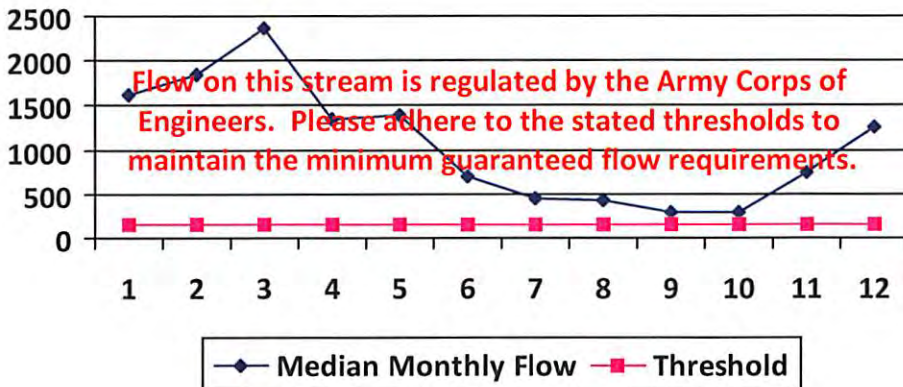
Reference Gaug: 3061000    WEST FORK RIVER AT ENTERPRISE, WV

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.

06/28/2013

## Source Detail

WMP- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18540    Source Name: West Fork River @ McDonald Withdrawal  
David Shrieves

Source Latitude: 39.16761  
Source Longitude: -80.45069

HUC-8 Code: 5020002

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

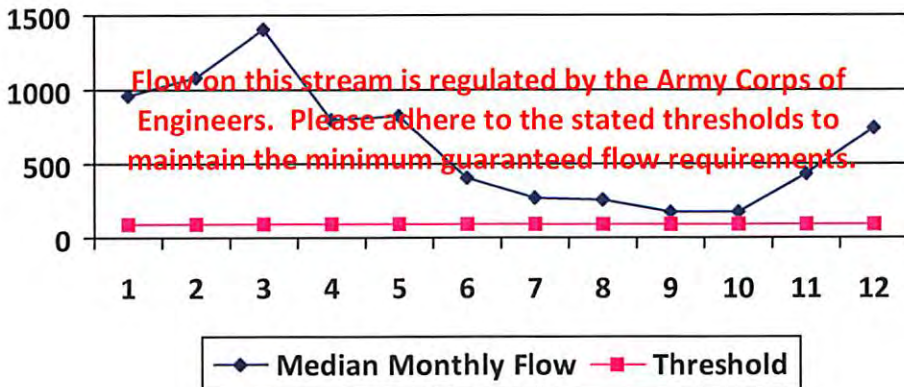
Reference Gaug: 3061000    WEST FORK RIVER AT ENTERPRISE, WV

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.

06/28/2013

## Source Detail

WMP- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18541    Source Name: West Fork River @ GAL Withdrawal  
David Shrieves

Source Latitude: 39.16422  
Source Longitude: -80.45173

HUC-8 Code: 5020002

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

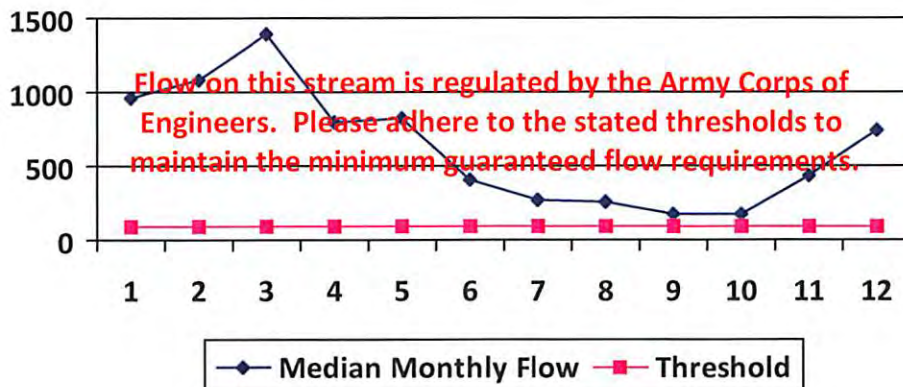
Reference Gaug: 3061000    WEST FORK RIVER AT ENTERPRISE, WV

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.

06/28/2013

## Source Detail

WMP- 01249

API/ID Number: 047-017-06273

Operator: Antero Resources

Swiger Unit 1H

Source ID: 18542    Source Name: Middle Island Creek @ Dawson Withdrawal  
Gary D. and Rella A. Dawson

Source Latitude: 39.379292  
Source Longitude: -80.867803

HUC-8 Code: 5030201

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

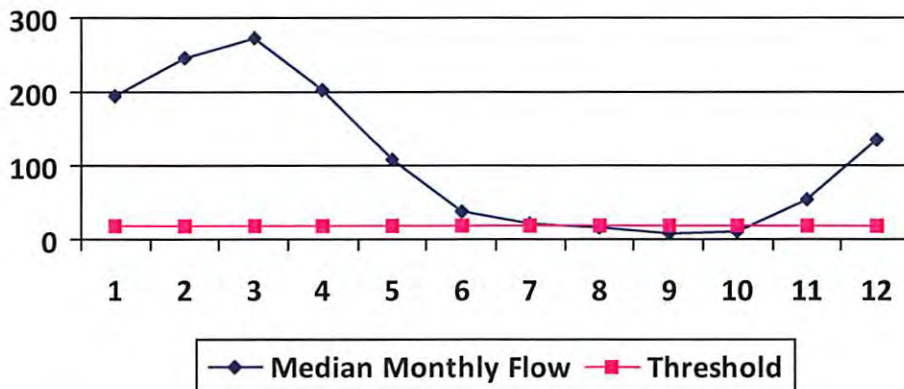
Reference Gaug: 3114500    MIDDLE ISLAND CREEK AT LITTLE, WV

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
<b>Min. Gauge Reading (cfs):</b>	<b>76.03</b>
<b>Passby at Location (cfs):</b>	<b>28.82</b>

"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- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18543    Source Name: McElroy Creek @ Forest Withdrawal  
Forest C. & Brenda L. Moore

Source Latitude: 39.39675  
Source Longitude: -80.738197

HUC-8 Code: 5030201

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

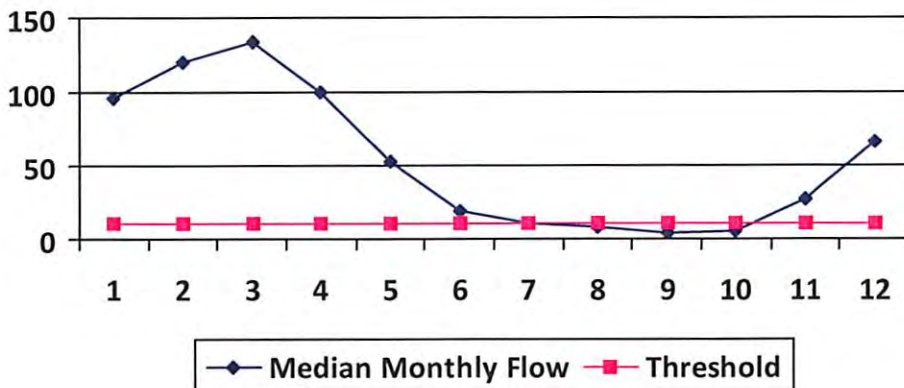
Reference Gaug: 3114500    MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	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- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18544    Source Name: McElroy Creek @ Sweeney Withdrawal  
Bill Sweeney

Source Latitude: 39.398123

Source Longitude: -80.656808

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 45.16    County: Doddridge

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

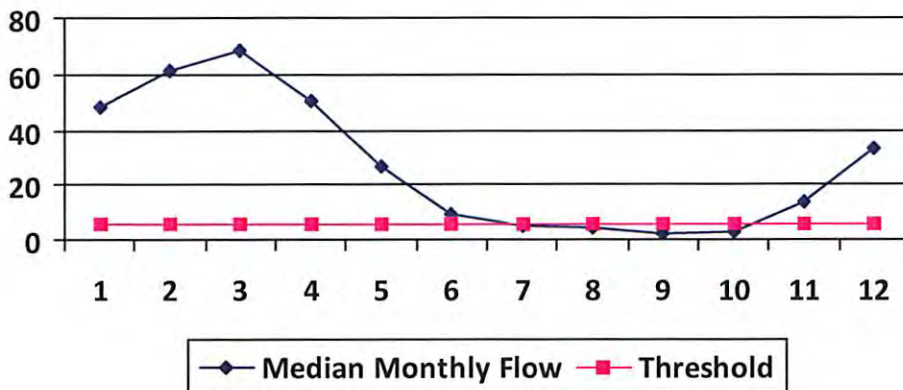
Reference Gaug: 3114500    MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

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



### 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

"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- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18545    Source Name: Meathouse Fork @ Gagnon Withdrawal  
George L. Gagnon and Susan C. Gagnon

Source Latitude: 39.26054  
Source Longitude: -80.720998

HUC-8 Code: 5030201

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Total Volume from Source (gal): 8,960,000

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?

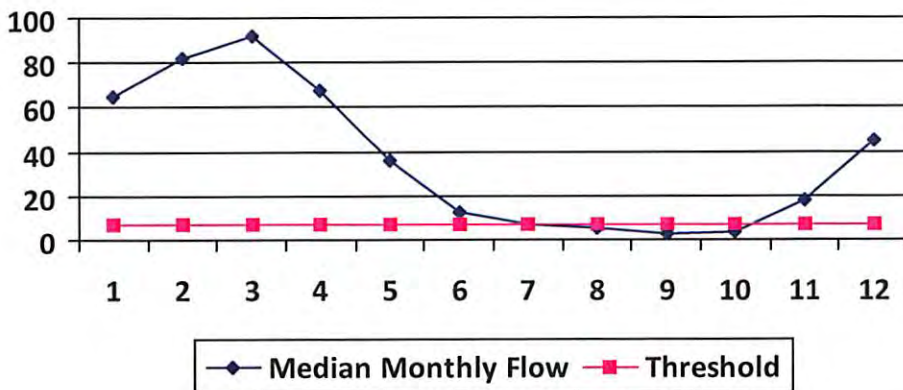
Reference Gaug: 3114500    MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	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
<b>Min. Gauge Reading (cfs):</b>	<b>71.96</b>
<b>Passby at Location (cfs):</b>	<b>11.74</b>

"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- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18546    Source Name: Meathouse Fork @ Whitehair Withdrawal  
Elton Whitehair

Source Latitude: 39.211317  
Source Longitude: -80.679592

HUC-8 Code: 5030201

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

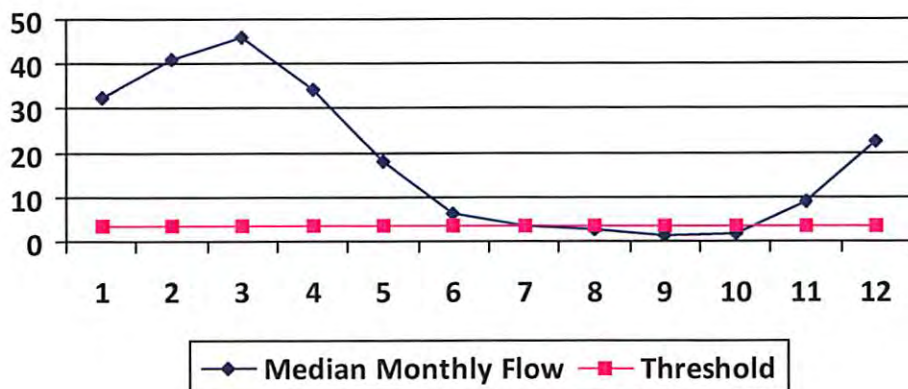
Reference Gaug: 3114500    MIDDLE ISLAND CREEK AT LITTLE, WV

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- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18547    Source Name: Tom's Fork @ Erwin Withdrawal  
John F. Erwin and Sandra E. Erwin

Source Latitude: 39.174306

Source Longitude: -80.702992

HUC-8 Code: 5030201

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

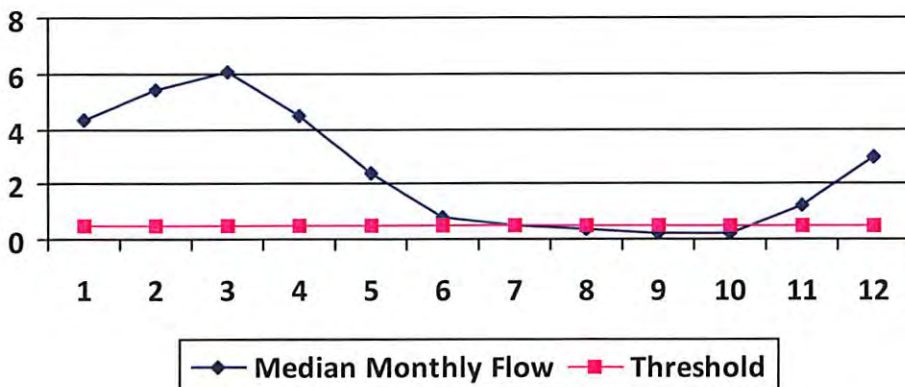
Reference Gaug: 3114500    MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	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- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18548    Source Name: Arnold Creek @ Davis Withdrawal  
Jonathon Davis

Source Latitude: 39.302006  
Source Longitude: -80.824561

HUC-8 Code: 5030201

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

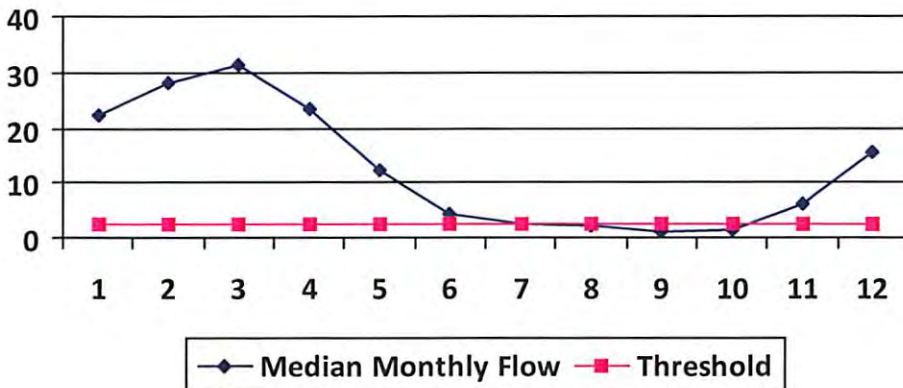
Reference Gaug: 3114500    MIDDLE ISLAND CREEK AT LITTLE, WV

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.

06/28/2013

## Source Detail

WMP- 01249

API/ID Number: 047-017-06273

Operator: Antero Resources

Swiger Unit 1H

Source ID: 18549    Source Name: Buckeye Creek @ Powell Withdrawal  
Dennis Powell

Source Latitude: 39.277142  
Source Longitude: -80.690386

HUC-8 Code: 5030201

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

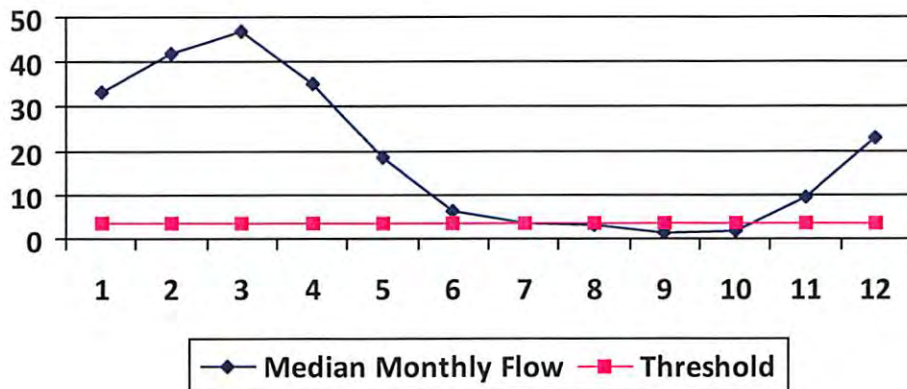
Reference Gaug: 3114500    MIDDLE ISLAND CREEK AT LITTLE, WV

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
<b>Min. Gauge Reading (cfs):</b>	<b>69.73</b>
<b>Passby at Location (cfs):</b>	<b>4.59</b>

"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- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18550    Source Name: South Fork of Hughes River @ Knight Withdrawal  
Tracy C. Knight & Stephanie C. Knight

Source Latitude: 39.198369  
Source Longitude: -80.870969

HUC-8 Code: 5030203

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

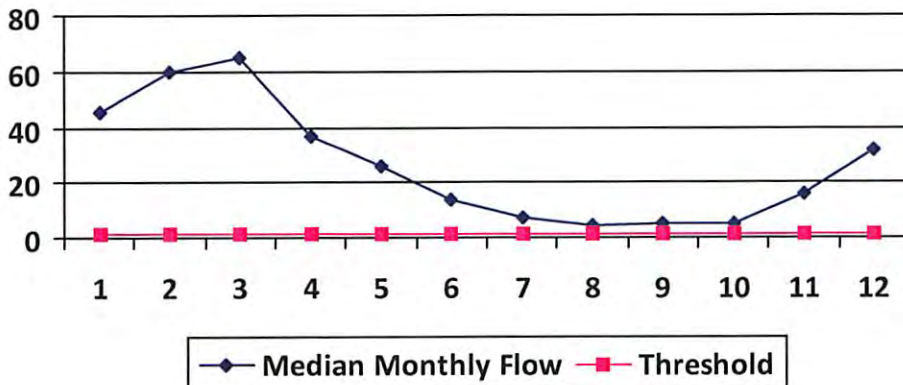
Reference Gaug: 3155220    SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV

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
<b>Min. Gauge Reading (cfs):</b>	<b>39.80</b>
<b>Passby at Location (cfs):</b>	<b>1.95</b>

"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- 01249

API/ID Number: 047-017-06273

Operator:

Antero Resources

Swiger Unit 1H

Source ID: 18551    Source Name: North Fork of Hughes River @ Davis Withdrawal  
Lewis P. Davis and Norma J. Davis

Source Latitude: 39.322363

Source Longitude: -80.936771

HUC-8 Code: 5030203

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

Anticipated withdrawal start date: 8/2/2014

Anticipated withdrawal end date: 8/2/2015

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 8,960,000

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?

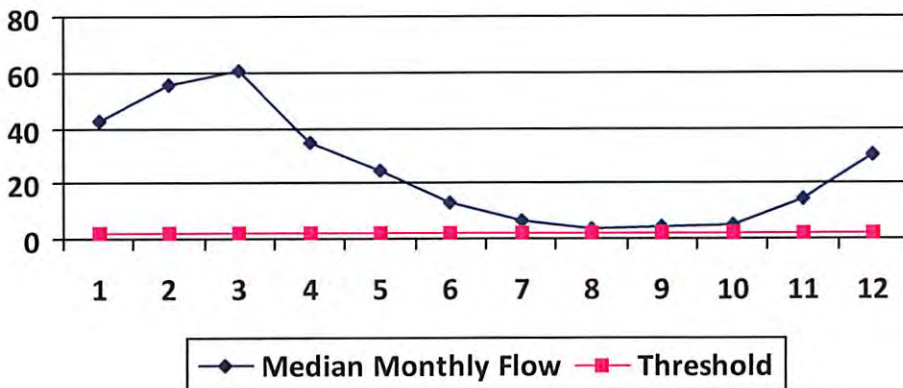
Reference Gaug: 3155220    SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV

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
<b>Min. Gauge Reading (cfs):</b>	<b>35.23</b>
<b>Passby at Location (cfs):</b>	<b>2.19</b>

"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



## Water Management Plan: Secondary Water Sources



WMP-01249

API/ID Number 047-017-06273

Operator:

Antero Resources

Swiger 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/Reservior

Source ID:	18556	Source Name	City of Salem Reservior (Lower Dog Run)	Source start date:	8/2/2014
			Public Water Provider	Source end date:	8/2/2015
Source Lat:	39.28834	Source Long:	-80.54966	County	Harrison
Max. Daily Purchase (gal)	1,000,000	Total Volume from Source (gal):	8,960,000		

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:	18557	Source Name	Pennsboro Lake		Source start date:	8/2/2014	
					Source end date:	8/2/2015	
		Source Lat:	39.281689	Source Long:	-80.925526	County	Ritchie
		Max. Daily Purchase (gal)		Total Volume from Source (gal):			8,960,000

DEP Comments:

Source ID:	18558	Source Name	Powers Lake (Wilderness Water Park Dam)		Source start date:	8/2/2014	
					Source end date:	8/2/2015	
		Source Lat:	39.255752	Source Long:	-80.463262	County	Harrison
		Max. Daily Purchase (gal)		Total Volume from Source (gal):			8,960,000

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:	18559	Source Name	Powers Lake Two		Source start date:	8/2/2014	
					Source end date:	8/2/2015	
		Source Lat:	39.247604	Source Long:	-80.466642	County	Harrison
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		8,960,000	

DEP Comments:

**Important:**

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

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

**Other**

Source ID:	18560	Source Name	Poth Lake (Landowner Pond)		Source start date:	8/2/2014	
			Private Owner		Source end date:	8/2/2015	
		Source Lat:	39.221306	Source Long:	-80.463028	County	Harrison
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		8,960,000	

DEP Comments:

Source ID:	18561	Source Name	Williamson Pond (Landowner Pond)		Source start date:	8/2/2014	
					Source end date:	8/2/2015	
		Source Lat:	39.19924	Source Long:	-80.886161	County	Ritchie
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		8,960,000	

DEP Comments:

## Swiger 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.

Source ID:	18562	Source Name	Eddy Pond (Landowner Pond)		Source start date:	8/2/2014	
					Source end date:	8/2/2015	
		Source Lat:	39.19924	Source Long:	-80.886161	County	Ritchie
		Max. Daily Purchase (gal)		Total Volume from Source (gal):			8,960,000

DEP Comments:

Source ID:	18563	Source Name	Hog Lick Quarry Industrial Facility		Source start date:	8/2/2014	
					Source end date:	8/2/2015	
		Source Lat:	39.419272	Source Long:	-80.217941	County	Marion
		Max. Daily Purchase (gal)	1,000,000	Total Volume from Source (gal):			8,960,000

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.

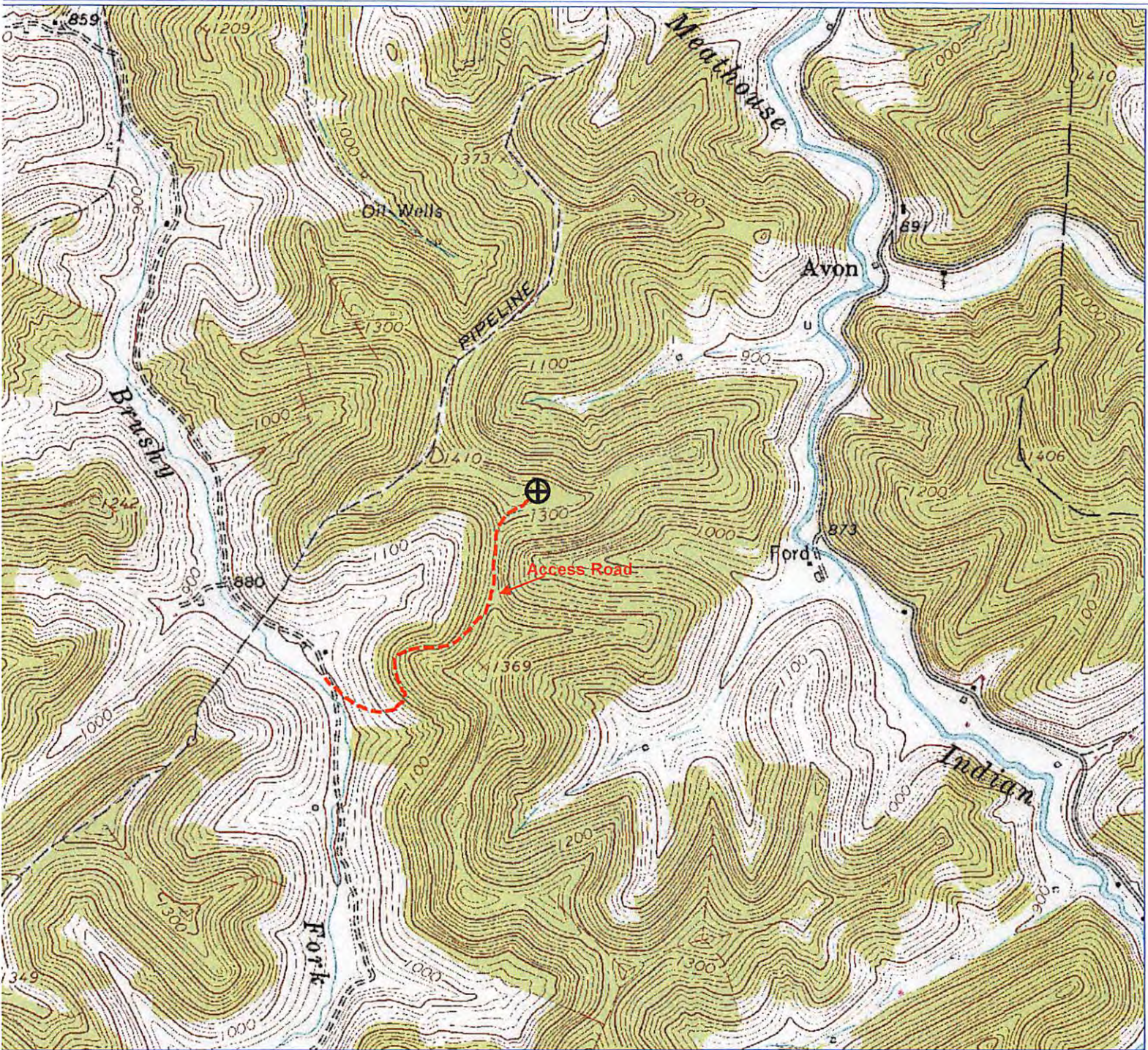
Source ID: 18564	Source Name	Glade Fork Mine Industrial Facility	Source start date:	8/2/2014	
			Source end date:	8/2/2015	
Source Lat:	38.965767	Source Long:	-80.299313	County	Upshur
Max. Daily Purchase (gal)	1,000,000	Total Volume from Source (gal):	8,960,000		

DEP Comments:

**Recycled Frac Water**

Source ID: 18565	Source Name	McClain Unit 1H	Source start date:	8/2/2014
			Source end date:	8/2/2015
Source Lat:		Source Long:		County
Max. Daily Purchase (gal)		Total Volume from Source (gal):	8,960,000	

DEP Comments:



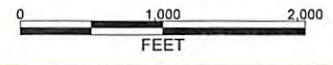
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 MAY 03 2013

Environmental Protection

**Antero Resources**

Appalachian Basin  
 Swiger Unit 1H  
 Doddridge County

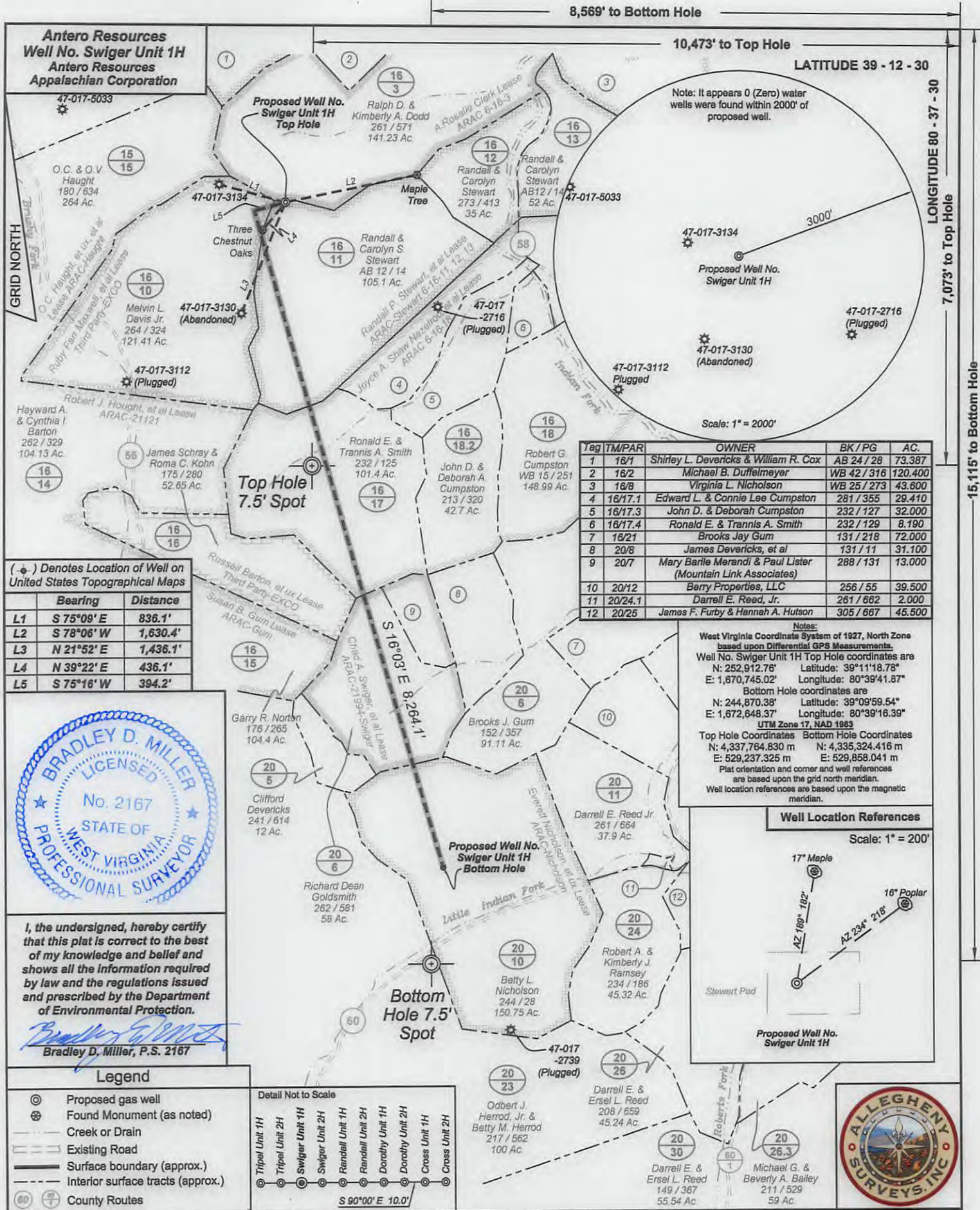


REMARKS  
 Quadrangle: New Milton  
 Watershed: Toms Fork Meathouse Fork  
 Dsistrict: New Milton

March 18, 2013

06/28/2013





Tag	TMPAR	OWNER	BK / PG	AC.
1	16/1	Shirley L. Devericks & William R. Cox	AB 24 / 28	73.387
2	16/2	Michael B. Duffelmeyer	WB 42 / 316	120.400
3	16/8	Virginia L. Nicholson	WB 25 / 273	43.600
4	16/17.1	Edward L. & Connie Lee Cumpston	281 / 355	29.410
5	16/17.3	John D. & Deborah Cumpston	232 / 127	32.000
6	16/17.4	Ronald E. & Trannis A. Smith	232 / 129	8.190
7	16/21	Brooks Jay Gum	131 / 218	72.000
8	20/8	James Devericks, et al	131 / 11	31.100
9	20/7	Mary Barile Merandi & Paul Lister (Mountain Link Associates)	288 / 131	13.000
10	20/12	Barry Properties, LLC	256 / 55	39.500
11	20/24.1	Darrell E. Reed, Jr.	261 / 662	2.000
12	20/25	James F. Furby & Hannah A. Hutson	305 / 667	45.500

(+/-) Denotes Location of Well on United States Topographical Maps

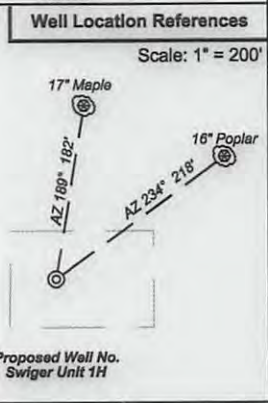
Bearing	Distance
L1	S 75°09' E 836.1'
L2	S 78°06' W 1,630.4'
L3	N 21°52' E 1,436.1'
L4	N 39°22' E 436.1'
L5	S 75°16' W 394.2'



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 regulations issued and prescribed by the Department of Environmental Protection.

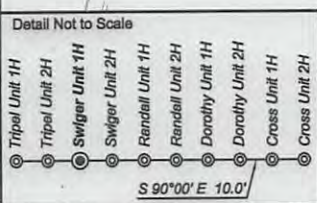
*Bradley D. Miller*  
Bradley D. Miller, P.S. 2167

Notes:  
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
Well No. Swiger Unit 1H Top Hole coordinates are  
N: 252,912.76' Latitude: 39°11'18.78"  
E: 1,670,745.02' Longitude: 80°39'41.87"  
Bottom Hole coordinates are  
N: 244,870.38' Latitude: 39°09'59.54"  
E: 1,672,648.37' Longitude: 80°39'16.39"  
UTM Zone 17, NAD 1983  
Top Hole Coordinates Bottom Hole Coordinates  
N: 4,337,764.830 m N: 4,335,324.416 m  
E: 529,237.325 m E: 529,858.041 m  
Plat orientation and corner and well references are based upon the grid north meridian.  
Well location references are based upon the magnetic meridian.



Legend

- Proposed gas well
- Found Monument (as noted)
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)
- County Routes



FILE NO: 78-30-NM-13  
DRAWING NO: 78-13 Swiger 1H Well  
SCALE: 1" = 1500'  
MINIMUM DEGREE OF ACCURACY: Submeter  
PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OIL AND GAS DIVISION

DATE: April 25 2013  
OPERATOR'S WELL NO. Swiger Unit 1H  
API WELL NO H6A  
47 - 017 - G273  
STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
(IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
LOCATION: ELEVATION: 1332' WATERSHED: Indian Fork QUADRANGLE: New Milton  
DISTRICT: New Milton COUNTY: Doddridge  
SURFACE OWNER: Randall & Carolyn S. Stewart Ruby Farr Maxwell, et al; ARAC-21994-Swiger; ARAC-Stewart 6-16-11,12,13; ACREAGE: 105.1  
ROYALTY OWNER: Randall P. Stewart, et al; Joyce A. Shaw Nazelrod, et al LEASE NO: ARAC-Nicholson ACREAGE: 69.54; 195; 384; 150  
PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY)  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 7,400' TVD 16,200' MD

WELL OPERATOR: Antero Resources Appalachian Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
ADDRESS: 1625 17th Street ADDRESS: 5400 D Big Tyler Road  
Denver, CO 80202 Charleston, WV 25313