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

November 12, 2013

**WELL WORK PERMIT**

**Horizontal 6A Well**

This permit, API Well Number: 47-10302940, issued to EQT PRODUCTION COMPANY, 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: 514566
Farm Name: DENCIL HENTHORN ET AL
**API Well Number: 47-10302940**
**Permit Type: Horizontal 6A Well**
Date Issued: 11/12/2013

103- 02940

# PERMIT CONDITIONS

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

## CONDITIONS

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

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

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

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

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

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

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

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

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(3/13)

47103029 40

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: EQT Production Company | | 103 | 4 | 254
Operator ID | County | District | Quadrangle

2) Operator's Well Number: 514566 Well Pad Name BIG367

3 Elevation, current ground: 1,474.6 Elevation, proposed post-construction: 1,442.9

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

Other _____

(b) If Gas: Shallow • Deep _____

Horizontal •

5) Existing Pad? Yes or No: no

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9-12-13

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Target formation is Marcellus at a depth of 7574' with the anticipated thickness to be 53 feet and anticipated target pressure of 4792 PSI

7) Proposed Total Vertical Depth: 7,574
8) Formation at Total Vertical Depth: Marcellus
9) Proposed Total Measured Depth: 11,149
10) Approximate Fresh Water Strata Depths: 433, 478, 705
11) Method to Determine Fresh Water Depth: By offset wells
12) Approximate Saltwater Depths: 1965, 2130, 2168
13) Approximate Coal Seam Depths: 620, 857, 1019, 1196, 1680
14) Approximate Depth to Possible Void (coal mine, karst, other): None reported
15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of Mine: None Reported
16) Describe proposed well work: Drill and complete a new horizontal well in the Marcellus formation. The vertical drill to go to an approximate depth of 6854. Then kick off the horizontal leg into the marcellus using a slick water frac.

17) Describe fracturing/stimulating methods in detail:
Hydraulic fracturing is completed in accordance with state regulations using water recycled from previously fractured wells and obtained from freshwater sources. This water is mixed with sand and a small percentage (less than 0.3%) of chemicals (including 15% Hydrochloric acid, gelling agent, gel breaker, friction reducer, biocide, and scale inhibitor). Stage lengths vary from 150 to 450 feet. Average approximately 400,000 gallons of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 400,000 pounds of sand per stage.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 16.20 ac

19) Area to be disturbed for well pad only, less access road (acres): 15.42 ac

WW - 6B

(3/13)

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## CASING AND TUBING PROGRAM

20)

| TYPE | Size | New or Used | Grade | Weight per ft. | FOOTAGE: for Drilling | INTERVALS: Left in Well | CEMENT: Fill- up (Cu.Ft.) |
|---|---|---|---|---|---|---|---|
| Conductor | 26 | New | MC-50 | 77 | 80 | 80 | 98 CTS |
| Fresh Water | 13 3/8 | New | MC-50 | 54 | 805 | 805 | 706 CTS |
| Coal | | | | | | | |
| Intermediate | 9 5/8 | New | MC-50 | 40 | 3,617 | 3,617 | 1422 CTS |
| Production | 5 1/2 | New | P-110 | 20 | 11,149 | 11,149 | See Note 1 |
| Tubing | 2 3/8 | | J-55 | 4.6 | | | May not be run, if run will be set 100' less than TD |
| Liners | | | | | | | |

| TYPE | Size | Wellbore Diameter | Wall Thickness | Burst Pressure | Cement Type | Cement Yield |
|---|---|---|---|---|---|---|
| Conductor | 26 | 30 | 0.312 | - | Construction | 1.18 |
| Fresh Water | 13 3/8 | 17 1/2 | 0.38 | 2,480 | 1 | 1.21 |
| Coal | | | | | | |
| Intermediate | 9 5/8 | 12 3/8 | 0.395 | 3,590 | 1 | 1.21 |
| Production | 5 1/2 | 8 1/2 | 0.361 | 12,640 | - | 1.27/1.86 |
| Tubing | | | | | | |
| Liners | | | | | | |

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## Packers

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

Note 1: EQT plans to bring the TOC on the production casing cement job 1,000' above kick off point, which is at least 500' above the shallowest production zone, to avoid communication.

47 10302940

21) Describe centralizer placement for each casing string.

• Surface: Bow spring centralizers – One at the shoe and one spaced every 500'.

• Intermediate: Bow spring centralizers– One cent at the shoe and one spaced every 500'.

• Production: One spaced every 1000' from KOP to Int csg shoe

22) Describe all cement additives associated with each cement type. **Surface (Type 1 Cement):** 0-3% Calcium Chloride Used to speed the setting of cement slurries.

0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of the cement slurry to a thief zone.

**Intermediate (Type 1 Cement):** 0-3% Calcium Chloride. Salt is used in shallow, low temperature formations to speed the setting of cement slurries. 0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of whole drilling fluid or cement slurry (not filtrate) to a thief zone.

Production:

**Lead (Type 1 Cement):** 0.2-0.7% Lignosulfonate (Retarder). Lengthens thickening time.

0.3% CFR (dispersant). Makes cement easier to mix.

**Tail (Type H Cement):** 0.25-0.40% Lignosulfonate (Retarder). Lengthens thickening time.

0.2-0.3% CFR (dispersant). This is to make the cement easier to mix.

60 % Calcuim Carbonate. Acid solubility.

0.4-0.6% Halad (fluid loss). Reduces amount of water lost to formation.

23) Proposed borehole conditioning procedures. **Surface:** Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating one full joint until cuttings diminish at surface. When cuttings returning to surface diminish, continue to circulate an additional 5 minutes. To ensure that there is no fill, short trip two stands with no circulation. If there is fill, bring compressors back on and circulate hole clean. A constant rate of higher than expected cuttings volume likely indicates washouts that will not clean up.

**Intermediate:** Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating one full joint until cuttings diminish at surface. When cuttings returning to surface diminish, continue to circulate an additional 5 minutes. If foam drilling, to enhance hole cleaning use a soap sweep or increase injection rate & foam concentration.

**Production:** Pump marker sweep with nut plug to determine actual hole washout. Calculate a gauge holes bottoms up volume. Perform a cleanup cycle by pumping 3-5 bottoms up or until the shakers are clean. Check volume of cuttings coming across the shakers every 15 minutes.

*Note: Attach additional sheets as needed.

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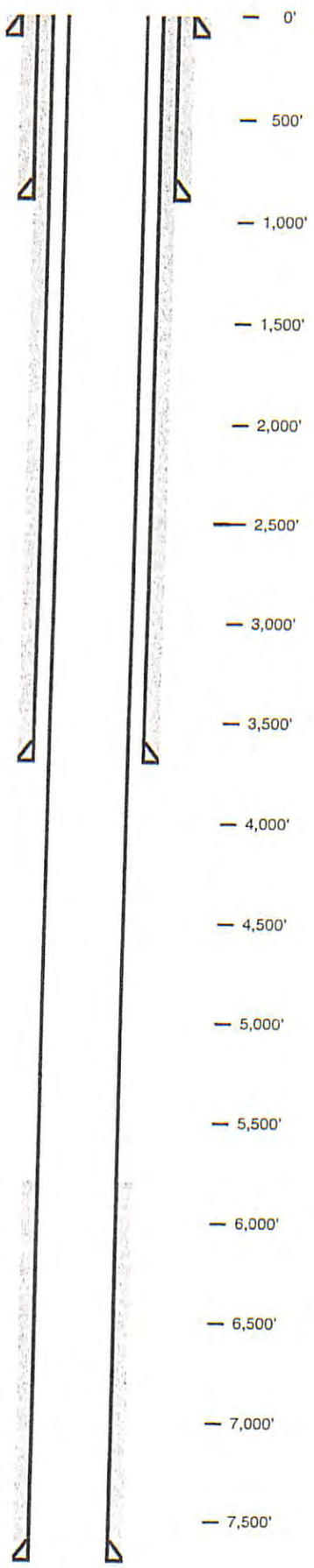
9-12-17

Well Schematic
EQT Production

47103029400

| | |
|---|---|
| Well Name | 514566 (BIG367H5) |
| County | Wetzel |
| State | West Virgina |

| | |
|---|---|
| Elevation KB: | 1456 |
| Target | Marcellus |
| Prospect | |
| Azimuth | 162 |
| Vertical Section | 3357 |




Hole Size 30" - 26" Conductor at 80'
Bit Size 17.5"

TOC @ Surface
13 3/8", MC-50, 54.5# @ 805' ft MD
Bit Size 12.375"

TOC @ Surface
9 5/8", MC-50, 40# @ 3,617' ft MD
Bit Size 8.5"

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9-12-13

KOP = 6,854' ft MD
10 Deg DLS

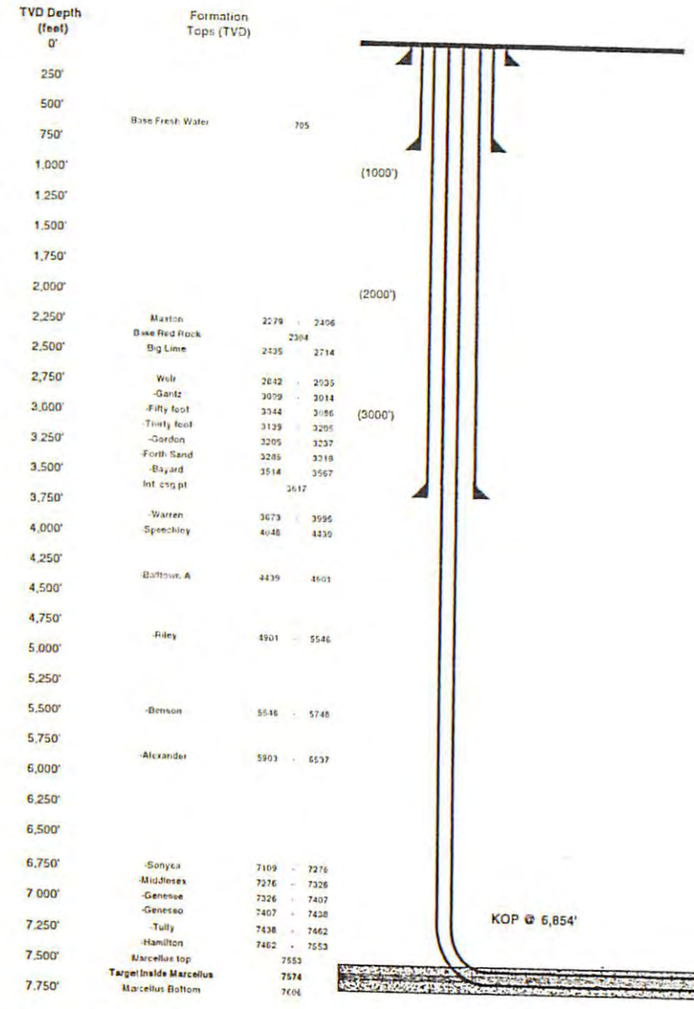
Land @ 7,978' ft MD
7,574' ft TVD

5 1/2", P-110, 20# 10,649' ft MD
7,574' ft TVD

4710302940

Well 514566 (BIG367H5)
EQT Production
Big Run
Wetzel West Virgina

Azimuth 162
Vertical Section 3357




| Hole Size (inches) | Casing Type | Size (inches) | Wt (ppf)/Grade |
|---|---|---|---|
| 30 | Conductor | 26 | |
| 17 1/2 | Surface | 13 3/8 | 54#/MC-50 |
| 12 3/8 | Intermediate | 9 5/8 | 40#/MC-50 |
| 8 1/2 | Production Casing | 5 1/2 | 20#/P-110 |

Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation
The vertical drill to go down to an approximate depth of 6854'.
Then kick of the horizontal leg into the Marcellus using a slick water frac.

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9-12-13

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(5/13)

API No. 47 - 103 - 0
Operator's Well No. 514566

**STATE OF WEST VIRGINIA**
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**

## Fluids/Cuttings Disposal & Reclamation Plan

Operator Name BIG367 OP Code _____

Watershed (HUC10) North Fork of Fishing Creek Quadrangle Big Run

Elevation 1442.9 County Wetzel District Grant

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

Will a pit be used for drill cuttings: Yes: ___ No: X

If so please describe anticipated pit waste: _____

Will a synthetic liner be used in the pit? Yes ___ No X If so, what ml.? 60

Proposed Disposal Method For Treated Pit Wastes:

___ Land Application
• Underground Injection ( UIC Permit Number 0014, 8462, 4037 )
___ Reuse (at API Number _____ )
• Off Site Disposal (Supply form WW-9 for disposal location)
___ Other (Explain _____ )

Will closed loop system be used ? YES

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Air and water based mud

If oil based, what type? Synthetic, petroleum, etc _____

Additives to be used in drilling medium? MILBAR, Viscosifer, Alkalinity Control, Lime, Chloride Salts,Rate Filtration Control, Deflocculant, Lubricant, Detergent, Defoaming, Walnut Shell, X-Cide, SOLTEX Terra

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Landfill

If left in pit and plan to solidify what medium will be used? (Cement, Line, sawdust) n/a

Landfill or offsite name/permit number? See Attached List

DMH 9-12-13

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

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

Company Official Signature _____
Company Official (Typed Name) Victoria J. Roark
Company Official Title Permitting Supervisor

Subscribed and sworn before me this 9 day of SEPTEMBER, 20 13

_____ Notary Public

My commission expires 6/27/2018

OFFICIAL SEAL
Notary Public, State Of West Virginia
NICHOLAS L. BUMGARDNER
Rt. 1 Box 4
Liberty, WV 25124
My Commission Expires June 27, 2018

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SEP 16 2013
WV Department of
Environmental Protection

WW-9

Operator's Well No. 47 1 0 3 0 2 9 4 0 514586

Proposed Revegetation Treatment: Acres Disturbed 16.2 Prevegetation pH 6

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer (10-20-20 or equivalent) 1/3 lbs/acre (500 lbs minimum)

Mulch 2 Tons/acre

Seed Mixtures

| Area I | | Area II | |
|---|---|---|---|
| Seed Type | lbs/acre | Seed Type | lbs/acre |
| KY-31 | 40 | Orchard Grass | 15 |
| Alsike Clover | 5 | Alsike Clover | 5 |
| Annual Rye | 15 | | |

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:

Title: Oil + Gas Inspector Date: 9-12-13

Field Reviewed? (✓) Yes ( ) No

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SEP 16 2013
WV Department of
Environmental Protection

# Water Management Plan:
## Primary Water Sources

WMP- 01539 API/ID Number: 047-103-02940 Operator: EQT Production Company

514566 (BIG367H5)

**Important:**

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

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

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

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

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

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

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

APPROVED NOV 07 2013

## Source Summary

WMP-01539 API Number: 047-103-02940 Operator: EQT Production Company

514566 (BIG367H5)

# Stream/River

Source **Ohio River at Hannibal, OH** Wetzel Owner: **Richard Potts/Rich Merryman**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 11/1/2013 | 11/1/2014 | 4,600,000 | | 39.655883 | -80.86678 |

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

**Max. Pump rate (gpm): 1,500** **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 **S. Fork of Fishing Creek @ Hastings Truck Pad** Wetzel Owner: **Dominion Transmission**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 11/1/2013 | 11/1/2014 | 4,600,000 | | 39.553 | -80.669 |

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

**Max. Pump rate (gpm): 1,260** **Min. Gauge Reading (cfs): 78.05** **Min. Passby (cfs) 10.32**

DEP Comments:

Source **S. Fork of Fishing Creek @ Jacksonburg Truck Pad** Wetzel Owner: **Ronald Anderson**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 11/1/2013 | 11/1/2014 | 4,600,000 | | 39.52609 | -80.6338 |

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

**Max. Pump rate (gpm): 1,260** **Min. Gauge Reading (cfs): 73.12** **Min. Passby (cfs) 8.86**

DEP Comments:

Source **N. Fork of Fishing Creek @ Pine Grove Truck Pad** Wetzel Owner: **Town of Pine Grove**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 11/1/2013 | 11/1/2014 | 4,600,000 | | 39.571562 | -80.677848 |

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

**Max. Pump rate (gpm): 2,520** **Min. Gauge Reading (cfs): 85.35** **Min. Passby (cfs) 6.22**

DEP Comments:

Source **N. Fork of Fishing Creek @ Edgell Property** Wetzel Owner: **Cathy Edgell**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 11/1/2013 | 11/1/2014 | 4,600,000 | | 39.58191 | -80.622839 |

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

**Max. Pump rate (gpm): 1,260** **Min. Gauge Reading (cfs): 78.74** **Min. Passby (cfs) 5.76**

DEP Comments:

Source **N. Fork of Fishing Creek @ Lydick Property** Wetzel Owner: **Les Lydick**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 11/1/2013 | 11/1/2014 | 4,600,000 | | 39.57795 | -80.59221 |

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

**Max. Pump rate (gpm): 1,260** **Min. Gauge Reading (cfs): 75.93** **Min. Passby (cfs) 3.28**

DEP Comments:

o Source **N. Fork of Fishing Creek @ BIG176 Pad** Wetzel Owner: **John W. Kilcoyne**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 11/1/2013 | 11/1/2014 | 4,600,000 | | 39.560283 | -80.560763 |

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

**Max. Pump rate (gpm): 1,260** **Min. Gauge Reading (cfs): 73.12** **Min. Passby (cfs) 2.19**

DEP Comments:

o Source **N. Fork of Fishing Creek @ Big 57 Pad** Wetzel Owner: **EQT Corporation**

| Start Date | End Date | Total Volume (gal) | Max. daily purchase (gal) | Intake Latitude: | Intake Longitude: |
|---|---|---|---|---|---|
| 11/1/2013 | 11/1/2014 | 4,600,000 | | 39.55316 | -80.53064 |

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

**Max. Pump rate (gpm): 1,260** **Min. Gauge Reading (cfs): 70.31** **Min. Passby (cfs) 1.71**

DEP Comments:

## Source Detail

WMP-01539 API/ID Number: 047-103-02940 Operator: EQT Production Company

514566 (BIG367H5)

Source ID: 27529 Source Name: Ohio River at Hannibal, OH
Richard Potts/Rich Merryman

Source Latitude: 39.655883
Source Longitude: -80.86678

HUC-8 Code: 5030201

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

Anticipated withdrawal start date: 11/1/2013
Anticipated withdrawal end date: 11/1/2014
Total Volume from Source (gal): 4,600,000
Max. Pump rate (gpm): 1,500
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

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

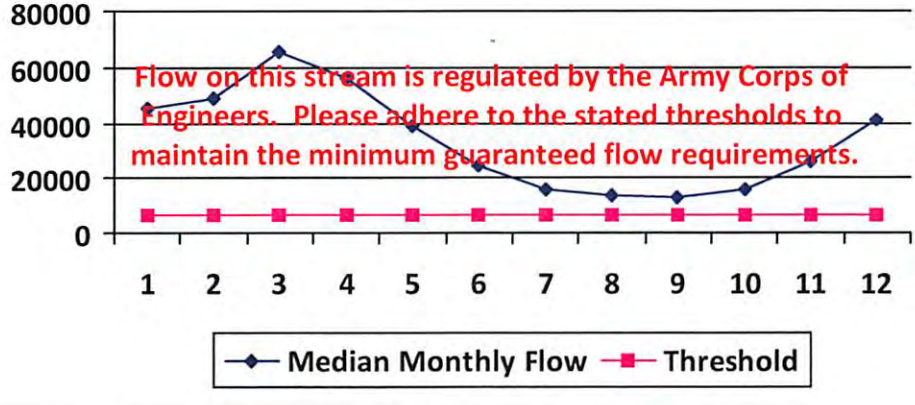
Reference Gaug 9999999 Ohio River Station: Willow Island Lock & Dam

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): | 3.34 |
| 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-01539 | API/ID Number: 047-103-02940 | Operator: EQT Production Company

514566 (BIG367H5)

Source ID: 27530 | Source Name: S. Fork of Fishing Creek @ Hastings Truck Pad
Dominion Transmission

Source Latitude: 39.553
Source Longitude: -80.669

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 70.02 | County: Wetzel

Anticipated withdrawal start date: 11/1/2013
Anticipated withdrawal end date: 11/1/2014
Total Volume from Source (gal): 4,600,000
Max. Pump rate (gpm): 1,260
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

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

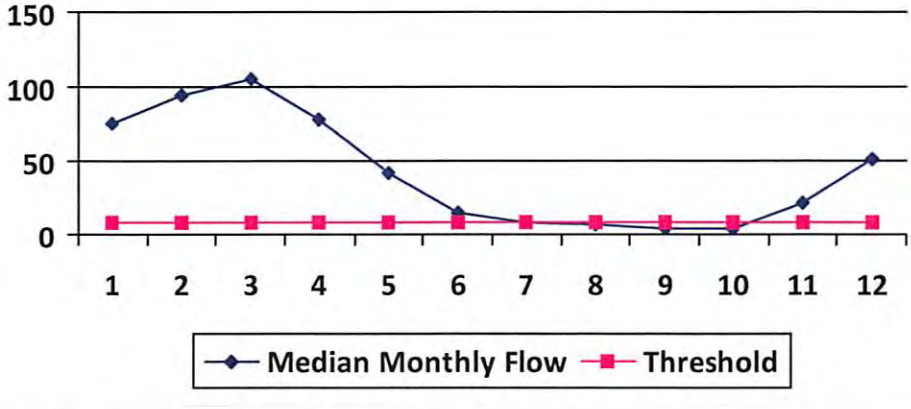
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 75.09 | 20.87 | 54.35 |
| 2 | 94.45 | 20.87 | 73.72 |
| 3 | 105.69 | 20.87 | 84.95 |
| 4 | 78.48 | 20.87 | 57.75 |
| 5 | 41.40 | 20.87 | 20.66 |
| 6 | 14.46 | 20.87 | -6.28 |
| 7 | 8.18 | 20.87 | -12.56 |
| 8 | 6.74 | 20.87 | -14.00 |
| 9 | 3.45 | 20.87 | -17.29 |
| 10 | 4.33 | 20.87 | -16.40 |
| 11 | 21.17 | 20.87 | 0.43 |
| 12 | 51.72 | 20.87 | 30.99 |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| **Base Threshold (cfs):** | 6.88 |
| Upstream Demand (cfs): | 7.74 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 2.81 |
| Headwater Safety (cfs): | 1.72 |
| Ungauged Stream Safety (cfs): | 1.72 |
| **Min. Gauge Reading (cfs):** | **78.05** |
| **Passby at Location (cfs):** | **10.32** |

"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-01539 | API/ID Number: 047-103-02940 | Operator: EQT Production Company

514566 (BIG367H5)

Source ID: 27531 Source Name: S. Fork of Fishing Creek @ Jacksonburg Truck Pad
Ronald Anderson

Source Latitude: 39.52609
Source Longitude: -80.6338

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 45.72 County: Wetzel

Anticipated withdrawal start date: 11/1/2013
Anticipated withdrawal end date: 11/1/2014
Total Volume from Source (gal): 4,600,000
Max. Pump rate (gpm): 1,260
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

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

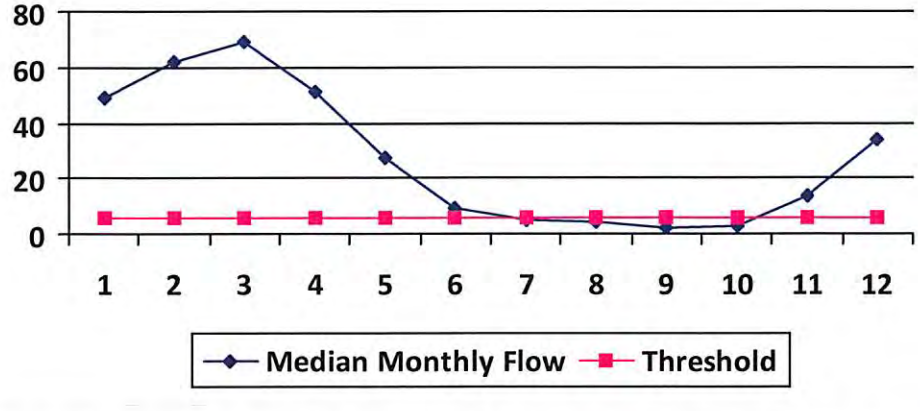
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 49.03 | 12.36 | 37.12 |
| 2 | 61.67 | 12.36 | 49.76 |
| 3 | 69.01 | 12.36 | 57.10 |
| 4 | 51.25 | 12.36 | 39.33 |
| 5 | 27.03 | 12.36 | 15.12 |
| 6 | 9.44 | 12.36 | -2.47 |
| 7 | 5.34 | 12.36 | -6.57 |
| 8 | 4.40 | 12.36 | -7.51 |
| 9 | 2.25 | 12.36 | -9.66 |
| 10 | 2.83 | 12.36 | -9.08 |
| 11 | 13.82 | 12.36 | 1.91 |
| 12 | 33.77 | 12.36 | 21.86 |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | 4.49 |
| Upstream Demand (cfs): | 2.81 |
| Downstream Demand (cfs): | 2.12 |
| Pump rate (cfs): | 2.81 |
| Headwater Safety (cfs): | 1.12 |
| Ungauged Stream Safety (cfs): | 1.12 |
| **Min. Gauge Reading (cfs):** | **73.12** |
| **Passby at Location (cfs):** | **8.86** |

"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-01539 API/ID Number: 047-103-02940 Operator: EQT Production Company

514566 (BIG367H5)

Source ID: 27532 Source Name N. Fork of Fishing Creek @ Pine Grove Truck Pad
Town of Pine Grove

Source Latitude: 39.571562
Source Longitude: -80.677848

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 42.17 County: Wetzel

Anticipated withdrawal start date: 11/1/2013
Anticipated withdrawal end date: 11/1/2014
Total Volume from Source (gal): 4,600,000
Max. Pump rate (gpm): 2,520
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

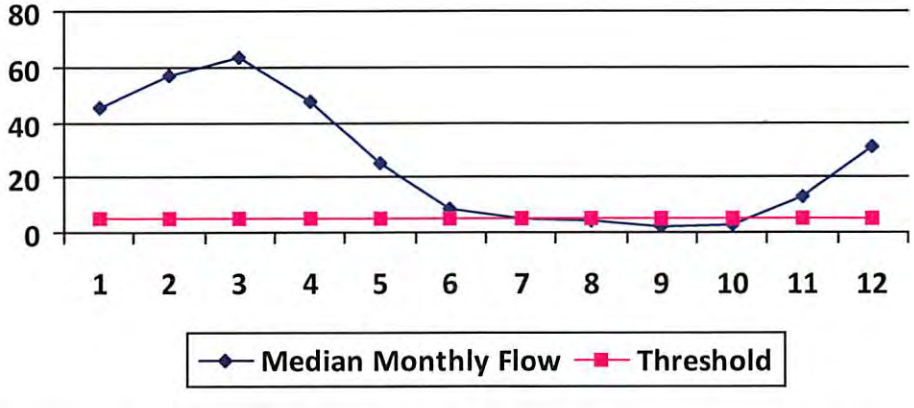
- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [ ] Regulated Stream?
- [x] Proximate PSD? Pine Grove
- [ ] Gauged Stream?

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 | 45.22 | 24.07 | 21.25 |
| 2 | 56.89 | 24.07 | 32.91 |
| 3 | 63.65 | 24.07 | 39.68 |
| 4 | 47.27 | 24.07 | 23.29 |
| 5 | 24.93 | 24.07 | 0.96 |
| 6 | 8.71 | 24.07 | -15.27 |
| 7 | 4.93 | 24.07 | -19.05 |
| 8 | 4.06 | 24.07 | -19.92 |
| 9 | 2.08 | 24.07 | -21.90 |
| 10 | 2.61 | 24.07 | -21.37 |
| 11 | 12.75 | 24.07 | -11.23 |
| 12 | 31.15 | 24.07 | 7.17 |

## Water Availability Profile




## Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | 4.14 |
| Upstream Demand (cfs): | 12.24 |
| Downstream Demand (cfs): | 0.00 |
| Pump rate (cfs): | 5.61 |
| Headwater Safety (cfs): | 1.04 |
| Ungauged Stream Safety (cfs): | 1.04 |
| **Min. Gauge Reading (cfs):** | **85.35** |
| **Passby at Location (cfs):** | **6.22** |

"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- 01539 | API/ID Number: 047-103-02940 | Operator: EQT Production Company

514566 (BIG367H5)

Source ID: 27533 | Source Name: N. Fork of Fishing Creek @ Edgell Property
Cathy Edgell

Source Latitude: 39.58191
Source Longitude: -80.622839

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 32.23 | County: Wetzel

Anticipated withdrawal start date: 11/1/2013
Anticipated withdrawal end date: 11/1/2014
Total Volume from Source (gal): 4,600,000
Max. Pump rate (gpm): 1,260
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

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

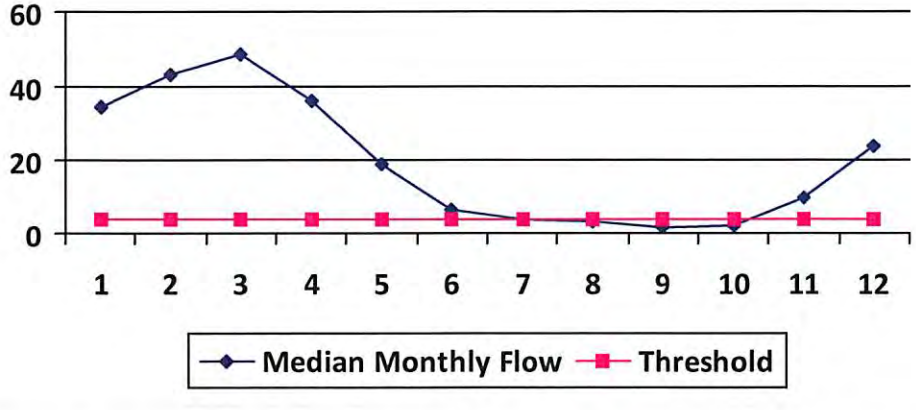
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 34.56 | 15.99 | 18.59 |
| 2 | 43.48 | 15.99 | 27.51 |
| 3 | 48.65 | 15.99 | 32.68 |
| 4 | 36.13 | 15.99 | 20.16 |
| 5 | 19.06 | 15.99 | 3.09 |
| 6 | 6.65 | 15.99 | -9.32 |
| 7 | 3.77 | 15.99 | -12.20 |
| 8 | 3.10 | 15.99 | -12.87 |
| 9 | 1.59 | 15.99 | -14.38 |
| 10 | 2.00 | 15.99 | -13.98 |
| 11 | 9.74 | 15.99 | -6.23 |
| 12 | 23.81 | 15.99 | 7.84 |

## Water Availability Profile




## Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | 3.17 |
| Upstream Demand (cfs): | 8.43 |
| Downstream Demand (cfs): | 1.00 |
| Pump rate (cfs): | 2.81 |
| Headwater Safety (cfs): | 0.79 |
| Ungauged Stream Safety (cfs): | 0.79 |
| **Min. Gauge Reading (cfs):** | **78.74** |
| **Passby at Location (cfs):** | **5.75** |

"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-01539 API/ID Number: 047-103-02940 Operator: EQT Production Company

514566 (BIG367H5)

Source ID: 27534 Source Name: N. Fork of Fishing Creek @ Lydick Property
Les Lydick

Source Latitude: 39.57795
Source Longitude: -80.59221

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 15.46 County: Wetzel

Anticipated withdrawal start date: 11/1/2013
Anticipated withdrawal end date: 11/1/2014
Total Volume from Source (gal): 4,600,000
Max. Pump rate (gpm): 1,260
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

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

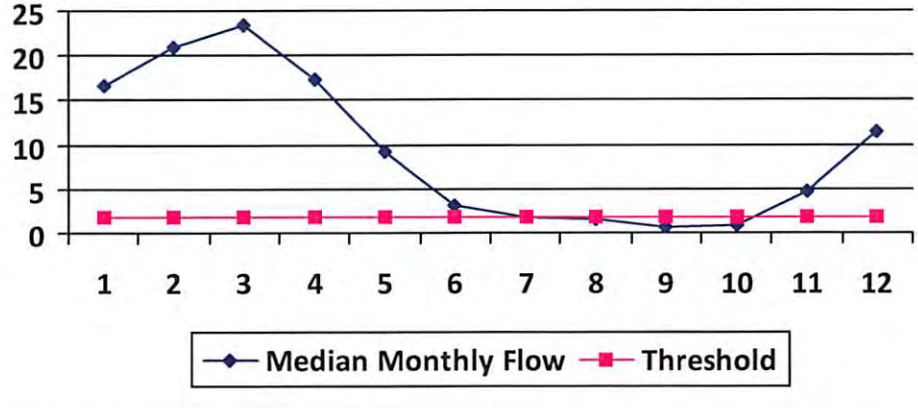
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 16.58 | 10.71 | 6.04 |
| 2 | 20.86 | 10.71 | 10.32 |
| 3 | 23.34 | 10.71 | 12.80 |
| 4 | 17.33 | 10.71 | 6.79 |
| 5 | 9.14 | 10.71 | -1.40 |
| 6 | 3.19 | 10.71 | -7.34 |
| 7 | 1.81 | 10.71 | -8.73 |
| 8 | 1.49 | 10.71 | -9.05 |
| 9 | 0.76 | 10.71 | -9.78 |
| 10 | 0.96 | 10.71 | -9.58 |
| 11 | 4.67 | 10.71 | -5.86 |
| 12 | 11.42 | 10.71 | 0.88 |

### Water Availability Profile




### Water Availability Assessment of Location

| | |
|---|---|
| **Base Threshold (cfs):** | 1.52 |
| Upstream Demand (cfs): | 5.62 |
| Downstream Demand (cfs): | 1.00 |
| Pump rate (cfs): | 2.81 |
| Headwater Safety (cfs): | 0.38 |
| Ungauged Stream Safety (cfs): | 0.38 |
| **Min. Gauge Reading (cfs):** | **75.93** |
| **Passby at Location (cfs):** | **3.28** |

"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-01539 | API/ID Number: 047-103-02940 | Operator: EQT Production Company

514566 (BIG367H5)

Source ID: 27535 | Source Name: N. Fork of Fishing Creek @ BIG176 Pad
John W. Kilcoyne

Source Latitude: 39.560283
Source Longitude: -80.560763

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 8.09 | County: Wetzel

Anticipated withdrawal start date: 11/1/2013
Anticipated withdrawal end date: 11/1/2014
Total Volume from Source (gal): 4,600,000

Max. Pump rate (gpm): 1,260
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

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

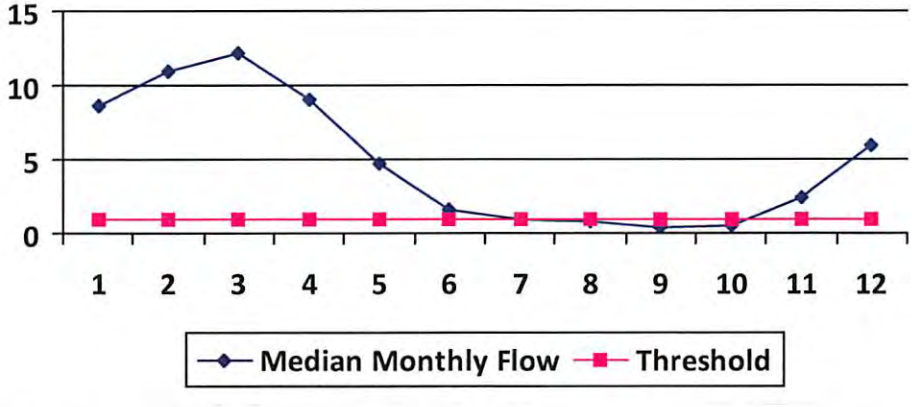
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 8.68 | 6.81 | 2.21 |
| 2 | 10.91 | 6.81 | 4.45 |
| 3 | 12.21 | 6.81 | 5.75 |
| 4 | 9.07 | 6.81 | 2.60 |
| 5 | 4.78 | 6.81 | -1.68 |
| 6 | 1.67 | 6.81 | -4.79 |
| 7 | 0.95 | 6.81 | -5.52 |
| 8 | 0.78 | 6.81 | -5.69 |
| 9 | 0.40 | 6.81 | -6.07 |
| 10 | 0.50 | 6.81 | -5.96 |
| 11 | 2.45 | 6.81 | -4.02 |
| 12 | 5.98 | 6.81 | -0.49 |

## Water Availability Profile




## Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | 0.79 |
| Upstream Demand (cfs): | 2.81 |
| Downstream Demand (cfs): | 1.00 |
| Pump rate (cfs): | 2.81 |
| Headwater Safety (cfs): | 0.20 |
| Ungauged Stream Safety (cfs): | 0.20 |
| **Min. Gauge Reading (cfs):** | **73.12** |
| **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.

# Source Detail

WMP- 01539 | API/ID Number: 047-103-02940 | Operator: EQT Production Company

514566 (BIG367H5)

Source ID: 27536 Source Name: N. Fork of Fishing Creek @ Big 57 Pad
EQT Corporation

Source Latitude: 39.55316
Source Longitude: -80.53064

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 4.77 County: Wetzel

Anticipated withdrawal start date: 11/1/2013
Anticipated withdrawal end date: 11/1/2014
Total Volume from Source (gal): 4,600,000
Max. Pump rate (gpm): 1,260
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm) 0

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

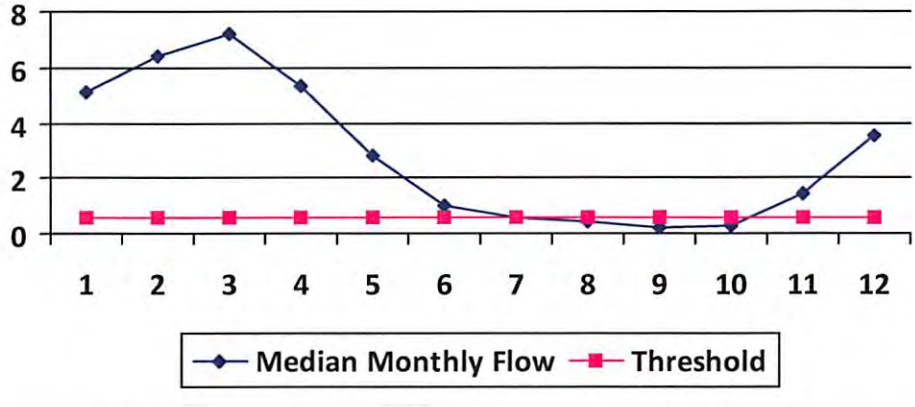
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

| Month | Median monthly flow (cfs) | Threshold (+ pump | Estimated Available water (cfs) |
|---|---|---|---|
| 1 | 5.12 | 3.51 | 1.62 |
| 2 | 6.43 | 3.51 | 2.94 |
| 3 | 7.20 | 3.51 | 3.71 |
| 4 | 5.35 | 3.51 | 1.85 |
| 5 | 2.82 | 3.51 | -0.67 |
| 6 | 0.98 | 3.51 | -2.51 |
| 7 | 0.56 | 3.51 | -2.93 |
| 8 | 0.46 | 3.51 | -3.03 |
| 9 | 0.24 | 3.51 | -3.26 |
| 10 | 0.30 | 3.51 | -3.20 |
| 11 | 1.44 | 3.51 | -2.05 |
| 12 | 3.52 | 3.51 | 0.03 |

## Water Availability Profile




## Water Availability Assessment of Location

| | |
|---|---|
| Base Threshold (cfs): | 0.47 |
| Upstream Demand (cfs): | 0.00 |
| Downstream Demand (cfs): | 1.00 |
| Pump rate (cfs): | 2.81 |
| Headwater Safety (cfs): | 0.12 |
| Ungauged Stream Safety (cfs): | 0.12 |
| **Min. Gauge Reading (cfs):** | **70.31** |
| **Passby at Location (cfs):** | **1.70** |

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

# Water Management Plan:
## Secondary Water Sources

WMP-01539 API/ID Number 047-103-02940 Operator: EQT Production Company

514566 (BIG367H5)

**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.

## Ground Water

Source ID: 27537 Source Name Groundwater Well TW#1

Source start date: 11/1/2013

Source end date: 11/1/2014

Source Lat: 39.56059 Source Long: -80.56027 County Wetzel

Max. Daily Purchase (gal)

Total Volume from Source (gal): 4,600,000

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: 27538 Source Name Groundwater Well TW#5

Source start date: 11/1/2013
Source end date: 11/1/2014

Source Lat: 39.553434 Source Long: -80.528871 County Wetzel

Max. Daily Purchase (gal)

Total Volume from Source (gal): 4,600,000

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.

## Multi-site impoundment

Source ID: 27539 Source Name YOHO Centralized Freshwater Impoundment
Source start date: 11/1/2013
Source end date: 11/1/2014

Source Lat: 39.56092 Source Long: -80.61432 County Wetzel

Max. Daily Purchase (gal) Total Volume from Source (gal): 4,600,000

DEP Comments: 103-FWC-00001

**The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.** **Reference: WMP-1068**

Source ID: 27540 Source Name Carlin Centralized Freshwater Impoundment
Source start date: 11/1/2013
Source end date: 11/1/2014

Source Lat: 39.51168 Source Long: -80.598605 County Wetzel

Max. Daily Purchase (gal) Total Volume from Source (gal): 4,600,000

DEP Comments: 103-FWC-00002

**The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.** **Reference: WMP-1321**

**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: 27541 Source Name BIG176 Centralized Freshwater Impoundment
Source start date: 11/1/2013
Source end date: 11/1/2014

Source Lat: 39.561403 Source Long: -80.561554 County Wetzel

Max. Daily Purchase (gal) Total Volume from Source (gal): 4,600,000

DEP Comments: 103-FWC-00003

**The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.** **Reference: WMP-1322**

Source ID: 27542 Source Name Sycoc Centralized Freshwater Impoundment
Source start date: 11/1/2013
Source end date: 11/1/2014

Source Lat: 39.56436 Source Long: -80.625644 County Wetzel

Max. Daily Purchase (gal) Total Volume from Source (gal): 4,600,000

DEP Comments: 103-FWC-00004

**The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.** **Reference: WMP-1222**

**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: 27543 Source Name Mobley Centralized Freshwater Impoundment
Source start date: 11/1/2013
Source end date: 11/1/2014

Source Lat: 39.553653 Source Long: -80.52971 County Wetzel

Max. Daily Purchase (gal) Total Volume from Source (gal): 4,600,000

DEP Comments: 103-FWC-00006

**The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.** **Reference: WMP-1534**

Source ID: 27544 Source Name Richwood Centralized Freshwater Impoundment
Source start date: 11/1/2013
Source end date: 11/1/2014

Source Lat: 39.551137 Source Long: -80.605342 County Wetzel

Max. Daily Purchase (gal) Total Volume from Source (gal): 4,600,000

DEP Comments: 103-FWC-00007

**The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.** **Reference: WMP-1535**

**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.

## Recycled Frac Water

Source ID: 27545 Source Name Various

Source start date: 11/1/2013
Source end date: 11/1/2014

Source Lat: Source Long: County

Max. Daily Purchase (gal) Total Volume from Source (gal): 4,600,000

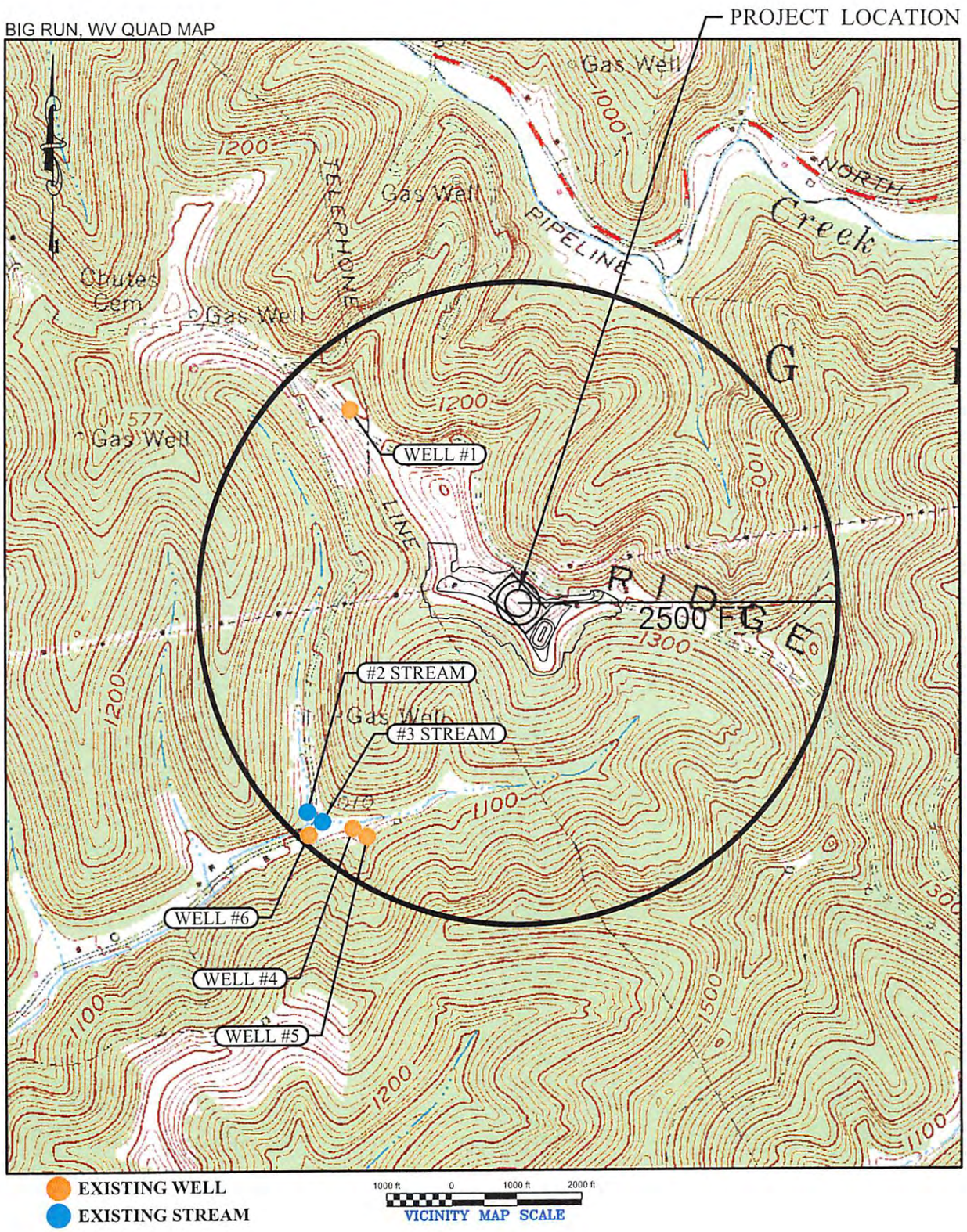
DEP Comments:

103-02940

plat spotted

# EQT PRODUCTION
# BIG 367 WELL PAD AND ACCESS ROAD
## WETZEL COUNTY, WV

BIG RUN, WV QUAD MAP



FORM WW-6

10,762' TOP HOLE

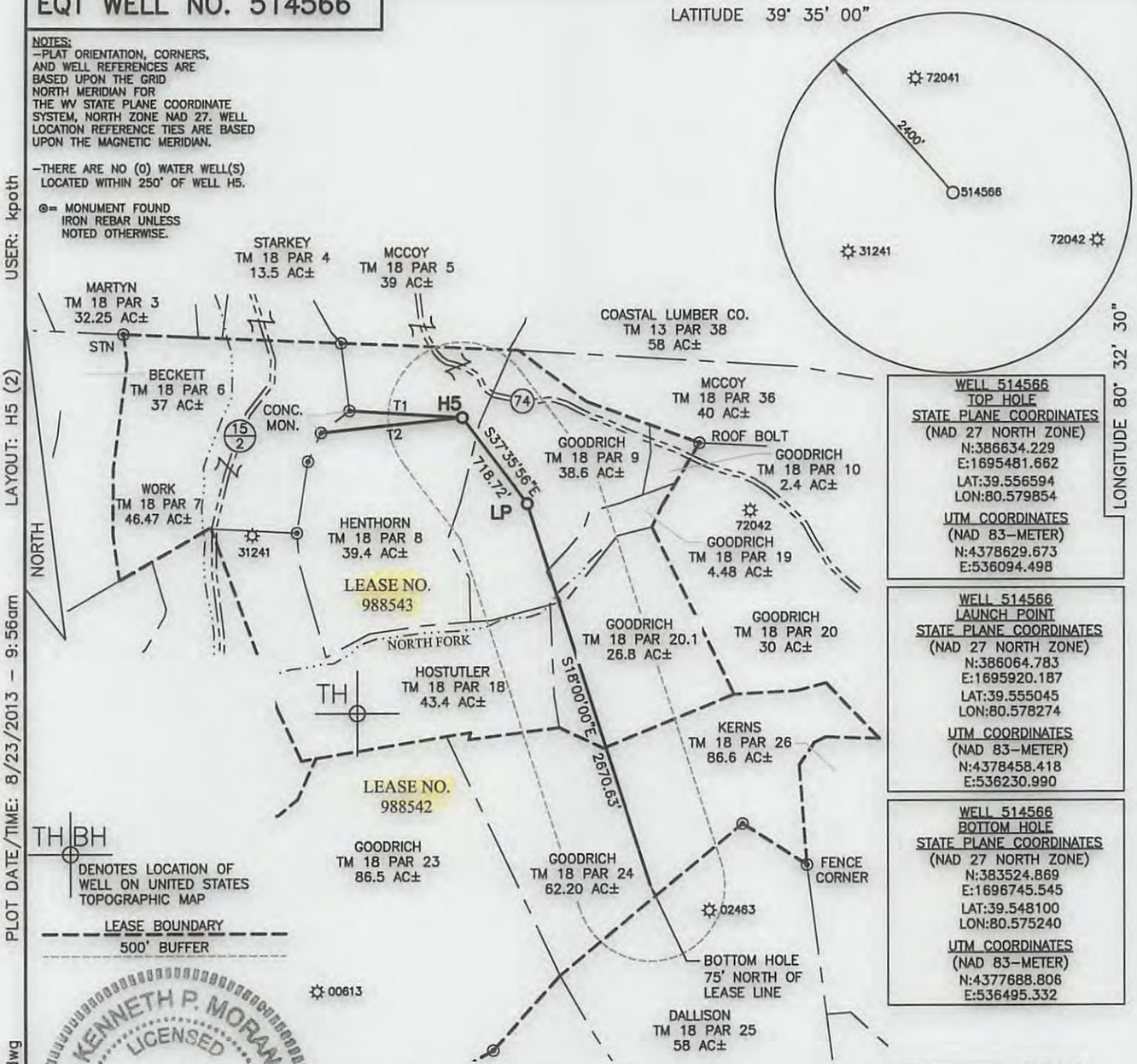
# EQT WELL NO. 514566

LATITUDE 39° 35' 00"

NOTES:
-PLAT ORIENTATION, CORNERS, AND WELL REFERENCES ARE BASED UPON THE GRID NORTH MERIDIAN FOR THE WV STATE PLANE COORDINATE SYSTEM, NORTH ZONE NAD 27. WELL LOCATION REFERENCE TIES ARE BASED UPON THE MAGNETIC MERIDIAN.

-THERE ARE NO (0) WATER WELL(S) LOCATED WITHIN 250' OF WELL H5.

⊙= MONUMENT FOUND IRON REBAR UNLESS NOTED OTHERWISE.




LONGITUDE 80° 32' 30"

9,742' TOP HOLE

WELL 514566
TOP HOLE
STATE PLANE COORDINATES
(NAD 27 NORTH ZONE)
N:386634.229
E:1695481.662
LAT:39.556594
LON:80.579854
UTM COORDINATES
(NAD 83-METER)
N:4378629.673
E:536094.498

WELL 514566
LAUNCH POINT
STATE PLANE COORDINATES
(NAD 27 NORTH ZONE)
N:386064.783
E:1695920.187
LAT:39.555045
LON:80.578274
UTM COORDINATES
(NAD 83-METER)
N:4378458.418
E:536230.990

WELL 514566
BOTTOM HOLE
STATE PLANE COORDINATES
(NAD 27 NORTH ZONE)
N:383524.869
E:1696745.545
LAT:39.548100
LON:80.575240
UTM COORDINATES
(NAD 83-METER)
N:4377688.806
E:536495.332

TH BH DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAP

LEASE BOUNDARY
500' BUFFER

REFERENCES
1"=500'
12" HICKORY
S45°32'42"E 332.31'
514566
N57°45'48"W 164.01'
18" WHT. ASH

| LINE | BEARING | DIST. |
|---|---|---|
| T1 | S86°35'44"E | 760.37' |
| T2 | N84°01'16"E | 954.83' |

514566
BIG367H5
S44°19'42"E
H1 15'
H2 15'
H3 15'
H4 15'
H5 15'
H6 15'
H7 15'
H8

KENNETH P. MORAN LICENSED No. 1333 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

KENNETH P. MORAN P.S. 1333

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

FILE NO. 030-2259
SCALE: 1"=1000'
MINIMUM DEGREE OF ACCURACY: 1 in 2500
PROVEN SOURCE OF ELEVATION: OPUS SURVEY GRADE GPS

**STATE OF WEST VIRGINIA**
DIVISION OF ENVIRONMENTAL PROTECTION
**OFFICE OF OIL & GAS**

DATE AUGUST 26 ,2013
OPERATOR'S WELL NO. 514566
API WELL NO.
47 - 103 - 2940 H6A
STATE COUNTY PERMIT

WELL TYPE: OIL ☐ GAS ☒ LIQUID INJECTION ☐ WASTE DISPOSAL ☐ (IF "GAS"), PRODUCTION ☒ STORAGE ☐ DEEP ☐ SHALLOW ☒
LOCATION: ELEVATION: EG: 1,474.6' PROP: 1,442.90' WATER SHED: NORTH FORK OF FISHING CREEK
DISTRICT: GRANT COUNTY: WETZEL
QUADRANGLE: BIG RUN ACREAGE: 39.4 AC±
SURFACE OWNER: DENCIL HENTHORN ET AL LEASE ACREAGE: 297.5/280 AC+
OIL & GAS ROYALTY OWNER: SHIBEN ESTATE, INC., CNX GAS CO., LLC LEASE NO. 988543/988542
PROPOSED WORK: DRILL ☒ CONVERT ☐ DRILL DEEPER ☐ REDRILL ☐ FRACTURE OR STIMULATE ☒
PERFORATE NEW FORMATION ☐ PLUG OFF OLD FORMATION ☐ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____
PLUG AND ABANDON _____ CLEAN OUT AND REPLUG _____
TARGET FORMATION: MARCELLUS SHALE ESTIMATED DEPTH: TVD/MD

THRASHER
30 COLUMBIA BLVD.
CLARKSBURG, WV 26301
PHONE 304-624-4108

WELL OPERATOR: EQT PRODUCTION
ADDRESS: 115 PROFESSIONAL PLACE
BRIDGEPORT, WV 26330

DESIGNATED AGENT: REX C. RAY
ADDRESS: 115 PROFESSIONAL PLACE
BRIDGEPORT, WV 26330

CAD FILE: R:\030-2259 EQT BIG367 Well Pad and Access Rd\Survey\030-2259 BIG 367 -EQT.dwg PLOT DATE/TIME: 8/23/2013 - 9:56am LAYOUT: H5 (2) USER: kpoth