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EQUITRANS℠

Paul W. Diehl
Counsel-Midstream
412.395.5540 Direct
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pdiehl@eqt.com

January 22, 2016

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: Equitrans, L.P.
Docket No. CP16-13-000
**Equitrans Expansion Project**
Responses to Data Requests issued December 29, 2015

Dear Ms. Bose:

On December 29, 2015, the Office of Energy Projects ("OEP") issued data requests to Equitrans, LP ("Equitrans") on behalf of itself and other cooperating agencies with respect to Equitrans' certificate application in Docket No. CP16-13-000. On January 19, 2016 Equitrans submitted a letter to the Commission stating that it would begin filing responses to the data requests and provide a more detailed schedule for any outstanding responses by January 22, 2016.

Equitrans submits herewith responses to a large number of the data request issued on December 29, 2015. Also attached are the verifications of the individuals responsible for the completion of the responses. For any responses or responsive materials that are currently outstanding, Equitrans has indicated the projected filing date in the response section of the respective data request. Equitrans anticipates that a substantial portion of the outstanding responses will be submitted by February 5, 2016, with the remainder being submitted later in February.

Please note that certain of the responses include attachments that contain either sensitive cultural resource information or specific landowner information; those attachments are being submitted as privileged pursuant to the Commission's regulations. Accordingly, the material is marked "PRIVILEGED AND CONFIDENTIAL – DO NOT RELEASE". Pursuant to Section 388.112 of the Regulations, Equitrans requests privileged treatment of the files containing the information and further requests that all of these files be restricted from public access.

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If you have any questions about the data responses or Equitrans' request for confidential treatment, please do not hesitate to contact me at (412) 395-5540 or pdiehl@eqt.com.

Respectfully submitted,

Equitrans, L.P.



Paul W. Diehl
Counsel-Midstream

cc: Paul Friedman – OEP
Lavinia DiSanto - Cardno, Inc.
Doug Mooneyhan – Cardno, Inc.
Service list

# VERIFICATION

Pursuant to Rule 2005 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("Commission"), 18 C.F.R. § 385.2005, Stephanie Frazier, being duly sworn, upon her oath says that she is Supervisor Environmental Permitting; that she has read and is familiar with the foregoing responses to the Commission's December 29, 2015 data request in Docket No. CP16-13-000; that the contents of the responses are true and correct to the best of her knowledge, information and belief; and that she has full power and authority to prepare the responses and execute this verification.

Stephanie Frazier
Supervisor Environmental Permitting

Subscribed and sworn before me this 21st day of January 2016.

Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Deborah Jean McCune, Notary Public
City of Pittsburgh, Allegheny County
My Commission Expires April 29, 2016
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

# VERIFICATION

Pursuant to Rule 2005 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("Commission"), 18 C.F.R. § 385.2005, Joseph B. Gilmore, being duly sworn, upon his oath says that he is Regional Land Director; that he has read and is familiar with the foregoing responses to the Commission's December 29, 2015 data request in Docket No. CP16-13-000; that the contents of the responses are true and correct to the best of his knowledge, information and belief; and that he has full power and authority to prepare the responses and execute this verification.

Joseph B. Gilmore

Regional Land Director
Huron Land & Coal

Subscribed and sworn before me this 21st day of January 2016.

Notary Public

Official Seal
Notary Public, State of West Virginia
Haley Combs
66 Dogwood Flat Road
Charleston, WV 25309
My Commission Expires June 4, 2017

# VERIFICATION

Pursuant to Rule 2005 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("Commission"), 18 C.F.R. § 385.2005, Abraham Jones, being duly sworn, upon his oath says that he is Manager, Construction Services ; that he has read and is familiar with the foregoing responses to the Commisssion's December 29, 2015 data request in Docket No. CP16-13-000; that the contents of the responses are true and correct to the best of his knowledge, information and belief; and that he has full power and authority to prepare the responses and execute this verification.

Abraham Jones
Manager, Construction Service

Subscribed and sworn before me this 21 day of January 2016.

Notary Public

OFFICIAL SEAL
Notary Public, State Of West Virginia
STEPHEN J. BUPP
EQT Midstream
303 Sand Cut Road, Clarksburg, WV 26301
My Commission Expires September 09, 2020

# VERIFICATION

Pursuant to Rule 2005 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("Commission"), 18 C.F.R. § 385.2005, Regina Henry, being duly sworn, upon her oath says that she is Supervisor, Environmental; that she has read and is familiar with the foregoing responses to the Commission's December 29, 2015 data request in Docket No. CP16-13-000; that the contents of the responses are true and correct to the best of her knowledge, information and belief; and that she has full power and authority to prepare the responses and execute this verification.

Regina Henry
Supervisor, Environmental

Subscribed and sworn before me this 21st day of January 2016.

Noelle M Nuckels
Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Noelle M. Nuckels, Notary Public
City of Pittsburgh, Allegheny County
My Commission Expires Sept. 7, 2016
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

# VERIFICATION

Pursuant to Rule 2005 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("Commission"), 18 C.F.R. § 385.2005, Jeremy Watts, P.E., being duly sworn, upon his oath says that he is an engineer; that he has read and is familiar with the foregoing responses to the Commission's December 29, 2015 data request in Docket No. CP16-13-000; that the contents of the responses are true and correct to the best of his knowledge, information and belief; and that he has full power and authority to prepare the responses and execute this verification.

Jeremy Watts, P.E.
Engineer III

**Subscribed and sworn before me this 21 day of January 2016.**

Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Deborah Jean McCune, Notary Public
City of Pittsburgh, Allegheny County
My Commission Expires April 29, 2016
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

# VERIFICATION

Pursuant to Rule 2005 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("Commission"), 18 C.F.R. § 385.2005, Andrew Gabany, being duly sworn, upon his oath says that he is Engineer III; that he has read and is familiar with the foregoing responses to the Commission's December 29, 2015 data request in Docket No. CP16-13-000; that the contents of the responses are true and correct to the best of his knowledge, information and belief; and that he has full power and authority to prepare the responses and execute this verification.

Andrew Gabany
Engineer III

Subscribed and sworn before me this 21 day of January 2016.

Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Deborah Jean McCune, Notary Public
City of Pittsburgh, Allegheny County
My Commission Expires April 29, 2016
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

# VERIFICATION

Pursuant to Rule 2005 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("Commission"), 18 C.F.R. § 385.2005, Kelsey Quan, being duly sworn, upon her oath says that she is Engineer II; that she has read and is familiar with the foregoing responses to the Commission's December 29, 2015 data request in Docket No. CP16-13-000; that the contents of the responses are true and correct to the best of her knowledge, information and belief; and that she has full power and authority to prepare the responses and execute this verification.

Kelsey Quan
Engineer II

Subscribed and sworn before me this 21 day of January 2016.

Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Deborah Jean McCune, Notary Public
City of Pittsburgh, Allegheny County
My Commission Expires April 29, 2016
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

# VERIFICATION

Pursuant to Rule 2005 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("Commission"), 18 C.F.R. § 385.2005, Hanna E. McCoy, being duly sworn, upon her oath says that she is Midstream Regional Land Manager; that she has read and is familiar with the foregoing responses to the Commission's December 29, 2015 data request in Docket No. CP16-13-000; that the contents of the responses are true and correct to the best of her knowledge, information and belief; and that she has full power and authority to prepare the responses and execute this verification.

Hanna E. McCoy

Regional Land Manager

Subscribed and sworn before me this 21 day of January 2016.

Notary Public

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Mark A. Jenkins, Notary Public
Cecil Twp., Washington County
My Commission Expires Aug. 17, 2019
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Federal Energy Regulatory Commission**

**General**

1. File, or provide an anticipated submittal date for, all outstanding plans and reports such as, but not limited to:

    a. Erosion and Sediment Control Plan;

**Response:**

See the response to Resource Report 7, Request 3.

    b. a track change version of Equitrans' proposed changes to the FERC staff's Wetland and Waterbody Construction and Mitigation Procedures (FERC's Procedures, May 2013 version) and our Upland Erosion Control, Revegetation, and Maintenance Plan (FERC's Plan, May 2013 version);

**Response:**

Equitrans has committed to use the FERC Plan and Procedures with minor modifications as requested in Resource Report 1 and thus does not intend to file proposed changes to the Wetland and Waterbody Construction and Mitigation Procedures or upland erosion and sediment control plans.

    c. Wetland Mitigation and Restoration Plan;

**Response:**

Equitrans expects to submit a response by February 5, 2016.

    d. Fire Prevention and Suppression Plan;

**Response:**

See the response to Resource Report 1, Request 20.

    e. Emergency Action Plan;

**Response:**

Please refer to section 11.1.2 of Resource Report 11. The plan will be developed after the construction contractor has been selected and will be filed with the Implementation Plan.

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f. Spill Prevention, Control and Countermeasures Plan;

**Response:**

Equitrans expects to file by February 5, 2016.

g. Bored Crossings Plan;

**Response:**

Road bore crossing details were filed in Resource Report 1 Appendix 1-E. Workspaces needed for road bores are shown on the alignment sheets. Equitrans expects to file the alignment sheets by February 5, 2016. See the response to Resource Report 1, Request 29.

h. Foreign Pipeline-Utility Crossings Plan;

**Response:**

During the design phase, Equitrans used each state's One-Call program to identify foreign line operators. Equitrans has planned its construction activities based on requirements provided by those operators as well as crossing methods used for prior construction projects. These methods include, but are not limited to, the use of an air bridge, adding additional fill over the existing utility, temporarily or permanently relocating or burying the utility and at times rerouting the proposed pipeline at the operator's request. Foreign pipeline operators have been consulted regarding pipeline protection measures.

Precautions will be taken to identify existing pipelines, avoid damage, and safely cross foreign pipelines during construction, including:

- One Call will be contacted to locate known pipelines and utilities, and operators of the existing pipelines will be given adequate notice of the crossing and the opportunity to be present during work around their pipelines;
- Known existing pipelines will be precisely located prior to excavation using a hand-held magnetometer and/or by probing;
- ROW edges will be scanned prior to grading with Passive Inductive Locating equipment to identify any unknown foreign pipelines;
- Mechanized excavation will not be allowed within three feet of existing pipelines; the excavations will be completed by hand shoveling;

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- Existing foreign lines will be temporarily supported for the length of the span exposed by the crossing excavation;
- The pipeline trench will be excavated to provide a minimum clearance between the pipeline and the foreign line or structure as designated by officials having authority over the facilities; and
- Existing pipelines will be inspected before and after installation of the Project.

In the event accidental damage occurs to a foreign pipeline during construction, appropriate measures will be implemented to minimize undesirable effects to human health and the environment.

i. Mine Subsidence Plan;

**Response:**

See the response to Resource Report 6, Request 15.

j. Trash Management Plan;

**Response:**

See the response to Resource Report 3, Request 23.

k. Transportation Management Plan;

**Response:**

See the response to Resource Report 5, Request 13.

l. Migratory Bird Habitat Conservation Plan;

**Response:**

See the response to Resource Report 3, Request 21.

m. Rare, Sensitive, and Threatened and Endangered Plant Survey Report;

**Response:**

See the response to Resource Report 3, Request 14.

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n. Rare, Sensitive, and Threatened and Endangered Wildlife and Aquatic Species Survey Report;

**Response:**

Aside from rare plant surveys, Equitrans has completed all requested species surveys. See also the response to Resource Report 3, Request 1.

o. Bat Survey Report;

**Response:**

See the response to Resource Report 3, Request 1.

p. Habitat and Non-Sensitive Wildlife and Aquatic Species Survey Report;

**Response:**

See the responses to Resource Report 1, Request 12, and Resource Report 3, Request 18.

q. Visual Screening Plan for Aboveground Facilities;

**Response:**

Equitrans has not received comments requesting visual screening of aboveground facilities, and as such, no visual screening of aboveground facilities is planned.

r. Cultural Resource Survey Reports; and

**Response:**

Equitrans expects to submit the reports by February 5, 2016. See the response to Resource Report 4, Request 4.

s. Cultural Resources Avoidance or Treatment Plans.

**Response:**

Consultation with the SHPO is ongoing. Equitrans will prepare a cultural resource avoidance or treatment plans if the applicable SHPO requires Equitrans to do so.

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

Respondent for subparts (a)-(g) and (j)-(s) Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

Respondent for subparts (h) and (i): Jeremy Watts
Position: Engineer III, EQT Corporation
Phone Number: 412-553-5769
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**General**

2. Table 1.3-1 stated that: "Additional temporary workspaces (ATWS) include those areas that will be used for equipment laydown, contractor staging yards, and pipeline storage. ATWS are not further categorized because each one will be used for multiple purposes." ATWS are generally along the pipeline right-of-way; used for road crossings, stream crossings, and in agricultural areas to store topsoil. Pipe storage and contractor yards are typically not located along the right-of-way. These areas should be listed separately from ATWS. Provide a table listing the proposed pipe storage and contractor yards for the Equitrans Expansion Project (EEP), including: yard name or number; size (acres); county and state; and current land use. In addition, provide figures that illustrate each pipe storage and contractor yard on 7.5-minute U.S. Geological Survey topographic quadrangle maps and larger scale (0.5-inch = 500 feet [1:12,000]) aerial maps that depict the boundaries of each yard.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Abraham Jones
Position: Manager, Construction Service, EQT Corporation
Phone Number: 304-626-7959
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**General**

3. Clarify that all of the information in each environmental resource report (RR) is based on field surveys or desktop data or a combination. Identify any environmental resource where field survey data was not incorporated into the RR, and explain why. In those situations, provide a schedule when the results of environmental field surveys would be filed.

**Response:**

Field survey was conducted throughout the entire Project footprint, unless otherwise noted in environmental resource reports or data tables.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**General**

4. Table 1.2-2 and RR 1 discuss three taps: the H-302 Tap Site, the H-306 Tap Site, and the H-148 Tap Site. Provide:
   a. a plot plan for each tap site;
   b. complete descriptive information (including acres of temporary and permanent impacts) and mapping (update maps provided as part of appendices 1-A and 1-B); and
   c. relevant environmental data for each tap site (such as, but not limited to soils, land use, vegetation, waterbodies, wetlands, special status species, and cultural resources).

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**General**

5. Revise tables, as appropriate, to provide environmental impact assessments for all project components, including the pipelines, ATWS, staging areas, mainline valves (MLV), meter stations, compressor stations, interconnections, tap sites, pipe storage and contractor yards, and new or to-be-improved existing access roads.

**Response:**

Unless addressed within the responses to this data request, please refer to the resource reports submitted with the certification application, which include environmental impact assessments for all Project components.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 1 – General Project Description**

1. Section 1.1 indicated that the project would be designed to deliver 600,000 dekatherms per day (Dth/d) of natural gas, but section 1.1.2 indicated that only 400,000 Dth/d was contracted. Resolve the apparent discrepancy.

**Response:**

While the Project currently has contracted for delivery of 400,000 Dth/d of natural gas, Equitrans has sized the Project to deliver 600,000 Dth/d, which provides for possibility of future deliveries without requiring additional construction. Equitrans is continuing to market the unsubscribed capacity.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 1 – General Project Description**

2. As previously requested in our comments dated September 28, 2015, fully describe all aspects of the proposed communication tower at the new Redhook Compressor Station, including dimensions, acres, height (in feet) and width, a typical plan and profile drawing, and permitting requirements and status. Discuss all environmental resources impacted by the construction and operation of the communication tower, such as on migratory birds, bats, and visual resources. Clarify whether Equitrans would follow U.S. Fish and Wildlife Service (FWS) guidelines for installation of telecommunication towers.

**Response:**

The communication tower at the Redhook Compressor Station will a single lattice structure 60 feet in height. There are no lighting or other devices supported by this tower, therefore, it is not a source of light or sound. The tower will be located within the compressor station fence and will not require additional earth disturbance and require no permits, or operating licenses. This tower will be operated in compliance with Federal Communications Commission, Part 15 requirements. The 2013 U.S. Fish and Wildlife Service (USFWS) Revised Voluntary Guidelines for Communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning provides recommendations on the installation and operation of communication towers to avoid impacts to birds. The Project's proposed tower installations adhere to the USFWS voluntary guidelines. Equitrans expects to submit the visual simulations for the Project, including the communications tower, by February 26, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 1 – General Project Description**

3. Label and identify with what system each red dot depicted on figure 1.2-1 as "Pipeline Interconnect" connects with and delete any red dots that are not relevant to the project. Depict the H-306 pipeline mentioned in section 1.2.2.2 on figure 1.2-1. The Applegate Gathering System does not appear on figure 1.2-1. Revise the symbols for the Applegate Gathering System to be different than the Sunoco Mariner East Pipeline and the Texas Eastern Pipeline.

**Response:**

See revised figure 1.2-1 in Attachment 1-3.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 1 – General Project Description**

4. Table 1.2-2 indicated that some facilities: "will be determined upon final review of capacity needs and route confirmation." Finalize and file the facilities data and revise the table to include acres for each project component.

**Response:**

Acreage for each Project component is included in updated Table 1.3-3. See the response to Resource Report 1, Request 8.

Equitrans expects to submit a revised Table 1.2-2 by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 1 – General Project Description**

5. Since only one pig launcher/receiver is noted in table 1.2-2 for H-316, clarify whether another pig launch/receiver is needed.

**Response:**

A launcher/receiver will be installed on the H-316 pipeline within the Redhook Compressor facility. See the response to Resource Report 1, Request 4.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 1 – General Project Description**

6. Given the proposed construction right-of-way widths and the proposed 50-foot-wide permanent right-of-way width, confirm that virtually all (45.7 of 47.98 acres) of the pipeline workspace would be maintained as "land required for operation" in table 1.3-1.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Jeremy Watts
Position: Engineer III, EQT Corporation
Phone Number: 412-553-5769
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 1 – General Project Description**

7. Confirm in table 1.3-1 that no new permanent access roads would be needed; as table 1.3-4 provides access roads that would be used for operation of the project.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Jeremy Watts
Position: Engineer III, EQT Corporation
Phone Number: 412-553-5769
Date: January 22, 2016

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**Equitrans, L.P.**
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**Resource Report 1 – General Project Description**

8. Clarify discrepancies in construction impacts between tables 1.3-1 and 1.3-3. For example, table 1.3-1 indicated that 17.74 acres would be disturbed during construction of the Redhook Compressor Station, while table 1.3-3 indicated that 23.99 acres would be disturbed during construction.

**Response:**

17.74 acres would be disturbed during construction of the Redhook Compressor Station. An updated Table 1.3-3 is included as Attachment 1-8.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
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**Resource Report 1 – General Project Description**

9. Provide a table of all MLV locations by milepost (MP). Include the average dimensions for each MLV site, and a typical plot plan. Depict all MLV sites on the alignment sheets (appendix 1-A). As previously requested in our July 2, 2015 comments, discuss any potential advantages to installing automatically-operated MLVs. Estimate the time between the issuance of a remote signal to close an automatically-operated MLV and the actual shut-off.

**Response:**

There are no stand-alone mainline valves included in the Project because of the short distances of the pipe segments. The valves on the launchers and receivers that will be installed at the kickoff and termination points of each pipeline segment provide the positive shut off necessary to comply with code requirements. Because there are no MLVs necessary with this Project, the automatic shutoff question does not apply.

Respondent: Jeremy Watts
Position: Engineer III, EQT Corporation
Phone Number: 412-553-5769
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 1 – General Project Description**

10. As previously requested in our comments dated September 28, 2015, include an analysis of the potential to reduce the nominal construction right-of-way width in forested areas. The proposed construction rights-of-way seem overly wide given the small diameter of the pipelines. Explain why "Equitrans anticipates conducting full right-of-way topsoiling through forested uplands."

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Abraham Jones
Position: Manager, Construction Service, EQT Corporation
Phone Number: 304-626-7959
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 1 – General Project Description**

11. Identify the types of construction equipment that would be used for each step of the sequence described in section 1.4.1.1 (as partly done for trenching, bending, lowering, and backfilling): survey, clearing, grading, stringing, bending, welding, trenching, padding, testing, and restoration.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Abraham Jones
Position: Manager, Construction Service, EQT Corporation
Phone Number: 304-626-7959
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 1 – General Project Description**

12. Given that the EEP and the Mountain Valley Pipeline Project (MVP) would be analyzed together in a single comprehensive environmental impact statement (EIS), provide a table listing all differences between Equitrans and Mountain Valley's proposed standard construction and restoration techniques. For example, section 1.4.1.1 of RR 1 for the EEP stated that: "Equitrans may use herbicides to control invasive species on a limited basis in consultation with landowners." However, section 1.5 of MVP's RR 1 stated that: "Unless requested by a land management agency, it is MVP policy not to use herbicides or pesticides to maintain the right-of-way or any of its Projects facilities."

**Response:**

A review of Mountain Valley and the Project was conducted to identify major differences in construction and restoration methods of the two projects. Unlike Mountain Valley, the Project does not cross special geological formations such as karst topography, or federal or state lands. In addition, the Project has not been subject to numerous stakeholder comments that contributed to the specific construction and restoration techniques developed for MVP. For example, Project stakeholders did not request special treatment for non-protected aquatic species, specifically for mussels, as they did for Mountain Valley.

Project stakeholders did not request surveys for habitat and non-sensitive species. MVP conducted habitat assessments and various other surveys because of the large number and diversity of species potentially occurring in its project; habitat assessments are often used to identify habitats present on the project, and rule out species from potentially occurring by proxy if the habitat they require is not preset. The number of species potentially occurring in the Project footprint was limited and could be effectively addressed by targeted searches, as discussed in the bat, mussel, and plant survey reports.

Unlike Mountain Valley, landowners associated with EEP have not expressed concerns to Equitrans about cancellation of insurance policies as result of this Project.

Aside from the difference noted in the question regarding herbicide application, and the comments in this response, we know of no other major differences in construction and restoration methods between EEP and MVP.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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13. As previously requested in our July 2, 2015 comments, revise table 1.4-1 (and table 8.1-4 as necessary) to include the site-specific description/purpose, the justification of the ATWS, and the length and width dimensions (or identify them as oddly-shaped if applicable). Ensure that tables 1.4-1 and 8.1-4 have the same data columns and that individual ATWS match and cross-reference completely between the two tables. Indicate whether Equitrans could locate ATWS to avoid forest, waterbodies, wetlands, and other sensitive resources. Complete and submit Equitrans planned "redesign (of) several of the ATWS so that the 50-foot offset will be maintained" at waterbodies and wetlands; or provide a timeframe for their submittal.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Abraham Jones
Position: Manager, Construction Service, EQT Corporation
Phone Number: 304-626-7959
Date: January 22, 2016

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14. Section 1.4.1.1 stated that: "streams will be crossed using dry-trench methods, including HDD, flume, and dam-and-pump." However, in the same section it was stated that: "intermediate waterbodies…and minor waterbodies…will be crossed by the open-cut/conventional lay or dry ditch crossing methods, unless otherwise required." Identify which waterbodies would be crossed with open-cut (wet) conventional lay methods and which waterbodies would be crossed by dry-trench methods.

**Response:**

As the project construction methodologies have been further defined, it has been determined that all waterbodies will be crossed using dry-trench methods. Open-cut construction methods will not be utilized for this project.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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15. As previously requested, for where Equitrans proposes to use a bore to cross a waterbody, road, or railroad, include a site-specific description of the associated topography, elevations at both ends of the bore, pit dimensions, and the size and location of temporary extra workspace to store spoil. Either provide this information or provide a schedule for when this information will be filed with the FERC.

**Response:**

Horizontal directional drilling (HDD) is planned for the Tenmile Creek and Monongahela River crossings. Site-specific crossing plans were provided as Appendix 1-G to Resource Report 1. Conventional boring is planned for some road crossings, and may be used to cross an area where a wetland or stream is proximal to the road. Road bore typical cross-section diagrams were filed with the application in Resource Report 1, Appendix 1-E. The workspaces necessary to accommodate road bore methods will be shown on the revised alignments sheets. See the response to Resource Report 1, Request 29.

Respondent: Jeremy Watts
Position: Engineer III, EQT Corporation
Phone Number: 412-553-5769
Date: January 22, 2016

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**Equitrans, L.P.**
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16. As previously requested, revise table 1.3-2 to include the width of the foreign right-of-way (feet), the width of the foreign right-of-way that would be used during construction (feet), and the width of the foreign right-of-way that would be used during operations (feet). Equitrans responded that "information pertaining to each of the existing corridors, such as the width of the foreign right-of-way, would be proprietary to each facility owner and this information is not readily available to Equitrans. Consequently, the width of the foreign right-of-way that would be used during construction and/or during operations cannot be determined." Once Equitrans reaches agreements with the owners of the foreign pipelines and utilities to be crossed, file the requested information with the FERC.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Jeremy Watts
Position: Engineer III, EQT Corporation
Phone Number: 412-553-5769
Date: January 22, 2016

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17. Confirm whether ATWS for horizontal directional drill (HDD) pull-back sections has been fully determined and depicted on the alignment sheets since Equitrans says that it "will be shown" on the alignment sheets.

**Response:**

ATWS for HDDs will be shown on the revised alignments sheets. See the response to Resource Report 1, Request 29.

Respondent: Jeremy Watts
Position: Engineer III, EQT Corporation
Phone Number: 412-553-5769
Date: January 22, 2016

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18. As previously requested in our July 2, 2015 comments, revise table 1.3-1 to include cathodic protection rectifiers and beds (even if they would be contained within the pipeline right-of-way), fully describe them, and depict them on maps.

**Response:**

Both cathodic protection rectifiers and groundbeds will be shallow bed groundbeds. Equitrans will update table 1.3-1 to show both cathodic protection rectifiers and beds. See the response to Resource Report 1, Request [cite the one for updated Table 1.3-1]. In addition, Equitrans will depict the cathodic protection rectifiers and groundbeds in the revised alignment sheets. See the response to Resource Report 1, Request 29.

Respondent: Jeremy Watts
Position: Engineer III, EQT Corporation
Phone Number: 412-553-5769
Date: January 22, 2016

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**Equitrans, L.P.**
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19. Clarify what analyses Equitrans would perform on "baseline water samples…taken at the source prior to water-up and prior to discharge" during hydrostatic testing as stated in section 1.4.1.1. Indicate what criteria from water analyses would result in the source not being used for hydrostatic testing of the pipeline.

**Response:**

Equitrans analyzes both source water and discharge water in the same manner, which is consistent with each state's discharge monitoring requirements. Source water quality testing is not a state requirement. Equitrans uses the source water data as a baseline to compare with hydrostatic test discharge water. There are no set criteria from source water quality testing that would result in the source not being used for hyrostatic testing.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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20. As previously requested in our July 2, 2015 comments, identify areas where brush and slash produced by clearing would be burned. File a Fire Prevention and Suppression Plan that outlines the best management practices that would be followed by Equitrans, and the requirements of local, state, and federal laws or regulations related to burning; or provide a schedule for its submittal. The plan should include measures that would be used to prevent impacts from burning on all potentially affected resources such as waterbodies, wetlands, vegetation, wildlife, air quality, and nearby structures.

**Response:**

Equitrans will not conduct burning of slash or debris. As such, a fire prevention and suppression plan as described in the request is not applicable to the Project.

Respondent: Abraham Jones
Position: Manager, Construction Service, EQT Corporation
Phone Number: 304-626-7959
Date: January 22, 2016

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21. As previously requested in our July 2, 2015 comments, in situations where Equitrans proposes to use a HDD, indicate the width of the path for electric-grid guide wires (in addition to the "small path just large enough to walk through" described for the "walkover unit"), clarify the specific maximum diameter of trees that would be cut within the path, and state whether the clearing would be conducted with hand tools only. Additionally, describe whether there would be any clearing associated with a potential path to water to support HDD operations.

**Response:**

The path for the guide wires should be about two feet wide. Any brush or tree clearing necessary to lay guide wires would be hand-cleared and usually limited to what can be done with a machete or similar tool. No trees larger than saplings are anticipated to be cleared. Water for the HDDs will be obtained from municipal sources, therefore no clearing of vegetation will be necessary.

Respondent: Jeremy Watts
Position: Engineer III, EQT Corporation
Phone Number: 412-553-5769
Date: January 22, 2016

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**Equitrans, L.P.**
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22. As previously requested in our July 2, 2015 comments, supplement table 1.4-5 (or provide an additional table) to include both vertical and lateral (side) slopes between 15 percent and 30 percent grade, and a table of both vertical and lateral (side) slopes greater than 30 percent grade that would be crossed by the pipelines. Describe special measures that would be used for construction or restoration in steep terrain. Explain how Equitrans would prevent rocks from rolling off the right-of-way, install erosion controls, and prevent post-construction landslides, particularly in relation to the replacement and compaction of soils.

**Response:**

The types of erosion and sediment control devices used throughout the Project are selected based on slope and soil conditions at each location. Site-specific plan drawings are prepared using state-approved best management practices (BMP), are stamped by registered Professional Engineers and are approved for use by the state. In areas of steep slopes, spoils are maintained on the right-of-way by using appropriate sediment barriers, such as super silt fence or appropriately sized compost filter sock. Spoil piles in Pennsylvania require temporary stabilization (e.g., seed and mulch) within four days of disturbance. The states also require waterbar spacing that is more conservative that the FERC Plan. On long downslopes, hard plugs are left in the trench to slow the velocity of construction stormwater. Soils are restored when conditions on the right-of-way are appropriate for restoration.

Equitrans reduces the potential for slips to develop by routing the pipeline so that it lays as perpendicular to the slope as practicable, reducing the need for side hill construction. Brushstrokes are developed and field surveyed for constructability and avoidance of sensitive resources, and refinements are then incorporated into the project based on survey feedback. Equitrans has also incorporated BMPs into the earth disturbance permits (still in development), such as seep collectors ("underdrains"), to manage the movement of water through slip-prone areas.

Equitrans expects to provide information regarding vertical and lateral slopes by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
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23. Indicate the maintenance schedule when Equitrans intends to remove trees located within 15 feet of the pipeline, as allowed by the FERC Procedures.

**Response:**

Trees will be removed from the right-of-way during construction, and vegetative maintenance during operations will be conducted as outlined in the FERC Plan and Procedures, as stated in Resource Report 1. Equitrans will conduct vegetative maintenance as necessary to protect the integrity of the pipeline.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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24. Indicate the location of permanent operation staff and their response time to the activation of safety alarms.

**Response:**

Information was provided in Resource Report 11, Section 11.3.11. The primary Gas Control Center is in Pittsburgh. The secondary Gas Control Center is in Jefferson Hills, PA at the Tepe Station. All Gas Controllers have the authority to respond immediately at their own discretion in order to protect the community, environment and integrity of the system. This includes, but not limited to: shutting down the pipeline system or contacting 911 in affected area.

The primary operational staff for the Project are also located in Mannington, WV, Logansport, WV, and Waynesburg, PA. These staff members are responsible for inspections and maintenance and responding to safety and operational issues at the Project location. See the response to Resource Report 5, Request 4.

Respondent: Andrew Gabany
Position: Engineer III, EQT Corporation
Phone Number: 412-395-5531
Date: January 22, 2016

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25. For all the projects listed on table 1.1-10, where information is available, quantify in tabular format impacts resulting from each individual project on specific environmental resources within the counties containing EEP facilities, including:

    a. land use (total acres affected by a project);
    b. agricultural land (miles and/or acres);
    c. forest (miles and/or acres);
    d. waterbodies (number crossed);
    e. wetlands (number crossed and acres affected);
    f. federally-listed threatened or endangered species (present/absent);
    g. developed recreational areas or parklands (number crossed);
    h. historic properties (number affected);
    i. hazardous air pollutants emitted (expressed in tons per year, for CO, NOx, SO2, VOC, PM10, and PM2.5); and
    j. greenhouse gases emitted (CO2 in metric tonnes per year).

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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26. In addition, Equitrans notes in several places within section 1.10 that research and/or analyses are ongoing. Provide the pending information; or an estimated timeframe for its submittal.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
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27. Also for the cumulative impact analysis, identify each watershed where EEP facilities would be located, and indicate the total size of each watershed in acres. Illustrate the watersheds in relationship to the proposed project facilities on a map. Identify each airshed basin where the EEP facilities would be located, and indicate the size of the air basins in square miles.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
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**Resource Report 1, Appendix 1-A**

28. As previously requested in our comments dated September 28, 2015, ensure that the full extent of access roads are depicted on alignment sheets or other aerial imagery, not just where they occur within the limit of the aerial photography.

**Response:**

The revised alignment sheets will reflect the requested information. Equitrans expects to file the revised alignment sheets by February 5, 2016. See the response to Resource Report 1, Request 29.

Respondent: Jeremy Watts
Position: Engineer III, EQT Corporation
Phone Number: 412-553-5769
Date: January 22, 2016

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**Equitrans, L.P.**
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**Resource Report 1, Appendix 1-A**

29. Revise appendix 1-A to:

a. include the survey corridor;
b. include the yellow line feature for all access roads (for example, H3180AR-07 is labeled but the yellow line is missing);
c. include the blue line features for all waterbodies (for example, waterbody ID 57103501 UNT/North Fork Fishing Creek at milepost (MP) 0.04 is not depicted);
d. include all project components (for example, the H-302 Tap Site, the H-306 Tap Site, and the H-148 Tap Site are not depicted);
e. define the blue wavy lines near the Monongahela River crossing; and
f. resolve discrepancies between table 2-A-2 (waterbody crossings) and appendix 1-A (for example, table 2-A-2 lists temporary impacts to waterbody S-AA1 due to ATWS for H-158/M-80 and Redhook. Both entries have a crossing method of dry-ditch which would not be appropriate for an ATWS. Further appendix 1-A only depicts S-AA1 being crossed by the pipeline routes of H-158 and M-80).
g. ensure that all project components depicted on the alignment sheets are accurately captured in the appendix tables through each RR.

**Response:**

Equitrans expects to submit the revised alignment sheets by February 5, 2016. Equitrans expects to provide a revised Table 2-A-2 by February 5, 2016. Equitrans will submit revised tables as appropriate to include all project components reflected on the revised alignment sheets.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Resource Report 1, Appendix 1-D**

30. Revise appendix 1-D to depict the entire 1-mile radius around the Redhook Compressor Station.

**Response:**

Revised Appendix 1-D is included as Attachment 1-30.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Resource Report 1, Appendix 1-H**

31. As previously requested in our comments dated September 28, 2015, revise the HDD Contingency Plan to include contact name and telephone numbers for the FERC Project Manager.

**Response:**

The revised HDD Contingency Plan has been updated as requested and is included as Attachment 1-31.

Respondent Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Resource Report 1, Appendix 1-H**

32. Indicate how Equitrans would isolate an inadvertent release of drilling fluids in deep and/or flowing water with hay bales, sand bags, filter socks, or silt fencing.

**Response:**

Equitrans has revised its HDD Contingency Plan. See the response to Resource Report 1, Request 31.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Resource Report 1, Appendix 1-J**

33. As previously requested in our comments dated September 28, 2015, clarify whether Equitrans would use a specialized "shoe" that may be fitted to the blade or bucket of heavy equipment as discussed in MVP's draft winter construction plan.

**Response:**

Equitrans would use a specialized shoe that maybe be fitted to the blade or bucket of heavy equipment.

Respondent: Abraham Jones
Position: Manager, Construction Service, EQT Corporation
Phone Number: 304-626-7959
Date: January 22, 2016

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**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 2 – Water Use and Quality**
**Water Resources**

1. Provide a discussion on the primary uses of the Pittsburg Low Plateau and Upper Pennsylvania aquifers.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 2 – Water Use and Quality**
**Water Resources**

2. As previously requested in our comments dated September 28, 2015, clarify whether the pipeline routes would cross any swallets. If so, outline measures to avoid, reduce, or mitigate impacts on swallets.

**Response:**

Swallets are generally associated with Karst terrain. This Project does not cross karst terrain, and no swallets have been identified in the Project area.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 2 – Water Use and Quality**
**Water Resources**

3. Provide a schedule for when information regarding the location of water wells and springs, identified within 150 feet of all project components (including the pipelines, ATWS, aboveground facilities, and pipe storage and contractor yards) through field reconnaissance, would be provided to the FERC.

**Response:**

Identification and testing of water wells and springs within 150 feet of the construction footprint will be conducted prior to construction and will be included with Equitrans' Implementation Plan for the Project.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 2 – Water Use and Quality**
**Water Resources**

4. Indicate if any of the EEP proposed pipelines would cross any mine pools. If so, outline measures to avoid, reduce or mitigate impacts near mine pools.

**Response:**

The H-316 pipeline crosses above a portion of the mine pool within the Mather Mine. The mine pool elevation at this location is at an approximate elevation of 600 feet above mean sea level (NMLRC, 2004). The H-316 pipeline and project components, in consideration to the planned HDD, are a minimum of 225 feet above this mine pool. Thus, no impacts to the mine pool are anticipated. No other pipelines cross any known mine pools (NMLRC, 2004).

(NMLRC) National Mine Land Reclamation Center. 2004. WVR173 Phase IV, EPA Region III Mine Pool Project

Respondent: Joe Gilmore
Position: Regional Land Director, EQT Corporation
Phone Number: 304-348-3864
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
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**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 2 – Water Use and Quality**
**Water Resources**

5. As previously requested in our comments dated September 28, 2015, clarify whether Equitrans would offer post-construction testing of water quantity and quality to landowners with water wells and springs located within 150 feet of any workspace. If so, provide details regarding water yields and water quality parameters that Equitrans would analyze.

**Response:**

Equitrans would offer pre-construction and post-construction testing to landowners with water wells and springs located within 150 feet of any workspace. Equitrans will interview the owner of the well or spring to document available basic water supply information (e.g., if the supply is a water well obtain the depth, year drilled, casing type, treatment, historic water quality issues). If requested, pre- and post-construction water samples will be collected and analyzed for the following:

- Analyses include:
- Alkalinity
- Oil and Grease
- Specific Conductance
- Total Dissolved Solids
- Total Suspended Solids
- Chloride
- Sulfate
- Hardness
- Nitrate as N
- MBAS / Surfactants
- Total Coliform
- E. Coli
- Turbidity
- Volatile Organic Compounds
- Hydrocarbons
- Total Metals

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If post-construction quality testing determines that the water supply has been affected from Project construction activities, then Equitrans will take steps necessary to return the water supply to pre-construction quality conditions or otherwise supply potable water for the water supply owner's use. Equitrans does not plan to test well yield because such testing is subject to large variation based on well construction, seasonal changes, aquifer properties, and testing procedures.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
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6. Provide a citation for Holland 2015 referenced in table 2.1-3.

**Response:**

Resource Report 2 does not have a table 2.1-3, and there are no references to Holland 2015.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
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7. Section 2.1.3.1 stated that: "Based on correspondence with PADEP (PADEP 2015a), there are no public groundwater supplies located in the area of the Project." Provide a definition for "area of the Project;" and identify any public groundwater supplies located within 150 feet of EEP components.

**Response:**

There are no public groundwater supplies located within 150 feet of any of the Project facilities. The Project area that was reviewed by the agency generally included an area within three miles of the Project facilities.

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8. Section 2.1.4.1 states "Dewatering of the pipeline trench, the only activity requiring pumping of groundwater, may be necessary in areas where there is a high water table." Identify areas where a shallow depth to groundwater may exist. Discuss where pumping of groundwater may be necessary for trench dewatering. If the trench is dewatered, explain procedures for water releases and the protection of nearby waterbodies and wetlands.

**Response:**

No areas of high water tables have been identified with the exception of areas where the Project would cross waterbodies as discussed in Section 2.2 of Resource Report 2. Whether water in the trench is from groundwater or from precipitation events, trench dewatering will be conducted as specified in the FERC Plan and Procedures, as discussed in Section 2.1.4.1, and in compliance with Project earth disturbance permits.

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9. Table 2.2.-2 provides impacts (acres) and crossing length (feet) for project components that would cross 100-year flood zones. However, several components have a crossing length but no impact acreage or have an impact acreage but no crossing length. Resolve the apparent discrepancy.

**Response:**

A crossing length is only provided if the pipeline centerline crosses the flood zone. ATWS only have an acreage calculated for the area within the flood zone. The revised Table 2.2-2 is included in Attachment 2-9.

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10. Discuss flash flooding hazards in the project area. Identify the type of rain event, and estimate the amount of precipitation that could result in flash flood conditions. Outline measures that Equitrans would implement to handle a flash flood during construction.

**Response:**

Section 2.2.1.2 of Resource Report 2 and revised Table 2.2-2 (see Attachment 2-9) has addressed facilities located within in the 100-year flood zones. Measures taken to prevent damage to Project facilities in the 100-year flood zones during flooding and flash flooding will be addressed in the state water encroachment permits for the Project.

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Phone Number: 412-553-5798
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11. Discuss the potential for stream scour during flash flood events. Outline the measures Equitrans would implement to prevent or mitigate stream scour.

**Response:**

Equitrans will install the pipeline at a depth below the streambed, below scour levels. Stream scour due to pipeline construction is not anticipated.

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12. Acreages provided in table 2.2-3 do not match those provided in appendix 2-A-2. For example, appendix 2-A-2 lists 0.03 acre of temporary impacts while table 2.2-3 lists 0.04 acre of impacts. Resolve the apparent discrepancies.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
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13. Discuss whether the project would cross any waterbodies considered an "outstanding natural resource water" as set forth by the Anti-degradation Policy in Pennsylvania.

**Response:**

No waterbody crossed by the Project is classified by the Pennsylvania Code, Title 25, Chapter 93 as "exceptional value" or "high quality".

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14. Milepost and crossing length in table 2.2-4 and appendix 2-A-2 do not match. For example, the Monongahela River crossing is listed in table 2.2-4 as MP 3.0 and a crossing length of 770 feet while table 2-A-2 lists this crossing at MP 3.1 with a crossing length of 1,023.11 feet. Resolve these apparent discrepancies.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
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15. Section 2.2.1.3 stated that a total of 23 waterbodies would be crossed by the project; however, table 2-A-2 lists more than 23 waterbody crossings. Reconcile the discrepancies.

**Response:**

Some waterbodies are crossed multiple times by either the pipeline route or other facilities. Table 2-A-2 of Resource Report 2 lists waterbody names, and there are instances where multiple entries have been made for a particular waterbody.

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Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
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16. RR 6 identified approximately 1 mile of pipeline where bedrock would be encountered within 5 feet of the ground surface. Due to the potential need for blasting if other methods of excavation should prove inadequate in bedrock, outline the measures Equitrans would implement to protect groundwater resources from blasting. Discuss well and spring testing procedures and criteria, and indicate how damage caused by blasting would be addressed.

**Response:**

As stated in Section 1.4.1.2 of Resource Report 1, Equitrans does not anticipate the need to blast in order to construct the Project. As such, Equitrans does not anticipate damage caused by blasting. In previous projects located near the Project area, Equitrans has ripped shallow bedrock or fractured it using a rock hammer. In the event that Equitrans finds that blasting is necessary, Equitrans will submit a Project-specific blasting plan to FERC prior to conducting any blasting. The blasting plan will include measures Equitrans would implement to protect groundwater resources.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
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17. As previously requested in our comments dated September 28, 2015, identify groundwater resources that may be affected by the proposed compressor station, pig launcher/receiver sites, taps, MLVs, pipe storage and contractor yards, and new or existing access roads that may be improved. Provide the measures to avoid, reduce, or mitigate impacts on groundwater resources during construction of these aboveground facilities and use areas.

**Response:**

Table 2.1-1 of Resource Report 2 includes a listing of the Project aboveground facilities in relation to the locations of aquifers. The aboveground facilities are not expected to result in impacts to groundwater. In addition, the measures discussed in Section 2.1.4 would protect groundwater from adverse effects from the aboveground Project facilities as well as the pipeline.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
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**Resource Report 2 – Water Use and Quality**
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18. As previously requested in our comments dated September 28, 2015, describe impacts (temporary and permanent) on waterbodies that may be affected by the construction of the compressor station, pig launcher/receiver sites, taps, MLVs, and pipe storage and contractor yards. Provide measures to avoid, reduce, or mitigate impacts on waterbodies during construction of these aboveground facilities and use areas.

**Response:**

Appendix 2-A-2 filed with the certificate application includes impacts (temporary and permanent) on waterbodies that may be affected by the construction of the compressor station, pig launcher/receiver sites, taps, MLVs, and pipe storage and contractor yards. Equitrans will be submitting a revised Appendix 2-A-2.

Resource Report 1 includes more detailed discussion of the temporary and permanent impacts from specific facilities, including that Equitrans will implement the FERC Plan and Procedures and will comply with state permits and regulations in order to avoid, reduce, or mitigate impacts on waterbodies during construction of aboveground facilities and use areas.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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19. Revise table 2.2-5 to provide MP and crossing length (feet) for each source water protection area that would be crossed. Discuss measures Equitrans would implement to avoid, reduce impacts, or mitigate impacts on the source water protection areas listed in table 2.2-5.

**Response:**

Information regarding source water protection areas in Table 2.2-5 was obtained directly from communications with the applicable state entities. Digital or other data was not available for mapping of these features. Impacts on source water protection areas are not anticipated; however, should impacts to source water areas unintentionally occur, Equitrans will implement the best management practices outlined in the Project earth disturbance permits as well as the FERC Plan and Procedures to avoid, reduce impacts, or mitigate impacts on source water protection areas.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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20. As previously requested in our comments dated September 28, 2015, discuss impacts that construction may have upon water intake equipment and filters at public surface water intake facilities. Outline measures Equitrans would implement to avoid, reduce, or mitigate those impacts.

**Response:**

Equitrans included a discussion on this topic in Section 2.2.2.3 of Resource Report 2. As listed in Table 2.2-5, there is only one surface water intake that is downstream of a crossing. This intake is used for drinking water.

The pipeline crossing of the Monongahela River would be conducted using HDD to reduce the risk of sediment influx into the river system upstream of the surface water intake. In the event of an inadvertent return during HDD, Equitrans would implement its contingency plan and notify appropriate agencies.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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21. As previously requested in our comments dated September 28, 2015, revise table 2.2-6 to provide the expected month that hydrostatic test water would be discharged. Indicate the anticipated discharge rate for each hydrostatic test water discharge.

**Response:**

The revised Table 2.2-6 is included as Attachment 2-21.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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22. As previously requested in our comments dated September 28, 2015, provide the expected volume of water from each individual source the project would require for dust control. Identify applicable permits for water withdrawals associated with dust control. Summarize the pertinent regulations related to water withdrawals for dust control in table 1.7-1 or provide as a stand-alone table.

**Response:**

Equitrans estimates that it would require 3,000 gallons of water to cover a 200-foot long portion of the pipeline construction right-of-way or 1,000 feet of access road. The total water usage for fugitive dust control would depend on numerous variables, such as rainfall frequency and amount, temperature, wind speeds and frequency, amount of direct sunlight, amount of disturbed area, and construction schedules. To reduce the amount of water needed to control fugitive dust, Equitrans or its contractor may elect to use a soil tackifier.

Water for fugitive dust control would be obtained by the construction contractor from municipal sources. No permits are needed to use municipal water sources for this purpose.

Respondent: Abraham Jones
Position: Manager, Construction Service
Phone Number: 304-626-7959
Date: January 22, 2016

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23. Provide the expected volume of water the EEP would use for the HDD method (i.e. mixing the bentonite slurry). Identify any permits necessary for the water withdrawal at HDD operations; and summarize the pertinent regulations related to water withdrawals for HDD operations in table 1.7-1 or provide as a stand-alone table.

**Response:**

The amount of water necessary to conduct the HDD is difficult to estimate because of variables undetermined at this time. As examples, the drilling contractor adjusts the amount of water in the drilling fluid to: fit changing conditions during the HDD; to effect the percentage of material recovered; and based on the efficiency of the mud recycling system.

Water will be obtained by the construction contractor from municipal sources. No permits are needed to use municipal water sources for this purpose.

Respondent: Jeremy Watts
Position: Engineer III
Phone Number: 412-553-5769
Date: January 22, 2016

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**Water Resources**

24. Section 2.4 provides two citations for the Greene County Conservation District and one citation for the Pennsylvania Department of Environmental Protection (PADEP) (2015b); these citations do not appear in the RR.

**Response:**

The Greene County Conservation District citations were used for background purposes for fishery type in Table 2-A-2 and were cited in footnote f/. The PADEP 2015b reference should be included in Section 2.1.3.2 as shown in underline here: "Although there are efforts to improve characterization and documentation of groundwater resources (WVDEP 2013a; PADEP 2015b), these efforts are ongoing and data is not yet available."

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
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**Resource Report 2 – Water Use and Quality**
**Appendix 2-A – Waterbody Crossing Tables**

25. Explain permanent impacts listed in table 2-A-2 on waterbodies at the Pratt Compressor Station.

**Response:**

Impacts identified are a result of the property boundary area of the Pratt Compressor Station. These are associated with a natural drainage at the southwest corner of the site, and a small developed drainage along the northeast pavement of the station. Project activities can avoid these waterbodies. These impacts will be revised as temporary in Table 2-A-2 with the plan to avoid during construction.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
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**Resource Report 2 – Water Use and Quality**
**Appendix 2-A – Waterbody Crossing Tables**

26. Revise table 2-A-2 to:

a. denote ID numbers for each ATWS, groundbed, and access road that would impact a waterbody;

**Response:**

Equitrans expects to provide a response by February 5, 2016.

b. clarify whether Equitrans proposes to use permanent fill for access roads within waterbodies;

**Response:**

Equitrans expects to provide a response by February 5, 2016.

c. update the FERC classifications based on our Procedures (for example the South Fork Tenmile Creek crossing at MP 2.3 is listed as a 123-foot-long intermediate crossing);

**Response:**

Equitrans expects to provide a response by February 5, 2016.

d. clarify why some waterbodies have no crossing length, but have an impact acreage;

**Response:**

Equitrans expects to provide a response by February 5, 2016.

e. assign a crossing method to all line items; and

**Response:**

Equitrans expects to provide a response by February 5, 2016.

f. provide the water use classifications and time of year restriction for all line items.

**Response:**

Equitrans addressed time of year restrictions in Resource Report 3, Section 3.1.4.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
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**Resource Report 2 – Water Use and Quality**
**Wetlands**

27. Provide an updated discussion and associated tables (including appendices) to only refer to a single wetland type (i.e., palustrine emergent [PEM], palustrine scrub/shrub [PSS], palustrine forested [PFO]). Avoid use of mixed categories such as PFO/PSS. In addition, revise the wetland tables to provide total acreage of impacted wetlands.

**Response:**

Table 2.3-1 will be revised to identify a single wetland type as well as impacts due to vegetation management vs permanent loss of wetlands. Equitrans expects to provide a revised Table 2.3-1 by February 5, 2016.

Respondent: Stephanie Frazier
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**Resource Report 2 – Water Use and Quality**
**Wetlands**

28. Describe impacts (temporary and permanent) on wetlands from construction of aboveground facilities.

**Response:**

Construction and operation impacts to wetland from aboveground facilities are provided in Appendix Table 2-B-1 and Table 2.3-1. Equitrans will provide revised Tables 2-B-1 and 2.3-1. See the responses to Resource Report 2, Requests 32 and 27, respectively.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
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**Wetlands**

29. As previously requested in our comments dated September 28, 2015, provide a discussion of any state wetland classifications for Pennsylvania (i.e., exceptional value or protected).

**Response:**

No wetland crossed by the Project is classified by the Pennsylvania Code, Title 25, Chapter 93 as "exceptional value" or "high quality".

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
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**Resource Report 2 – Water Use and Quality**
**Wetlands**

30. As previously requested in our comments dated September 28, 2015, document communications with the U.S. Army Corps of Engineers (COE) and appropriate state agencies regarding the development of a project-specific Wetland Mitigation and Restoration Plan. File a copy of the plan; or provide a schedule for when the plan would be completed and submitted to the FERC and COE.

**Response:**

ACOE and PASPGP permits are still in review with the agencies and so the impacts and required mitigation are not yet finalized. Equitrans has committed to use the FERC Procedures to mitigate impacts and restore wetlands.

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**Resource Report 2 – Water Use and Quality**
**Wetlands**

31. Clarify discrepancies in wetland impact totals between summary table 2.3-1 (Construction – 0.885 acres, Operation – 0.78 acres, Total – 1.665) and appendix table 2-B-1 (Construction – 0.873 acres, Operation – 0.771 acres, Total – 1.644 acres).

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
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**Resource Report 2 – Water Use and Quality**
**Appendix 2B – Wetland Crossing Tables**

32. Revise table 2-B-1 to:

a. split out PFO and PSS for wetland W-BB12;

**Response:**

Equitrans expects to provide a response by February 5, 2016.

b. denote identification numbers for each project component (ATWS, groundbed, and access road) that would impact a wetland;

**Response:**

Equitrans expects to provide a response by February 5, 2016.

c. clarify whether Equitrans proposes to use permanent fill for access roads within wetlands;

**Response:**

Equitrans expects to provide a response by February 5, 2016.

d. clarify why wetland W-AA6 would result in 0.06 acres of operational impact when it is located outside of the footprint of the existing Pratt Compressor Station;

**Response:**

Equitrans expects to provide a response by February 5, 2016.

e. clarify why some wetlands have no crossing length but have an impact acreage.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Resource Report 3 – Fish, Wildlife, and Vegetation**

1. Provide copies of agency-approved species survey plans, and the results of wildlife and aquatic species surveys.

**Response:**

Project information was submitted to the Pennsylvania Natural Diversity Inventory on April 27, 2015 and June 24, 2015.

The Bat Survey Work Plan (Attachment 3-1a) for the Project was submitted to United States Fish and Wildlife Service Pennsylvania and West Virginia Field Offices, Pennsylvania Game Commission, and West Virginia Division of Natural Resources on June 24, 2015. Permission to conduct the surveys was received from the United States Fish and Wildlife Service Pennsylvania Field Office and Pennsylvania Game Commission on June 29, 2015.

The Bat Survey Summary Report (Attachment 3-1b, marked **Privileged & Confidential**) was submitted to United States Fish and Wildlife Service Pennsylvania Field Office and Pennsylvania Game Commission on December 17, 2015, and submitted to the United States Fish and Wildlife Service West Virginia Field Office and West Virginia Division of Natural Resources on January 7, 2016. A response from these agencies regarding their concurrence with the bat survey results is expected within 60 days of submittal of the document (expected in February and March 2016, respectively).

The Bat Conservation Plan (Attachment 3-1c; marked **Privileged & Confidential**) was submitted to United States Fish and Wildlife Service West Virginia Field Office and West Virginia Division of Natural Resources in January 7, 2016 for review and comment. Equitrans is awaiting comments and concurrence on this plan from these agencies.

The Mussel Survey Work Plan (Attachment 3-1d) was submitted to the Pennsylvania Fish and Boat Commission on August 24, 2015. Survey results for the South Fork Tenmile Creek mussel surveys were submitted to Pennsylvania Fish and Boat Commission on December 17, 2015 (Attachment 3-1e; marked **Privileged & Confidential**). Concurrence on the results of the survey and that no adverse impacts to freshwater mussels are likely to occur due to the proposed crossing via HDD techniques was received from Pennsylvania Fish and Boat Commission on January 5, 2016 (see Attachment 3-20b).

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A Project survey for rare plants also is planned for Spring/Summer 2016. The survey plan for the rare plant surveys is currently under development. Equitrans will provide the surveys to FERC after they are finalized.

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2. Clarify the assertion in section 3.1.1 that the project would not affect fisheries (including warmwater fisheries) which does not agree with data provided in RR 2. Confirm that all waterbodies in the project area are warmwater streams, and that all of them would be crossed within the FERC-mandated window of June 1 to November 30, unless the window is modified or further restricted by a state agency.

**Response:**

All waterbodies crossed by the Project are warmwater fisheries. No cold water streams have been identified for Project stream crossings.

Table 2.2-4 lists South Fork Tenmile Creek as a sensitive waterbody because the Pennsylvania Fish and Boat Commission indicated that rare or protected mussels could be present. A mussel survey of this stream identified four live mussels of three species, none of which are federally or state protected. On January 5, 2016, the Pennsylvania Fish and Boat Commission provided its concurrence that no adverse impacts to species of concern were anticipated because the crossing would be conducted by HDD (Attachment 3-20b). See also response to Resource Report 2, Question 26(f).

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3. Regarding analysis in section 3.1.2.2, specify when Equitrans anticipates the completion of field surveys in order to refine its appendix 3-A listing the fish species with the potential to occur within the project area. Include in appendix 3-A each species expected to be present in a waterbody.

**Response:**

Project correspondence with Pennsylvania Fish and Boat Commission did not identify the requirement for Equitrans to perform fish surveys specifically for the Project, thus no fish surveys are planned. The fish species list provided in Resource Report 3 was based on county-wide data available for Pennsylvania, and is applicable for the West Virginia portion of the Project, as the fish listed are associated with the Ohio River Basin. Since only streams that support warm water fisheries are associated with the Project, the fish table for the Project included as Appendix 3-A has been revised to remove species restricted to cool or cold water streams (see Attachment 3-3) (based on Pennsylvania Fish and Boat Commission information obtained from: http://fishandboat.com/pafish/fishhtms/chap1.htm and Tetra Tech, Inc. fishery biologists' personal observations and knowledge of regional fish communities).

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4. Indicate whether all native mussels are protected in Pennsylvania.

**Response:**

In Pennsylvania, freshwater mussels cannot be harvested without a scientific collection permit.

Harvest of endangered and threatened mussels is prohibited under Pennsylvania Code Title 58 (Recreation) Part II, Fish and Boat Commission, Chapter 6, Fishing, §75.1 and §75.2 (relating to endangered and threatened species). Pennsylvania Code Title 58 (Recreation) Part II, Fish and Boat Commission, Chapter 6, Fishing, §61 (Seasons, Sizes and Creel Limits) prohibits harvest of any live mussel or clam.

There is no statutory protection for mussel species that do not have a legal status designation.

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5. Outline measures that Equitrans would implement to protect mussels within waterbodies where the dry-ditch crossing method would be used.

**Response:**

Waterbody crossings of the Monongahela River and South Fork Tenmile Creek will be crossed using the horizontal directional drilling (HDD) method, which is expected to avoid impacts on freshwater mussels in these waterbodies. As stated in the response to Resource Report 3, Request 1, Equitrans has received concurrence from the Pennsylvania Fish and Boat Commission that no adverse impacts to freshwater mussels are likely to occur due to the proposed crossing via HDD techniques.

As described in Resource Report 2 Table 2-A-2 (Waterbodies Crossed by Project), all other stream crossings will use dry ditch crossing methods, which will either be dam-and-pump or flume. Potentially suitable freshwater mussel habitat could be temporarily impacted by in-stream construction activities. For the dam and pump method, screens would be installed on all intake hoses to prevent entrainment of freshwater mussels and other aquatic life, and would be raised off the streambed to prevent scour and increased turbidity. The Pennsylvania Fish and Boat Commission has not indicated mussel concerns for any waterbody affected by the Project other than South Fork Tenmile Creek.

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6. Clarify the analysis presented in section 3.1.3.2 regarding whether there are any special status streams in West Virginia.

**Response:**

In a letter dated November 18, 2015 (Attachment 3-6), the West Virginia Division of Natural Resources Wildlife Resources Section identified the confluence of North Fork Fishing Creek as located within 300 feet of the Project construction area. This section of the North Fork Fishing Creek is classified as a High Quality Stream, having the potential to support state protected mussel species; and downstream areas of the North Fork Fishing Creek from the Project site have recently been part of a restoration project.

In West Virginia, mussel surveys are warranted if there is (a) any potential for in-stream disturbance to a known mussel stream and (b) the upland drainage area is greater than 10 square miles upstream of the point of disturbance. Neither of these criteria is met. The Project will not cause an in-stream disturbance to North Fork Fishing Creek. In addition, the upland drainage area of North Fork Fishing Creek (adjacent to Project activities) is approximately 6 square miles.

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7. Outline measures that would be implemented in the case of in-stream blasting to protect aquatic life, indicating whether fish and mussels would be removed and relocated from the work area.

**Response:**

No in-stream blasting is anticipated for the Project. In the event that Equitrans finds that blasting is necessary, Equitrans will submit a Project-specific blasting plan to FERC prior to conducting any blasting. The blasting plan will include, as appropriate, measures for handling fish and mussels.

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8. Expand upon the discussion presented in section 3.1.4 regarding potential impacts on aquatic life resulting from HDD, including native mussels, resulting from an inadvertent loss of drilling fluids.

**Response:**

HDD fluids are thought to have low toxicity effects on aquatic habitats and organisms based on the use of bentonite clay, which is a naturally occurring, inert material that forms the basis of the HDD drilling fluid. In comparison to other industry drilling techniques, such effects are significantly reduced, as toxic additives are not required for implementation of successful HDD methods.

Potential impacts to aquatic organisms and habitats that could result from an inadvertent release of hydraulic fluids used in HDD techniques include:

- Increase in drift (resulting in reduced densities) of benthic invertebrates from drill fluid exposure;
- Reduction of emergence rates of adult benthic invertebrates from drill fluid deposition;
- Alteration of wetland hydrology and soil conditions from drill fluid release and deposition; and
- Behavior and physiological changes in fish and habitat suitability from increased concentration of sediment in the water column and sediment deposition (Golder Associates Ltd. 1998).

The degree of any potential impacts is directly related to the volume of drilling fluid released, flow conditions within the waterbody, and sensitivity of the aquatic organisms that are present at the HDD crossing site. The effects to organisms are expected to be greater in extreme water temperatures, if composed of large particles, or if the aquatic organisms are compromised (diseased) or sensitive (egg or larval life stages) (Golder Associates Ltd. 1998).

Any inadvertent release of drilling fluid will be addressed immediately through implementation of the Project HDD Contingency Plan (see Attachment 1-31) upon discovery to minimize potential impacts to aquatic habitats and wildlife.

Golder Associates Ltd. 1998. River and Stream Crossings Study (Phase I) Executive Summary. Prepared for INGAA Foundation. http://www.ingaa.org/file.aspx?id=523. Accessed January 15, 2016.

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9. List waterbodies containing fish or mussels that would be affected by access roads and explain in detail how impacts would be avoided or minimized.

**Response:**

Table 2-A-2 (Waterbodies Crossed by Project) contained in Resource Report 2 identifies streams crossed by the Project, and includes an impact description for each stream, including those that would be affected by access roads. With the exception of ephemeral and intermittent streams, all other streams crossed by the Project are assumed to potentially support populations of freshwater fish and/or mussels.

Equitrans intends to implement the FERC Plan and Procedures as well as its Project-specific earth disturbance permits to minimize the potential for accelerated erosion and sedimentation that could otherwise affect aquatic life. Any installation of culverts or other fill material for access roads within waterbodies or wetlands will be subject to approval by appropriate federal and state agencies.

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10. Identify the number and location of the water basins referenced in section 3.1.4.5 in relation to preventing the spread of aquatic invasive species.

**Response:**

Table 2.2-1 in Resource Report 2 identifies these major watersheds and their respective sub-basins by hydrologic unit code (HUC). Table 2-A-1 of Resource Report 2 contains a comprehensive list of watersheds crossed by milepost. All of these watersheds are subject to the measures identified to prevent the spread of aquatic invasive species.

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11. Reconcile apparent discrepancies between the areal extent of habitat/land use types affected between the tables presented in section 3.2 and RR 8. For example (discrepancies may not be limited to these two examples), RR 3 reports agricultural and forest construction impacts as 91.41 and 73.32 acres, respectively, whereas RR 8 reports construction impacts to these same categories as 75.94 and 55.96 acres, respectively.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

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12. Provide a summary table of vegetation impacts by type during construction and operation, distributed by state/county and project component.

**Response:**

Tables 3.2-1 through 3.2-5 include impacts for each Project component by type of impact (permanent and temporary) and type of vegetation.

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13. As previously requested in our comments dated September 28, 2015, provide a list of plant species observed during field surveys.

**Response:**

Attachment 3-13 provides a preliminary list of plant species observed during wildlife field surveys completed for the Project, and is comprised of data from three different sources, including plant species observed during mist net surveys; plant and tree species identified in previously-submitted survey reports for bat studies and mussel surveys; and plant species added to this list by field survey biologists that have not been directly observed, but are very likely to occur based on knowledge of flora of the Project regions. Plants considered "invasive" are highlighted in yellow in Attachment 3-13.

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14. Regarding analysis in section 3.2.9, provide a schedule for when Equitrans anticipates the completion of its "rare plant surveys," and filing the survey report with the FERC. Document that the plant survey report was submitted to the FWS and state resource agencies, and file their comments.

**Response:**

Rare plant surveys are planned for Spring/Summer of 2016 and will be submitted to the FERC concurrent with state agency submittals. Because there are no federally-protected species, the plant survey report will not be submitted to FWS.

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15. Provide a list of invasive plant species (and MP locations) that have been observed during field surveys for this project.

**Response:**

See the response to Resource Report 3, Request 13 and 14. Plants considered "invasive" are highlighted in yellow in Attachment 3-13.

Upon completion of the rare plant survey planned for 2016, the list of observed invasive species and locations (by MP) will be generated for the Project.

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16. As previously requested in our comments dated September 28, 2015, provide the proposed seeding mixes for restoration, and document that they were developed in consultation with appropriate agencies, including the U.S. Department of Agricultural Natural Resources and Conservation Service.

**Response:**

The combined seed mix tables to be utilized in all areas of the Project is included as Attachment 3-16c.

Seed mixes to be used in Pennsylvania will follow those directed to use in the Pennsylvania Erosion & Sediment Control Manual, and are based on Penn State publications (see Attachment 3-16a). Where practicable, Equitrans also will follow the Pennsylvania Bureau of Forestry planting guidelines to attract pollinators (see Attachment 3-16b).

In West Virginia, the West Virginia Erosion & Sediment Control Manual also identifies approved seed mixes. However, due to similarities between the Pennsylvania and West Virginia Erosion & Sediment Control seed mix lists, Equitrans has elected to utilize the Pennsylvania-approved seed mix throughout the Project area.

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17. Clarify whether in addition to the measures identified in 3.2.9, Equitrans would train Environmental Inspectors in the recognition of invasive plant species, would wash/clean equipment before movement to new spreads (i.e., different pipelines), and would wash/clean equipment prior to movement from an area of known invasive species locations (as proposed by MVP).

**Response:**

Project correspondence with federal and state agencies or interested stakeholders received to date has not identified the need to employ Project Environmental Inspectors that are trained/experienced in the identification of invasive plant species. No special invasive species identification measures are proposed for the Project, other than routine inspection of Project equipment upon arrival at the Project worksite to ensure they are free of mud/debris.

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18. Regarding the analysis in section 3.3.1, provide a schedule for completing ongoing field surveys and filing results with the FERC that would refine the listing of wildlife species and habitat types potentially affected by the project. Document that the habitat and non-sensitive wildlife survey report was submitted to the FWS and state resource agencies, and file their comments.

**Response:**

As identified in Project correspondence with federal and state agencies or interested stakeholders received to date, Equitrans has completed or plans to complete all required flora and fauna surveys. None of these agencies has indicated that habitat or non-sensitive wildlife survey reports are necessary for the Project.

Equitrans is submitting the mussel and bat surveys in response to Resource Report 3, Request 1.

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19. Regarding section 3.3, as previously requested in our comments dated September 28, 2015, describe any known game corridors, herding or feeding areas, or game farms within or nearby the Project area. Outline measures Equitrans would implement to avoid, minimize, or mitigate impacts on harvested game species during construction and operation of the project.

**Response:**

Based on desk-top reviews and online research of publicly available data, no Project facilities are located within a United States Fish and Wildlife Service National Wildlife Refuge. As described in Resource Report 3, Section 3.3.2 (Significant or Sensitive Wildlife Habitat), the Project is located in Pennsylvania Wildlife Management Units 2A and 2B. A review of Pennsylvania Game Commission mapping for State Game Lands did not identify any special wildlife areas within the Pennsylvania portion of Project area. Three West Virginia wildlife management areas are located within 10 miles of the Webster Interconnect, H-319 pipeline, and Mobley Tap, including Lewis Wetzel Wildlife Management Area, Lantz Farm and Nature Preserve, and Cecil H. Underwood Wildlife Management Area.

Based on Project correspondence received from relevant federal and state wildlife agencies and other stakeholders, no concerns have been raised to date regarding impacts on game species or hunting (e.g., hunt clubs, individual landowners, food plots, etc.). The BMPs outlined throughout resource reports submitted to FERC for the Project will avoid, minimize or mitigate impacts on game species during construction and operation.

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20. Regarding analysis in section 3.3.3:
    a. provide a table listing the 18 birds of conservation concern (BCC) species associated with the Appalachian Mountains bird conservation region (BCR) and include columns summarizing the species' preferred habitat, date-range during which the species breed, and whether potential breeding habitat is confirmed, possible, or none for any project site in both Pennsylvania and West Virginia; and
    b. provide documentation of communications with the FWS and state resource agencies that resulted in a finding that none of the 18 BCC species associated with the BCR crossed by the project are species of concern in the area.

**Response:**

a. Equitrans expects to submit a table containing the requested BCC information by February 5, 2016.

b. Project correspondence received to date from federal and state agencies have not identified any concerns regarding birds of conservation concern associated with the Appalachian Mountains bird conservation region under their jurisdiction (see Attachment 3-20b).

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21. Regarding analysis in sections 3.3.3 and 3.3.4, provide a schedule for the completion and filing of a project-specific Migratory Bird Habitat Conservation Plan. Document that the plan was submitted to the FWS and state resource agencies and file their comments.

**Response:**

Equitrans is in the process of preparing a Project-specific Migratory Bird Habitat Conservation Plan. Equitrans expects to submit this plan to the United States Fish and Wildlife Service, FERC, and other relevant state resources agencies by February 5, 2016. To the extent the agency does not file comments directly with FERC, Equitrans will file comments upon receipt.

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22. If found within the project area, provide the MP locations, crossing lengths, and acreages affected for interior forest areas. Outline measures, developed in communication with the FWS and state resource agencies that would be implemented to minimize impacts on this habitat type, including seasonal tree clearing restrictions.

**Response:**

As stated in Table 3.2-2, approximately 73 acres of upland deciduous forest will be affected by the Project. Equitrans has attempted to minimize impacts resulting from tree clearing by routing the pipeline adjacent to existing cleared rights-of-way and previously developed corridors and open lands where feasible. Clearing of trees and other vegetation will be restricted to only what is necessary to safely construct and operate the Project. In addition, Equitrans will follow applicable time of year restrictions specified in agency correspondence for the Project. Tree clearing restrictions and mitigation for the Project is described in Resource Report 3 Section 3.2.9 (Vegetation Impacts and Mitigation), Section 3.3.3 (Migratory Birds), and Section 3.3.4 (Wildlife Impacts and Mitigation). Project correspondence received from federal and state agencies to date have not identified concerns regarding impacts to interior forest habitats from implementation of the Project.

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23. Regarding analysis in section 3.3.4, specify whether Equitrans would develop a plan for management of trash and food debris along the right-of-way during construction.

**Response:**

The Trash Management Plan will be site-specific and will be the responsibility of the construction contractor to develop. This plan will be submitted with the Implementation Plan.

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24. Regarding analysis in section 3.3.4, further discuss and clarify:
    a. the effects during operation that artificial lighting at the aboveground facilities (e.g., security lighting at the compressor station and communication tower) may have on local nocturnal species and migratory bird species that may pass through the project area (reference recent literature in the discussion);
    b. the effects that noise during operation (e.g., compressor station) may have on local species (reference recent literature in the discussion); and
    c. how Equitrans would avoid or mitigate for potential impacts on wildlife due to artificial lighting and/or noise.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

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**Wildlife**

25. As previously requested in our comments dated September 28, 2015, add columns to the appendix 3-B tables to include the habitat types in which each species would be expected to occur and the MP ranges and project components that correspond to each habitat type.

**Response:**

Project stakeholders did not request surveys for habitat and non-sensitive species. MVP conducted habitat assessments and various other surveys because of the large number and diversity of species potentially occurring in its project; habitat assessments are often used to identify habitats present on the project, and rule out species from potentially occurring by proxy if the habitat they require is not preset. The number of species potentially occurring in the Project footprint was limited and could be effectively addressed by targeted searches, as discussed in the bat, mussel, and plant survey reports.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 3 – Fish, Wildlife, and Vegetation**
**Endangered, Threatened, and Special Concern Species**

26. File survey reports for rare, sensitive, or threatened and endangered wildlife species; or provide a schedule for report submission. Document that the survey reports were provided to the FWS and state agencies, and file their comments.

**Response:**

See the responses to Resource Report 3, Requests 1, 14, and 18.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Resource Report 3 – Fish, Wildlife, and Vegetation**
**Endangered, Threatened, and Special Concern Species**

27. Provide data for the small whorled pogonia similar to that provided for the other six rare plant species discussed in section 3.4.2 and table 3.4-2.

**Response:**

Project correspondence received from federal and state resources agencies has not identified small whorled pogonia as a plant species of concern. See the response to Resource Report 3, Request 20, subpart b.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 3 – Fish, Wildlife, and Vegetation**
**Endangered, Threatened, and Special Concern Species**

28. Provide an estimated schedule for bat surveys and the filing of reports for project areas in West Virginia.

**Response:**

See the response to Resource Report 3, Request 1.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 4 – Cultural Resources**

1. Document that Equitrans communicated with local archaeological or historical organizations, and file all comments from such organizations about the EEP with the FERC. Also, file any comments from local governments on potential project effects on cultural resources.

**Response:**

Equitrans communicated with a mix of local, regional, and state-wide informants while researching the cultural resources of the Project area. The reference services of the New Martinsville public library, Wetzel County, WV; and the Bowlby Library, Waynesburg, Greene County, PA; were used in person. Certain local property owners in Greene County, PA; and Allegheny County, PA were interviewed concerning historical land use of their properties. County-level genealogical and historical webpages hosted on nationwide sites, e.g., US Genweb, Ancestry, and Rootsweb, provided important information about the former population of the area. Information on the general history of the county was obtained from the Greene County website, while the MonRiver.org website (http://98.131.69.156/history.htm) provided information about the development of that important element in the project area. (According to its website, the Wetzel County [WV] Historical Society is now defunct, so its resources could not be accessed.) Information about land ownership was gathered at the Greene County tax assessor and registrar of deeds, Waynesburg, PA, while the property record websites for Allegheny and Washington Counties were accessed online. Similarly, the online resources provided by the West Virginia and Pennsylvania Archaeological Societies were accessed. Materials concerning regional history and those focusing on local contexts and trends were consulted using the West Virginia and Pennsylvania SHPO websites. National Register nominations were obtained via the SHPO and National Park Service websites. Visual resources were consulted via the University of Pittsburgh's Digital Research Library ("Photographs from the Pittsburgh and Lake Erie Railroad Company Collection"). Historical aerial imagery came from the Penn State PennPilot website and from the Earth Resources Observation and Science (EROS) Center EarthExplorer website. While historical maps were obtained from online sources including Pennsylvania Historical and Museum Commission, David Rumsey Historical Map Collection, Historic Map Works, Library of Congress, and USGS TopoView and Map Store websites.

No written comments were received from such organizations or local governments on potential project effects on cultural resources related to the Project.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 4 – Cultural Resources**

2. File copies of Equitrans' cultural resources work plans and research designs for Pennsylvania and West Virginia, and the Pennsylvania Historical and Museum Commission (PHMC) Project Review form referenced in section 4.3.1 of RR 4.

**Response:**

See Attachments 4-2a (PHMC work plan) and 4-2b (WVDCH work plan).

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 4 – Cultural Resources**

3. Indicate the distance (in feet) between the previously recorded Mobley School and the Webster Interconnect and the Mobley Tap.

**Response:**

The Mobley School is located approximately 3,155 feet from the Mobley Tap and approximately 910 feet from the Webster Interconnect.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 4 – Cultural Resources**

4. File copies of all survey reports for archaeological and architectural resources, referenced in sections 4.1.1.1 and 4.1.2.1 and appendix 4-C of RR 4. Document that copies of the reports were submitted to the State Historic Preservation Offices (SHPOs) for Pennsylvania and West Virginia, and file the SHPOs' comments on the reports with the FERC.

**Response:**

The following reports referenced in Sections 4.1.1.1 and 4.1.2.1 and appendix 4-C of RR4 are expected to be submitted to the respective SHPOs in January 2016 and filed with FERC at the same time. To the extent the SHPO does not file comments with FERC directly, Equitrans will file such comments with FERC.

2016 *Equitrans Expansion Project (FERC Docket No. CP16-13-000), Cultural Resources Identification Survey, Webster Interconnect and Mobley Tap, Grant District, Wetzel County, West Virginia*. Prepared for Equitrans, LP, Pittsburgh, Pennsylvania, by Tetra Tech, Inc., Boston, Massachusetts.

2016 *Equitrans Expansion Project (FERC Docket No. CP16-13-000), Architectural Resources Reconnaissance Survey, Jefferson, Morgan, and Franklin Townships, Greene County; Forward Township, Allegheny County; and Union Township, Washington County, Pennsylvania*. Prepared for Equitrans, LP, Pittsburgh, Pennsylvania, by Tetra Tech, Inc., Boston, Massachusetts.

2016 *Equitrans Expansion Project (FERC Docket No. CP16-13-000)—Phase I Archaeological Survey, Jefferson, Morgan, and Franklin Townships, Greene County; Forward Township, Allegheny County; and Union Township, Washington County, Pennsylvania*. Prepared for Equitrans, LP, Pittsburgh, Pennsylvania, by Tetra Tech, Inc., Boston, Massachusetts.

The work plans and research designs have been submitted in response to Resource Report 4, Request 2.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 4 – Cultural Resources**

5. The Monongahela River Navigation System and the Pittsburgh & Lake Erie Railroad are National Register of Historic Places eligible sites that may be affected by the project. File plans for avoiding impacts on those sites, or site-specific treatment plans for mitigating impacts, as well as any SHPO comments on those plans.

**Response:**

Equitrans proposes to use Horizontal Directional Drilling (HDD) to avoid these resources. As outlined in Section 1.4.1 of Resource Report 1, HDD will allow direct impacts to these resources to be avoided by traversing under them. Both resources will be avoided by a section of HDD construction for the H-318 pipeline between MP 2.81 and MP 3.52. See Resource Report 1, Appendix G, "Site Specific HDD Plans." As depicted by these plans, the HDD section of the H-318 pipeline will enter the ground approximately 360 feet southeast of the former P&LE RR (now Conrail) line and approximately 730 feet southeast of the south bank of the Monongahela River, which marks the southern (right bank) boundary of the Monongahela River Navigation System historic district. The HDD segment will terminate approximately 1,700 feet north of the north bank of the river, which marks the northern (left bank) boundary of the river navigation system historic district. The HDD-constructed pipeline will pass more than 70 feet beneath the rail line and a minimum of approximately 50 feet beneath the bed of the Monongahela River. This information is included in the historic architecture survey report for the Pennsylvania portion of the Project (see the response to Resource Report 4, Request 4); SHPO comment on that report is pending and will be filed upon receipt.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 4 – Cultural Resources**

6. Provide copies of all SHPO and tribal correspondence.

**Response:**

SHPO and tribal correspondence are included in Appendix A ("Agency Correspondence") of Resource Report 4 and in Appendix L ("Agency Correspondence") of Resource Report 1.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Resource Report 5 – Socioeconomics**

1. Provide a table that includes a breakdown, by state, for the following:
   a. direct payroll for construction;

   b. direct payroll for operation; and

   c. local consumables expenditures.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Abraham Jones
Position: Manager, Construction Service, EQT Corporation
Phone Number: 304-626-7959
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 5 – Socioeconomics**

2. Provide estimates for anticipated indirect employment and associated income from construction and operation of the project.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Abraham Jones
Position: Manager, Construction Service, EQT Corporation
Phone Number: 304-626-7959
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 5 – Socioeconomics**

3. Provide a table that includes all communities within 10 miles of the project and their distance from the project components (in miles).

**Response:**

Attachment 5-3 is a table listing all the communities within 10 miles of project components and the distance in miles to the Project component.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Resource Report 5 – Socioeconomics**

4. Provide the estimated operational workforce for the project. Indicate where operational employees would be stationed.

**Response:**

Existing workforce will be used during the operation of the Project. Redhook Compressor Station is an unmanned station. Redhook Compressor Station will be managed from the EQT Waynesburg PA office. The pipelines, Mobley Tap and Webster Interconnect will be managed from the EQT Mannington and EQT Logansport offices in WV.

Waynesburg Office
175 Industry Rd,
Waynesburg, PA 15370

Mannington Office
109 Spring Street
Mannington, WV 26582

Logansport Station
11533 North Fork Road
Smithfield, WV 26437

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 5 – Socioeconomics**

5. Estimate the total length of service (in months) for an average construction worker.

**Response:**

The average time workers are estimated to spend on the Project is 6 months for pipelines; and 8 months for compressor stations.

Respondent: Abraham Jones
Position: Manager, Construction Service
Phone Number: 304-626-7959
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
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**Resource Report 5 – Socioeconomics**

6. Estimate the average number of employees per spread that may share accommodations, and provide the source of that data.

**Response:**

The average number of employees per spread that may share accommodations depends upon factors such as the identities and locations of the contractors and their employees. The contractors for the Project will not be selected until possibly Q4 2016.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 5 – Socioeconomics**

7. Estimate how many construction workers would bring their families to the project area, and estimate the average family size, and the number of school age children. Include these addition numbers in all population estimates.

**Response:**

The average number of employees that may bring their families to the Project area depends upon factors such as the identities and locations of the contractors and their employees. The contractors for the Project will not be selected until possibly Q4 2016. However, Equitrans expects very few, if any, of the non-local workers employed during the construction phase to be accompanied by family members. As a result, the number of school age of children expected to relocate is limited and unlikely to noticeably affect school enrollment in the Project area.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Resource Report 5 – Socioeconomics**

8. Provide a description of current public services and infrastructure in the counties affected by the EEP, including number of police departments per county and officers; fire departments and number of firemen; hospitals and number of beds; and number of schools and students. Explain what impacts construction and operation of the EEP may have on those public services, and any measures Equitrans would implement to reduce or mitigate those impacts.

**Response:**

Attachment 5-8 describes the police departments per county; fire departments; hospitals and number of beds; and number of schools and students. Published data on the number of police officers, firemen, hospital beds and students was not found.

As described in Section 5.2.4 of Resource Report 5, the temporary addition of construction workers and family members (few, if any) to local communities is not expected to affect the levels of service provided by existing law and fire protection personnel, or have significant adverse impacts on local and regional medical facilities or school services. As explained in this section, Equitrans will work directly with local law enforcement, fire departments, and emergency medical services to coordinate for effective emergency response thereby mitigating any impacts.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
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**Resource Report 5 – Socioeconomics**

9. Indicate the training, funding, or additional facilities that Equitrans would provide to local law enforcement, fire departments, and other first responders to handle a pipeline accident.

**Response:**

EQT (Equitrans' ultimate parent company) and its affiliates host annual training conferences for local emergency response organizations on pipeline safety and awareness. Equitrans would accommodate additional requests by local law enforcement, fire departments, and other first responders to provide training on responding to pipeline incidents. In addition, EQT and its affiliates provide annual contributions to local fire departments in the Project area to assist with their operations.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
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**Dated December 29, 2015**

**Resource Report 5 – Socioeconomics**

10. As previously requested in our comments dated September 28, 2015, provide a table of vacant housing units, rental vacancy rates, number of hotel/motel rooms, and the number of campgrounds and recreational vehicle parks for each of the affected counties and communities.

**Response:**

The requested table is included as Attachment 5-10.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Resource Report 5 – Socioeconomics**

11. As previously requested in our comments dated September 28, 2015, provide a table of the most recent estimates for the population (number of people, density, per capita income, unemployment rates, civilian workforce) in each of the affected counties and communities.

**Response:**

Attachment 5-11 is a table describing the most recent estimates for the population, population density, per capita income, unemployment rate and civilian workforce in each of the affected counties and in seven communities that may be affected by the project. These communities (Elizabeth and West Elizabeth in Allegheny County, Mather and Morrisville in Greene County, Elrama and Monongahela in Washington County, and Smithfield in West Virginia) were selected as some of the closest communities to the project within each county for which U.S. Census data was available.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
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**Resource Report 5 – Socioeconomics**

12. As previously requested in our comments dated September 28, 2015, provide a table with the population listed by race, percent of people living in poverty, elderly, children, disabled, and non-English speakers for each county and census tract crossed by the proposed project, compared to percentages for the state as a whole. Illustrate the location of census blocks with high percentages of minorities, or people below the poverty line, in relation to project components.

**Response:**

Attachment 5-12 is a table describing population listed by race, percent of people living in poverty, elderly, children, disabled, and non-English speakers for each county and census tract crossed by the proposed project, compared to percentages for the state as a whole.

The total minority population for each county and census block is below the total minority population of their respective states. No county or census block has 20% or more of households below the poverty level except for Wetzel County, WV, where 20.5% of the households are living below the poverty level.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
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**Resource Report 5 – Socioeconomics**

13. Provide a Traffic and Transportation Management Plan that:

    a. lists all roads to be used for access, organized by federal, state, county, and private;
    b. provides current traffic counts for the federal, state, and county roads that would be used for access, during the time period 6:00am to 7:00pm, with peak traffic hours recognized;
    c. provides an estimate of construction traffic on each of the access roads, by construction spread, with peak periods recognized;
    d. verifies how Equitrans would document preconstruction road conditions;
    e. verifies how Equitrans would repair all roads damaged by construction of the project;
    f. outlines measures to ensure that construction vehicles exiting the right-of-way would not track soil and dirt onto paved roads;
    g. lists equipment type and number of vehicles to be used for construction by spread; and
    h. estimates the number of buses to be used by spread to transport workers from yards (identified) to the pipeline right-of-way.

    Document that a copy of the Transportation Plan was submitted to appropriate state and county agencies, and file their comments.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Abraham Jones
Position: Manager, Construction Service, EQT Corporation
Phone Number: 304-626-7959
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 5 – Socioeconomics**

14. Indicate whether Equitrans would be willing to track, investigate, and report quarterly to the FERC for a period of two years following granting of in-service any documented complaints from a directly affected or abutting homeowner whose insurance policy was cancelled or that materially increased in price as a result of the project. Further, indicate whether Equitrans would mitigate impacts documented through the process described above.

**Response:**

No landowners have expressed concerns to Equitrans about cancellation of insurance policies as result of this Project.

Equitrans is willing to track, investigate, and report to the FERC quarterly for a period of two years following granting of in-service any documented complaints from a directly affected homeowner whose insurance policy was cancelled or materially increased in price as a direct result of the Project. Equitrans is willing to review any potential mitigation on a case-by-case basis and will state any mitigation in the quarterly report mentioned above.

Respondent: Hanna McCoy
Position: Regional Land Manager, EQT Corporation
Phone Number: 724-873-3476
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 6 – Geology**

1. As previously requested in our comments dated September 28, 2015, provide information about geologic setting, mineral resources, and geologic hazards with regards to access roads, ATWS, staging areas, and pipe storage and contractor yards. Discuss each area individually.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 6 – Geology**

2. Revise table 6.1-1, to:

   a. confirm that the physiographic divisions and elevation data presented are from Fenneman and Johnson (1946); and
   b. clarify that the elevations are above mean sea level.

**Response:**

Table 6-1.1 has been revised as requested and is included as Attachment 6-2.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 6 – Geology**

3. Revise figure 6.1-2 to include inset maps around the H-316 and H-318 components so project details can be seen clearly.

**Response:**

Figure 6.1-2 has been revised to include inset maps around the H-316 and H-318 pipelines and is included as Attachment 6-3.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 6 – Geology**

4. Revise table 6.3-1 to include:
   a. the type of well and distance and direction of each well to a project component; and
   b. all project components including the Mobley Tap, pig launcher/receiver sites, and the H-302 Tap Site, the H-306 Tap Site, and the H-148 Tap Site.

**Response:**

Table 6.3-1 has been revised to include all Project components and is included as Attachment 6-4. The type of well and the distance Project components within 0.25 mile have been added to the table.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 6 – Geology**

5. Revise table 6.3-2 to provide:

   a. the distance used to define the "Project Area";
   b. all project components (pipelines, interconnects, taps, pig launcher/receiver sites);
   c. crossing length (feet) for those mines that would be crossed;
   d. depth (in feet) below the ground surface to the mine;
   e. maximum potential settlement (feet) if mine collapse occurs; and
   f. a definition for "N/A."

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Joe Gilmore
Position: Regional Land Director, EQT Corporation
Phone Number: 304-348-3864
Date: January 22, 2016

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**Equitrans, L.P.**
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6. As previously requested in our comments dated September 28, 2015, revise table 6.2-1 and table 6.2-1A to include shallow depth to bedrock (bedrock within 5 feet of the surface) for all project components. Denote project components that do not have shallow depth to bedrock with the designation of "not applicable (N/A)." Revise table 6.2-1A to include a Length (feet) column.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Resource Report 6 – Geology**

7. As previously requested in our comments dated September 28, 2015, provide a discussion of surficial materials that would be crossed by the project.

**Response:**

A discussion of surficial materials crossed by the Project was included in Section 6.1 of Resource Report 6, in particular Tables 6.1-2 and 6.1-3, and Figure 6.1-2 in Appendix 6-A.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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8. Summarize the best management practices that EEP would employ to ensure that blasting would be conducted in a safe manner. Outline measures that would be followed, such as the use of blasting mats, and monitoring that would be conducted at wells and structures. List the federal, state, and local laws and regulations that would apply to blasting in table 1.7-1.

**Response:**

Equitrans does not anticipate using blasting for construction of the Project. In the event that Equitrans finds that blasting is necessary, Equitrans will submit an updated Table 1.7-1 and a Project-specific blasting plan to FERC prior to conducting any blasting. The blasting plan will include, as appropriate, specific measures and monitoring procedures.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
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**Resource Report 6 – Geology**

9. Clarify that project components in West Virginia do not come within 0.25 mile of any non-fossil fuel mineral resources. Provide a West Virginia reference for non-fossil fuel mineral resources.

**Response:**

There are no existing permits for non-fossil fuel mining operations within 0.25 mile of any of the Project components in West Virginia (WVDEP 2016a), nor are any such operations present in the broader Wetzel County area in which these Project features reside (WVDEP 2016b).

WVDEP (West Virginia Department of Environmental Protection). 2016a. Mining Data Explorer. Available at http://tagis.dep.wv.gov/mining/. Accessed January 2016.

WVDEP (West Virginia Department of Environmental Protection). 2016b. Mining Permit Search. Available at http://www.dep.wv.gov/insidedep/Pages/miningpermitsearch.aspx. Accessed January 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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10. Provide a table that lists non-fossil fuel and fossil fuel mining operations that are within 0.25 mile of any aboveground facilities, including the Redhook Compressor Station, Webster Interconnect, all tap sites, pig launcher/receiver sites, pipe storage and contractor yards, and access roads.

**Response:**

There are no non-fossil fuel mining operations within 0.25 mile of any Project components as indicated in Section 6.3.1 of Resource Report 6. Revised Table 6.3-2 (Attachment 6-5) includes all fossil fuel mining operations in the Project area and all tap sites, pig launcher/receiver sites, access roads, and ATWS. All staging areas and well as pipe storage and contractor yards are included within the designation "ATWS."

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
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11. Revise table 6.4.2 to provide the distance and direction of earthquake epicenters in relation to the project.

**Response:**

Table 6.4-2 has been revised to include the distance and direction away from the nearest Project component for each epicenter (Attachment 6-11a). Revised Figure 6.4-1 displays all earthquakes within 100 miles of the Project Route based on PADCNR 2003 and USGS 2015, and has been updated to match the revisions to Table 6.4-2 as Attachment 6-11b.

PADCNR. 2003. Earthquakes (1724 to 2003).
http://www.dcnr.state.pa.us/topogeo/publications/digitaldata/index.htm#hazards
Accessed January 2016.

USGS. 2015. Earthquake Hazards Program. Updated June 23, 2015.
http://earthquake.usgs.gov/earthquakes/search/. Accessed January 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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12. Clarify that the USGS Quaternary Fault and Fold Database of the United States was searched for both A and B as well as C and D class faults.

**Response:**

The USGS Quaternary Fault and Fold Database of the United States was queried for both A and B as well as C and D faults and no faults were found in the counties impacted by the Project.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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13. A low probability of seismicity cannot be used to rule out the potential for soil liquefaction. Provide a review of soil conditions and shallow depth to groundwater and identify where soil liquefaction could potentially occur and pose a hazard to project facilities.

**Response:**

Areas susceptible to liquefaction may include soils that are generally sandy or silty and are generally located along rivers, streams, lakes, and shorelines or in areas with shallow groundwater. Resource Report 2 describes the depth to ground water and stream crossings that may be encountered within the Project area. Areas with shallow groundwater and sandy or silty materials are minor and discontinuous throughout the Project area. The pipeline crosses FEMA 100-year flood zones that may contain sandy or silty soils. The H-318 pipeline crosses Zone AE for the Monongahela River, Bunola Run, and Kelly Run. The H-316 pipeline crosses Zone AE for South Fork Tenmile Creek. No other pipelines or permanent aboveground facilities are located within FEMA 100-year flood zones.

The inherent design of modern pipeline systems affords protection for all but the most severe earthquake hazards, particularly liquefaction. As stated in Section 6.4.3 of Resource Report 6, newer pipelines exhibit elastic behavior and are significantly less vulnerable to earthquake effects, including liquefaction, differential settlement, violent shaking, and ground strain, than older types of pipe. Modern pipe has a greater ability to conform to ground movements both from vibration and slippage.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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14. Section 6.4.5 identifies that the project is located in an area of high landslide susceptibility, as such provide the following:

    a. identify any seeps located in areas of steep slopes (>15%) which could add to the risk of a landslide;
    b. identify if geotechnical professionals such as a geotechnical engineer or state certified geologist would inspect areas of steep slopes and provide site specific construction recommendations prior to construction;
    c. provide a discussion of specific construction techniques that would be used in areas of steep slopes and landslide prone areas;
    d. as previously requested in our comments dated September 28, 2015, provide a table of areas within 0.25 mile of the project where landslides have occurred recently; and
    e. as previously requested in our comments dated September 28, 2015, provide a list of slip-prone soils identified by the West Virginia Department of Environmental Protection.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Resource Report 6 – Geology**

15. Regarding historic coal mines that would be crossed, provide:

    a. PADEP guidance on recommended surface to top of mine minimums;

**Response:**

It is not clear what is meant by "historic coal mines" as this is not a term defined by PADEP. PADEP does not have published guidance on surface to top of mine minimums.

    b. documentation of coordination with PADEP regarding recommendations for the crossing of historic mines;

**Response:**

There are no requirements for coordination with PADEP regarding mine crossings.

    c. the identification of known abandoned, closed, and reclaimed coal mines within 0.25-mile of the project;

**Response:**

Revised Table 6.3-2 (Attachment 6-5) includes all coal mines crossed by Project components, including abandoned, closed, and reclaimed mines.

    d. project-specific Mine Subsidence Plan revised to include contingency procedures to be followed when underground mines are encountered or when subsidence occurs under the pipeline during construction; and

**Response:**

Equitrans expects to submit a Project-specific mine subsidence plan by February 5, 2016. Review of PADEP records indicates that the Project crosses closed/abandoned surface mines and spoil piles as well as closed/abandoned underground mines (revised Table 6.3-2 in Attachment 6-5). The Project was specifically routed to avoid active underground mines.

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e. monitoring that would be conducted during construction and operation.

**Response:**

See the response to Resource Report 6, Request 15(d).

Respondent: Jeremy Watts
Position: Engineer III, EQT Corporation
Phone Number: 412-553-5769
Date: January 22, 2016

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**Equitrans, L.P.**
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**Resource Report 6 – Geology**

16. Revise figures 6.3-6, 6.3-7, and 6.3-8 to depict the location and orientation of individual surface and subsurface coal mines.

**Response:**

Figures 6.3-7 and 6.3-8 have been updated with the requested revisions and are included as Attachments 6-16a and 6-16b respectively. Figure 6.3-6 in Resource Report 6 is an overview map; revisions are not discernable and so this figure was not revised.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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17. Provide a summary of any construction limitations that would be implemented when crossing current or active mining areas. Identify potential hazards and mitigation measure associated with heavy equipment movement, excavation, blasting, and removal or resource within or in close proximity to the right-of-way. Also identify how these activities and hazards would be monitored.

**Response:**

None of the Project facilities or temporary workspaces crosses current or active mining areas.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
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**Equitrans, L.P.**
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**Resource Report 6 – Geology**

18. Cite the sources reviewed to determine that no paleontological resources exist in the project area.

**Response:**

A search of The Paleobiology Database (PBDB) was performed for known fossil occurrences within the Conemaugh (Casselman Formation), Dunkard (Washington, Greene, and Waynesburg Formations), and Monongahela Groups, which comprise the geology of the Project area. This query of PBDB returned 902 records of fossil occurrences within these geologic units, none of which were located within the Project area (PBDB, 2016).

The Paleobiology Database (PBDB). 2016. PBDB Data Service. http://paleobiodb.org/data1.2/occs/list.txt?datainfo&rowcount&strat=Conemaugh%20gp,%20Monongahela%20gp,%20Dunkard%20gp&envtype=terr,marine,carbonate,silicic,unknown,lacust,fluvial,terrother,marginal,reef,stshallow,stdeep,offshore,slope,marindet&show=attr,class,coords,loc,lith,lithext,geo&limit=1000. Accessed January 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
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**Dated December 29, 2015**

**Resource Report 7 – Soils**

1. As previously requested in our comments dated September 28, 2015, identify any known contaminated areas that may be located in proximity to the project from sources such as the U.S. Environmental Protection Agency National Priority List. Provide a table that lists potentially contaminated sites within 0.25 of the project. The table should include the name of the site, potential contaminant, the contaminated media, distance (in feet) from the project component, and proposed mitigation measures.

**Response:**

The requested table is provided as Attachment 7-1.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 7 – Soils**

2. Provide descriptions similar to the discussion in section 7.1.2 for stony rocky soils and poor drainage potential soil limitations.

**Response:**

Stony/Rocky Soils

Stony/rocky soils—have a cobbly, stony, bouldery, gravelly, or shaly modifier to the textural class; or are comprised of more than 5 percent stones larger than 3 inches in the surface layer (Soil Survey Staff 2015a, 2015b). Generally, in areas where rocky soil or shallow bedrock is present, pipeline backfill activities could result in concentration of large clasts near the surface. Specific construction methods would be utilized to ensure that disturbed areas are returned to conditions consistent with pre-construction use and capability. These methods include topsoil removal, segregation and redistribution during backfilling, and off-site removal of excess rocks and rock fragments. The size threshold for rock removal would be consistent to that which is found in adjacent undisturbed areas off the ROW. This effort would result in an equivalent quantity, size and distribution of rocks to that found on adjacent lands.

Poor Drainage Potential Soils

Drainage class refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual." Poorly drained and very poorly drained soils were considered as poor drainage potential soils.

Very poorly drained soils have water at or near the soil surface during much of the growing season. Internal free-water is shallow and persistent or permanent. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Commonly, the soil occupies a depression or is level. If rainfall is persistent or high, the soil can be sloping. Poorly drained soils are wet at shallow depths periodically during the growing season or remains wet for long periods. Internal free-water is shallow or very shallow and common or persistent. Unless the soil is artificially drained, most mesophytic crops cannot be grown. The soil, however, is not continuously wet directly below plow depth. The water table is commonly the result of low or very low saturated hydraulic conductivity class or persistent rainfall, or a combination of both factors.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Resource Report 7 – Soils**

3. Provide a project-specific Erosion and Sediment Control Plan.

**Response:**

Equitrans will adopt the FERC Plan and Procedures with minor modifications as requested in Resource Report 1. Equitrans does not intend to prepare a separate narrative format Erosion and Sediment Control Plan. Earth disturbance permits are required by both Pennsylvania (ESCGP-2) and West Virginia (Construction Stormwater General Permit), and these plans are currently in development.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 7 – Soils**

4. As previously requested in our comments dated September 28, 2015, revise table 7.3-1 to provide the acreages of soils that would be permanently and temporarily impacted by the project. Also include the H-302 Tap Site, the H-306 Tap Site, and the H-148 Tap Site and include ATWS, pipe storage and contractor yards, and access roads as separate facilities. Do not group contractor yards with ATWS acreages. Provide shallow depth to groundwater as a soil limitation/characteristic in table 7.3-1.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Resource Report 7 – Soils**

5. Revise appendix 7-A to provide:

   a. the acreages for each soil characteristic crossed by all project components separately where currently the soil characteristic is denoted as "yes" or "no." For soil characteristics that do not apply to a soil type put a 0;
   b. temporary and permanent impacts to soil limitations from pipeline facilities as separate tables; and
   c. shallow depth to groundwater as a soil limitation/characteristic.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
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**Docket No. CP16-13-000**

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**Resource Report 7 – Soils**

6. Revise appendix 7-B to provide:

   a. the acreage of each soil limitation that would be affected by soil type (i.e., provide acreages for soil limitations where there currently are "yes" and "no"). For soil characteristics that do not apply to a soil type put a 0.
   b. separate permanent and temporary impacts;
   c. total anticipated permanent impacts currently listed as TBD;
   d. shallow depth to groundwater as a soil limitation/characteristic;
   e. the H-302 Tap site, H-306 tap site, and H-148 Tap site as well as ATWS, contractor yards, temporary access roads, and permanent access roads as facilities. Do not combine contractor yards with ATWS acreages report the facilities separately.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 8 – Land Use, Recreation and Visual Resources**

1. Clarify the apparent discrepancies in reported impacts across the following tables:

   a. the total of the reported impacts in table 1.3-1 do not match the total impacts in table 8.1-3;
   b. the reported acres of construction impacts in table 1.3-3 do not match the reported construction impacts for aboveground facilities in tables 1.3-1 and 8.1-3;
   c. the reported acres of impacts for access roads in table 1.3-1 do not match the reported impacts for access roads in table 1.3-4 or table 8.1-3 and the reported impacts for access roads in tables 1.3-4 and 8.1-3 do not match each other;
   d. the impacts on agricultural land in table 3.2-1 do not match the impacts on agricultural land in table 8.1-3; and
   e. the impacts on deciduous forest land in table 3.2-2 is higher than the impacts on forest land reported in table 8.1-3 although the impacts in table 8.1-3 include both deciduous forest and forested wetlands.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 8 – Land Use, Recreation and Visual Resources**

2. Clarify or correct instances in tables 2.3-1, 2-B-1, and 8.1-3 where the acres of operational impacts are greater than the acres of construction impacts.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 8 – Land Use, Recreation and Visual Resources**

3. Clarify the apparent discrepancy between the text in section 8.1.1.3 which stated that there would be 75.85 acres of ATWS and table 8.1-4 which shows a total of 77.85 acres of ATWS.

**Response:**

The correct acreage is 77.85.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
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**Resource Report 8 – Land Use, Recreation and Visual Resources**

4. Update table 8.1-4 to include data columns for why the ATWS is needed, dimensions (or identify as odd-shaped if applicable), and land use type affected.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 8 – Land Use, Recreation and Visual Resources**

5. Update table 8.1-5 to include any private road crossings or clarify that the project does not cross any private roads. Update table 8.1-5 to include the proposed crossing method for each road and railroad crossing.

**Response:**

Revised Table 8.1-5 is included as Attachment 8-5. The revised table shows the proposed crossing method for each road and railroad crossing. There are no private roads crossed.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 8 – Land Use, Recreation and Visual Resources**

6. In a filing on December 17, 2015, Thomas Headley stated that his farm, to be crossed by the EEP H-318 pipeline route, is enrolled in the Pennsylvania Agricultural Land Preservation Program and is part of a Forward Township Agricultural Security Area. Explain how construction along the proposed route would not have negative impacts on these land use designations. Further, detail the measures Equitrans would implement to prevent erosion during construction, and avoid or minimize impacts on springs and ponds on the Headley Farm.

**Response:**

The following practices will be employed by the project to minimize the potential for accelerated erosion and sedimentation and also to protect, maintain, reclaim and restore water quality. These best management practices (BMPs) are developed based on PADEP's Erosion and Sediment Pollution Control Program Manual (March 2012). Project-specific plans are in preparation for review and approval by the PADEP.

- Minimize the extent and duration of earth disturbance to the extent practicable. Temporary stabilization will occur if the construction activity is delayed for a period of 4 days or more. Areas outside the temporary workspace will remain as vegetated (or existing condition).
- Maximize protection of existing drainage features and vegetation. All runoff from disturbed areas will flow through BMPs for sediment removal.
- Restore to pre-existing use. As stated in Resource Report 1 (1.4.1), excavated soils will be stockpiled along the right-of-way. In agricultural areas, topsoil excavated for trenching will be segregated so that it can be replaced to it previous condition.
- After a segment of pipe has been installed, the trench will be backfilled, the segregated agricultural topsoil will be returned to its original horizon, and the work area will be graded to match original contours. In actively cultivated areas, the pipe will be backfilled with 48 inches of cover.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Resource Report 8 – Land Use, Recreation and Visual Resources**

7. Identify all parcels along project components that may be enrolled in federal, state, or local programs to protect farmland, grasslands, or wetlands. Provide a table that lists these parcels by MP, landowner name, program, agency, acres affected, and mitigation measures.

**Response:**

There are no parcels along Project components that have been identified as being enrolled in federal, state, or local programs to protect grasslands or wetlands. As described in Section 8.1.3.1 of Resource Report 8, one farm in Washington County along the H-318 pipeline is enrolled in The Pennsylvania Agricultural Land Preservation Program, a state-run program devoted to the preservation of small farms by the purchase of conservation easements. Temporary impacts to the farm will occur during the construction of the pipeline; however, no permanent impacts are anticipated. No other parcels are identified as being enrolled in any other program to protect farmland. Also see response to Question 6 above.

If NRCS easements are identified in the future through ongoing landowner discussions and/or consultation with NRCS West Virginia and Pennsylvania state offices, Equitrans will work with landowners and local FSA and NRCS officials to develop restoration programs that will ensure that affected enrolled CRP/CREP acreage will be eligible to continue participation in the program.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
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**Resource Report 8 – Land Use, Recreation and Visual Resources**

8. Clarify the statement that "there are no residences within 50 feet of the Project" as stated in section 8.2.2, while table 8.2-1 identified a residence within 25 feet of the proposed workspace. Provide a site-specific residential construction mitigation plan for that residence.

**Response:**

The residence in question is greater than 25 feet from the proposed workspace and therefore does not require a site-specific residential construction mitigation plan. Revised Table 8.2-1 is included as Attachment 8-8.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
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9. Provide a draft screening plan for all aboveground facilities in proximity to a residence.

**Response:**

No landowner has requested visual screening from aboveground facilities. Aboveground facilities such as those planned for this Project are consistent with the visual landscape in the Project area. If an affected stakeholder requests visual screening, then Equitrans will review the request.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Resource Report 8 – Land Use, Recreation and Visual Resources**

10. Provide visual simulations for all key observation points that have a high potential for visual impacts as discussed in section 8.4.4, such as the Webster Interconnect.

**Response:**

Equitrans expects to provide a response by February 26, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
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**Resource Report 8 – Land Use, Recreation and Visual Resources**

11. Revise table 8.1-7 to include the data that is stated as unavailable, including: ownership (federal, state, county, or private), construction impact (acres), permanent impact (acres), and justification. Revise the table to include the acres of impact by land use type.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Resource Report 9 – Air Quality and Noise**
**Air Quality**

1. Provide a discussion of fugitive emissions from open burning. List the federal, state, and local laws and regulations pertaining to burning on table 1.7-1.

**Response:**

Equitrans will not conduct burning of slash or debris.

Respondent: Regina Henry
Position: EQT Corporation, Supervisor, Environmental
Phone Number: 412-553-7848
Date: January 22, 2016

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**Equitrans, L.P.**
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**Resource Report 9 – Air Quality and Noise**
**Air Quality**

2. As previously requested in our comments dated September 28, 2015, provide climate parameters in table 9.1-1 for all counties that would be affected by the project (i.e., add representative climate data for the counties of Allegheny, Pennsylvania; Washington, Pennsylvania; and Wetzel, West Virginia).

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Regina Henry
Position: Supervisor, Environmental, EQT Corporation
Phone Number: 412-553-7848
Date: January 22, 2016

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**Equitrans, L.P.**
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**Resource Report 9 – Air Quality and Noise**
**Air Quality**

3. As previously requested in our comments dated September 28, 2015, provide tables for ambient air quality monitoring data representative of the other counties (Allegheny, Pennsylvania; Washington, Pennsylvania; and Wetzel, West Virginia) that would be affected by the project.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Regina Henry
Position: Supervisor, Environmental, EQT Corporation
Phone Number: 412-553-7848
Date: January 22, 2016

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**Resource Report 9 – Air Quality and Noise**
**Air Quality**

4. Section 9.1.2.4 states "New Source Review applicability will be evaluated once all aspects of the Project are finalized, and Class I modeling requirements will be reviewed if the Project requires Prevention of Significant Deterioration review." File updated information about the finalization of project design and air quality assessments; or provide a schedule for submittal of that data. Document communications with state regulatory agencies on air quality reviews.

**Response:**

The Project design and air quality assessment were finalized at the time Equitrans filed the resource reports. However, at that time, some language in the Resource Report 9 had not been updated to reflect this finalization. Resource Report 9, as submitted, reflects the final project design and includes an analysis of New Source Review (NSR) applicability in Section 9.1.5.1. The Redhook Compressor Station will be a minor source of all regulated pollutants and as such will not trigger NSR permitting, including Nonattainment New Source Review (NNSR) and Prevention of Significant Deterioration (PSD).

Communication with the Pennsylvania Department of Environmental Protection (PADEP) regarding the air permitting was included in the Appendix 9-D, which contains the Pennsylvania State Plan Approval Application. Subsequent to the October 2015 application filing, PADEP provided a letter to Equitrans outlining two comments on outstanding data necessary to initiate their complete review of the permit application. A copy of this letter is included as Attachment 9-4. Equitrans is in the process of responding to PADEP's letter.

Respondent: Regina Henry
Position: Supervisor, Environmental, EQT Corporation
Phone Number: 412-553-7848
Date: January 22, 2016

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**Equitrans, L.P.**
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**Resource Report 9 – Air Quality and Noise**
**Air Quality**

5. Revise table 9.1-4 to include the other three tap locations: the H-302 Tap Site, the H-306 Tap Site, and the H-148 Tap Site.

**Response:**

Revised Table 9.1-4 is included as Attachment 9-5.

Respondent: Regina Henry
Position: Supervisor, Environmental, EQT Corporation
Phone Number: 412-553-7848
Date: January 22, 2016

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**Equitrans, L.P.**
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**Air Quality**

6. Provide a summary table of construction emissions (including NOx, CO, VOC, SO2, PM10, PM2.5, GHGs, and HAPs) by year and by activity (including construction equipment operations, on-road and off-road travel, and fugitives from earthmoving and open burning) for each of the project components (pipelines, access roads, Webster Interconnect, Mobley Tap, three tap sites, Redhook Compressor Station, and Pratt Compressor Station decommissioning).

**Response:**

The information requested is in summary tables included in Appendix 9-B of Resource Report 9. Although the titles for the aforementioned tables may, for the sake of simplicity, have referenced only the primary pipeline or facility associated with the construction activities that were the subject of the table, the data used to calculate the emissions in each of the tables also accounted for construction of any access roads, taps, etc., associated with the primary pipeline or facility. The locations and activities accounted for in each of the construction emission summary tables in Appendix B are listed in the table below. Because including individual and total HAP in the same table as criteria and GHG pollutants would have resulted in the need to break one table up into multiple pages, separate summary tables were provided in Appendix 9-B for emissions of HAPs from construction of project components. As noted in the response to Resource Report 9, Request 1, there will be no open burning.

| RR9 Table No. | Table Title | Locations/Activities Included in Table |
|---|---|---|
| 9-B-1. | Criteria Pollutant Emissions Summary, H-318 Pipeline Allegheny Washington Construction | H-318 pipeline, H-148 tap site, all associated access roads. |
| 9-B-2. | HAP Emission Summary, H-318 Pipeline Allegheny Washington Construction | H-318 pipeline, H-148 tap site, all associated access roads. |
| 9-B-12 | Criteria Pollutant Emissions Summary, H-316 Pipeline Greene County Construction | H-316 pipeline, H-302 tap site, all associated access roads. |
| 9-B-13 | HAP Emission Summary, H-316 Pipeline Greene County Construction | H-316 pipeline, H-302 tap site, all associated access roads. |
| 9-B-23 | Criteria Pollutant Emissions Summary, Webster Interconnect Construction | Webster interconnect, H-306 tap site, all associated access roads. |
| 9-B-24 | HAP Emission Summary, Webster Interconnect Construction | Webster interconnect, H-306 tap site, all associated access |

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| RR9 Table No. | Table Title | Locations/Activities Included in Table |
|---|---|---|
| | | roads. |
| 9-B-34 | Criteria Pollutant Emissions Summary, Mobley Tap Construction | Mobley tap site, all associated access roads. |
| 9-B-35 | HAP Emission Summary, Mobley Tap Construction | Mobley tap site, all associated access roads. |
| 9-B-45 | Criteria Pollutant Emissions Summary, Redhook Station Construction | Redhook Station, all associated access roads. |
| 9-B-46 | HAP Emission Summary, Redhook Station Construction | Redhook Station, all associated access roads. |
| 9-B-56 | Criteria Pollutant Emissions Summary, Pratt Station Decommissioning | Pratt Station. |
| 9-B-57 | HAP Emission Summary, Pratt Station Decommissioning | Pratt Station. |

Respondent: Regina Henry
Position: Supervisor, Environmental, EQT Corporation
Phone Number: 412-553-7848
Date: January 22, 2016

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**Air Quality**

7. Provide the following summary tables for the operation of the project:

   a. a table showing potential-to-emit emissions in tons per year for all criteria pollutants (NOx, VOC, CO, SO2, PM10, PM2.5), and hazardous air pollutants from emission generating equipment at the existing Pratt Compressor Station. Indicate which equipment would be retained and which ones will be phased out and corresponding dates;

**Response:**

All equipment apart from minor aboveground piping and other non-air emissions equipment will be eliminated from the Pratt Compressor Station once the Redhook Compressor Station is in service. This demolition is expected to start approximately in May 2018 as outlined in Table 1.4-6. Therefore, potential-to-emit (PTE) emissions from the Pratt Compressor Station are not relevant to this project. Nonetheless, a table of PTE emissions for current equipment at the station is included as Attachment 9-7a.

   b. a table showing potential-to-emit emissions in tons per year for all criteria pollutants (NOx, VOC, CO, SO2, PM10, PM2.5), and hazardous air pollutants from emission generating equipment for the new Redhook Compressor Station. Include the number of yearly blowdown events at the new Redhook Compressor Station and the resulting VOC and greenhouse gas (GHG) emissions that would result from such an event; and

**Response:**

Table 9.1-5 has been revised to include facility totals for total HAPs, as well as formaldehyde (HCHO) emissions, which is the largest single HAP emitted by the facility. The revised table is included as Attachment 9-7b. Revised Table 9.1-5 shows PTE emissions in tons per year for all criteria pollutants ($NO_X$, VOC, CO, $SO_2$, $PM_{10}$, $PM_{2.5}$) from emission generating equipment for the Redhook Compressor Station. Emissions from blowdown events are included in these totals. A breakdown of emissions from blowdowns and an estimate of the number of yearly blowdown events can be found in Appendix 9-C, Table 11.

   c. a table showing potential-to-emit emissions in tons per year for the GHG (i.e., CH4, N2O, CO2) from emission generating equipment at the new Redhook Compressor Station.

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**Response:**

Table 9.1-5, included as Attachment 9-7b, has been revised to include a breakdown of GHG emissions (i.e., $CH_4$, $N_2O$, and $CO_2$) from the Redhook Compressor Station.

Respondent: Regina Henry
Position: Supervisor, Environmental, EQT Corporation
Phone Number: 412-553-7848
Date: January 22, 2016

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**Air Quality**

8. As identified in table 9.1-4, discuss potential impacts at all Class I areas within 100 kilometers (km) of the project. Document communications with federal land managers from each of the Class I areas within 100 km regarding air emissions from the proposed project.

**Response:**

Equitrans reviewed the potential emission estimates for the final project design and determined that the facility will be a minor source and not subject to NSR, including PSD and Class I area modeling. As such, no formal correspondence with the Federal Land Managers is required (i.e., the Federal Land Managers do not anticipate an impact at the Class I area) due to the distance to the project.

Nonetheless, Equitrans submitted correspondence to Federal Land Managers with the US Forest Service and National Park Service to notify them of the project and its associated potential emissions. Confirmation was received from the US Forest Service that the project would not be anticipated to impact any Forest Service Class I area, and that no additional information was requested. The National Park Service also shared this determination.

Copies of this correspondence were included in Appendix 9-F to Resource Report 9.

Respondent: Regina Henry
Position: Supervisor, Environmental, EQT Corporation
Phone Number: 412-553-7848
Date: January 22, 2016

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**Resource Report 9 – Air Quality and Noise**
**Appendix 9-B – Construction Emissions Calculations**

9. Revise appendix 9-B to provide detailed calculations of construction emissions for the access roads and open burning emissions.

**Response:**

As discussed in the response Resource Report 9, Request 6, construction emissions for access roads are accounted for in tables in Appendix 9-B of Resource Report 9.

As noted in the response to Resource Report 9, Request 6, there will be no open burning.

Respondent: Regina Henry
Position: Supervisor, Environmental, EQT Corporation
Phone Number: 412-553-7848
Date: January 22, 2016

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**Resource Report 9 – Air Quality and Noise**
**Noise**

10. Discuss potential sound impacts at noise-sensitive areas (NSAs) in proximity to the Mobley Tap and Webster Interconnect due to construction and operation of the project. Provide noise impacts tables similar to table 9.2-11.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Resource Report 9 – Air Quality and Noise**
**Noise**

11. Provide an analysis of low frequency noise for the Redhook Compressor Station to determine if any perceptible vibration would affect nearby NSAs.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Noise**

12. Discuss potential noise levels that would be generated during construction of the pipelines. Provide existing ambient noise levels along portions of the pipeline routes that cross near residential neighborhoods. List all NSAs within 0.25 mile of a pipeline, and estimate construction noise and duration at those locations. Explain how construction noise would attenuate with distance and time. Identify any NSAs where construction noise may exceed 55 decibels. Summarize results in tables similar to table 9.2-11.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Noise**

13. Discuss potential noise and vibration levels and impacts on NSAs, as well as appropriate mitigation to be used, due to blasting in areas near residences. Summarize results in tables similar to table 9.2-11 at each location.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Noise**

14. Estimate the duration (days/weeks/months) of construction for each project component (i.e., pipeline spreads, Webster Interconnect, Mobley Tap, the three tap sites, the Redhook Compressor Station, and Pratt Station decommissioning).

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Noise**

15. Revise tables 9.2-14 through 9.2-17 (or create new tables) so that they show the same information shown in table 9.2-11 for each NSA (i.e., add corresponding values for):
    a. existing ambient background Ldn (dBA) for each NSA to HDD entry and exit points;
    b. estimated maximum Ldn From HDD activities (dBA);
    c. total noise, ambient + HDD; and
    d. predicted change from existing ambient Ldn (dBA).

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Resource Report 9 – Air Quality and Noise**
**Noise**

16. Provide a discussion of how Equitrans would identify any noise complaints from nearby residents due to the construction and operation of the project facilities and describe how the complaints would be resolved.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Resource Report 9 – Air Quality and Noise**
**Noise**

17. Section 9.2.6 states "although the [Redhook Compressor] station is predicted to have sound levels higher than the [Franklin Township's Zoning Ordinance] at the station's property line, adverse impact to the community is not expected based on the non-sensitive land use of the surrounding properties. Therefore, noise mitigation measures to meet the Township's noise criteria have not been proposed." File documentation of communications with Franklin Township regarding this noise ordinance and the Township's concurrence with Equitrans' assessment.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Dated December 29, 2015**

**Resource Report 10 – Alternatives**

1. Insert the county "Natural Heritage Inventory Core Habitat" as an element in tables comparing alternatives to the proposed project.

**Response:**

County Natural Heritage Inventory Core Habitat, where present, has been added to alternatives in Pennsylvania (Tables 10.3-1 through 10.3-6 and 10.3-8, 10.3-9 and 10.4-1). The data does not exist in West Virginia. These tables are included as part of Attachment 10-6.

Respondent: Kelsey Quan
Position: Engineer II
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Resource Report 10 – Alternatives**

2. As previously requested in our September 28, 2015 comments, include in all alternatives comparison tables data specifically for steep side-slopes (i.e., not the more generic term steep slopes) and for interior forest (miles and acres affected during both construction and operation). The side slope data can be provided in addition to data for steep vertical slopes as necessary.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

**Responses to Environmental Information Request**
**Dated December 29, 2015**

**Resource Report 10 – Alternatives**

3. Revise figure 10.2-1 to show and label all three categories of highways within the project counties.

**Response:**

Revised Figure 10.2-1 is included as Attachment 10-3.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
**Docket No. CP16-13-000**

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**Resource Report 10 – Alternatives**

4. Revise table 10.3-1 regarding the number of perennial waterbodies crossed. Also clarify the apparent discrepancies, where figure 10.3-1 appears to show the proposed route crossing two blue-line streams, yet table 10.3-1 indicates that only one perennial waterbody would be crossed.

**Response:**

The discrepancy is between NWI and NHD data sets. Revised Table 10.3-1 (included as part of Attachment 10-6) and revised Figure 10.3-1 (Attachment 10-4) have been reconciled to show two perennial streams based on NWI data.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
**Equitrans Expansion Project**
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**Resource Report 10 – Alternatives**

5. Depict the existing pipelines that the proposed M-80 and H-158 pipelines would connect to on figure 10.3-3 as well as the existing M-80 and H-158 pipelines themselves (if different), and assess whether alternative routes to the east of the proposed route and west of Jefferson Road within or adjacent to a cleared pathway might be viable and reduce impacts to forest and landowner parcels.

**Response:**

Equitrans expects to submit a response by February 5, 2016.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Equitrans, L.P.**
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**Resource Report 10 – Alternatives**

6. In all alternative comparison tables provide data to at least one decimal place, except where the data category can only be appropriately described with a whole number. For example, the "Total length" and "Length adjacent to existing ROW" data rows in table 10.3-4 are rounded to whole numbers that don't match the data presented in the text in section 10.3.2.4.

**Response:**

All of the comparison tables except Tables 10.3-6 and 10.3-9 which Equitrans expects to file on February 5, 2016 have been updated as requested: Revised Tables 10.3-1 through 10.3-5. 10.3-7, 10.3-8 and 10.4-1 are included in Attachment 10-6.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Docket No. CP16-13-000**

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**Resource Report 10 – Alternatives**

7. Section 10.3.1.3 stated that "the proposed route crosses.isolated wetlands totaling approximately 86 feet," but table 10.3-1 indicated that Alternative Route 2 would cross about 86 feet of wetlands and the proposed route would cross about 199 feet of wetlands. Resolve the apparent discrepancy. In addition, correct the apparent error in table 10.3-1 where the number of landowner parcels affected by operation (30) is greater than the number affected by construction (26) for Alternative Route 2.

**Response:**

In Section 10.3.1.1, the second sentence should have stated "Alternative Route 2" instead of "Proposed Route".

The parcel count in Table 10.3-1, Alternative Route 2 for construction and operations has been revised to show 29 parcels and 25 parcels, respectively. See the revised Table 10.3-1 as a part of Attachment 10-6.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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8. Describe in more detail the "additional safety concerns with weather" noted in section 10.3.2.4. In addition, provide supporting information regarding why "the only acceptable construction method across Raccoon Run Road into Riverview Golf Course would be an HDD" and indicate why a road bore or open cut would not be suitable crossing method alternatives.

**Response:**

"Additional safety concerns with weather" are based on the Riverview Golf Course preference that construction take place during winter months to avoid any conflict with golf course use. Winter construction has additional potential hazards for equipment working close to an energized transmission line, work in hilly terrain and worksite slips, trips and falls.

Raccoon Run Road is located in a deep valley between two steep hills. It was determined during the routing process that along Raccoon Run Road the terrain contained vertical rock walls on one or both sides of the road. To add to the difficulty of the terrain, a creek runs in close parallel to the road leaving little available workspace in the valley. Because of these conditions a road bore or open cut is not possible. Further, even if an HDD were attempted, it would likely fail because of the adjacent mined out areas.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Resource Report 10 – Alternatives**

9. Where slope and side slope concerns are used to justify selection of one route over another (such as, but not necessarily limited to, sections 10.3.3, 10.3.4, 10.3.6.1, and 10.3.6.2) provide project mapping overlaid on a topographic base in addition to an aerial photography base. This can be accomplished with separate figures or the split/dual mapping as depicted in figure 10.4-1 (as appropriate).

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Resource Report 10 – Alternatives**

10. Depict the existing H-306 pipeline as well as the proposed MVP (H-600) pipeline on figure 10.3-4 for the Webster Interconnect, as well as any other relevant features (including topography as noted above). In addition, explain why the total area for the proposed and alternative Webster Interconnect sites are listed as '0" in table 10.3-7.

**Response:**

Revised, Attachment 10-10, Figure 10.3-4 shows the existing H-306 and Proposed MVP (H-600) pipelines and topography. Table 10.3-7 has been revised (included as part of Attachment 10-6) to include the total area in acres required for the proposed and alternative sites.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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11. Clarify for figure 10.3-5 whether the parcel shaded in green is actually the Cline property (even though the Cline alternative route is colored maroon) and the parcel shaded in maroon is actually the Headley property (even though the Headley alternative route is colored green). Correct the map shading as appropriate.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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12. Clarify and if appropriate correct the statement in section 10.3.6.2 that "the proposed route will be adjacent to an existing right-of-way for its entire length." That assertion is not supported by the data presented in table 10.3-9 or the depiction in figure 10.3-5. Based on this clarification, re-assess the viability of the Cline Variation given the comparative data presented in table 10.3-9 along with any other pertinent information. In addition, consider and discuss minor adjustments to the Cline Variation route where appropriate to avoid or minimize potential impacts such as decreasing proximity to homes, enhanced routing along parcel boundaries, and reducing or eliminating effects to the southern portion of the golf course. Finally, consider and discuss the potential merits of a combined / hybrid Cline and Headley variation that potentially would further decrease the length of pipeline required.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Resource Report 10 – Alternatives**

13. In filings on November 27, 2015, both Eleanor Sawyer and Thomas Prentice stated that there is an existing Equitrans right-of-way easement that runs to the same crossing point of the Monongahela River as the proposed H-318 pipeline route. Provide an alternative analysis using the existing Equitrans right-of-way in comparison to the proposed H-318 pipeline route.

**Response:**

Equitrans expects to provide a response by February 5, 2016.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Resource Report 10 – Alternatives**

14. Using available desktop data, clarify in section 10.4.1 whether the East compressor station site "may even be within that stream's floodplain." Further, clarify and explain the statement "The Redhook Site does not require many existing pipelines to be realigned."

**Response:**

Based on desktop analysis of floodplain mapping the southern portion of the East Site is within the FEMA 100-year floodplain for South Fork Tenmile.

Respondent: Kelsey Quan
Position: Engineer II, EQT Corporation
Phone Number: 412-395-2590
Date: January 22, 2016

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**Dated December 29, 2015**

**Resource Report 11 – Reliability and Safety**

1. Correct table 11.1-2. The Potential Impact Radius (PIR) for M-80 and M-158 appear to be incorrect.

**Response:**

Equitrans expects to file this response by February 5, 2016.

Respondent: Andrew Gabany
Position: Engineer III, EQT Corporation
Phone Number: 412-395-5531
Date: January 22, 2016

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**Equitrans, L.P.**
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**Resource Report 11 – Reliability and Safety**

2. Describe how Equitrans would monitor for changes in population density around proposed project components. If population density changes such that higher classification standards of safety must be met, discuss how and when Equitrans would be required to meet the new standards.

**Response:**

Equitrans expects to file this response by February 5, 2016.

Respondent: Andrew Gabany
Position: Engineer III, EQT Corporation
Phone Number: 412-395-5531
Date: January 22, 2016

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**Equitrans, L.P.**
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**Dated December 29, 2015**

**Resource Report 11 – Reliability and Safety**

3. As previously requested in our comments dated September 28, 2015, clarify whether both methods to calculate high consequence areas (HCA) would be used and that all applicable sites would be reported, in order to provide the most comprehensive listing possible.

**Response:**

According to 49 CFR Part 192 Subpart O, the operator has the choice to use either Method 1 or Method 2 for calculating HCAs. Equitrans used Method 2 to calculate HCAs. All applicable sites would be reported.

Respondent: Andrew Gabany
Position: Engineer III, EQT Corporation
Phone Number: 412-395-5531
Date: January 22, 2016

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**Equitrans, L.P.**
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**Dated December 29, 2015**

**Resource Report 11 – Reliability and Safety**

4. Include a more detailed overview of how steep topography, land instability, geology, and other natural forces could affect reliability and safety for the project, and describe any associated proposed impact avoidance, minimization, and/or mitigation measures proposed. Clarify whether Equitrans anticipates the use of strain gauges in steep or unstable areas, and if so describe their features and usage.

**Response:**

Equitrans expects to file this response by February 5, 2016.

Respondent: Andrew Gabany
Position: Engineer III, EQT Corporation
Phone Number: 412-395-5531
Date: January 22, 2016

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**Resource Report 11 – Reliability and Safety**

5. Equitrans stated in section 11.3.7 that it's "procedures and practices will meet or exceed the pipeline safety regulations." Describe any project safety features proposed by Equitrans that would be more stringent than the measures required by the U.S. Department of Transportation.

**Response:**

All pipes in Class I areas are designed to Class II standards and tested to Class III standards per 49 CFR Part 192.

Respondent: Jeremy Watts
Position: Engineer III, EQT Corporation
Phone Number: 412-553-5769
Date: January 22, 2016

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**Equitrans, L.P.**
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**Resource Report 11 – Reliability and Safety**

6. Section 11.1.3 indicates that the method used to determine HCAs includes areas within a potential impact circle that contain 20 or more buildings intended for human occupancy and that no HCAs have been identified along any of the proposed pipeline routes. Review the following alignment sheets to verify that this statement is correct:

   a. PA-GRPA-H316-01 (Sheet 2 of 6); and
   b. PA-ALPA-H318-04 (Sheet 4 of 6).

**Response:**

The referenced statement is correct.

Respondent: Andrew Gabany
Position: Engineer III, EQT Corporation
Phone Number: 412-395-5531
Date: January 22, 2016

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**Equitrans, L.P.**
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**COMMENTS OF FEDERAL & STATE COOPERATING AGENCIES**

Please address the following comments from other federal and state cooperating agencies. If there are data overlaps with the FERC staff questions, include the answers to cooperating agencies comments when answering the FERC questions. It is not necessary to address comments on spelling or grammar.

**WVDEP Comment 1**

The confluence of the receiving stream, North Fork Fishing Creek, is within 300 feet of the construction area and is classed as a High Quality Stream with the potential for populations of State protected mussels. Special attention to sediment and erosion control practices will limit potential impacts to downstream aquatic life.

**Response:**

Equitrans is currently developing a Construction Stormwater General Permit that will address sediment and erosion control practices to limit potential impacts to downstream aquatic life.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**WVDEP Comment 2**
Stream restoration in North Fork Fishing Creek was conducted under a Consent Order from the West Virginia Department of Environmental Protection. The restoration area is also downstream of the construction area. Special attention to sediment and erosion control practices will limit potential impacts to restored stream sections.

**Response:**

Equitrans is currently developing a Construction Stormwater General Permit that will address sediment and erosion control practices to limit potential impacts to downstream aquatic life.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans, L.P.**
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**Dated December 29, 2015**

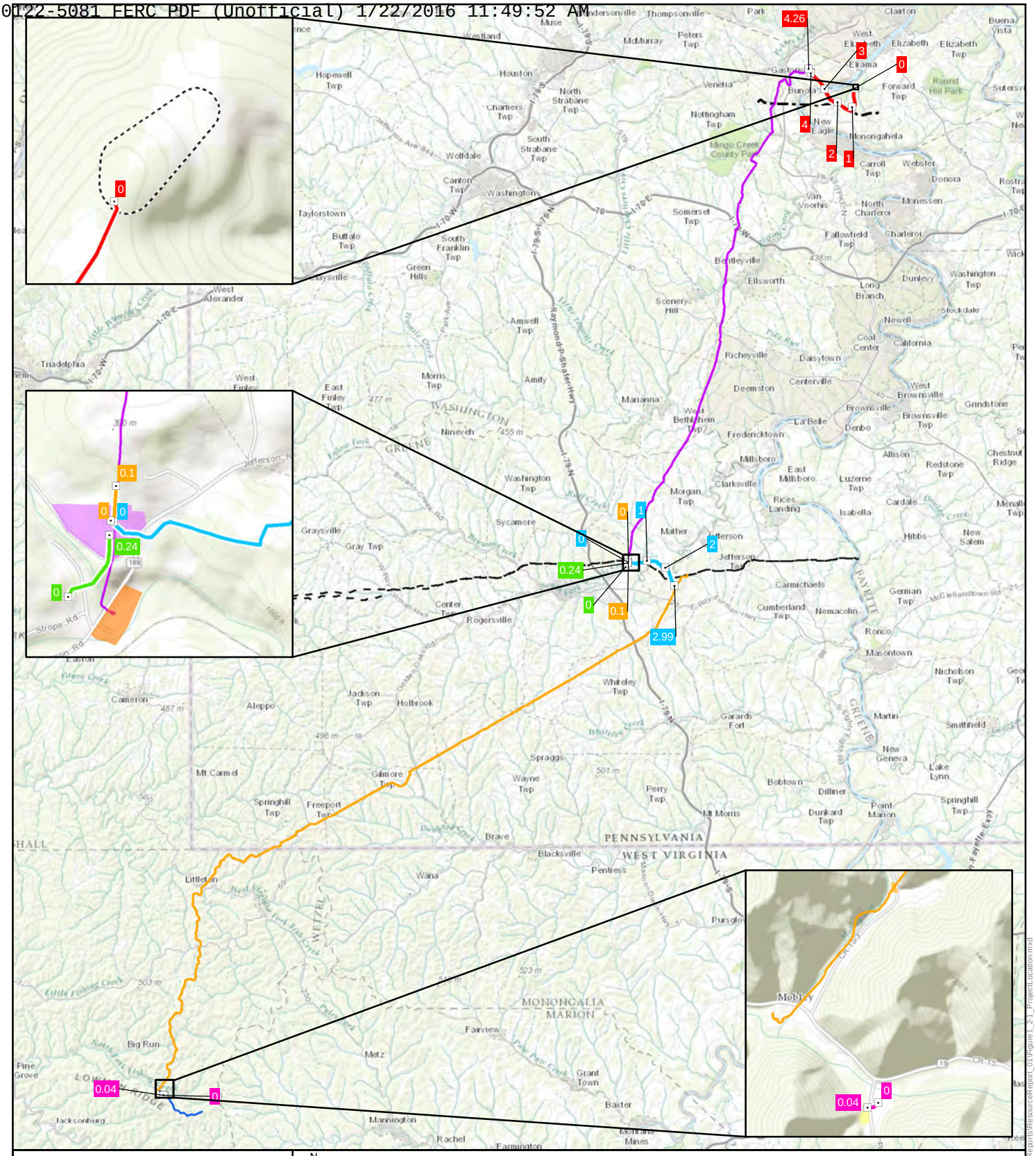
**WVDEP Comment 3**
Spawning season dates for West Virginia State 401 Water Quality Certification Conditions for Nationwide Permits are April-June for warm water streams and September 15 - March 31 for trout waters and adjacent tributaries. If stream work cannot be avoided during these dates, for the respective stream designation, WRS requests that the impacts be evaluated to aid in our determination to grant or deny a spawning season waiver.

**Response:**

Equitrans will adhere to the stream crossing construction windows as outlined in Resource Report 2, or it will apply for spawning season waivers.

Respondent: Stephanie Frazier
Position: Supervisor Permitting – Environmental, EQT Corporation
Phone Number: 412-553-5798
Date: January 22, 2016

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**Equitrans Expansion Project**

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EQUITRANS

**Figure 1.2-1**
**Project Location**

(Revised January 22, 2016)

Data Sources: ESRI Streaming Data (2014)

**Legend**

- Milepost
- H-158/M80
- H-305
- H-316
- H-318
- H-319
- H-148
- H-302
- H-306
- Sunoco Mariner East Pipeline
- Texas Eastern Pipeline
- Applegate Gathering System Area
- Webster Interconnect
- Mobley Tap
- Existing Pratt Compressor Station
- Proposed Redhook Compressor Station

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**Attachment 1-8**

**Table 1.3-3**

**(Revised January 22, 2016)**

**Land Requirements for Aboveground Facilities a/**

| Facility Name | Approximate Milepost | Land Required for Construction (acres) | Land Required for Operation (acres) |
|---|---|---|---|
| **Compressor Stations** | | | |
| Redhook Station | H-316, MP 0.00; H-158/M-80, MP 0.24 | 17.74 | 17.74 |
| **Other Facilities** | | | |
| Webster Interconnect | H-319, MP 0.04 | 2.47 | 0.81 |
| Mobley Tap | H-302, MP 0.60 | 0.38 | 0.38 |
| **Pig Launcher/Receiver Facilities** | | | |
| Applegate L/R Site | H-318, 0.00 | 0.4 | 0.4 |
| Hartson L/R Site | H-318, 4.26 | 0.11 | 0.11 |
| H-302 Tap L/R Site | H-316, 2.99 | 0.49 | 0.49 |

a/ MLVs are not included because these will be completely within the right-of-way and will not require additional land outside of that necessary for the pipeline.

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**HORIZONTAL DIRECTIONAL DRILLING (HDD)**
**CONTINGENCY PLAN**

# EQUITRANS EXPANSION PROJECT

**ALLEGHENY, GREENE AND WASHINGTON COUNTIES, PENNSYLVANIA**

**JULY 2015**

**(Revised January 22, 2016)**

Prepared by:
EQUITRANS
625 Liberty Avenue
Suite 1700
Pittsburgh, PA 15222-3111

EQUITRANS℠

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EQUITRANS

## HORIZONTAL DIRECTIONAL DRILLING (HDD) CONTINGENCY PLAN

**Project Narrative:**

HDD is a trenchless excavation method that is accomplished in three phases. The first phase consists of drilling a small diameter pilot hole along a designed directional path. The second phase consists of enlarging the pilot hole to a diameter suitable for installation of the pipe. The third phase consists of pulling the pipe into the enlarged hole. HDD is accomplished using a specialized horizontal drilling rig with ancillary tools and equipment. A properly executed HDD crossing will allow for the pipeline to be installed in a minimally invasive manner.

HDD is proposed for the Equitrans Expansion Project crossing the Monongahela River (H-318 pipeline) in Allegheny and Washington Counties, Pennsylvania and Ten Mile Creek (H-316 pipeline) in Greene County, Pennsylvania. The HDD crossing is the preferred method of construction intended to minimize direct impacts to surface waters.

The inadvertent release (IR) of drilling lubricant is a potential concern when the HDD is used. The HDD procedure for these crossings will utilize Bentonite for Drilling Lubricant.

**Purpose:**

The purpose of this Contingency Plan is to:

- Minimize the potential for an IR associated with horizontal directional drilling activities.
- Provide for the timely detection of an IR.
- Protect areas that are considered environmentally sensitive (streams, wetlands, other biological resources, cultural resources).
- Provide an organized, timely, and “minimum-impact” response in the event of an IR.
- Provide that all appropriate notifications are made to the PA Department of Environmental Protection (DEP), EQT, and other appropriate regulatory agencies, and that documentation is completed.

**Preparation:**

Prior to construction, sensitive cultural and biological resources will be protected by implementing the following measures:

- The drilling contractor shall review the site conditions prior to the start of work. The execution of HDD operations and actions for detecting and controlling drilling fluid seepage are the responsibility of the drilling contractor.
- Construction limits will be clearly marked.

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- Barriers (Fabric Filter Fence or Compost Filter Sock, as per the on-site inspector) will be erected between the bore site and nearby sensitive resources prior to drilling to prevent released material from reaching the resource.

- On-site briefings will be conducted for the workers to identify and locate sensitive resources at the site.

- Provide that all field personnel understand their responsibility for timely reporting of IR's.

- Maintaining necessary response equipment on-site and in good working order.

The primary areas of concern for IR's occur at the entrance and exit points where the drilling equipment is generally at their shallowest depths. The likelihood of an IR decreases as the depth of the pipe increases.

To minimize the potential extent of impacts from an IR, HDD operations will be continuously monitored to look for observable IR conditions or lowered pressure readings on the drilling equipment. Early detection is essential to minimizing the area of potential impact.

**Training:**

Prior to the start of construction, the Site Supervisor/Foreman shall ensure that the crew members receive training on the following:

- The provisions of this Contingency Plan.

- Inspection procedures for IR prevention and containment equipment materials.

- Contractor/crew obligation to immediately stop the drilling operation upon first evidence of the occurrence of an IR and to immediately report any IRs to EQT's Environmental Coordinator.

- Contractor/crew member responsibilities in the event of an IR.

- Operation of release prevention and control equipment and the location of release control materials, as necessary and appropriate.

- Protocols for communication with agency representatives who might be on site during the clean-up effort.

- Copies of this contingency plan and the contractor's site specific contingency plan will be maintained at the bore site in a visible and accessible location at all times.

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**Equipment:**

The Site Supervisor shall verify that:

- All equipment and vehicles are inspected and maintained daily to prevent leaks of hazardous materials.

- Spill kits and spill containment materials are available on-site at all times and that the equipment is in good working order.

- Equipment required to contain and clean up an IR is available at the bore site during drilling activities.

  *Note: It is the drilling contractor's responsibility to provide any IR containment materials that are necessary to respond to the release of drill fluids. The materials listed in this contingency plan are not to be considered inclusive and may require additional equipment depending on site conditions.

**Drilling Procedures:**

Drilling pressures shall be closely monitored so they do not exceed those needed to penetrate the formation. Pressure levels shall be monitored randomly by the operator. Pressure levels shall be set at a minimum level to prevent IRs. During the pilot bore, maintain the drilled annulus. Cutters and reamers will be pulled back into previously drilled sections after each joint of pipe is added.

Entry and exit pits shall be enclosed by Fabric Filter Fence or Compost Filter Sock and straw bales. A spill kit shall be on-site and used if an IR occurs. If accessible, a vacuum truck shall be readily available on-site prior to and during all drilling operations. Containment materials (straw, fabric filter fence, sand bags, spill kits, boom and turbidity curtain, etc.) shall be staged on-site at a location where they are readily available and easily mobilized for immediate use in the event of an IR. Filter Fence or Filter Sock will be installed between the bore site and the edge of water sources prior to drilling.

*NOTE: If the site is not able to be accessed by a vacuum truck, a pump with sufficient power to convey the released drill fluid to a containment area will be used instead. Along with the pump, an adequate amount of hose, several filter bags, straw bales, sand bags, and Fabric Filter Fence (or Compost Filter Sock) will be kept on site to create a containment area on site.

Once the drill rig is in place and drilling begins, the drill operator shall stop work immediately whenever the pressure in the drill rig drops or there is a lack of returns in the entrance pit. At this time the Site Supervisor/Foreman shall be informed of the potential IR. When a loss in pressure dictates a change in operations, the Site Supervisor/Forman will contact EQT Project Manager prior to proceeding. The Site Supervisor/Foreman and the drill rig operator(s) shall work to coordinate the likely location of the IR. The location shall be recorded and notes made on the location and measures taken to address the concern. Measures will then be taken according to

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the type of IR (i.e. Terrestrial or Aquatic) as listed below. The Site Supervisor/Foreman will then begin notifying the appropriate parties as listed in the "Contacts" section of this document.

Water containing mud, silt, drilling fluid, or other pollutants from equipment washing or other activities, shall not be allowed to enter a lake, flowing stream, or any other water source. The bentonite used in the drilling process shall be either disposed of at an approved disposal facility or recycled in an approved manner. Other construction materials and wastes shall be recycled, or disposed of, as appropriate.

**Inadvertent Release (IR) Procedures**

In the event of an IR, EQT's Project Manager, Environmental Inspector, Chief (i.e. whoever is on site) is required to IMMEDIATELY notify the Project's **EQT Environmental Coordinator (Ms. Stephanie Frazier, 412-553-5798)** with the following information: What occurred; Where it occurred (Terrestrial or Aquatic); When it occurred; Who was responsible; and Quantity released.

**Terrestrial IR Procedures:**

- Stop work immediately.
- Isolate the area with hay bales, sand bags, filter sock, or silt fencing to surround and contain the drilling mud.
    - Determine the quantity (gallons) of material released
    - Determine the distance (feet) to the nearest waterbody
    - Determine the name of the waterbody
- Contact the appropriate parties as listed in the "Required Notifications" section at the end of this document regarding the following action:
- A mobile vacuum truck (or pump if in an inaccessible area) will be used to pump the drilling mud from the contained area and into either a return pit or (if using a pump) into a filter bag surrounded by Fabric Filter Fence or Compost Filter Sock.
- Once excess drilling mud is removed, the area will be seeded and/or replanted using species similar to those in the adjacent area, or allowed to re-grow from existing vegetation.

After the IR is stabilized, document the IR from discovery through post-cleanup conditions with photographs and prepare an IR incident report describing time, place, actions taken to remediate IR, and measures implemented to prevent recurrence. The incident report will be provided to the EQT Environmental Coordinator within 24 hours of the occurrence.

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**Aquatic (under water) IR Procedures:**

- Stop work immediately.
- Contact the appropriate parties as listed in the "Required Notifications" section at the end of this document regarding the following actions:
- Isolate the area with hay bales, sand bags, filter sock, or silt fencing to surround and contain the IR;
- If the area is unable to be isolated (deeper waters), use a hole plugging method with denser mud to plug the fractures. Re-direct the drill to travel through competent, solid rock.
    - Determine the quantity (gallons) of the IR
    - Determine the quantity (gallons) that was released to the waterbody
    - Determine the distance (feet) the material traveled down the waterbody
    - Determine the name of the affected waterbody
- A mobile vacuum truck (or pump if in an inaccessible area) will be used to pump the drilling mud from the contained area and into either a return pit or (if using a pump) into a filter bag surrounded by Fabric Filter Fence or Compost Filter Sock.
- If the IR affects an area that is vegetated, the area will be seeded and/or replanted using species similar to those in the adjacent area, or allowed to re-grow from existing vegetation.

After the IR is stabilized, document the IR from discovery through post-cleanup conditions with photographs and prepare an IR incident report describing time, place, actions taken to remediate IR, and measures implemented to prevent recurrence. The incident report will be provided to the EQT Environmental Coordinator within 24 hours of the occurrence.

**Abandonment and Alternative Crossings**

If the HDD fails and EQT decides to abandon the drill hole, alternative crossing methods will be considered. Any alternative crossing will require permitting approvals to be secured before action is taken. Contact the Environmental Coordinator for the Project.

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**Required Notifications:**

In the event of an IR, the following parties are to be notified IMMEDIATELY:
EQT Environmental Department:

**Ms. Stephanie Frazier (Primary Contact)**
Environmental Permitting - Supervisor
412-553-5798 (office)
412-925-1446 (cell)

Include the following information:

- Time the spill was first identified
- Description of where the spill occurred – Township and County
- Latitude and Longitude of spill
- Size of spill and control measures in place
- Name of affected water resource (if known/applicable)
- Photographs of spill area and corrective measures – when available. (Do not wait to notify EQT until pictures are available. Photo documentation should begin immediately upon detection and continued throughout the duration of the cleanup).

The Environmental Department will contact State and/or Federal environmental agencies (if applicable) for notification requirements in the event of an IR.

**AGENCY CONTACT INFORMATION**

- U/S Army Corps of Engineers:
  Pittsburgh District Corps of Engineers
  Regulatory/Permits
  Federal Bldg., 20th Floor
  1000 Liberty Ave.
  Pittsburgh, PA 15222
  (412) 395-7152

- Pennsylvania Department of Environmental Protection:
  Rachel Carson State Office Building
  400 Market Street
  Harrisburg, PA 17101
  (717) 783-2300

**References:**

This Contingency Plan was adapted from the following websites:

<http://www.blm.gov/pgdata/etc/medialib/blm/wy/information/NEPA/cfodocs/greencore.Par.0871.File.dat/PODappH.pdf>

<http://www.csx.com/share/wwwcsx_mura/assets/File/Customers/Non-freight_Services/Property_Real_Estate/Sample_Fraction_Mitigation_Plan_for_HDD.pdf>

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http://www.energy.ca.gov/sitingcases/smud/documents/applicants_files/Data_Response_Set-1Q/APPENDIX_C_FRAC_OUT_PLAN3.PDF

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**Attachment 2-9. Table 2.2-2**
**(Revised January 22, 2016)**

**FEMA 100-year Flood Zones Crossed by the Project**

| Site | Impact Description | State / County | Floodplain Waterbody | FEMA Flood Zone | Milepost | Permanent/ Temporary Workspace Impact (acres) | Crossing Length (feet) |
|---|---|---|---|---|---|---|---|
| H-318 | Access Roads | PA / Allegheny | Perry Mill Run | AE | 0 | 0.01/0.01 | 18.06 |
| H-318 | ATWS | PA / Allegheny | Kelly Run | A | 1.7 | 0.27 | NA |
| H-318 | Pipeline | PA / Allegheny | Kelly Run | A | 1.7 | 0.17/0.13 | 146.53 |
| H-318 | ATWS | PA / Allegheny | Bunola Run | A | 2.7 | 0.02 | NA |
| H-318 | Pipeline | PA / Allegheny | Bunola Run | A | 2.7 | 0.002/0.02 | Does not cross centerline |
| H-318 | ATWS | PA / Allegheny | Bunola Run | AE | 2.8 | 3.54 | NA |
| H-318 | Pipeline | PA / Allegheny | Bunola Run | AE | 2.8 | 0.69/0.31 | 606.99 |
| H-318 | Pipeline | PA / Allegheny | Monongahela River | AE | 3 | 0.52/0.0 | 456.54 |

Source : FEMA (2015) GIS data available for Allegheny County in Pennsylvania and Wetzel County in West Virginia; no GIS data available for Greene, Washington, and parts of Allegheny Counties)

Flood Zone A = Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies.

Flood Zone AE = Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods.

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**Attachment 2-21**
**Table 2.2-6**
**(Revised January 22, 2016)**

**Proposed Hydrostatic Test Water Use**

| Facility | Mileposts | Water Source | Water Discharge | Volume (gallons) |
|---|---|---|---|---|
| H-158 | 0.00-0.24 | Municipal | Uplands | 7,085 |
| H-305 | 0.00-0.10 | Municipal | Uplands | 12,043 |
| H-316 | 0.00-2.99 | Municipal | Uplands | 551,423 |
| H-318 | 0.00-0.55 | Municipal | Uplands | 44,666 |
| H-318 | 0.55-4.26 | Municipal | Uplands | 304,613 |
| H-319 | 0.00-0.04 | Municipal | Uplands | 1900 |
| M-80 | 0.00-0.24 | Municipal | Uplands | 1,810 |
| Mobley Tap | NA | Municipal | Haul off site | 1,174 |
| Redhook Compressor Station | NA | Municipal | Haul off site | 25,000 |
| Webster Interconnect | NA | Municipal | Haul off site | 1,565 |

Notes:

Redhook testing includes testing all gas piping in the station area: the below grade piping at the meter yard area, M-80, H-158, H-148, H-316 and H-305.

Equitrans intends to discharge in November 2017 for the pipelines and for Redhook Compressor Station. The hydrotest will be released into frak tanks, and then discharged at a slow, controlled rate, approximately 35 gallons per minute. .

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# STUDY PLAN:

# RARE, THREATENED, AND ENDANGERED BAT STUDIES ON THE PROPOSED EQUITRANS EXPANSION PROJECT IN ALLEGHENY, WASHINGTON, AND GREENE COUNTIES, PENNSYLVANIA AND WETZEL COUNTY, WEST VIRGINIA

## USFWS PROJECT # UNASSINGNED

24 June 2015

*Submitted to:*

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*On behalf of:*

EQT
Where energy meets innovation.

*Prepared by:*

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Appendix B: PNDI ER Tool Review
Appendix C: Sample Data Sheets

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# 1.0 Project Description

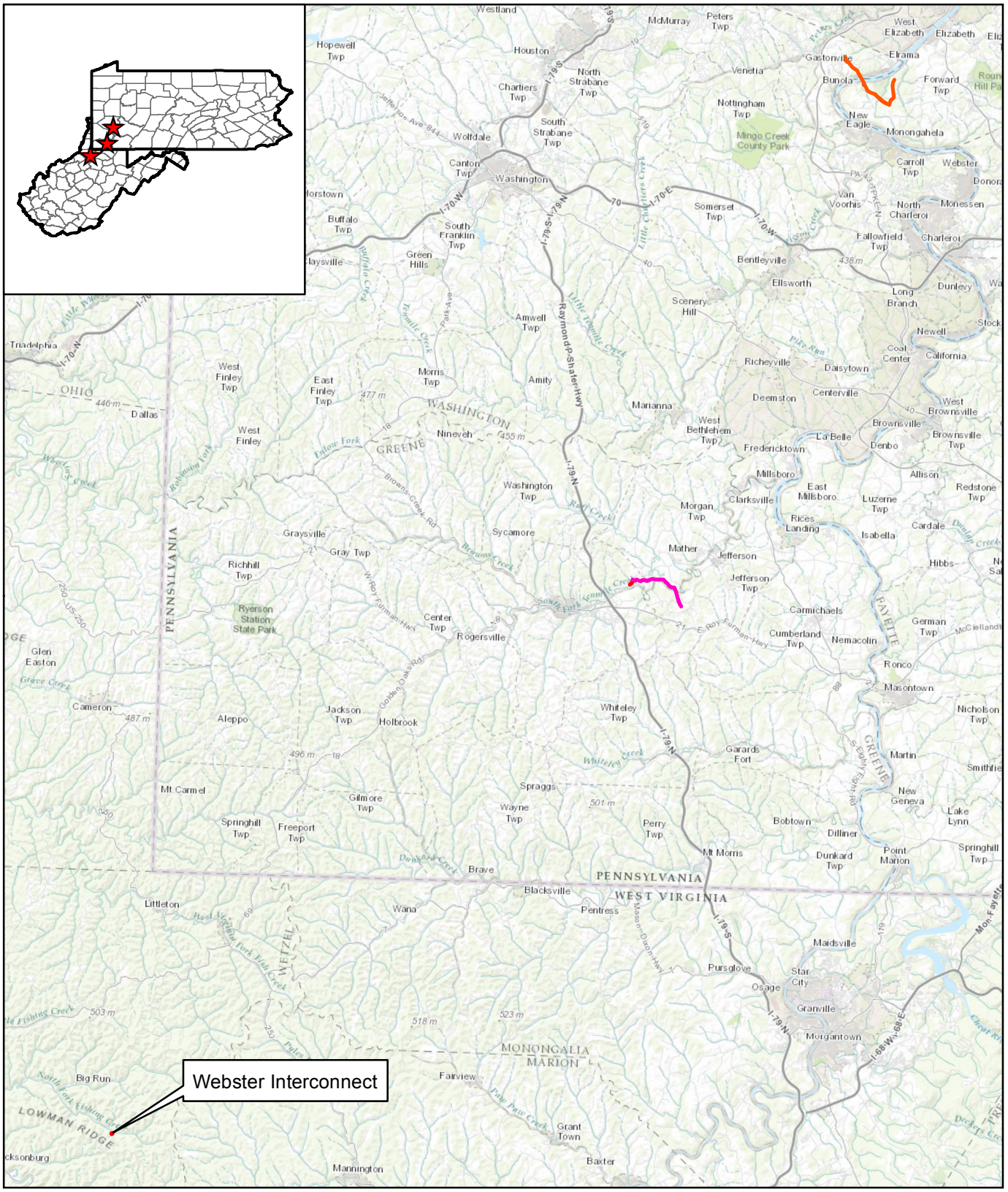
Equitrans (EQT) proposes to develop the Equitrans Expansion Project (Project) in Allegheny, Washington, and Greene counties, Pennsylvania and Wetzel County, West Virginia (Figure 1). The Project (formerly known as the Mountain Access Pipeline Project) will involve the construction of approximately 7.3 miles of new 24- to 30-inch-diameter natural gas transmission pipeline. The Project consists of three separate pipeline alignments; the 30-inch-diameter H316, the 24-inch-diameter H158-M80, and the 24-inch-diameter H318. The H318 alignment requires a crossing of the Monongahela River using horizontal directional drilling (HDD). The Project is designed to minimize greenfield construction to the extent practicable, and to parallel existing EQT Rights-of-Way (ROW). The Project crosses multiple streams and waterways and will require permits from the U.S. Army Corps of Engineers (USACE). As such, Endangered Species Act (ESA) requirements for this Project will be met via Section 7 Consultation.

In addition, EQT is proposing the demolition of the existing Pratt Compressor Station in Greene County, Pennsylvania, the construction of the Redhook Compressor Station immediately adjacent, and the Webster interconnect station in Wetzel County, West Virginia. The existing Pratt Station will become a pipe yard, and include existing and upgraded measurement and interconnect facilities. The Webster interconnect station will connect future pipelines to the proposed Mountain Valley Pipeline. EQT plans to add approximately 48,000 horsepower of centrifugal compression and 12,600 horsepower of reciprocating compression. EQT anticipates disturbing approximately 9 acres of wooded habitat in Pennsylvania for the demolition and construction of the compression facilities and approximately 1 acre of woodland in West Virginia for the construction of the interconnect station.

EQT generally proposes to use an approximately 25-foot wide temporary construction ROW alongside a 75-foot wide permanent ROW centered over the pipeline for operation and maintenance of the pipeline (generally a 100-foot total ROW width during construction). The temporary construction ROW may be narrowed adjacent wetland and stream crossings in order to avoid and minimize impacts to resources used by endangered bats.

Tetra Tech contracted Environmental Solutions & Innovations, Inc. (ESI) to provide assistance with rare, threatened and endangered species for the project. Part of this effort is to conduct endangered bat studies along the length of the Project. Studies will be carried out under U.S. Fish and Wildlife (USFWS) Federal Fish and

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Figure 1. Location of the Equitrans Expansion Project in Allegheny, Washington, and Greene counties, Pennsylvania and Wetzel County, West Virginia.

Project No. 639

0 5 10 Kilometers

Base Map: Esri

ESI ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

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Wildlife Permits: TE02373A-8, TE212440-3, and TE120231-3 and Pennsylvania Game Commission (PGC) Special Use Permits #34973 (issued to Virgil Brack, Jr.), #34977-3 (Issued to John Chenger), and #34979 (issued to John Timpone of HDR Inc.) A list of qualified surveyors is provided as Appendix A.

# 2.0 Initial Project Screening

## 2.1 Step 1. Existing Records of Endangered Bat Occurrences

Several portions of the Project occur in Greene County, Pennsylvania, where numerous Indiana and northern long-eared bat records are known. ESI's internal database reveals that the H316 alignment, the H158-M80 alignment, and the Pratt and Redhook Compressor Stations all fall within the 3-mile buffer of a northern long-eared bat ESI captured during a 2010 mist net survey. Also, records from USFWS West Virginia Field Office (WVFO) indicate that the Webster Interconnect occurs within a 5-mile buffer of known terrestrial northern long-eared bat habitat. By submission of this study plan, ESI formally requests any additional capture and roosting data that will impact consultation for this Project.

ESI further requests assistance in understanding how the records from 2010 will affect this project.

## 2.2 Step 2. Conduct Habitat Assessment

A desktop habitat analysis was completed for the Project. Potentially suitable summer habitat for the Indiana and northern long-eared bat was identified along the entire length of the Project.

## 2.3 Step 3. Pennsylvania Natural Diversity Index (PNDI) Screening

Due to the seasonality of the survey window for bats and the high potential for a bat capture to substantially impact project design and timeline, ESI has concurrently submitted this study plan for approval to complete bat surveys and the large-project PNDI screening documents.

Though the cumulative length of the Project is less than 10 miles, and the total Project impacts are less than 5,165 acres, the distance between the segments of the Project is too great to effectively draw using the online PNDI ER Tool. A description of the Project and accompanying figures were sent as a Large Project for PNDI Screening to USFWS Pennsylvania Field Office, PGC, Pennsylvania Fish and Boat Commission (PAFBC) and Pennsylvania Department of Conservation and Natural Resources (PDCNR). However, it was possible to use the online PNDI ER Tool to

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screen each of the work areas in Pennsylvania separately, and this output is appended (Appendix B). ESI understands that only the results of the large-project PNDI will be applied to the Project.

### 2.4 Step 3. Assess Potential for Adverse Effects

As currently designed, the Project cannot avoid loss of suitable habitat along its length. As such, the Project must proceed to Phase 2 of the survey protocol.

## 3.0 Field Survey: Habitat Assessments

The Webster Interconnect in Wetzel County, West Virginia occurs within known habitat for the northern long-eared bat based on data provided by USFWS WVFO. Approximately 0.5 acre of forested habitat is proposed for clearing in association with this portion of the Project (Figure 2). The site is in close proximity to other EQT projects where ESI has conducted endangered bat studies. Due to the small amount of forested habitat impacts proposed, and the number of endangered bat surveys previously conducted nearby, ESI proposes completion of habitat assessments at the Webster Interconnect site to identify any potential roosting habitat that must be cleared after 15 November.

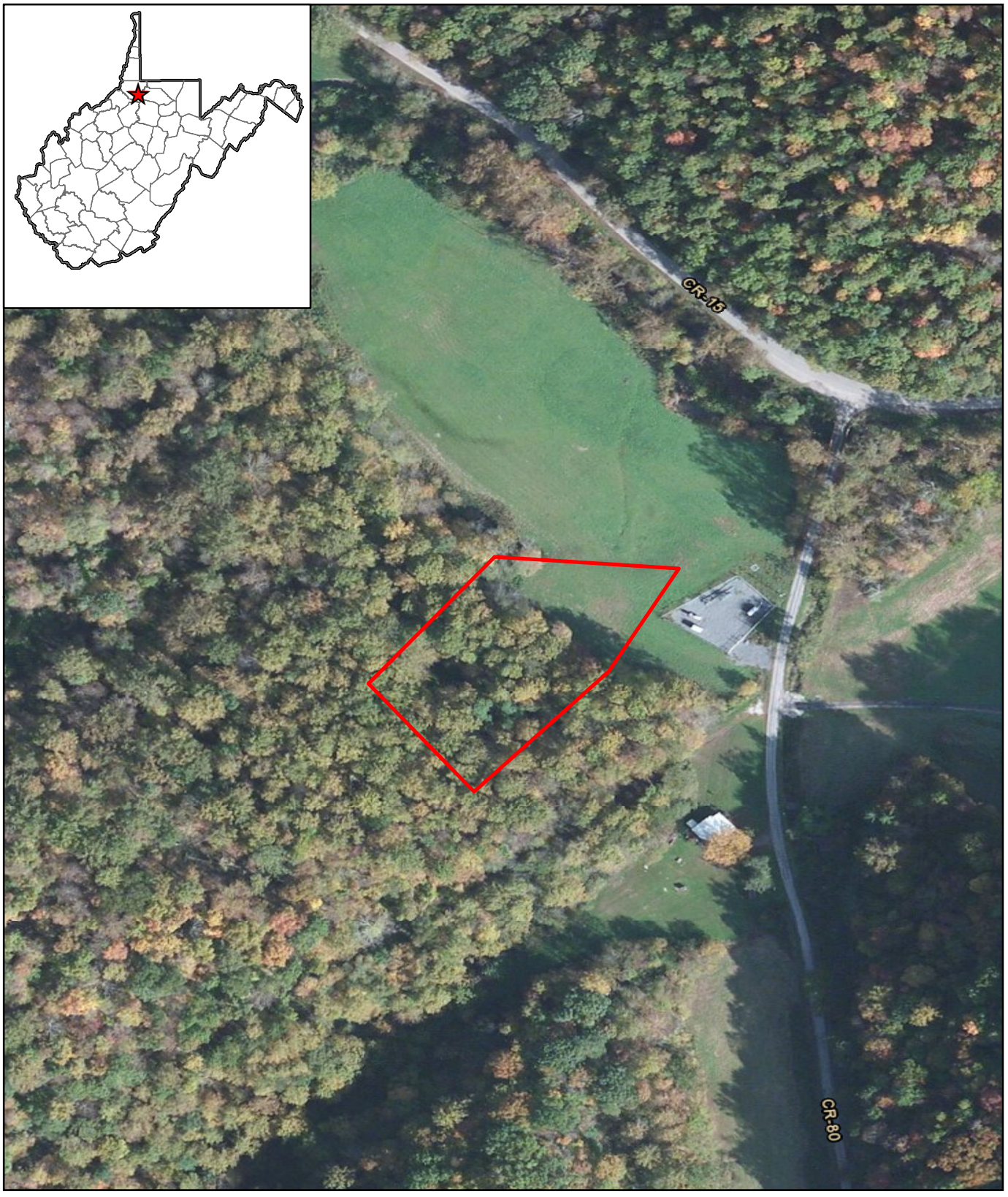
## 4.0 Field Survey: Mist-Netting

ESI proposes to conduct summer mist netting in accordance with guidelines contained in the USFWS 2015 *Range-wide Indiana Bat Summer Survey* (Table 1), USFWS 2014 *Northern Long-Eared Bat Interim Conference and Planning Guidance* and PGC Standard and Minimum Effort Requirements for Qualified Bat Surveyor Netting within the Commonwealth of Pennsylvania.

### 4.1 Level of Effort

Guidelines mandate that in Pennsylvania, if netting is to be conducted for linear projects, it should be at a rate of 6 net nights per 1 kilometer (0.6 mi) of potentially suitable habitat proposed for removal. Based on these requirements and the proposed forest impacts occurring along the portion of the pipeline outside the known swarming area, ESI proposes a level of survey effort equal to 60 net nights distributed across 10 sites (Figure 3).

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Webster Interconnect Boundary

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Figure 2. Location of Habitat Assessments for the Equitrans Expansion Project in Wetzel County, West Virginia.

Project No. 639

0 40 80 Meters

Base Map: Esri

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Table 1. USFWS Indiana and Northern bat Mist Net Survey Guidelines

**2015 NETTING GUIDELINES**

**Northeast and Appalachian Recovery Units (CT, DE, MA, MD, NC, NJ, NY, PA, eastern TN, WV, VA, VT)**

1. Netting Season: Broadly 15 May to 15 August, but may vary by state.
2. Equipment (Mist Nets): constructed of the finest, lowest visibility mesh commercially available – monofilament or black nylon – with the mesh size approximately 1½ inch (1¼ – 1¾) (38 mm).
3. Net Placement: mist nets extend approximately from water or ground level to tree canopy and are bounded by foliage on the sides. Net width and height are adjusted for the fullest coverage of the flight corridor at each site. A "typical" net set consists of two (or more) nets "stacked" on top of one another; width may vary up to 60 feet (20 m).
4. Net Site Spacing:
   - ♦ Linear Projects – minimum of 6 net nights per 0.6 mile (1 km); 1 net night = 1 net set deployed for 1 night
   - ♦ Non-linear Projects – minimum of 42 net nights per 123 acres (0.5 km)
5. Minimum Level of Effort Per Net Site:
   - ♦ Maximum of 3 nights of consecutive netting at any given location; must change net locations or wait at least 2 calendar nights before resuming netting at same location
   - ♦ Minimum of 2 calendar nights
   - ♦ Sample Period: begin at dusk and net for 5 hours (approximately 0200h)
   - ♦ Nets are monitored at approximately 10-minute intervals
   - ♦ No disturbance within 300 feet of nets between checks
6. Weather: Negative surveys combined with any of the following conditions throughout all or most of a sampling period are likely to require an additional night of mist-netting:
   - ♦ Precipitation (rain and/or heavy fog) lasting >30 minutes or continuing intermittently during the survey period
   - ♦ Temperatures <10°C (50°F)
   - ♦ Sustained wind >9 mi/hr (4 m/sec) (3 on Beaufort scale)

Source: U.S. Fish and Wildlife Service; 2015

## 4.2 Net Placement

Mist nets are set to maximize coverage of flight paths used by Indiana and northern long-eared bats along suitable travel corridors, foraging areas, and/or drinking areas. Riparian corridors are often used for travel or foraging; however, upland corridors (e.g., trails or logging roads) also provide suitable sites. Site selection is based upon the extent of canopy cover, presence of an open flyway, and forest conditions near the site. The actual location and orientation of each net set is determined in the field by a permitted bat biologist. Coordinates of each net set are recorded with either a Garmin, model eTrex Vista HCx, GPS unit which has an accuracy of 10 to 3 meters in WAAS-enabled areas, or using the ESRI ArcGIS Collector application via Apple iPads.

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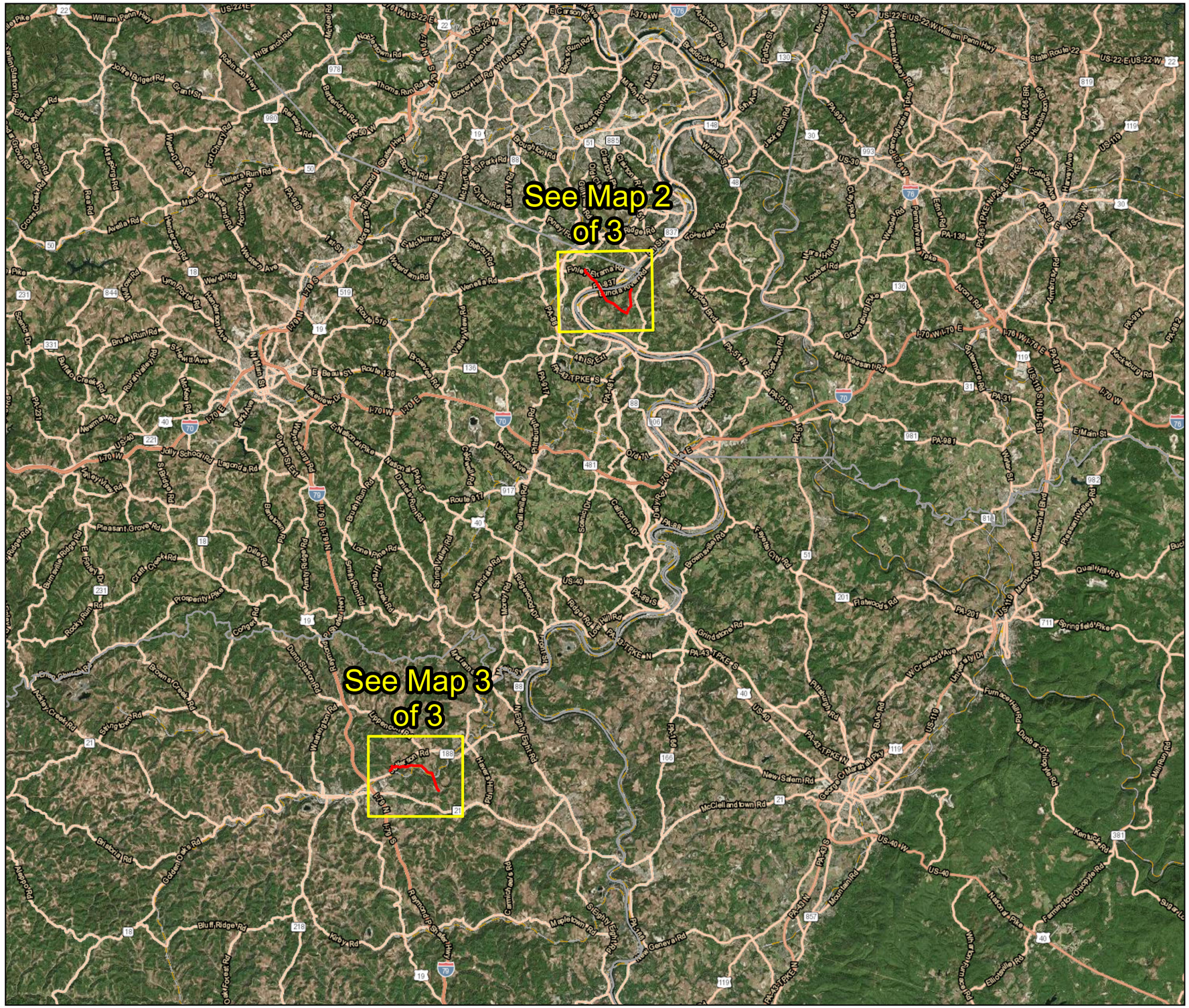



Figure 3. Mist net survey effort along the Equitrans Expansion Project in Allegheny, Washington, and Greene counties, Pennsylvania.

**Map 1 of 3**

- H316 Alignment
- H318 Alignment
- H158-M80 Alignment
- County Boundary

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0 5 10 Km

Service Layer Credits: Source: Esri, DigitalGeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the

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Project No. 639

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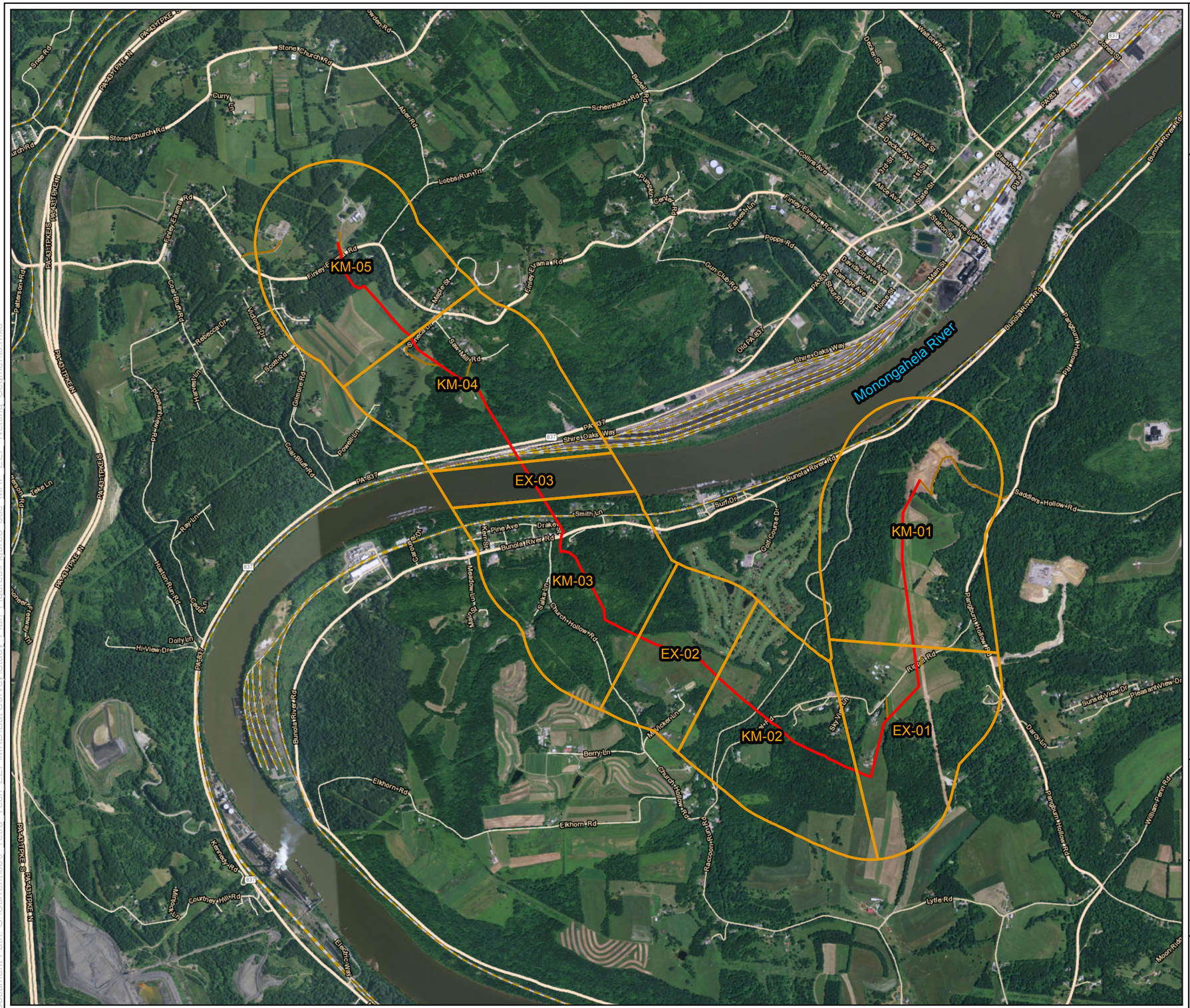



Figure 3. Mist net survey effort along the Equitrans Expansion Project in Allegheny, Washington, and Greene counties, Pennsylvania.

**Map 2 of 3**

- Netting Segment
- H318 Alignment
- H318 Access Road

N
W E
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0 0.5 1 Km

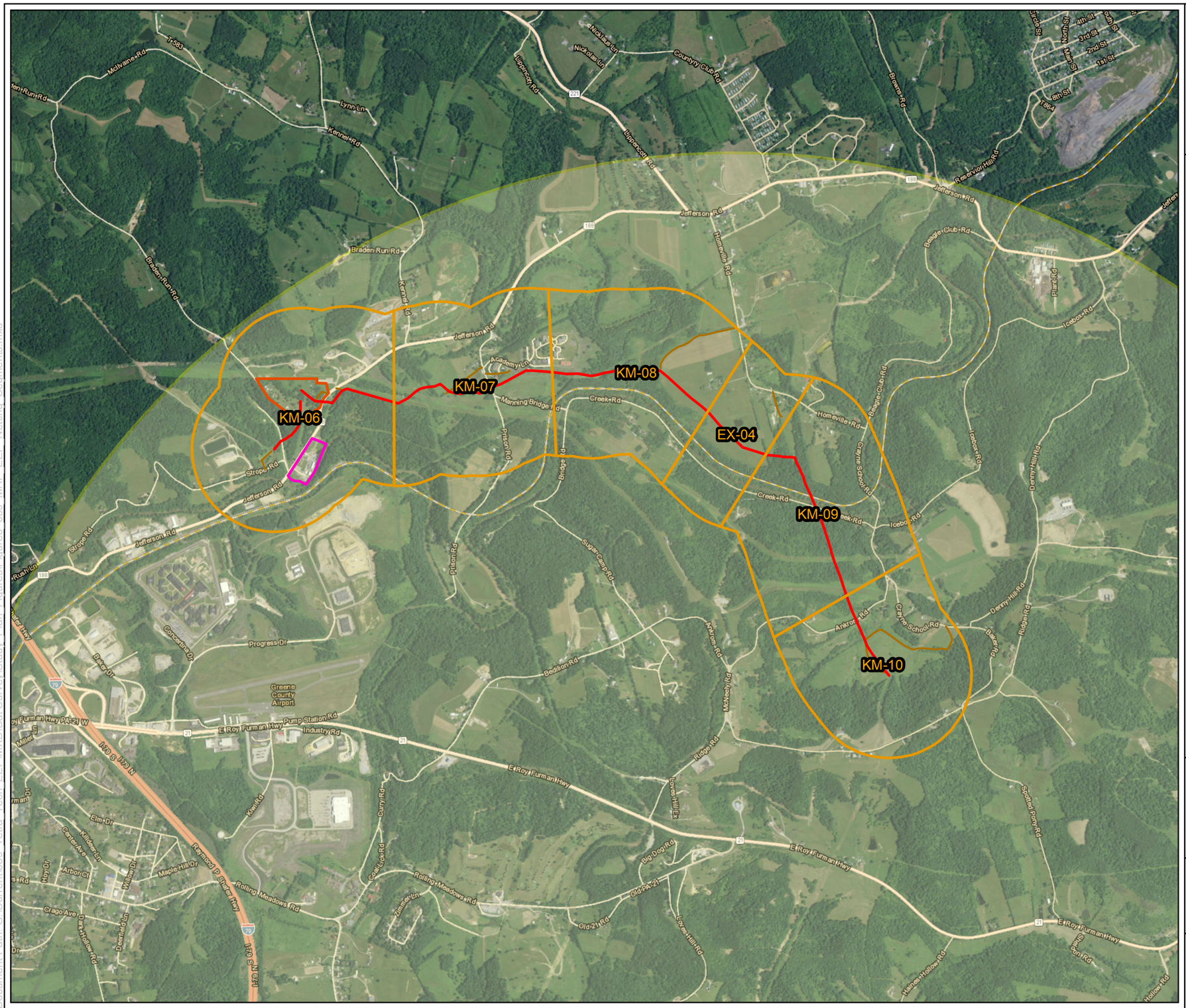
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Project No. 639

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KM-06
KM-07
KM-08
EX-04
KM-09
KM-10
Braden Run Rd
Jefferson Rd
E Roy Furman Hwy
Progress Dr
Greene County Airport
Rolling Meadows Rd
Old PA-21
Creek Rd
Homeville Rd
Ridge Rd
Bedillion Rd
Ankrom Rd
Crayne School Rd
Denny Hill Rd
Beagle Club Rd
Icebox Rd
Sugar Camp Rd
Pump Station Rd
Industry Rd
Lowes Hill Rd
Big Dog Rd
Hollow Rd
Haynes Hollow Rd
Sporting Pony Rd
Plank Rd
Reservoir Hill Rd
Brown Rd
Country Club Rd
Nicklaus Ln
Lynn Ln
Kennel Rd
Mellvaine Rd
Strope Rd
Concaffiura Dr
Baker Dr
Miller Ln
Elm Dr
Maple Hill Dr
Crago Ave
Deerfield Ln
Zimmer Ln
Rush Ln
Arbor Ct
Hoyt Dr
Willow Dr
Center Ave
Killdeer Ln
Keuri Rd
Curry Rd
Coal Lick Rd
McNeely Rd
Patson Rd
Bridge Rd
Academy Ln
Manning Bridge Rd
Creek Rd
Ridge Rd
Lowes Hill Rd
Old PA-21 Rd
Rolling Meadows Rd
Raymond P Shafer Hwy
I-79 S
I-79 N
PA-21 W
E Roy Furman Hwy
188
21
79
221
Nicholas Ln
Hupperscall Rd
Jefferson Rd
Braden Run Rd
Kennel Rd
Homeville Rd
Beagle Club Rd
Plank Rd
Icebox Rd
Reservoir Hill Rd
Brown Rd
Country Club Rd
Nicklaus Ln
Hupperscall Rd
Lynn Ln
Kennel Rd
Mellvaine Rd
Jefferson Rd
Academy Ln
Manning Bridge Rd
Creek Rd
Prison Rd
Bridge Rd
Sugar Camp Rd
Homeville Rd
Beagle Club Rd
Crayne School Rd
Icebox Rd
Denny Hill Rd
Ankrom Rd
Bedillion Rd
Progress Dr
Concaffiura Dr
Baker Dr
Greene County Airport
E Roy Furman Hwy
Pump Station Rd
Industry Rd
Miller Ln
I-79 S I-79 N
Elm Dr
Keuri Rd
Curry Rd
Coal Lick Rd
Rolling Meadows Rd
Raymond P Shafer Hwy
Maple Hill Dr
Crago Ave
Deerfield Ln
Zimmer Ln
Rush Ln
Arbor Ct
Hoyt Dr
Willow Dr
Center Ave
Killdeer Ln
Strope Rd
Jefferson Rd
Old PA-21 Rd
Lowes Hill Rd
Ridge Rd
McNeely Rd
Patson Rd
Big Dog Rd
Haynes Hollow Rd
Hollow Rd
Sporting Pony Rd
Plank Rd
Reservoir Hill Rd
Brown Rd
Country Club Rd
Nicklaus Ln
Hupperscall Rd
Lynn Ln
Kennel Rd
Mellvaine Rd
Braden Run

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ESI will meet PGC's required sampling efforts including providing a Qualified Bat Surveyor (QBS) to supervise all aspects of the Project, completing 420 units of sampling effort at each of the 10 sites, and using a least two sets of nets stacked 3-high per site. A list of qualified surveyors is provided as Appendix A.

### 4.3 Bat Capture

Bats are live-caught in mist nets and released unharmed near the point of capture. Captured bats are identified to species, sex, age class, and reproductive condition. Weight and right forearm length of each individual are also recorded. Age is determined by examining the ephiphyseal-diaphyseal fusion of long bones in the wing. Reproductive condition of female bats is recorded as pregnant (based on gentle abdominal palpation), lactating, post lactating, or non-reproductive. Time and location/net site of captured bats is recorded. Processing is typically completed within 30 minutes of the time each bat is removed from the net. Photographs are taken of all bats captured and identified as either Indiana bats or northern long-eared bats. Information is recorded on standardized Data Sheets, provided in Appendix C.

ESI will notify USFWS and PGC of capture of any Indiana and northern long-eared bats within one business day and will notify PGC of the capture of small-footed bats, silver-haired bats, and Seminole bats.

### 4.4 Protocol for Addressing White-nose Syndrome

White-nose syndrome (WNS) is a disease that is killing millions of bats in the eastern U.S. The disease, which was first found in New York, is spreading across the range of the Indiana and northern long-eared bat. All current federal and state guidelines for WNS decontamination, containment, and avoidance are implemented. Biologists are kept aware of all current and changing WNS regulations. Bat handling follows current WNS protocols set by the USFWS and requirements of PGC. Captured bats are examined for damage associated with WNS to the wing and uropatagium (tail) membranes, including use of white and/or ultraviolet light. Wing damage is categorized using the Wing-Damage Index Used for Characterizing Wing Condition of Bats Affected by White-nose Syndrome established by Jon Reichard in 2008.

### 4.5 Habitat Characterization

Concurrent with mist netting, habitat is described for each net site. The emphasis of this description is habitat form: size and relative abundance of large trees and snags that potentially serve as roost trees, canopy closure, understory clutter/openness, water availability, and flight corridors. Habitat form is emphasized because Indiana and northern long-eared bats roosts in a variety of tree species.

ESI's habitat characterization does more than emphasize species of large trees near the net. It identifies components of the canopy and subcanopy layers. All trees that

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reach into the canopy are canopy trees, regardless of their diameter/size. Many smaller trees are often also found in the canopy, and in some situations, the canopy can be entirely composed of smaller diameter trees. ESI's habitat characterization identifies dominant and subdominant elements of the canopy.

The subcanopy, or understory, vegetation layer is well defined in classical ecological literature. It is that portion of the forest structure between the ground vegetation (to approximately 0.6 meter [2 ft]) and the canopy layers, usually beginning at about 7.6 meters (24.9 ft). Vegetation in the understory may come from:

- Lower branches of overstory trees,
- Small trees that will grow into the overstory,
- Small trees and shrubs that are confined to the understory.

The amount of understory, or clutter, is also recorded because, unlike the Indiana bat, the northern long-eared bat forages more under the tree canopy and closer to the ground where it can glean insects from vegetation.

Each net site is documented with a sketch on the Net Site Habitat Description data sheet, provided in Appendix C.

### 4.6 Weather and Temperature

Weather conditions are monitored each night of survey to assure compliance with mist netting guidelines. Conditions recorded include temperature, wind speed and direction, and percent cloud cover. Any of a variety of standard mercury or electric thermometers is used to record temperature, wind speed is determined by use of the Beaufort wind scale, and cloud cover is visually estimated. Weather data are provided in an appendix and summarized in the report. Information is recorded on standardized Data Sheets, provided in Appendix C.

### 4.7 Timeline and Reporting

Mist netting will occur during the allotted survey window for Pennsylvania (15 May through 15 August 2015). Data are summarized in a detailed report and submitted to the appropriate state and federal agencies within a month of completing the mist net survey. The detailed report includes the following:

1. Copy of prior phase reports (if not previously provided).
2. Detailed description of the project, methods, results, and discussion/interpretation of results.
3. Explanation of any modifications from the original survey plan (e.g., altered net locations or addition of net locations due to changes in Project design).
4. Legible copies of datasheets that will describe in detail:

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- Mist net locations (including a site diagram and coordinates) and net set-ups (height and number of net set-ups).
- Habitat (including roosting potential) adjacent to each mist net location.
- Date, name of biologist(s) conducting survey, duration of survey, and weather conditions at each mist net location.
- The species, time of capture, sex, weight, reproductive status, right forearm length, and Reichard's wing damage index score.
- Results of radio-tracking and roost tree emergence counts (if Indiana or northern long-eared bats are captured), as well as results for any State listed species.

5. Color photographs of all captured endangered bats, mist net set-ups, and endangered bat roosts if located during radio-tracking.

## 5.0 Survey for Caves and Mines

Due to the presence of mining activity in the general area, a pedestrian search of the Project is conducted concurrent with summer mist netting. Searches are conducted by teams of two individuals walking along the pipeline or access road centerline with approximately 45.7 meters (150 ft.) between searchers. If portals are found, they are assessed for their potential to serve as suitable bat hibernacula. Characteristics of suitable bat hibernacula include:

- Single horizontal openings least 6 inches in diameter,
- Vertical shafts at least 1 foot in diameter,
- Presence of flowing air,
- Passages that continue at least 50 feet with some accessible fissures present,
- Presence of guano,
- No evidence of flooding or collapse, and
- Other indications (such as spider webs or debris) that, by presence or state (disturbed vs. undisturbed), would provide evidence of use by bats.

If portals are found, biologists record coordinates using a GPS unit (Garmin Model eTrex Vista HCx), that provides a location within 10 meters (3 meters in WAAS-

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enabled areas), complete a mine portal description data sheet (Appendix C), and take photographs.

# 6.0 Radio Tracking Bats

After collecting morphometric data, species noted below are fitted with radio-transmitters tuned to 172 MHz.

## 6.1 Species Tagged and Numbers of Individuals Tracked

As described below, ESI will follow the level of effort required by the PGC with the exception of the number of northern long-eared bats. Radio telemetry is completed on the following species and individuals if captured:

- All Indiana bats,
- All small-footed bats (*Myotis leibii*),
- Reproductive female and juvenile silver-haired bats (*Lasionycteris noctivagans*),
- Reproductive female and juvenile Seminole bats (*Lasiurus seminolus*),
- A minimum of 1 reproductive female or juvenile northern long-eared bat for every 3 miles (5 km) of the Project. Priority is given to adult reproductive females first, then juveniles (if of sufficient size), non-reproductive females, and adult males.

## 6.2 Transmitter Attachment

A small interscapular area is trimmed of fur and the transmitter is attached to this area with non-toxic surgical adhesive. Transmitters are activated and tested before attachment. The adhesive degrades over time (typically 1 to 4 weeks) and the transmitter falls off the bat. Biologists record the transmitter weight, weight of the bat before and after transmitter attachment, and holding time. Bats are released unharmed near the points of capture. Standardized data forms are used for transmitter attachment information (Appendix C).

Transmitters are typically obtained from either ®Holohil Systems Ltd. or ®Blackburn Transmitters (frequency of 171 and 172). Bat transmitter weights range from 0.25 to 0.5 gram. Whenever possible, ESI uses 0.35 to 0.47-gram transmitters, as they are the lightest commercially available, least stressful to the bats, are usually less than 5 percent of the pre-attachment weight of the bat, and are not more than 10 percent of a bat's total body weight. The lifespan of the batteries used on these transmitters typically last 7 to 14 days.

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### 6.3 Diurnal Roost Telemetry

To locate roosting bats, ESI tracks radio-telemetry signals using either a ®Wildlife Materials TRX-2000S PLL Synthesized Tracking Receiver, an ®Advanced Telemetry Systems, Inc. Model R2000 Scanning Receiver, or a ®Communications Specialists Model R-1000 Scanning Receiver with a three- or five-element folding Yagi directional antennas manufactured by either ®Wildlife Materials, Inc. or ®Titley Electronics, PTY LTD. Receivers are not water resistant and are not used during periods of heavy rain. If a day of effort is missed due to inclement weather, an additional day will be added.

Beginning the day after bat capture and transmitter attachment, ESI biologists use telemetry to locate each bat's diurnal roost. Roost trees are identified to species and diameter at breast height (dbh) is measured using a dbh tape or Biltmore stick. The approximate height at which the bat is roosting and general condition of the roost tree (dead, live, dying, % bark cover, etc.) is noted. A description of habitat near the roost tree is recorded. Occasionally, Indiana and northern long-eared bats roost in man-made structures. Standardized data forms are used to characterize roost trees and assess associated habitat; the form also provides for assessment of man-made structures used as roosts. Depending on specific requests by landowners or the client, roosts can either be flagged, painted, receive a metal tag, or be staked for ease of future identification. Coordinates of each roost are recorded with a GPS unit. If a roost tree occurs in an area where biologists are not permitted to access, then triangulation will be used to estimate its location.

#### 6.3.1 Indiana Bats

Indiana bats are tracked for approximately 7 days, for a minimum of 4 hours per day per bat (or until the bat is found), after the date of capture or until the transmitter is shed or fails, whichever happens first. Emergence counts are performed on each identified roost tree for a minimum of 2 days as suggested in Appendix E (Phase 4 Emergence Surveys for Known Indiana Bat Roosts) of the USFWS 2015 Range-wide Indiana Bat Summer Survey Guidelines.

#### 6.3.2 State Listed Species

Bats are tracked for at least 3 days for a minimum of 4 hours per day per bat (or until the bat is found), after the date of capture or until the transmitter is shed or fails, whichever happens first. At least one roost emergence count is conducted at each tree identified.

#### 6.3.3 Nocturnal Telemetry

A minimum of 3 nights of telemetry (using triangulation or bi-angulation) will be completed on all bats listed in section 6.1 above. This includes a minimum of 10 hours per night with a minimum of 3 successful triangulations per hour (i.e., 30

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successful triangulations per night under appropriate weather conditions), with no more than 2 hours of any night missed due to telemetry crew error or weather.

# 7.0 Requests for Agency Concurrence

## 7.1 Request for Site-Specific Authorization to Proceed

Please consider this Study Plan a request for site-specific authorization to begin sampling as soon as possible and within the season designated for sampling.

## 7.2 Time of Clearing Restrictions

At present, ESI understands that apart from the sites KM-06, KM-07, KM-08, KM-09, and KM-10 in Pennsylvania and the Webster Interconnect in West Virginia, the Project traverses areas that provide habitat suitable for northern long-eared and Indiana bats, but these areas are not currently regulated as "known occupied habitat." As such, ESI seeks confirmation that trees may be cleared at any time unless a) an endangered bat is captured during the survey, or b) buffers created by bats captured by a nearby survey impact the Project area. Areas of known habitat will be cleared after 15 November.

If endangered bats are captured, the location of each capture site and roost(s) is plotted in relation to the Project to determine whether portions of the ROW are subject to the following seasonal clearing restrictions:

- Within 1.5 miles of a roost tree used by a northern long-eared bat
- Within 2.5 miles of a roost tree used by an Indiana bat
- Within 3 miles of a capture of a northern long-eared bat for which no roost tree was located
- Within 5 miles of a capture of a Indiana bat for which no roost tree was located

## 7.3 Release of Untagged Northern Long-eared bats

Northern long-eared bats remain relatively common in this region of Pennsylvania and there is a reasonable chance the species will be captured. ESI will use professional judgment in the application of radio-tags to northern long-eared bats beyond the standard of 1 tagged bat per every 5 kilometers. The goal of tagging more bats is to ensure that all maternity colonies are located. ESI seeks specific concurrence that any northern long-eared bats not tagged using this approach will be treated as members of the colonies identified during telemetry including the

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application of the 1.5-mile protective buffer around identified roosts as opposed to the 3-mile buffer for bats for whom no roost is known.

### 7.4 Period for Which Survey Results are Valid

We seek confirmation that results of the net survey remain valid for a period of two complete summer maternity seasons after the summer when the survey was completed.

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# APPENDIX A
# QUALIFIED SURVEYORS

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# Bat Surveyors and PGC Status

| Qualified Bat Surveyors (QBS) |
|---|
| Virgil Brack |
| Dale Sparks |
| David Jeffcott |
| Justin Wilson |
| Jacques Veilleux |
| Beth Meyer |
| Shane Brodnick |
| Darwin Brack |
| Christopher Boggs |
| L. Michelle Gilley |
| Justin Boyles |
| Jason Damm |
| Nick Gikas |
| Daniel Judy |
| Carme Ardito |
| Megan Caylor |
| Valerie Clarkston |
| Jeremy Vandeventer |
| John Timpone |
| John Chenger |
| Amie Haskew |
| James Wolfe Kennedy |
| Kevin Rhome |
| Kirk Silas |
| Risa Wright |
| Bat Identifiers (BI) |
| Karen Francl Powers |
| Shawn McKinley |
| Jeremy Sheets |
| Kristen Brisee |
| Bryan Butler |
| Eli Lee |
| Doug Raybuck |

| Assistants |
|---|
| Brett Andersen |
| Tammy Britzke |
| Casey Swecker |
| Jared Helms |
| Arthur Zurcher, |
| Tony Cimpi |
| Kyle McGill |
| Brian Dennis |
| Michael Mairose |
| Tyler Russell |
| Joe Dancho |
| David Tull |
| Dylan Little |
| Aaron Prewitt |
| Abigail Peterson |
| Josiah Kleinhenz |
| Aaron Kleinhenz |
| Phillip Borrego |
| Karsen Shoger |
| Ben Ward |
| Kimberly Linnel |
| Allyson Arulanantham |
| Roger Rodriguez |
| Jeremy Benjamin |
| Kiara Johnson |
| Doug Gilbert |
| Jo Salyers |
| Kyle Price |
| Alyssa Rooks |
| Les Aaron |
| Kory Armstrong |
| Lynn Robbins |

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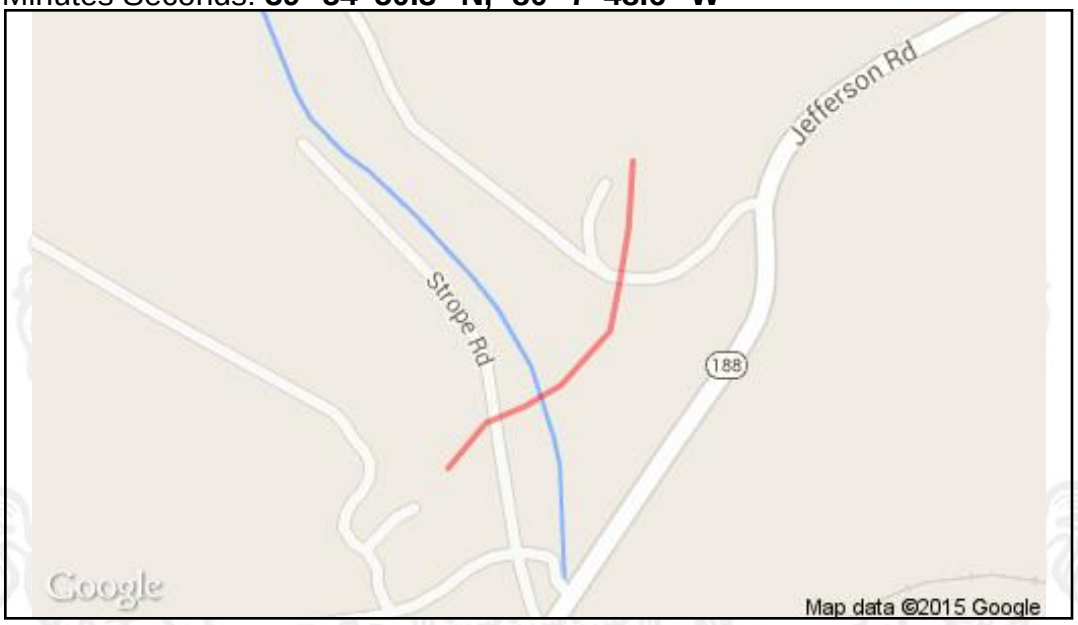
# APPENDIX B
# PNDI ER TOOL REVIEW

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PNDI Project Environmental Review Receipt Project Search ID: 20150618518986

# 1. PROJECT INFORMATION

Project Name: **H158_M80**
Date of review: **6/18/2015 2:36:38 PM**
Project Category: **Energy Storage, Production, and Transfer,Energy Transfer,Pipeline (e.g., gas, oil) -- NEW (construction of new line in a new location)**
Project Length: **1147.9** feet
County: **Greene** Township/Municipality: **Franklin**
Quadrangle Name: **WAYNESBURG** ~ ZIP Code: **15370**
Decimal Degrees: **39.913979 N, -80.130180 W**
Degrees Minutes Seconds: **39° 54' 50.3" N, -80° 7' 48.6" W**




# 2. SEARCH RESULTS

| Agency | Results | Response |
|---|---|---|
| PA Game Commission | No Known Impact | No Further Review Required |
| PA Department of Conservation and Natural Resources | **Potential Impact** | **FURTHER REVIEW IS REQUIRED, See Agency Response** |
| PA Fish and Boat Commission | **Potential Impact** | **FURTHER REVIEW IS REQUIRED, See Agency Response** |
| U.S. Fish and Wildlife Service | No Known Impact | No Further Review Required |

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

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## RESPONSE TO QUESTION(S) ASKED

**Q1:** "Will the entire project area (including any discharge), plus a 300 feet buffer around the project area, all occur in or on an existing building, parking lot, driveway, road, road shoulder, street, runway, paved area, railroad bed, maintained (periodically mown) lawn, crop agriculture field or maintained orchard?"
Your answer is: **2. No**

## 3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

## PA Game Commission

**RESPONSE:** No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

## PA Department of Conservation and Natural Resources

**RESPONSE:** Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

**DCNR Species:** (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: http://www.gis.dcnr.state.pa.us/hgis-er/PNDI_DCNR.aspx.)
**Scientific Name:** Aplectrum hyemale
**Common Name:** Puttyroot
**Current Status:** Special Concern Species*
**Proposed Status:** Special Concern Species*

**Scientific Name:** Sensitive Species**
**Common Name:**
**Current Status:** Special Concern Species*
**Proposed Status:** Special Concern Species*

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## PA Fish and Boat Commission

**RESPONSE:** Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

**PFBC Species:** (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)
**Scientific Name:** Amblema plicata
**Common Name:** Three-ridge
**Current Status:** Special Concern Species*

## U.S. Fish and Wildlife Service

**RESPONSE:** No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictinal agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

## WHAT TO SEND TO JURISDICTIONAL AGENCIES

**If project information was requested by one or more of the agencies above,** send the following information to the agency(s) seeking this information (see AGENCY CONTACT INFORMATION).

**Check-list of *Minimum* Materials to be submitted:**

____**SIGNED** copy of this Project Environmental Review Receipt
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____Project location information (name of USGS Quadrangle, Township/Municipality, and County)
____USGS 7.5-minute Quadrangle with project boundary clearly indicated, and quad name on the map

**The inclusion of the following information may expedite the review process.**
____A basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing

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the location of all project features, as well as wetlands and streams

## 4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

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# 5. ADDITIONAL INFORMATION

The PNDI environmental review website is a **preliminary** screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

# 6. AGENCY CONTACT INFORMATION

### PA Department of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

### U.S. Fish and Wildlife Service

Pennsylvania Field Office
110 Radnor Rd; Suite 101, State College, PA 16801
NO Faxes Please.

### PA Fish and Boat Commission

Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

### PA Game Commission

Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

# 7. PROJECT CONTACT INFORMATION

Name:_____
Company/Business Name:_____
Address:_____
City, State, Zip:_____
Phone:(_____)_____Fax:(_____)_____
Email:_____

# 8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

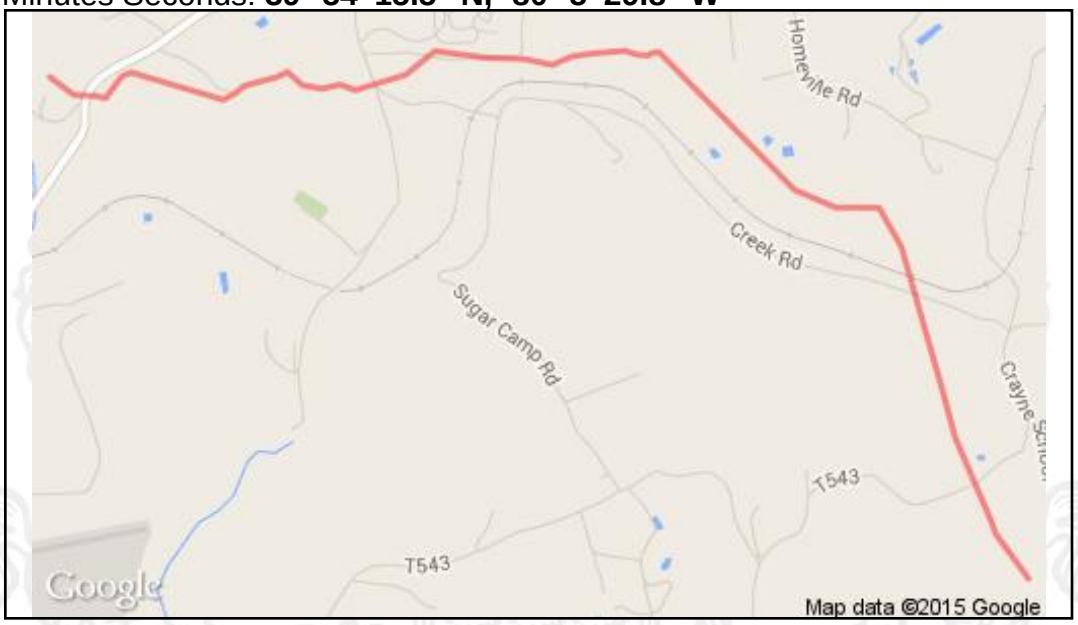
_____ _____
applicant/project proponent signature date

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PNDI Project Environmental Review Receipt Project Search ID: 20150618518998

# 1. PROJECT INFORMATION

Project Name: **H316**
Date of review: **6/18/2015 2:49:53 PM**
Project Category: **Energy Storage, Production, and Transfer,Energy Transfer,Pipeline (e.g., gas, oil) -- NEW (construction of new line in a new location)**
Project Length: **15934.5** feet
County: **Greene** Township/Municipality: **Morgan,Franklin,Jefferson Twp**
Quadrangle Name: **WAYNESBURG** ~ ZIP Code: **15344,15370**
Decimal Degrees: **39.904301 N, -80.091604 W**
Degrees Minutes Seconds: **39° 54' 15.5" N, -80° 5' 29.8" W**




# 2. SEARCH RESULTS

| Agency | Results | Response |
|---|---|---|
| PA Game Commission | **Potential Impact** | **FURTHER REVIEW IS REQUIRED, See Agency Response** |
| PA Department of Conservation and Natural Resources | **Potential Impact** | **FURTHER REVIEW IS REQUIRED, See Agency Response** |
| PA Fish and Boat Commission | **Potential Impact** | **FURTHER REVIEW IS REQUIRED, See Agency Response** |
| U.S. Fish and Wildlife Service | No Known Impact | No Further Review Required |

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

## RESPONSE TO QUESTION(S) ASKED

**Q1:** "Will the entire project area (including any discharge), plus a 300 feet buffer around the project area, all occur in or on an existing building, parking lot, driveway, road, road shoulder, street, runway, paved area, railroad bed, maintained (periodically mown) lawn, crop agriculture field or maintained orchard?"
Your answer is: **2. No**

## 3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

## PA Game Commission

**RESPONSE:** Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

**PGC Species:** (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)
**Scientific Name:** Sensitive Species**
**Common Name:**
**Current Status:** Special Concern Species*

## PA Department of Conservation and Natural Resources

**RESPONSE:** Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

**DCNR Species:** (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: http://www.gis.dcnr.state.pa.us/hgis-er/PNDI_DCNR.aspx.)
**Scientific Name:** Aplectrum hyemale
**Common Name:** Puttyroot
**Current Status:** Special Concern Species*

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**Proposed Status:** Special Concern Species*

**Scientific Name:** Erigenia bulbosa
**Common Name:** Harbinger-of-spring
**Current Status:** Threatened
**Proposed Status:** Special Concern Species*

**Scientific Name:** Erythronium albidum
**Common Name:** White Trout-lily
**Current Status:** Special Concern Species*
**Proposed Status:** Special Concern Species*

**Scientific Name:** Sensitive Species**
**Common Name:**
**Current Status:** Special Concern Species*
**Proposed Status:** Special Concern Species*

## PA Fish and Boat Commission

**RESPONSE:** Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

**PFBC Species:** (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)
**Scientific Name:** Amblema plicata
**Common Name:** Three-ridge
**Current Status:** Special Concern Species*

**Scientific Name:** Fusconaia flava
**Common Name:** Wabash Pigtoe
**Current Status:** Special Concern Species*

## U.S. Fish and Wildlife Service

**RESPONSE:** No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.

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** Sensitive Species - Species identified by the jurisdictinal agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

# WHAT TO SEND TO JURISDICTIONAL AGENCIES

**If project information was requested by one or more of the agencies above,** send the following information to the agency(s) seeking this information (see AGENCY CONTACT INFORMATION).

**Check-list of *Minimum* Materials to be submitted:**

____**SIGNED** copy of this Project Environmental Review Receipt
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____Project location information (name of USGS Quadrangle, Township/Municipality, and County)
____USGS 7.5-minute Quadrangle with project boundary clearly indicated, and quad name on the map

**The inclusion of the following information may expedite the review process.**
____A basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams

# 4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

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# 5. ADDITIONAL INFORMATION

The PNDI environmental review website is a **preliminary** screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

# 6. AGENCY CONTACT INFORMATION

### PA Department of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

### U.S. Fish and Wildlife Service

Pennsylvania Field Office
110 Radnor Rd; Suite 101, State College, PA 16801
NO Faxes Please.

### PA Fish and Boat Commission

Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

### PA Game Commission

Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

# 7. PROJECT CONTACT INFORMATION

Name:_____
Company/Business Name:_____
Address:_____
City, State, Zip:_____
Phone:(_____)_____Fax:(_____)_____
Email:_____

# 8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

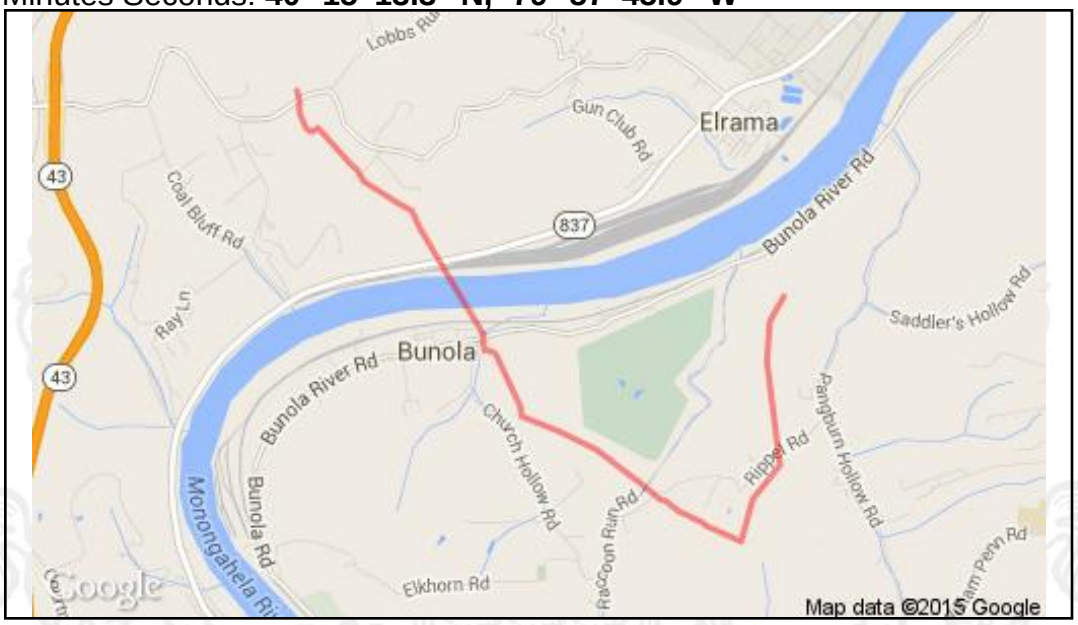
_____ _____
applicant/project proponent signature date

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PNDI Project Environmental Review Receipt Project Search ID: 20150619519110

# 1. PROJECT INFORMATION

Project Name: **H318**
Date of review: **6/19/2015 10:33:03 AM**
Project Category: **Energy Storage, Production, and Transfer,Energy Transfer,Pipeline (e.g., gas, oil) -- NEW (construction of new line in a new location)**
Project Length: **22061.2** feet
County: **Allegheny,Washington** Township/Municipality: **Forward,Union**
Quadrangle Name: **MONONGAHELA** ~ ZIP Code: **15063,15332**
Decimal Degrees: **40.253696 N, -79.962757 W**
Degrees Minutes Seconds: **40° 15' 13.3" N, -79° 57' 45.9" W**




# 2. SEARCH RESULTS

| Agency | Results | Response |
|---|---|---|
| PA Game Commission | No Known Impact | No Further Review Required |
| PA Department of Conservation and Natural Resources | **Conservation Measure** | **No Further Review Required, See Agency Comments** |
| PA Fish and Boat Commission | No Known Impact | No Further Review Required |
| U.S. Fish and Wildlife Service | No Known Impact | No Further Review Required |

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate that while threatened and endangered and/or special concern species and resources are in the project vicinity, no adverse impacts are anticipated. Therefore, based on the information you provided, no further coordination is required with the jurisdictional agencies. However, the jurisdictional agency/agencies recommend the project proponent/applicant follow the Conservation Measures indicated in their entirety. If a DEP permit is required for this project, DEP has the discretion to incorporate one or more Conservation Measures into its permit. This response does not reflect potential agency concerns regarding potential impacts to other ecological resources, such as wetlands.

# 3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

## PA Game Commission

**RESPONSE:** No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

## PA Department of Conservation and Natural Resources

**RESPONSE:** Conservation Measure: A species of special concern with the proposed state status of PA Tentatively Undetermined is known on or adjacent to your site. Contact the PA Bureau of Forestry if you would like information on this species and voluntary species-specific conservation measures.

**DCNR Species:** (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: http://www.gis.dcnr.state.pa.us/hgis-er/PNDI_DCNR.aspx.)
**Scientific Name:** Erythronium albidum
**Common Name:** White Trout-lily
**Current Status:** Special Concern Species*
**Proposed Status:** Special Concern Species*

## PA Fish and Boat Commission

**RESPONSE:** No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

## U.S. Fish and Wildlife Service

**RESPONSE:** No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other

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authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictinal agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

## 4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

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# 5. ADDITIONAL INFORMATION

The PNDI environmental review website is a **preliminary** screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

# 6. AGENCY CONTACT INFORMATION

### PA Department of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

### U.S. Fish and Wildlife Service

Pennsylvania Field Office
110 Radnor Rd; Suite 101, State College, PA 16801
NO Faxes Please.

### PA Fish and Boat Commission

Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

### PA Game Commission

Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

# 7. PROJECT CONTACT INFORMATION

Name:_____
Company/Business Name:_____
Address:_____
City, State, Zip:_____
Phone:(_____)_____Fax:(_____)_____
Email:_____

# 8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

_____ _____
applicant/project proponent signature date

PNDI Project Environmental Review Receipt Project Search ID: 20150619519119

# 1. PROJECT INFORMATION

Project Name: **Pratt**
Date of review: **6/19/2015 10:52:28 AM**
Project Category: **Energy Storage, Production, and Transfer,Energy Storage,Tank removal (e.g., gas, oil)**
Project Area: **7.0** acres
County: **Greene** Township/Municipality: **Franklin**
Quadrangle Name: **WAYNESBURG** ~ ZIP Code: **15370**
Decimal Degrees: **39.913997 N, -80.127727 W**
Degrees Minutes Seconds: **39° 54' 50.4" N, -80° 7' 39.8" W**




# 2. SEARCH RESULTS

| Agency | Results | Response |
|---|---|---|
| PA Game Commission | No Known Impact | No Further Review Required |
| PA Department of Conservation and Natural Resources | **Conservation Measure** | **No Further Review Required, See Agency Comments** |
| PA Fish and Boat Commission | **Avoidance Measure** | **See Agency Response** |
| U.S. Fish and Wildlife Service | No Known Impact | No Further Review Required |

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

# RESPONSE TO QUESTION(S) ASKED

**Q1:** "Will the entire project (including any discharge) occur in or on an existing building, parking lot, driveway, road, road shoulder, street, runway, paved area, railroad bed, maintained (periodically mown) lawn, crop agriculture field or maintained orchard?"
Your answer is: **1. Yes**

## 3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

## PA Game Commission

**RESPONSE:** No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

## PA Department of Conservation and Natural Resources

**RESPONSE:** Conservation Measure: Please avoid the introduction of invasive species in order to protect the integrity of nearby plant species of special concern. Voluntary cleaning of equipment/vehicles, using clean fill and mulch, and avoiding planting invasive species (http://www.dcnr.state.pa.us/forestry/invasivetutorial/index.htm) will help to conserve sensitive plant habitats.

**DCNR Species:** (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: http://www.gis.dcnr.state.pa.us/hgis-er/PNDI_DCNR.aspx.)
**Scientific Name:** Aplectrum hyemale
**Common Name:** Puttyroot
**Current Status:** Special Concern Species*
**Proposed Status:** Special Concern Species*

**Scientific Name:** Sensitive Species**
**Common Name:**
**Current Status:** Special Concern Species*
**Proposed Status:** Special Concern Species*

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## PA Fish and Boat Commission

**RESPONSE:** Avoidance Measure: Use stringent erosion and sedimentation controls before, during, and after project implementation to ensure that sediment and contaminants do not enter any waterway(s) (rivers, creeks, streams, tributaries) or waterbodies (lakes, ponds).

As the project proponent or applicant, I certify that I will implement the above Avoidance Measure:

_____(Signature)

SPECIAL NOTE: **If you agree to implement the above Avoidance Measure, no further coordination with this agency regarding threatened and endangered species and/or special concern species and resources is required.** If you are not able to comply with the Avoidance Measures, you are required to coordinate with this agency - please send project information to this agency for review (see "What to Send" section).

**PFBC Species:** (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)
**Scientific Name:** Amblema plicata
**Common Name:** Three-ridge
**Current Status:** Special Concern Species*

## U.S. Fish and Wildlife Service

**RESPONSE:** No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictinal agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

## WHAT TO SEND TO JURISDICTIONAL AGENCIES

**If project information was requested by one or more of the agencies above,** send the following information to the agency(s) seeking this information (see AGENCY CONTACT INFORMATION).

**Check-list of *Minimum* Materials to be submitted:**

____**SIGNED** copy of this Project Environmental Review Receipt

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____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____Project location information (name of USGS Quadrangle, Township/Municipality, and County)
____USGS 7.5-minute Quadrangle with project boundary clearly indicated, and quad name on the map

**The inclusion of the following information may expedite the review process.**
____A basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams

# 4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

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# 5. ADDITIONAL INFORMATION

The PNDI environmental review website is a **preliminary** screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

# 6. AGENCY CONTACT INFORMATION

### PA Department of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

### U.S. Fish and Wildlife Service

Pennsylvania Field Office
110 Radnor Rd; Suite 101, State College, PA 16801
NO Faxes Please.

### PA Fish and Boat Commission

Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

### PA Game Commission

Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

# 7. PROJECT CONTACT INFORMATION

Name:_____
Company/Business Name:_____
Address:_____
City, State, Zip:_____
Phone:(_____)_____Fax:(_____)_____
Email:_____

# 8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

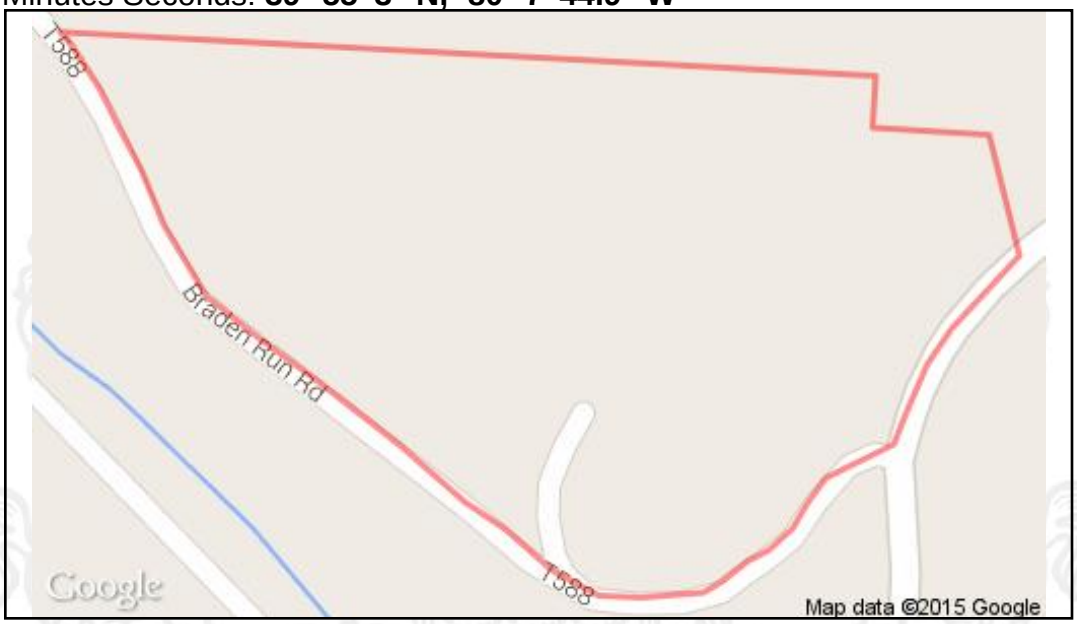
_____ _____
applicant/project proponent signature date

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PNDI Project Environmental Review Receipt Project Search ID: 20150619519113

# 1. PROJECT INFORMATION

Project Name: **Redhook**
Date of review: **6/19/2015 10:41:57 AM**
Project Category: **Energy Storage, Production, and Transfer,Energy Storage,Tank installation (e.g., gas, oil)**
Project Area: **17.0** acres
County: **Greene** Township/Municipality: **Franklin**
Quadrangle Name: **WAYNESBURG** ~ ZIP Code: **15370**
Decimal Degrees: **39.917488 N, -80.129138 W**
Degrees Minutes Seconds: **39° 55' 3" N, -80° 7' 44.9" W**




# 2. SEARCH RESULTS

| Agency | Results | Response |
|---|---|---|
| PA Game Commission | No Known Impact | No Further Review Required |
| PA Department of Conservation and Natural Resources | **Potential Impact** | **FURTHER REVIEW IS REQUIRED, See Agency Response** |
| PA Fish and Boat Commission | No Known Impact | No Further Review Required |
| U.S. Fish and Wildlife Service | No Known Impact | No Further Review Required |

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

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## RESPONSE TO QUESTION(S) ASKED

**Q1:** "Will the entire project area (including any discharge), plus a 300 feet buffer around the project area, all occur in or on an existing building, parking lot, driveway, road, road shoulder, street, runway, paved area, railroad bed, maintained (periodically mown) lawn, crop agriculture field or maintained orchard?"
Your answer is: **2. No**

## 3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

## PA Game Commission

**RESPONSE:** No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

## PA Department of Conservation and Natural Resources

**RESPONSE:** Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

**DCNR Species:** (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: http://www.gis.dcnr.state.pa.us/hgis-er/PNDI_DCNR.aspx.)
**Scientific Name:** Aplectrum hyemale
**Common Name:** Puttyroot
**Current Status:** Special Concern Species*
**Proposed Status:** Special Concern Species*

**Scientific Name:** Sensitive Species**
**Common Name:**
**Current Status:** Special Concern Species*
**Proposed Status:** Special Concern Species*

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## PA Fish and Boat Commission

**RESPONSE:** No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

## U.S. Fish and Wildlife Service

**RESPONSE:** No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictinal agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

## WHAT TO SEND TO JURISDICTIONAL AGENCIES

**If project information was requested by one or more of the agencies above,** send the following information to the agency(s) seeking this information (see AGENCY CONTACT INFORMATION).

**Check-list of *Minimum* Materials to be submitted:**

____**SIGNED** copy of this Project Environmental Review Receipt
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____Project location information (name of USGS Quadrangle, Township/Municipality, and County)
____USGS 7.5-minute Quadrangle with project boundary clearly indicated, and quad name on the map

**The inclusion of the following information may expedite the review process.**
____A basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams

## 4. DEP INFORMATION

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concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

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# 5. ADDITIONAL INFORMATION

The PNDI environmental review website is a **preliminary** screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

# 6. AGENCY CONTACT INFORMATION

### PA Department of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

### U.S. Fish and Wildlife Service

Pennsylvania Field Office
110 Radnor Rd; Suite 101, State College, PA 16801
NO Faxes Please.

### PA Fish and Boat Commission

Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

### PA Game Commission

Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

# 7. PROJECT CONTACT INFORMATION

Name:_____
Company/Business Name:_____
Address:_____
City, State, Zip:_____
Phone:(_____)_____Fax:(_____)_____
Email:_____

# 8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

_____ _____
applicant/project proponent signature date

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# APPENDIX C
# SAMPLE DATA SHEETS

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# ESI DATA SHEETS

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# HABITAT ASSESSMENT

**Project #:**_____ **Date:**_____ **State:**_____ **County:**_____

**Project Name:** _____ **Site Name/#:**_____ **USGS Quad:**_____

Permitted Biologist:_____ (full name) Other Field Staff:_____ (full name) State Permit #:_____

Federal Permit #:_____

| Net/Trap/ Detector | Net/Trap/ Detector # | Latitude | Longitude | Picture # | Waypoint # |
|---|---|---|---|---|---|
| | | ° ' "N | ° ' "W | | |
| | | ° ' "N | ° ' "W | | |
| | | ° ' "N | ° ' "W | | |
| | | ° ' "N | ° ' "W | | |

Distance to closest water source (meters):_____ Type of water source:_____

Water source name:_____

## ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS OR DETECTOR):

Bank Height: _____meters Channel Width: _____meters Stream Width: _____meters

Substratum: ___Bedrock ___Boulder ___Cobble ___Gravel ___Sand ___Silt/Clay

Still Water Present (Y/N): _____ Average Water Depth: ____m or cm Clarity (H,M,L):____

## VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)

_____

_____

_____

Subdominant Canopy Species (< 40 cm/16" dbh)

_____

_____

_____

Estimated dbh range: Lg: _____ Sm: _____

Estimated dbh range: Lg: _____ Sm: _____

Relative abundance of dominant vs. subdominant (ratio):_____

Estimated canopy closure: ___Closed ___Moderate ___Open

Roost tree potential consists of: ___Large Trees ___Snags ___ Neither

Roost tree potential for the area is: ___High ___Moderate ___Low

Roost potential comments: _____

Subcanopy clutter: ___Closed ___Moderate ___Open

Subcanopy comprised largely of: ___Lower Branches of Canopy Trees ___Saplings ___Shrubs

Common Subcanopy Species: _____ _____ _____

Habitat Description:_____

_____

Check all that apply:

__Mature Upland Forest __Recently Logged Forest __Crop/Pasture Land __Other _____
__Young Upland Forest __Forest Edge __Stream/River _____
__Mature Lowland Forest __Woodlot __Vernal Pool _____
__Young Lowland Forest __Old Field __Deepwater Lake/Pond _____

Herbaceous Cover: ___ Sparse ___Moderate ___Dense

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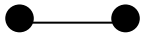
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# HABITAT ASSESSMENT (continued)

| Project #: | State/County: | Site Name/#: | Initials: |
|---|---|---|---|

## SKETCH NETS and/or DETECTORS




| LEGEND | COMMENTS |
|---|---|
| Net:  | |
| Detector:  | |

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# BAT CAPTURE DATA

**Project #:**_____ **Date:**_____

**Project Name:**_____ **Site Name/#:**_____

**State:**_____ **County:**_____

**GPS Unit #:**_____ **Camera #:**_____

Permitted Biologist:_____ Other Field Staff:_____
(full name) (full name)

State Permit #:_____ Federal Permit #:_____

| WEATHER DATA | | | | |
|---|---|---|---|---|
| Time (xxxx h) | Temp (°C) | Wind Speed (estimated – see chart) | % Cloud Cover (estimated) | Comments |
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| Net/Trap/ Detector | Net/Trap/ Detector # | Latitude | Longitude | Length (m) | Height (m) | Time Up (xxxx h) | Time Down (xxxx h) | Picture # | Waypoint # |
|---|---|---|---|---|---|---|---|---|---|
| | | ° ' "N | ° ' "W | | | | | | |
| | | ° ' "N | ° ' "W | | | | | | |
| | | ° ' "N | ° ' "W | | | | | | |
| | | ° ' "N | ° ' "W | | | | | | |

**Net Placement/Site Description:**_____

| Capt # | Net/ Trap | Species | Time | Age (Ad/Jv) | Sex (M/F) | Repro.[1] | Wt (g) | RFA (mm) | Belly (F/M/E) | Wing Index* (0-3) | Comments Picture # /Guano/Hair Sample/Band # |
|---|---|---|---|---|---|---|---|---|---|---|---|
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[1] Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ * Refer to table on the back



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## BAT CAPTURE DATA (continued)

**Project #:**_____ **Date:**_____

**Project Name:**_____ **Site Name/#:**_____ **Initials:**_____

| Capt # | Net/ Trap | Species | Time | Age (Ad/Jv) | Sex (M/F) | Repro. [2] | Wt (g) | RFA (mm) | Belly (F/M/E) | Wing Index* (0-3) | Comments Picture # /Guano/Hair Sample/Band # |
|---|---|---|---|---|---|---|---|---|---|---|---|
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| Wind Speed (mph) | Description | Visible Condition |
|---|---|---|
| 0 | Calm | Smoke rises vertically |
| 1-3 | Light Air | Direction of wind shown by smoke but not by wind vanes |
| 4-7 | Light Breeze | Wind felt on face; leaves rustle; ordinary wind vane moved by wind |
| 8-12 | Gentle Breeze | Leaves and small twigs in constant motion; wind extends light flag |
| 13-18 | Moderate Breeze | Raises dust and loose paper; small branches are moved |
| 19-24 | Fresh Breeze | Small trees in leaf begin to sway; crested wavelets on inland water |
| 25-31 | Strong Breeze | Large branches in motion; telephone wires whistle; umbrellas used with difficulty |
| 32-38 | Moderate Gale | Whole trees in motion; inconvenience in walking against wind |
| 39-46 | Fresh Gale | Breaks twigs off trees; generally impedes progress |

| Score | Description |
|---|---|
| 0 | **No damage.** Fewer than 5 small scar spots are present on the membranes. |
| 1 | **Light damage.** Less than 50% of flight membrane is depigmented (splotching), which is often visible only with translumination. |
| 2 | **Moderate damage.** Greater than 50% of wing membrane covered with scar tissue (splotching). Scarring is visible without translumination. Membrane exhibits some necrotic tissue and possibly few small holes (<0.5 cm diameter). Forearm skin may be flaking and discolored along the majority of the forearm. |
| 3 | **Heavy damage.** Deteriorated wing membrane and necrotic tissue. Isolated holes >0.5 cm are present in membranes. Necrotic or receding plagiopatagium and/or chiropatagium are evident. |



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# BAT TRANSMITTER DATA

**Project #:**_____ **Date:**_____ **Site Name/#:**_____

**Project Name:**_____ **Camera #:**_____

**State:**_____ **County:**_____ **Picture #:**_____

**Bat Species:**_____ **Capture Time:**_____

Permitted Biologist:_____ Other Field Staff:_____
**(full name)** **(full name)**

State Permit #:_____ Federal Permit #:_____

| Age<br>Ad or Jv | Sex<br>M or F | Reproductive Condition<br>F=(NR/PG/L/PL; M=↑/↓ | Wt<br>(g) | RFA<br>(mm) |
|---|---|---|---|---|
| | | | | |

Transmitter weight = _____ grams Frequency number:_____

Transmitter + bat total weight = _____ grams Band/color number:_____

**FINAL CHECK:**

1) Transmitter attachment (Y/N):_____
2) Signal receiving (frequency):_____
3) Band attachment (Y/N):_____
4) Condition of animal:_____
5) Description of release:_____

**RELEASE TIME:**_____ **TOTAL HOLD TIME:**_____**minutes**

**RELEASE LOCATION:**_____

**COMMENTS:**

_____

_____

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# FIXED TELEMETRY DATA

**Project #:**_____ **Date:**_____ **State:**____ **County:**_____

**Project Name:**_____ **GPS Unit #:**_____ **Waypoint:**_____

**USGS Quad:**_____ **Bat Species:**_____

Permitted Biologist:_____ (full name) Other Field Staff:_____ (full name) State Permit #:_____

Federal Permit #:_____

**Transmitter Frequency:**

**Comments:**

| Station # | Latitude | Longitude | Frequency | Time (0000h) | Azimuth | Comments |
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# FIXED TELEMETRY DATA (continued)

**Project #:_____ Date:_____ State:_____ County:_____ Initials:____**

| Station # | Latitude | Longitude | Frequency | Time (0000h) | Azimuth | Comments |
|---|---|---|---|---|---|---|
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# MOBILE TELEMETRY DATA

**Project #:**_____ **Date:**_____ **State:**_____ **County:**_____

**Project Name:**_____ **GPS Unit #:**_____

Permitted Biologist:_____ (full name) Other Field Staff:_____ (full name) State Permit #:_____

Federal Permit #:_____

| Frequency | Sex | Age | Repro. Condition | Capture Site | Capture Date | Day of Search (1st, 2nd, 3rd, etc.) |
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Start Time:_____ Ending Mileage:_____

End Time:_____ Starting Mileage:_____

Total Effort (hours):_____ Total Mileage:_____

Antennas: ___Yagi ___Directional ___Both

**NOTE: Record coordinates as often as possible (at intersections and when you stop).**

| Location (road or river name, etc.) | Latitude | Longitude | Comments (Bat frequency – if detected) |
|---|---|---|---|
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# MOBILE TELEMETRY DATA (continued)

**Project #:**_____ **Date:**_____ **State :**_____ **County:**_____ **Initials:**_____

| Location (road or river name, etc.) | Latitude | Longitude | Comments (Bat frequency – if detected) |
|---|---|---|---|
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# ROOST TREE DATA

**Project #:**_____ **Project Name:**_____ **Date:**_____ **State:**____ **County:**_____

**GPS Unit #:**_____ **Waypoint:**_____ **Camera #:**_____ **Picture #:**_____

Permitted Biologist:_____ (full name) Other Field Staff:_____ (full name) State Permit #:_____

Federal Permit #:_____

**Latitude: _____°_____'_____"N Longitude: _____°_____'_____"W**

**Bat Species:**_____ **Sex(M/F):**_____ **Age(Ad/Jv):**____ **Repro.:**_____

**Capture Date:**_____ **Capture Site:**_____

**Frequency:**_____ **Roost Name/#:**_____

## ROOST TREE DATA

Roost tree species:_____ dbh:_____ cm

Estimated height from ground to roost:_____(meters) Tree height _____ (meters)

Exfoliating bark (%):_____ Distance from capture site:_____m or km (circle one)

Tree health: __Live __Dead __Partial

Observed roost potential: __Exfoliating Bark __Cracks/crevasses __Hollow __Unknown

Bat vocalizations: __Yes __No

Guano on ground/foliage: __Yes __No

Is guano fresh (if present)?: __Yes __No

Guano volume (if present): _____

## DESCRIPTION OF SURROUNDING HABITAT

Dominant Canopy Species (> 40 cm/16" dbh)

_____

_____

_____

Estimated dbh range (cm): Lg: ____ Sm: ____

Subdominant Canopy Species (< 40 cm/16" dbh)

_____

_____

_____

Estimated dbh range (cm): Lg: ____ Sm: ____

Estimated canopy closure at roost: _____%

Slope: ___Steep ___Moderate ___Slight ___None Slope aspect:_____

Subcanopy Clutter: ____Closed ____Moderate ____Open

Distance to nearest water source:_____m or km (circle one)

Distance to nearest flight corridor:_____meters

Habitat Description:_____

Check all that apply:

__Mature Upland Forest __Recently Logged Forest __Crop/Pasture Land __Shrub/scrub Swamp
__Young Upland Forest __Pine Plantation __Stream/River __Vernal Pool
__Mature Lowland Forest __Woodlot/ForestEdge __Emergent Wetland __Deepwater Lake/Pond
__Young Lowland Forest __Old Field __Forested Swamp __Other _____

Comments:

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# ROOST TREE DATA (continued)



**State/County:** _____ **Project Name/#:** _____ **Date:** _____

**Frequency:** _____ **Roost Name/#:** _____ **Initials:** _____

**Sketch: Roost Tree Habitat**

N

**Comments:** _____

_____

**Stages of Decay:**

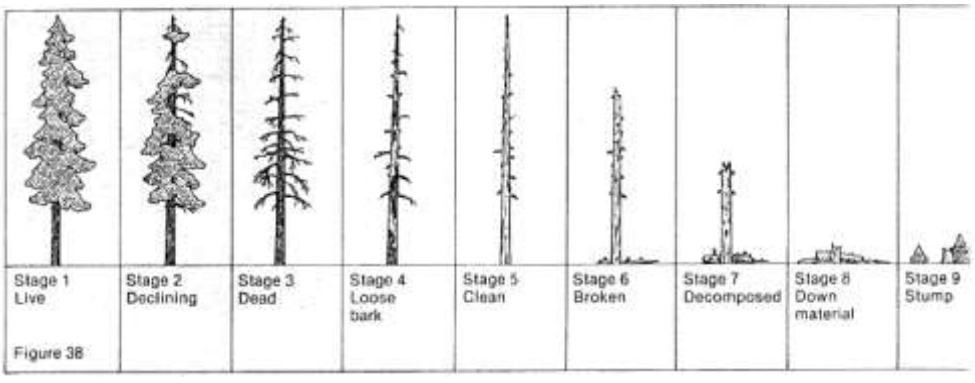



Figure 38

**Sketch: Roost Tree**

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# ROOST TREE EMERGENCE DATA

**Project #:**_____ **Date:**_____ **State:**_____ **County:**_____

**Project Name:**_____ **GPS Unit #:**_____ **Waypoint:**_____

Permitted Biologist:_____ (full name) Other Field Staff:_____ (full name) State Permit #:_____

Federal Permit #:_____

**Latitude: ____°____'____"N Longitude: ____°____'____"W**

**Roost Name/#:**_____

**Radio-tagged bat present in tree: Yes____ No____**

Complete the following information only if a radio-tagged bat is present in the roost

**Bat species:**_____ **Sex(M/F):**____ **Age(Ad/Jv):**_____ **Repro:**_____

**Capture date:**_____ **Capture site:**_____ **Frequency:**_____

**NOTE:** Tallies of bat exits should be made at 2-minute intervals. Use the back lighting of the setting sun to help distinguish bats as silhouettes against the sky as they exit the roost. Please ensure that you are close enough to the roost to observe all exiting bats, but not close enough to influence emergence (do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights).

**Arrival time:**_____ **Departure time:**_____ **Total bats:**_____

| Emergence Time | Number of Bats | Emergence Aspect |
|---|---|---|
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Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

_____

_____

_____

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# ROOST TREE EMERGENCE DATA (continued)

**Project #:**_____ **Project name:**_____
**Frequency:**_____ **Roost #:**_____

| Emergence Time | Number of Bats | Emergence Aspect |
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# PORTAL SEARCH DATA SHEET

**Project #:_____ Task #:___ Date:_____ Project Name:_____ Page __ of __**

**Biologist(s):_____ GPS Unit:_____ Camera :_____ County:_____**

| Feature/ Segment ID | Start Time | End Time | Evidence of Mining? | Portal(s) Present? | Portal ID(s) if present * | GPS Coordinates/Waypoints | | | | Photos | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Start | | End | | | |
| | | | | | | Wpt | Lat/Long | Wpt | Lat/Long | | |
| | | | | | | | N<br>W | | N<br>W | | |
| | | | | | | | N<br>W | | N<br>W | | |
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| | | | | | | | N<br>W | | N<br>W | | |
| | | | | | | | N<br>W | | N<br>W | | |

* Refer to Mine Portal Description data sheets

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# MINE PORTAL DESCRIPTION

**Project No:** _____ **Project Name:** _____

**Date:** _____ **Biologists:** _____

**State:** _____ **County:** _____

| **Site Name/#** | | **No. of Portals:** | |
|---|---|---|---|
| **STATE PERMIT NUMBER:** | | **FEDERAL PERMIT NUMBER:** | |

**GPS:** **Unit #:** _____ **Waypoint Name:** _____

**Latitude:** _____°_____'_____"N **Longitude:** _____°_____'_____"W

**Camera #:** _____ **Photo ID #s:** _____

| **Portal/opening** | **#1** | **#2** | **#3** | **#4** |
|---|---|---|---|---|
| Diameter (height x width) | | | | |
| Is opening vertical or horizontal (V or H) | | | | |
| Is opening sloped (estimated degree of slope) | | | | |
| Estimated length of portal | | | | |
| Estimated internal dimensions (height x width) | | | | |
| Entrance appears stable? | | | | |
| Evidence of collapse? | | | | |
| Ceiling condition stable? | | | | |
| Amount of airflow (slight, moderate, heavy) | | | | |
| Direction of airflow (in or out) | | | | |
| Outside temperature | | | | |
| Temperature at portal | | | | |
| Evidence of past flooding? | | | | |
| % Canopy closure at entrance | | | | |
| Estimated distance to nearest water source | | | | |
| Evidence of foraging (insect remains)? | | | | |
| Presence of guano? | | | | |
| Portal obstructed by vegetation? | | | | |
| Portal obstructed by spider webs? | | | | |
| Would use make bat susceptible to predation? | | | | |

Is portal recommended for bat survey? No___ Yes___ Why_____

_____

Comments:

_____

Please include site sketch on back when feasible.

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# PGC DATA SHEETS

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**FORM** P-70008-N/T
12/09
**Section 2**

COMMONWEALTH OF PENNSYLVANIA
Pennsylvania Game Commission

**BAT NETTING/TRAPPING SITE SURVEY RECORD**



**1. Survey Date:**_____ **2. Company Name:**_____

**3. Bat Identifier:** (Responsible Recorder)_____ **4. Assistants:**_____

**5. Site Name and/or Number:**_____

**6. Site is (circle one):** hibernation site summer habitat

**7a. If hibernation site circle one:** limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,

other structure, describe -_____.

**7b. If summer habitat, describe area being sampled** (e.g. forested stream or forest clearing with stream):

_____

**8. County:**_____ **9. 7.5' Quad.:**_____

**10. Was site GPS'd (required) ?** YES - NO

**11. Geographic Coordinates (D-M-S):** Latitude: _____°-_____'-_____"N, Longitude: _____°-_____'-_____"W

**Datum** *(circle one)*: **NAD27** (Preferred), NAD83, WGS84, Other:_____

**12. Ownership and Access:** *(Who owns site or controls access? Give name and address.)*_____

_____

**13. Time** *(military)* **& Temperature:** Start Time_____h Stop Time_____h Total Minutes:_____

Start Temp._____°C End Temp._____°C *(must stay ≥10°C for summer netting)*

**14. General Weather** *(circle one)*: Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain; Steady Rain; Thunderstorms; Snow; Other:_____.
*(suspend netting during periods of rain)*

**15. General Wind Conditions** *(circle one)*: Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).

**16. Capture Setup at Site:**

| Set # | Type | Count | Dimensions | Description | TOTAL AREA (m) |
|---|---|---|---|---|---|
| 1 | Nets | 4 | 12m x 2.6m | Stacked over trail | 124.8 sq. m |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Total Capture Area:_____sq. m

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*(Site Survey Record – Continued)* **Site Name/No.:** _____ **Date:**_____

**17. Describe habitat 150 m around site:** *(topography and vegetation including dominant tree species.)*

**18. Was reproductive status checked? YES / NO** *(if "NO" only enter numbers in* **Total** *columns)*

***CAPTURE RESULTS**

| Species | Number of Adult Females | | | | No. Juv. Fem. | Total No. Fem. | Number of Adult Males | | No. Juv. Male | Total No. Males | Species Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NR | PG | L | PL | | | SCR | NR | | | |
| *Eptesicus fuscus* | 2 | | 1 | | | 3 | 2 | 1 | 1 | 4 | 7 |
| *Myotis lucifugus* | | | | | | | | | | | |
| *Myotis septentrionalis* | | | | | | | | | | | |
| *Myotis leibii* | | | | | | | | | | | |
| *Myotis sodalis* | | | | | | | | | | | |
| *Eptesicus fuscus* | | | | | | | | | | | |
| *Perimyotis subflavus* | | | | | | | | | | | |
| *Lasiurus borealis* | | | | | | | | | | | |
| *Lasiurus cinereus* | | | | | | | | | | | |
| *Lasionycteris noctivagans* | | | | | | | | | | | |
| Other – specify: | | | | | | | | | | | |
| Other – specify: | | | | | | | | | | | |

Reproductive Status: **NR**= nonreproductive, **PG**= pregnant, **L**= lactating, **PL**= post lactating, **SCR**= scrotal/epididymis swollen.

Note: Pregnant is a category for females that are visibly pregnant. All others should be classified as NR Visibly pregnant last year may be noted in comments.

**Grand Total**

***Complete Measurement and Capture Data Form for all Captures**

Photo document all listed species, all species not considered residents, or abnormalities noted

**19. BAT DETECTORS & OTHER MONITORING DEVICES:** *Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.*

| 1st hour | 2nd hour | 3rd hour | 4th hour | 5th hour |
|---|---|---|---|---|
| **Start Time:** | **Start Time:** | **Start Time:** | **Start Time:** | **Start Time:** |
| **End Time:** | **End Time:** | **End Time:** | **End Time:** | **End Time:** |
| **Tallies:** | **Tallies:** | **Tallies:** | **Tallies:** | **Tallies:** |

**20. REMARKS:**

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**FORM** P-70008-M
12/09
**Section 3**

COMMONWEALTH OF PENNSYLVANIA
Pennsylvania Game Commission

Page#_____ of _____

# Bat Measurement and Capture Data Form

(Complete for all (1) Myotis sodalis, (2) Myotis leibii, (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA)

| Site Name Or Number: | Date: | Set No. Captured In: | Name of Person Identifying the Bat: | *Capture Number: |
|---|---|---|---|---|
| | | | | |

| Height in meters captured above ground surface: _____m | Body Measurements *(grams and millimeters)* | | | | | | | Band Information *(if banded)* *(Band Males on bat's RIGHT fa., Females on bat's LEFT fa.)* | | | | | Transmitter Attached? If so: Frequency *(mHz)* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Species | Sex | Age | Repro. Condition | Wt. (g) | Ear | Tragus | Fore-arm | Hind Foot | | Recapture Yes/No | Band Material | Band Color | Band Inscription | Band on Left/Right | |
| | | | | | | | | | | | | | | | |

| Time of Capture | Photo Taken Yes / No | WNS Wing Score | Wing Photo ID: Remarks: |
|---|---|---|---|
| | | | |

*Repro.Condition: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen*

| Site Name Or Number: | Date: | Set No. Captured In: | Name of Person Identifying the Bat: | *Capture Number: |
|---|---|---|---|---|
| | | | | |

| Height in meters captured above ground surface: _____m | Body Measurements *(grams and millimeters)* | | | | | | | Band Information *(if banded)* *(Band Males on bat's RIGHT fa., Females on bat's LEFT fa.)* | | | | | Transmitter Attached? If so: Frequency *(mHz)* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Species | Sex | Age | Repro. Condition | Wt. (g) | Ear | Tragus | Fore-arm | Hind Foot | | Recapture Yes/No | Band Material | Band Color | Band Inscription | Band on Left/Right | |
| | | | | | | | | | | | | | | | |

| Time of Capture | Photo Taken Yes / No | WNS Wing Score | Wing Photo ID: Remarks: |
|---|---|---|---|
| | | | |

*Repro.Condition: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen*

| Site Name Or Number: | Date: | Set No. Captured In: | Name of Person Identifying the Bat: | *Capture Number: |
|---|---|---|---|---|
| | | | | |

| Height in meters captured above ground surface: _____m | Body Measurements *(grams and millimeters)* | | | | | | | Band Information *(if banded)* *(Band Males on bat's RIGHT fa., Females on bat's LEFT fa.)* | | | | | Transmitter Attached? If so: Frequency *(mHz)* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Species | Sex | Age | Repro. Condition | Wt. (g) | Ear | Tragus | Fore-arm | Hind Foot | | Recapture Yes/No | Band Material | Band Color | Band Inscription | Band on Left/Right | |
| | | | | | | | | | | | | | | | |

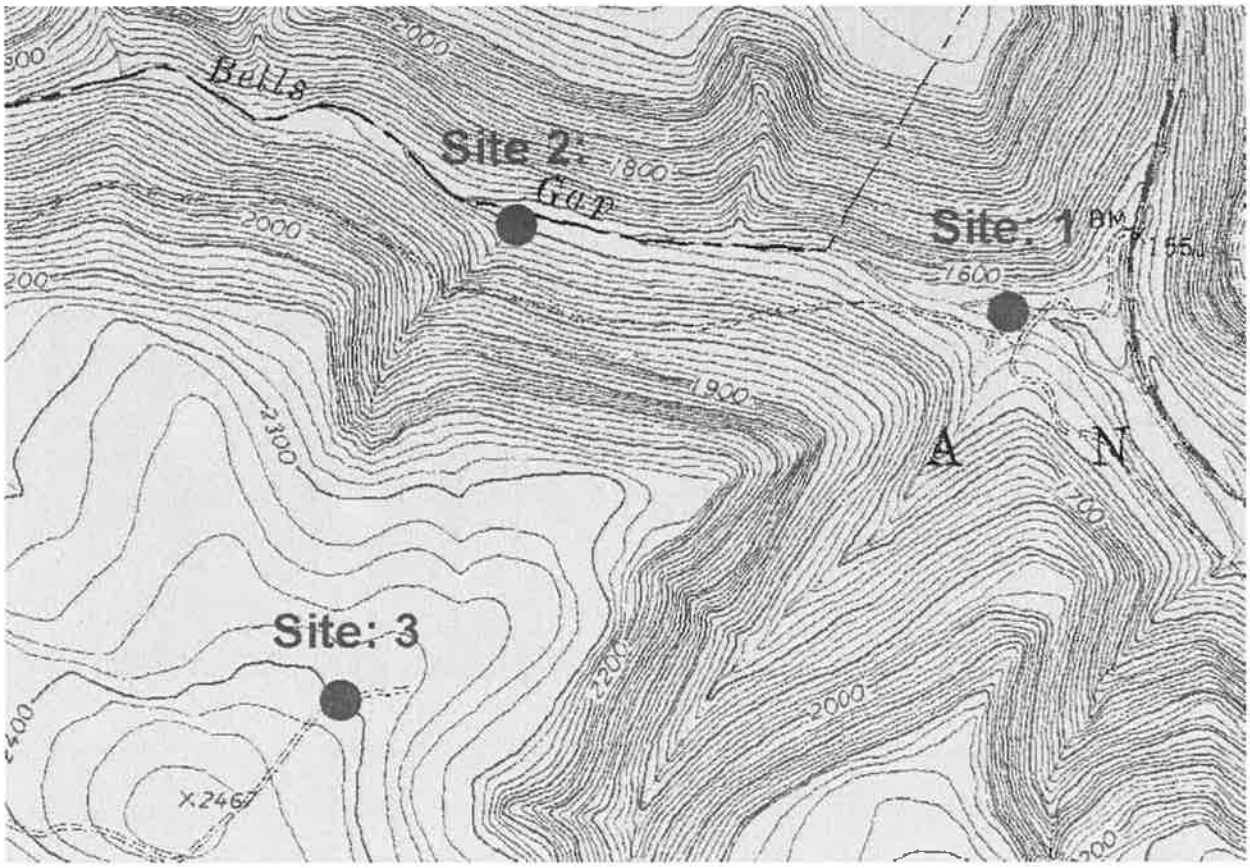
| Time of Capture | Photo Taken Yes / No | WNS Wing Score | Wing Photo ID: Remarks: |
|---|---|---|---|
| | | | |

*Capture Number = number in sequence by site.

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**Section 5 - Maps** *(example)*

Blair Co., Blandburg Quadrangle, Bells Gap Area.
Location of Sites 1, 2, and 3 for Project PA-24




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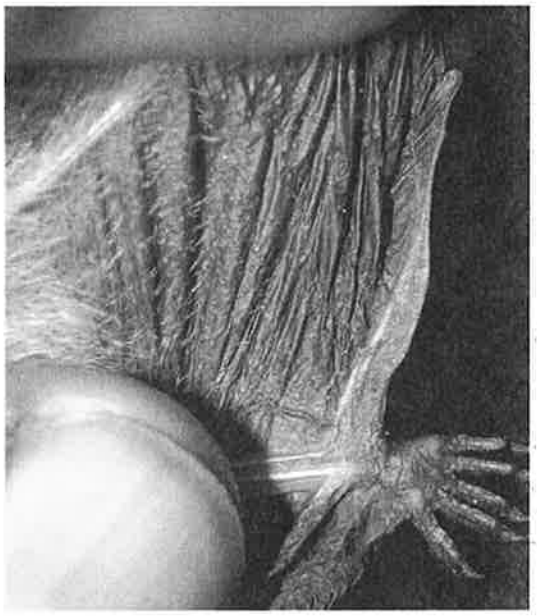
**Section 6 - Photos** *(example)*

Male *Myotis sodalis* captured at **Site 1**
Capture date: **7/18/01**
Capture Number: **06**

Portrait




Keeled Calcar



Mail 2 **hard copies** of report to address on the heading of this page within 120 days of project comp

Pennsylvania Game Commission
Bureau of Wildlife Protection, Special Permits Enforcement Division
2001 Elmerton Avenue, Harrisburg, PA 17110-9797

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PGC Form:
WD-DR-02/09
Section 4

**PA GAME COMMISSION**
**Wildlife Diversity Section**
**Bat Tree - Day Roost - Data Sheet**

**1-**
**Landowner:** **Name:** _____ **Address:** _____

**Phone:** _____ _____

**2-BAT INFO**
**Dates on Roost:** _____ **Day Roost Number:** _____
*(Date = Date bat was on roost; TreeNo.= Bat # & numbered tree, in sequence, for that bat ~ 241PGC-01)*

**Surveyors:** _____ **Roost Type:** Tree - Building - Other_____

**Bat Species:** _____ **Band No.:**_____ **Transmitter Frequency:** _____

**Ht.(m) bat is roosting off ground:** _____ Was Bat Emergence Form Completed? **YES - NO**
**Comments:** *(Where is bat roosting? Under bark? If building-describe)*

_____

**3-LOCATION**

**County:** _____ **Quadrangle:** _____

**Latitude:** _____(DMS) **Elevation (ft.):** _____

**Longitude:** _____(DMS) **%Slope:** **Slope Aspect (0-360):**

**Datum:** Nad27 (prefered) NAD83/WGS84 (circle one)

**4-TREE INFORMATION**

**Species:** _____ **DBH (cm):**_____ Is Tree Alive? **YES - NO** *(CIRCLE)*

**Height:** **( %UP _____ + %DOWN _____) X Dist.(m) to tree_____ =_____m**

**1st Branch Ht.** ***( %UP _____ + %DOWN _____) X Dist.(m) to tree_____ =_____m***

**Estimate % Canopy Cover Around Tree:** _____

Is suitable roost area on tree exposed to direct sunlight? **YES - NO** *(circle one)*
If so - estimate # of hours of exposure to direct sun: _____
Azimuth of Exposure (which way does exposed part of tree face): _____ *(0-360)*

Exfoliating Bark? **YES - NO** **Estimate % of tree with Exfoliating Bark:**_____

Cavities? **YES - NO** **If yes - Describe:**_____

**5-SURROUNDING HABITAT**
**Distance (m) to Water:**_____ **Water Type:**_____

**Understory Species:**_____

**Overstory Species:** _____
*On reverse side of form Comment on Overstory Species and Habitat Composition.*

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PGC Form:
WD-EM-02/13
Section 4

**PA GAME COMMISSION, Wildlife Diversity Section**
**Bat Emergence Form**

*** It is important to keep lights and noise disturbance to a minimum during the emergence period. ***

**ROOST NO.:**_____ **DATE:**_____

**ROOST TYPE:** Building - Tree - Rock - Other _____

**Surveyors:** _____

_____

**Transmittered Bat Band No.:**_____ **Transmitter Frequency:**_____

**Weather** **Temperature:**_____*F

**Sky Condition Code:**_____ **Wind Scale Code:**_____

**Sky Conditions**

| Code | |
|---|---|
| 0 | Clear or a few clouds |
| 1 | Partly cloudy/variable sky |
| 2 | Cloudy (broken) or overcast |
| 4 | Fog or smoke |
| 5 | Drizzle |
| 7 | Snow |
| 8 | Showers |

**Beaufort Wind Scale**

| Code | MPH | Indicators |
|---|---|---|
| 0 | <1 | Smoke rises vertically |
| 1 | 1-3 mph | Smoke Drift shows wind direction |
| 2 | 4 - 7 mph | Wind felt on face/leaves rustle |
| 3 | 8 - 12 mph | Leaves&sm.twigs in constant motion |
| 4 | 13 - 18 mph | Raises dust & loose paper |
| 5 | 19 - 24 mph | Small trees in leave sway |

Night Vision Equipment Used? **YES - NO** Bat Detector Used? **YES - NO**

Telemety Equipment Present? **YES - NO**

**Time Surveyors arrived at Roost :**_____ ***(use 24 hour clock for times)***

**Time First Bat Seen Flying:**_____

**Time Transmittered Bat Emerged:**_____ **And Azimuth Last Detected:**_____

**Time Last Bat Seen Emerging:**_____ **Total Emergence Count:**_____

**Comments:** *(include other emergence observations, weather, bat behavior, etc.)*

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# STUDY PLAN:

# FRESHWATER MUSSEL (UNIONIDAE) SURVEYS ON THE SOUTHFORK TENMILE CREEK AND RUFF CREEK FOR THE PROPOSED EQUITRANS EXPANSION PROJECT IN GREENE COUNTY, PENNSYLVANIA

24 August 2015

*Submitted to:*
Mr. Nevin Welte
Pennsylvania Fish and Boat Commission
Natural Diversity Section
450 Robinson Lane
Bellefonte, PA 16823

*Prepared for:*

TETRA TECH

*On behalf of:*

EQT
Where energy meets innovation.

*Prepared by:*

ESI

Environmental Solutions & Innovations, Inc.
4525 Este Ave
Cincinnati, Ohio 45232
Phone: (513) 451-1777
Fax: (513) 451-3321

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# 1.0 Introduction

## 1.1 Project Description

Equitrans (EQT) proposes to develop the Equitrans Expansion Project (Project) in Allegheny, Washington, and Greene counties, Pennsylvania (Figure 1). The Project (formerly known as the Mountain Access Pipeline Project) will involve the construction of approximately 7.3 miles of new 24- to 30-inch-diameter natural gas transmission pipeline. The Project consists of three separate pipeline alignments; the 30-inch-diameter H316, the 24-inch-diameter H158-M80, and the 24-inch-diameter H318. The H316 alignment requires a crossing of South Fork Tenmile Creek and Ruff Creek. The H318 alignment requires a crossing of the Monongahela River using horizontal directional drilling (HDD). The Project is designed to minimize greenfield construction to the extent practicable, and to parallel existing EQT Rights-of-Way (ROW). The Project crosses multiple streams and waterways and will require permits from the U.S. Army Corps of Engineers (USACE).

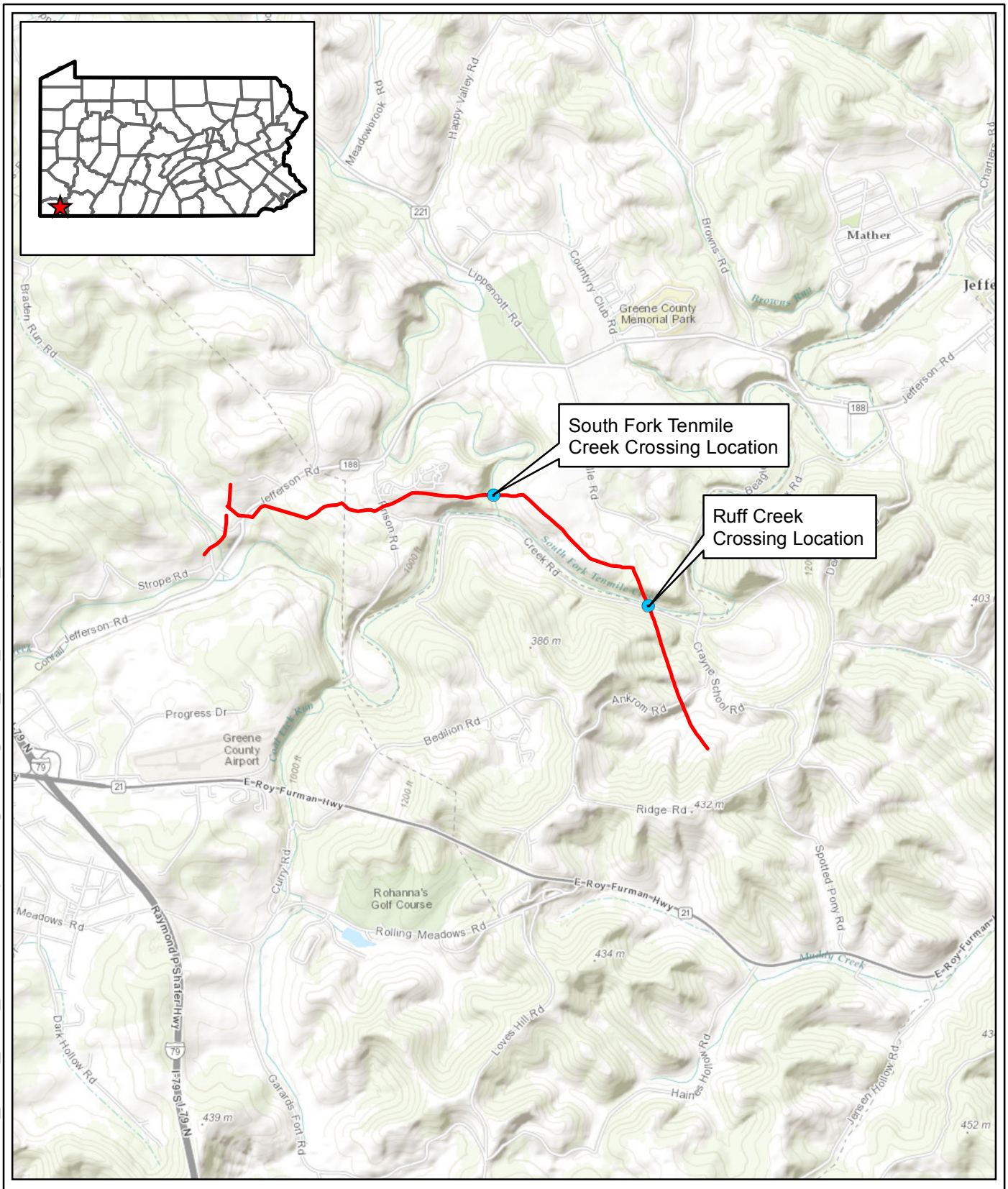
EQT generally proposes to use an approximately 25-foot wide temporary construction ROW alongside a 75-foot wide permanent ROW centered over the pipeline for operation and maintenance of the pipeline (generally a 100-foot total ROW width during construction). The temporary construction ROW may be narrowed adjacent wetland and stream crossings in order to avoid and minimize impacts to freshwater mussels.

The Project involves installation of a natural gas pipelines that traverse two streams with potential to harbor native freshwater unionid mussels including South Fork Ten-Mile Creek and Ruff Creek. The stream crossings are on private property in Greene County at the following coordinates:

- South Fork Ten-Mile Creek: 39.90999, -80.09235
- Ruff Creek: 39.91745, -80.10558

## 1.2 Regulatory Setting

These streams are known to support state-rare species including threeridge (*Amblema plicata*) and Wabash pigtoe (*Fusconaia flava*) and were identified by a Pennsylvania Natural Diversity Inventory (PNDI) search (June 2015) conducted within the vicinity of the Project. The Project may potentially have an impact on these species at the aforementioned locations per the automatic response by the Pennsylvania Fish and Boat Commission (PFBC). PFBC is the state agency responsible for governing state-listed species. The Project is currently under a large-project PNDI review and an official response by PFBC has not occurred.




N
W E
S

Figure 1. Proposed mussel survey location at the Equitrans Expansion Project crossing of South Fork Tenmile Creek and Ruff Creek in Greene County, Pennsylvania.

Project No. 639

0 0.5 1 Miles

Base Map: USGS Topographic Map

ESI ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

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Based on the preliminary PNDI findings of the PFBC dated June 2015, PFBC Project review is anticipated to yield a recommendation to perform freshwater mussel surveys and relocation efforts via a systematic protocol designed to detect presence / absence of rare mussel species. The objective of this survey is to determine whether state-rare mussel species are present within the Project location, evaluate (or characterize) the overall mussel resource(s), and relocate mussels from the Project area. These streams are not known to contain federally listed mussel species (FLS).

Tetra Tech, on behalf of EQT, retained Environmental Solutions & Innovations, Inc. (ESI) to conduct freshwater mussel presence / absence surveys. This document contains ESI's methods for conducting surveys at the proposed crossing on South Fork Tenmile Creek and Ruff Creek in Greene County, Pennsylvania.

**We seek agreement from PFBC that these proposed methods and levels of effort are acceptable.** Field surveys will be completed in 2015 under the permissible mussel survey conditions between 1 May and 15 October when visibility and water temperatures exceed 0.5 meter (1.6 ft) and 12.8 degrees Celsius (55° F), respectively and will be carried out under ESI's PFBC Permit Number 402 Type 3.

# 2.0 Methods

ESI proposes to conduct surveys following the qualitative methods described by (Smith et al. 2001) in the "Survey protocol for assessment of endangered freshwater mussels in the Allegheny River, Pennsylvania" (Allegheny Protocol) throughout the area of direct impact and appropriate upstream and downstream buffers (established upon agency coordination).

## 2.1 Timed Search Survey Effort

The Allegheny Protocol incorporates a grid survey pattern composed of predefined survey cells and includes a qualitative phase of assessment. The qualitative phase includes timed searches to assess species diversity and distribution in both the *direct effects* and *indirect effects* areas.

The study area is divided into two areas: *direct effects* and *indirect effects. Direct effects* areas include all areas where there is potential for a mussel to be directly impacted during construction. For the purpose of this Project, ESI estimates the *direct effects* area to be approximately 20 meters (65.6 ft) of stream reach centered on the proposed pipeline crossing location. The *indirect effects* area is the area upstream and downstream of the *direct effects* area where construction may alter habitat (i.e.

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effects from deposition, scouring, velocity and hydrologic variation, erosion, and turbidity). The *indirect effects* area for these stream crossings will extend 60.9 meters (200 ft) upstream and 121.9 meters (400 ft) downstream of the *direct effect* area limits. Because this survey method involves using predefined sampling cells, the total survey area encompasses a 202.8-meter (656.6-ft) linear stream reach (Figure 2 and Figure 3).

The proposed centerlines are established in the field (on one or both banks) using GPS coordinates, survey stakes, and maps. Researchers use bank markers and flagging to divide the study area into a grid composed of sampling cells.

Timed searches are completed for each sample cell. Cells are searched meeting a minimum *effective sampling fraction* of ~0.05 (percent of cell that is searched thoroughly equivalent to Smith et al 2001).

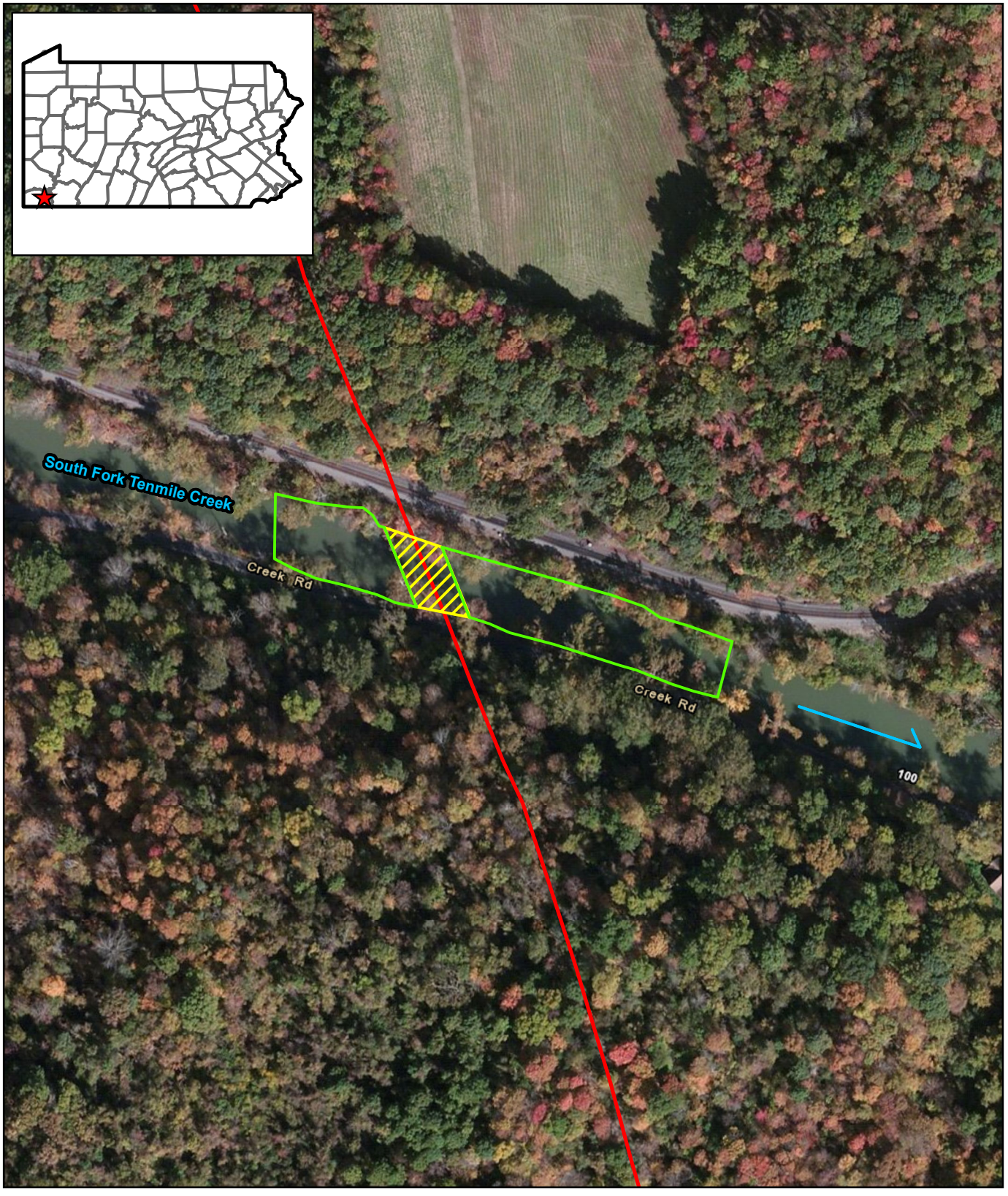
Depending on water depth, snorkeling (<1 meter [3.28 ft] deep) or scuba/surface supply air (>1 meter [3.28 ft] deep) are used to survey each cell for mussels. Surveyors use their hands and fingertips to fan the top level of substrate and rake loose sediments to search for embedded mussels. Surveyors overturn large flat rocks and search beneath them where mussels could reside. Location, cell dimensions, species counts, survey method (i.e. snorkel, scuba, surface supply), and search time for each cell are recorded. Habitat in the form of substrate composition and depth is recorded for each sample cell.

## 2.2 Relocations

At the completion of the mussel occupancy survey efforts, ESI requests approval to proceed with relocation efforts. Relocation of native, non-federally listed mussels is proposed to occur upon approval of this Study Plan and anticipated during the same mobilization as the occupancy mussel survey. Relocation efforts are conducted within the direct effects area and mussels are relocated to suitable habitat upstream. GPS coordinates of the relocation area are recorded and included in the final report. Population monitoring of relocated individuals is not anticipated.

## 2.1 Mussel Capture

No live mussels are retained or injured during any survey related to this Study Plan. Fresh dead (empty valves) and weathered shells are retained as voucher specimens and deposited at malacological museums at Marshall University, Huntington, West Virginia or provided to the USFWS and/or appropriate state agency upon request.




Area of Direct Impact (ADI) | Upstream (US) and Downstream (DS) Survey Buffer | Proposed Project Alignment

N
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S

Figure 2. Proposed survey extent at the Equitrans Expansion Project crossing of South Fork Tenmile Creek in Greene County, Pennsylvania.

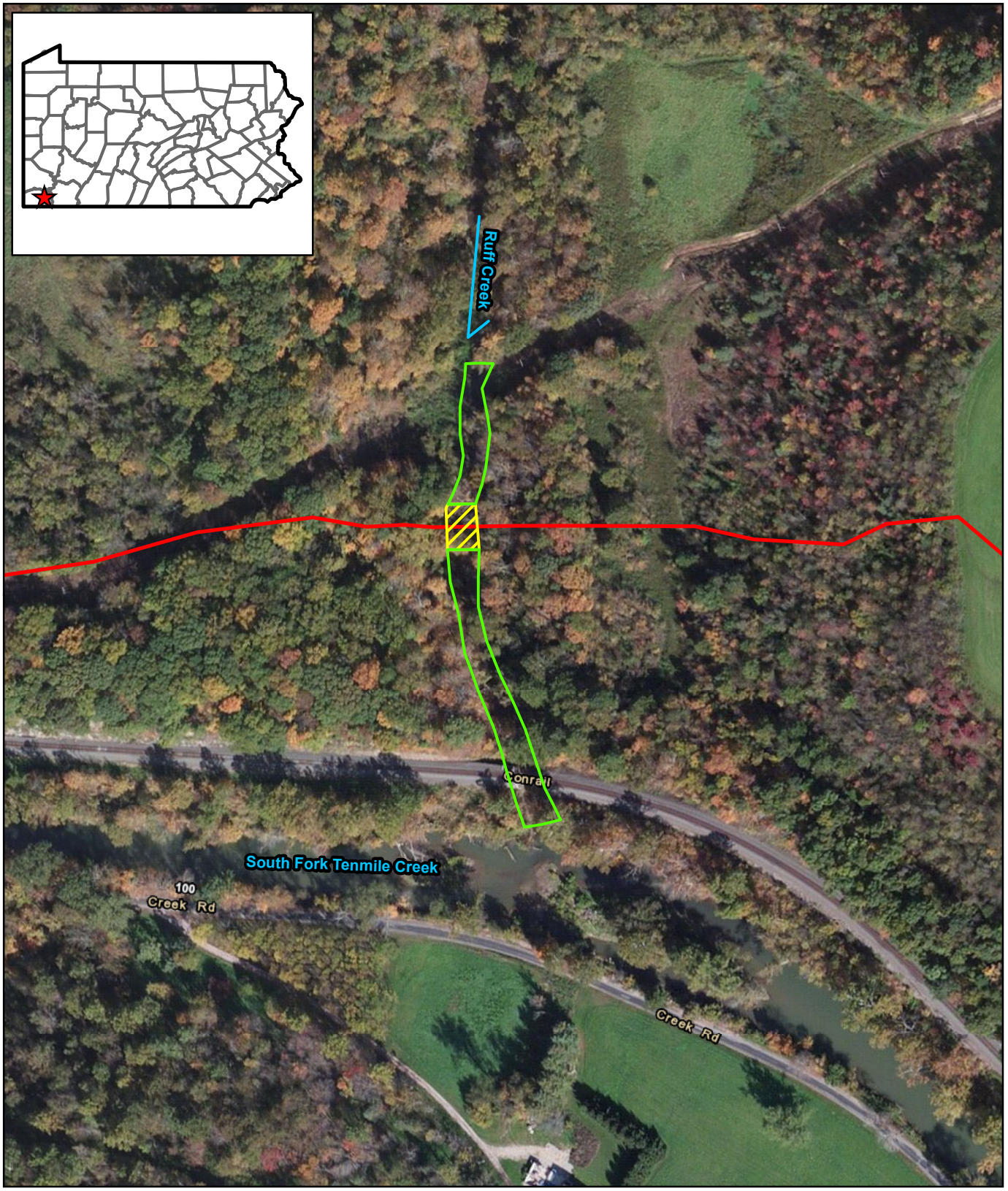
Project No. 639

0 45 90 Meters

ESI ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

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Area of Direct Impact (ADI) | Upstream (US) and Downstream (DS) Survey Buffer | Proposed Project Alignment

N
W E
S

Figure 3. Proposed survey extent at the Equitrans Expansion Project crossing of Ruff Creek in Greene County, Pennsylvania.

Project No. 639

0 45 90 Meters

ESI ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

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### 2.2 Endangered Species

In the event a FLS is encountered within the survey extent, mussel surveys will cease, and the USFWS (Pennsylvania Field Office) and PFBC will be contacted within 24 hours (or by the next business day). A GPS coordinate will be recorded at the exact capture location. At the time of capture, the mussel will be photographed, measured, and weighed before being returned to the water at the exact capture location.

## 3.0 Survey Schedule

ESI anticipates surveys will be conducted after written Study Plan concurrence (i.e., letter or email) is received from PFBC and within the acceptable mussel survey field season (1 May to 15 October) when temperatures are greater than 55° Fahrenheit (12.8°C). If this Study Plan is approved, and based on observation of only native non-FLS mussels, relocations as described above may be conducted while researchers are onsite.

## 4.0 Reporting and Validity

ESI will prepare a comprehensive report of findings covering mussel surveys and relocation efforts at both Project crossings for submission to PFBC. This report will include methods and results for all study elements including maps showing mussel locations and survey areas. Cell locations, survey area, and *direct effects* and *indirect effects* extents will be defined in the report and provided in decimal degrees. All calculations and delineated mussel concentrations will be provided within the report. This report will also include copies of all field data sheets, photographs as appropriate, and authorization to proceed. The report will be submitted to the agency prior to the end of the 2015 calendar year.

**ESI requests confirmation that survey data collected on a site-specific basis is considered valid for five years from the date the survey was conducted.**

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## 5.0 Contact Information

Questions related to the study plan can be addressed to:

Mr. Casey Swecker
Senior Project Manager
cswecker@envsi.com
Phone: (513) 451-1777
Cell: (304) 633-5808

Mr. John Spaeth
Aquatic Scientist
jspaeth@envsi.com
Phone: (513) 591-4329
Cell: (513) 377-0443

## 6.0 Literature Cited

Smith, D. R., R. F. Villella, and D. P. Lemarié. 2001. Survey protocol for assessment of endangered freshwater mussels in the Allegheny River, Pennsylvania. Journal of the North American Benthological Society 20:118-132.

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**Equitrans Expansion Project**

**Docket No. CP16-___-000**

**Resource Report 3**

# Appendix 3-A
# Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion
# (Revised January 22, 2016)

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**Appendix 3-A**

**Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion**
**(Revised January 22, 2016)**

| Common Name | Scientific Name |
|---|---|
| Alewife | *Alosa pseudoharengus* |
| Allegheny pearl dace | *Margariscus margarita* |
| American brook lamprey a/ | *Lampetra appendix* |
| American eel | *Anguilla rostrata* |
| Atlantic salmon b/ | *Salmo salar* |
| Banded darter | *Etheostoma zonale* |
| Banded killifish | *Fundulus diaphanus* |
| Bigeye chub | *Notropis amblops* |
| Bigmouth buffalo c/ | *Ictiobus cyprinellus* |
| Bigmouth chub | *Nocomis platyrhynchus* |
| Bigmouth shiner c/ | *Hybopsis dorsalis* |
| Black buffalo | *Ictiobus niger* |
| Black bullhead c/ | *Ameiurus melas* |
| Black crappie | *Pomoxis nigromaculatus* |
| Black redhorse | *Moxostoma duquesnei* |
| Blackchin shiner c/ | *Notropis heterodon* |
| Blacknose dace | *Rhinichthys atratulus* |
| Blacknose shiner | *Notropis heterolepis* |
| Blackside darter | *Percina maculata* |
| Bluebreast darter c/ | *Etheostoma camurum* |
| Blueside shiner | *Lythrurus ardens* |
| Blue catfish d/ | *Ictalurus furcatus* |
| Blue sucker d/ | *Cycleptus elongatus* |
| Bluegill | *Lepomis macrochirus* |
| Bluntnose minnow | *Pimephales notatus* |
| Bowfin c/ | *Amia calva* |
| Brassy minnow | *Hybognathus hankinsoni* |
| Brindled madtom c/ | *Noturus miurus* |
| Brook silverside a/ | *Labidesthes sicculus* |
| Brook stickleback c/ | *Culaea inconstans* |
| Brook trout | *Salvelinus fontinalis* |
| Brown bullhead | *Ameiurus nebulosus* |
| Brown trout b/ | *Salmo trutta* |
| Bullhead minnow d/ | *Pimephales vigilax* |
| Burbot c/ | *Lota lota* |
| Central mudminnow c/ | *Umbra limi* |
| Central stoneroller | *Campostoma anomalum* |

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**Appendix 3-A**

**Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion**
**(Revised January 22, 2016)**

| | |
|---|---|
| Chain pickerel b/ | *Esox niger* |
| Channel catfish | *Ictalurus punctatus* |
| Channel darter a/ | *Percina copelandi* |
| Channel shiner | *Notropis wickliffi* |
| Common carp b/ | *Cyprinus carpio* |
| Common shiner | *Luxilus cornutus* |
| Creek chub | *Semotilus atromaculatus* |
| Creek chubsucker | *Erimyzon oblongus* |
| Eastern mosquitofish | *Gambusia holbrooki* |
| Eastern sand darter c/ | *Ammocrypta pellucida* |
| Emerald shiner | *Notropis atherinoides* |
| Fallfish b/ | *Semotilus corporalis* |
| Fantail darter | *Etheostoma flabellare* |
| Fathead minnow | *Pimephales promelas* |
| Flathead catfish | *Pylodictis olivaris* |
| Freshwater drum | *Aplodinotus grunniens* |
| Ghost shiner c/ | *Notropis buchanani* |
| Gilt darter c/ | *Percina evides* |
| Gizzard shad | *Dorosoma cepedianum* |
| Gravel chub c/ | *Erimystax x-punctatus* |
| Golden redhorse | *Moxostoma erythrurum* |
| Golden shiner | *Notemigonus crysoleucas* |
| Golden rainbow trout b/ | *Oncorhynchus mykiss* |
| Goldeye d/ | *Hiodon alosoides* |
| Goldfish b/ | *Carassius auratus* |
| Grass carp b/ | *Ctenopharynogodon idella* |
| Grass pickerel | *Esox americanus vermiculatus* |
| Green sunfish | *Lepomis cyanellus* |
| Greenside darter | *Etheostoma blennioides* |
| Highfin carpsucker d/ | *Carpiodes velifer* |
| Hornyhead chub c/ | *Nocomis biguttatus* |
| Iowa darter | *Etheostoma exile* |
| Johnny darter | *Etheostoma nigrum* |
| Kanawha minnow | *Phenacobius teretulus* |
| Lake sturgeon c/ | *Acipenser fulvescens* |
| Largemouth bass | *Micropterus salmoides* |
| Least brook lamprey c/ | *Lampetra aepyptera* |

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| **Appendix 3-A**<br><br>**Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion**<br>**(Revised January 22, 2016)** | |
|---|---|
| Logperch | *Percina caprodes* |
| Longear sunfish c/ | *Lepomis megalotis* |
| Longhead darter a/ | *Percina macrocephala* |
| Longnose dace | *Rhinichthys cataractae* |
| Longnose gar a/ | *Lepisosteus osseus* |
| Longnose sucker c/ | *Catostomus catostomus* |
| Margined madtom | *Noturus insignis* |
| Mimic shiner | *Notropis volucellus* |
| Mooneye a/ | *Hiodon tergisus* |
| Mottled sculpin | *Cottus bairdi* |
| Mountain brook lamprey c/ | *Ichthyomyzon greeleyi* |
| Mountain madtom c/ | *Noturus eleutherus* |
| Muskellunge | *Esox masquinongy* |
| Mummichog b/ | *Fundulus heteroclitus* |
| New River shiner | *Notropis scabriceps* |
| Northern brook lamprey | *Ichthyomyzon fossor* |
| Northern hogsucker | *Hypentelium nigricians* |
| Northern madtom c/ | *Noturus stigmosus* |
| Northern pike | *Esox lucius* |
| Northern redbelly dace c/ | *Chrosomus eos* |
| Northern studfish | *Fundulus catenatus* |
| Ohio lamprey | *Ichthyomyzon bdellium* |
| Orange spotted sunfish | *Lepomis humilis* |
| Paddlefish | *Polyodon spathula* |
| Popeye shiner d/ | *Notropis ariommus* |
| Pugnose minnow | *Opsopoeodus emiliae* |
| Pumpkinseed | *Lepomis gibbosus* |
| Quillback | *Carpiodes cyprinus* |
| Rainbow darter | *Etheostoma caeruleum* |
| Rainbow trout b/ | *Oncorhynchus mykiss* |
| Redbreast sunfish | *Lepomis auritus* |
| Redear sunfish b/ | *Lepomis microlophus* |
| Redfin shiner c/ | *Lythrurus umbratilus* |
| Redside dace | *Clinostomus elongatus* |
| River carpsucker | *Carpiodes carpio* |
| River chub | *Nocomis micropogon* |
| River darter | *Percina shumardi* |
| River redhorse a/ | *Moxostoma carinatum* |

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**Appendix 3-A**

**Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion**
**(Revised January 22, 2016)**

| | |
|---|---|
| River shiner c/ | *Notropis blennius* |
| Rock bass | *Ambloplites rupestris* |
| Rosyface shiner | *Notropis rubellus* |
| Rosyside dace | *Clinostomus funduloides* |
| Rudd minnow e/ | *Scardinius erythrophthalmus* |
| Sand shiner | *Notropis stramineus* |
| Sauger | *Stizostedion canadense* |
| Sharpnose darter d/ | *Percina oxyrhynchus* |
| Shorthead redhorse | *Moxostoma macrolepidotum* |
| Shortnose gar d/ | *Lepisosteus platostomus* |
| Shovelnose sturgeon d/ | *Scaphirhynchus platorynchus* |
| Silver chub a/ | *Macrhybopsis storeriana* |
| Silver lamprey | *Ichthyomyzon unicuspis* |
| Silver redhorse | *Moxostoma anisurum* |
| Silver shiner | *Notropis photogenis* |
| Silverjaw minnow | *Notropis buccatus* |
| Skipjack herring a/ | *Alosa chrysochloris* |
| Smallmouth bass | *Micropterus dolomieu* |
| Smallmouth buffalo a/ | *Ictiobus bubalus* |
| Smallmouth redhorse | *Moxostoma anisurum* |
| Southern redbelly dace c/ | *Chrosomus erythrogaster* |
| Spotfin shiner | *Cyprinella spiloptera* |
| Spottail shiner b/ | *Notropis hudsonius* |
| Spotted bass | *Micropterus punctulatus* |
| Spotted darter c/ | *Etheostoma maculatum* |
| Spotted sucker c/ | *Minytrema melanops* |
| Steelcolor shiner | *Cyprinella whipplei* |
| Stonecat | *Noturus flavus* |
| Streamline chub | *Erimystax dissimilis* |
| Stripeback darter | *Percina notogramma* |
| Striped bass | *Morone saxatillis* |
| Striped bass hybrid | *Morone chrysops x M. saxatilis* |
| Striped shiner | *Luxilus chrysocephalus* |
| Tadpole madtom c/ | *Notorus gyrinus* |
| Telescope shiner | *Notropis telescopus* |
| Threadfin shad | *Dorosoma petenense* |
| Tiger muskellunge b/ | *Esox lucius x E. masquinony* |
| Tippecanoe darter c/ | *Etheostoma tippecanoe* |

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**Appendix 3-A**

**Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion**
**(Revised January 22, 2016)**

| | |
|---|---|
| Tonguetied minnow | *Exoglossum laurae* |
| Torrent sucker | *Thoburnia rhothoecum* |
| Trout perch | *Percopsis omiscomaycus* |
| Variegate darter | *Etheostoma variatum* |
| Walleye | *Stizostedion vitreum* |
| Warmouth c/ | *Lepomis gulosus* |
| White bass | *Morone chrysops* |
| White catfish b/ | *Ameiurus catus* |
| White crappie | *Pomoxis annularis* |
| White perch b/ | *Morone americana* |
| White shiner | *Luxilus albeolus* |
| White sucker | *Catostomus commersoni* |
| Whitetail shiner | *Cyprinella galactura* |
| Yellow bullhead | *Ameiurus natalis* |
| Yellow perch | *Perca flavescens* |

Sources:

West Virginia Department of Environmental Protection. 2015. Fishes of West Virginia. http://www.dep.wv.gov/WWE/getinvolved/sos/Pages/Fishes.aspx Accessed 07 June 2015.

Pennsylvania Fish and Boat Commission. 2015d. Gallery of Pennsylvania Fishes. Chapter 2 – Pennsylvania Species by Watershed. http://fishandboat.com/pafish/fishhtms/chap2.htm Accessed 07 June 2015.

a/ Delisted species

b/ Introduced species

c/ State or federally listed or candidate species

d/ Thought to be extirpated

e/ Invasive species

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**DIVISION OF NATURAL RESOURCES**
**324 4th Avenue, Room 328**
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**Fax (304) 558-2768**
**TDD (304) 558-1439**

**Earl Ray Tomblin**
***Governor***

**Robert A. Fala**
***Director***

November 18, 2015

MEMORANDUM TO: Paul Friedman, Project Manager

FROM: Clifford L. Brown

SUBJECT: Comments on Resource Reports 2 - Water Use and Quality and 3 - Fisheries, Vegetation and Wildlife for the planned Equitrans Expansion Project, Docket No. CP16-13-000

The West Virginia Division of Natural Resources Wildlife Resources Section has completed review of the Resource Reports 2 and 3 for the planned Equitrans Expansion Project, FERC Docket No. CP16-13-000. The following comments are provided for your consideration.

- The confluence of the receiving stream, North Fork Fishing Creek, is within 300 feet of the construction area and is classed as a High Quality Stream with the potential for populations of State protected mussels. Special attention to sediment and erosion control practices will limit potential impacts to downstream aquatic life.

- Stream restoration in North Fork Fishing Creek was conducted under a Consent Order from the West Virginia Department of Environmental Protection. The restoration area is also downstream of the construction area. Special attention to sediment and erosion control practices will limit potential impacts to restored stream sections.

- Spawning season dates for West Virginia State 401 Water Quality Certification Conditions for Nationwide Permits are April-June for warm water streams and September 15 - March 31 for trout waters and adjacent tributaries. If stream work cannot be avoided during these dates, for the respective stream designation, WRS requests that the impacts be evaluated to aid in our determination to grant or deny a spawning season waiver.

If you have questions, please contact Mr. Clifford L. Brown at (304) 637-0245, or by email at Clifford.L.Brown@wv.gov .

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## Attachment 3-13

## Preliminary List of Plants for Equitrans Expansion Project

**Methodology**

This list is comprised of data from three different sources. First, plant species were observed during mist netting activities and recorded as observed. Second, plant and tree species were incorporated from these reports previously submitted to USFWS: *Summer Mist Net Bat Studies on the Pennsylvania Portion of the Proposed Equitans Expansion Project in Allegheny, Washington, and Greene Counties, Pennsylvania, Freshwater Mussel (Unionidae) Surveys on the South Fork Tenmile Creek for the Proposed Equitans Expansion Project in Greene County, Pennsylvania,* and the *Indiana and Northern Long-Eared Bat Habitat Survey and Myotid Bat Conservation Plan for EQT's Equitrans Expansion Project in Wetzel County, West Virginia.* Third, based on experience working in the area, plant species were added that were not observed but surely occur. In addition, plants considered "invasive" have been highlighted in yellow.

**Preliminary List of Plants**

box elder (*Acer negundo*),

black maple (*Acer nigrum*),

red maple (*Acer rubrum*),

sugar maple (*Acer saccharum*),

silver maple (*Acer saccharinum*)

yarrow (*Achillea millefolium*)

butterfly weed species (*Aesclepia sp.*)

agrimony (*Agrimonia gryposepala*)

tree-of-heaven (*Ailanthus altissima*),

garlic-mustard (*Alliaria petiolate*)

annual ragweed (*Ambrosia artemisiifolia*)

giant ragweed (*Ambrosia trifida*)

paper birch (*Betula papyrifera*)

common beggarticks (*Bidens alba*)

shagbark hickory (*Carya ovata*),

hickory species (*Carya* sp.),

common hackberry (*Celtis occidentalis*)

redbud (*Cercis canadensis*)

chicory (*Cichorium intybus*)

Canada thistle (*Cirsium arvense*)

Bull thistle (*Cirsium vulgare*)
flowering dogwood (*Cornus florida*),
Queen Anne's lace (*Daucus carota*)
autumn olive (*Elaeagnus umbellata*),
American beech (*Fagus grandifolia*)
White ash (*Fraxinus americana*)
Green ash (*Fraxinus pennsylvanica*)
ash species (*Fraxinus* spp.),
common bedstraw (*Galium aparine*)
honey-locust (*Gleditsia tricanthos*)
American witch-hazel (*Hamamelis virginiana*)
St.-John's-wort species (*Hypericum* sp.)
Orange jewelweed (*Impatiens capensis*)
black walnut (*Juglans nigra*),
common spicebush (*Lindera benzoin*),
American sweetgum (*Liquidambar styraciflua*),
tulip poplar (*Liriodendron tulipifera*),
amur honeysuckle (*Lonicera maackii*),
sweet crabapple (*Malus coronaria*),
Japanese stiltgrass (*Microstegium vimineium*)
Common daffodil (*Narcissus pseudonarcissus*)
Eastern hop-hornbeam (*Ostrya virginiana*)
Sourwood (*Oxydendrum arboreum*)
Virginia creeper (*Parthenocissus quinquefolia*)
English plantain (*Plantago lanceolate*)
Common reed (*Phragmites australis*)
American pokeweed (*Phytolacca americana*),
blue spruce (*Picea pungens*),
sycamore (*Platanus occidentalis*),
Kentucky blue grass (*Poa pratensis*)
Eastern cottonwood (*Populus deltoides*)

Aspen species (*Populus* sp)
pin cherry (*Prunus pensylvanica*),
black cherry (*Prunus serotina*),
white oak (*Quercus alba*)
scarlet oak (*Quercus coccinia*)
burr oak (*Quercus macrocarpa*)
chestnut oak (*Quercus prinus*)
northern red oak (*Quercus rubra*),
stag-horn sumac (*Rhus typhina*)
black locust (*Robinia pseudoacacia*)
multiflora rose (*Rosa multiflora*),
blackberry species (*Rubus* sp.)
Curly dock (*Rumex crispus*)
sassafras (*Sassafras albidum*),
black willow (*Salix nigra*)
tall fescue (*Schedonorus arundinaceus*)
Canadia goldenrod (*Solidago canadensis*)
Johnson grass (*Sorghum haplepense*)
Common dandelion (*Taraxacum officinale*)
American basswood (*Tilia americana*)
Eastern poison-ivy (*Toxicodendron radicans*)
White clover (*Trifolium repens*)
American elm (*Ulmus americana*),
slippery elm (*Ulmus rubra*),
Unknown elm species (*Ulmus* sp.)
Stinging nettle (*Urtica dioica*)
Common wingstem (*Verbesina alternifolia*)
Ironweed species (*Vernonia* sp)
Corn (*Zea mays*)

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pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION

# EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL

## FINAL

**Technical Guidance Number**
**363-2134-008**

**March 2012**

**BUREAU OF WATERWAYS ENGINEERING AND WETLANDS**
**DIVISION OF WETLANDS, ENCROACHMENT AND TRAINING**

TOPSOIL APPLICATION

Graded areas should be scarified or otherwise loosened to a depth of 3 to 5 inches to permit bonding of the topsoil to the surface areas and to provide a roughened surface to prevent topsoil from sliding down slope.

Topsoil should be uniformly distributed across the disturbed area to a depth of 4 to 8 inches minimum — 2 inches on fill outslopes. Spreading should be done in such a manner that sodding or seeding can proceed with a minimum of additional preparation or tillage. Irregularities in the surface resulting from topsoil placement should be corrected in order to prevent formation of depressions unless such depressions are part of the PCSM plan.

Topsoil should not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet, or in a condition that may otherwise be detrimental to proper grading and seedbed preparation. Compacted soils should be scarified 6 to 12 inches along contour wherever possible prior to seeding.

**TABLE 11.1**
**Cubic Yards of Topsoil Required for Application to Various Depths**

| Depth (in) | Per 1,000 Square Feet | Per Acre |
|---|---|---|
| 1 | 3.1 | 134 |
| 2 | 6.2 | 268 |
| 3 | 9.3 | 403 |
| 4 | 12.4 | 537 |
| 5 | 15.5 | 672 |
| 6 | 18.6 | 806 |
| 7 | 21.7 | 940 |
| 8 | 24.8 | 1,074 |

Adapted from VA DSWC

SEEDING - Seed mixtures appropriate for site conditions (e.g. soil pH and fertility, slope, available sunlight, anticipated use, etc.) should be specified. Tables 11.3, 11.4 and 11.5, adapted from the Penn State Erosion Control and Conservation Plantings on Noncropland Manual, should be used for selection of species, seed specifications, mixtures, liming and fertilizing, time of seeding, and seeding methods. Specifications for these items may also be obtained from PennDOT's Publication # 408, Section 804 or from the local conservation district. Other sources can be approved on a case-by-case basis. Upon selection of a reference, that reference should be used to provide all specifications for seeding, mulching, and soil amendments unless otherwise approved. Indicate the reference being used in the plan submittal. Seed mixtures that contain potentially invasive species or species that may be harmful to native plant communities should be avoided. Standard E&S Worksheet #21 should be used to provide seeding, mulching and soil amendment specifications in the E&S plan. This information should be placed on one of the plan drawings.


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Seeding rates are stated as pounds per acre (lb/A) of pure live seed (PLS). PLS is the product of the percentage of pure seed times the percentage of germination divided by 100 (e.g. [85% pure seed × 72% germination] ÷ 100 = 61% PLS). Seed should not be used later than one year after the test date that appears on the label. Use of seed older than one year could result in less than satisfactory vegetative coverage and the need to re-seed the disturbed area.

Actual seeding rates may be determined by dividing the PLS seeding rate by the %PLS shown on the seed tag, or calculated as shown above (e.g. for a PLS seeding rate of 12 lb/A from a seed lot with a PLS of 35%, the actual seeding rate is equal to 12 ÷ 0.35 = 34.3 lb/A). If more than one species is used, indicate the application rate for each species. A nurse crop may be necessary if the selected species do not rapidly germinate. If a nurse crop is used in conjunction with permanent seeding, the nurse crop should not hinder the establishment of the permanent vegetation. A nurse crop should not be applied at a rate exceeding 50% of its temporary seeding rate.

Legumes should be inoculated in accordance with the supplier's recommendations. Inoculants should not be mixed with liquid fertilizer.

The Department also recommends that soil testing be done prior to seeding and mulching to determine the proper soil amendments and application rates for the proposed seed mixture(s). Soil test kits are inexpensive and may be obtained from the county Cooperative Extension Service offices. When done properly, soil tests can actually save money that would otherwise be lost on improper soil amendments, unsuccessful seeding, and damage caused by erosion of unstabilized areas. In the absence of a soil test, soil amendments should be added at the rates specified by the selected seeding reference.

Site conditions such as soil limitations, wetness, steepness of slope, sun vs. shade, proximity to natural plant communities, proximity to nuisance, noxious and/or invasive species, site history, previous herbicide applications, and proposed land use should be considered in selecting seed mixtures.

Tables contained on the website maintained by the NRCS provide valuable information regarding soil use limitations. Soils designated as “infertile,” “wet,” “droughty,” “acid,” etc. should be given special attention when selecting seed mixtures. Table 11.3 identifies plant species which are tolerant or intolerant of these soil conditions.

Wherever seeding is to be done on steep slopes ($\geq$ 3H:1V), seed mixtures should be selected that are appropriate for steep slopes. Table 11.5 in this manual and Table A (Section 804.2(b)) in PennDOT’s publication 408 identify seed mixtures suitable for steep slope conditions. These tables also provide information regarding seed selection for various proposed land uses (e.g. mowed vs. unmowed, high traffic, etc.).

Fill slopes should be seeded and mulched at regular vertical increments — 15 to 25 feet maximum — as the fill is being constructed. This will allow the bottom of the fill to progress toward stabilization while work continues on the upper portion, making final stabilization easier to achieve and providing some vegetative buffering at the bottom of the slope.

Wherever seed and mulch is applied by hydroseeding methods, the seed and mulch should be applied in separate applications with the seed being applied first and the mulch sprayed on top of the seed. This is to ensure that the seed makes contact with the underlying soil. Soil preparation should be completed prior to adding seed to the hydroseeding equipment. Running seed through the pumping system can result in excessive abrasion of the seed and reduce the percentage of pure live seed in the application. Therefore all site preparation should be completed prior to the arrival of the hydroseeder.

In critical areas (e.g. adjacent to or within 50 feet of streams, ponds, or wetlands) a protective blanket should be provided for all seeded areas. Consideration should be given to use of mulch with netting or protective blankets for all seeded areas on slopes 3H:1V or steeper.

When wetland areas are temporarily disturbed, isolate and stockpile topsoil for replacement after grading is completed. In most cases, no seeding of the disturbed area is necessary after the topsoil is replaced. The soil contains sufficient seed and root material to reestablish vegetation. If temporary vegetative stabilization is necessary, apply annual ryegrass at the rate not exceeding 48 lb PLS/acre. Apply clean straw as a mulch at the rate of 3T /acre. No soil amendments should be used on wetland areas.

Show all seeding, mulching, and soil amendment specifications on a detail sheet. References to a standard seed mixture are not acceptable. The exception to this is for PennDOT, Pennsylvania Turnpike Commission, or Bureau of Abandoned Mine Reclamation or other agency projects using a standard seed mixture which is contained in the bid package. A copy of the seed mixture used in the bid package should be made available to the reviewing agency upon request.

The beginning and ending of the germination season for each of the proposed seed mixtures should be provided as well as directions for temporary stabilization of disturbed areas that achieve finished grade during non-germinating seasons.

Vehicular traffic should be restricted from areas to be seeded to prevent soil compaction.

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**TABLE 11.2**
**Soil Amendment Application Rate Equivalents**

| Soil Amendment | Permanent Seeding Application Rate | | | Notes |
|---|---|---|---|---|
| | Per Acre | Per 1,000 sq. ft. | Per 1,000 sq. yd. | |
| **Agricultural lime** | 6 tons | 240 lb. | 2,480 lb. | Or as per soil test; may not be required in agricultural fields |
| **10-10-20 fertilizer** | 1,000 lb. | 25 lb. | 210 lb. | Or as per soil test; may not be required in agricultural fields |
| | **Temporary Seeding Application Rate** | | | |
| **Agricultural lime** | 1 ton | 40 lb. | 410 lb. | Typically not required for topsoil stockpiles |
| **10-10-10 fertilizer** | 500 lb. | 12.5 lb. | 100 lb. | Typically not required for topsoil stockpiles |

Adapted from Penn State, “Erosion Control and Conservation Plantings on Noncropland”

**NOTE: A compost blanket which meets the standards of this chapter may be substituted for the soil amendments shown in Table 11.2.**

# TABLE 11.3
## Plant Tolerances of Soil Limitation Factors

| Species | Growth Habit[1] | Tolerates | | | | Minimum Seed Specifications[3] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Wet Soil | Dry Site | Low Fertility | Acid Soil (pH 5-5.5)[2] | Purity (%) | Ready Germ (%) | Hard Seed (%) | Total Germ (%) | Seeds/lb (1,000s) |
| **Warm-Season Grasses** | | | | | | | | | | |
| Deertongue | bunch | yes | yes | yes | yes | 95 | 75 | | 75 | 250 |
| Weeping lovegrass | bunch | no | yes | yes | yes | 97 | 75 | | 75 | 1,500 |
| Switchgrass[4] | bunch | yes | yes | yes | yes | (60 PLS) | | | | 390 |
| Big bluestem | bunch | no | yes | yes | yes | (60 PLS) | | | | 150 |
| **Cool-Season Grasses** | | | | | | | | | | |
| Tall Fescue | bunch | yes | no | yes | no | 95 | 80 | | 80 | 227 |
| Redtop | sod | yes | yes | yes | yes | 92 | 80 | | 80 | 5,000 |
| Fine fescues | sod | no | no | yes | no | 95 | 80 | | 80 | 400 |
| Perennial ryegrass | bunch | yes | no | no | no | 95 | 85 | | 85 | 227 |
| Annual ryegrass | bunch | yes | no | yes | no | 95 | 85 | | 85 | 227 |
| Kentucky bluegrass | sod | no | no | no | no | 85 | 75 | | 75 | 2,200 |
| Reed canarygrass | sod | yes | yes | yes | no | 95 | 70 | | 70 | 520 |
| Orchardgrass | bunch | yes | yes | yes | yes | 95 | 80 | | 80 | 654 |
| Timothy | bunch | yes | no | yes | yes | 95 | 80 | | 80 | 1,230 |
| Smooth bromegrass | sod | no | yes | yes | no | 95 | 80 | | 80 | 136 |
| **Legumes[5]** | | | | | | | | | | |
| Crownvetch | sod | no | yes | yes | no | 98 | 40 | 30 | 65 | 120 |
| Birdsfoot trefoil[6] | bunch | yes | no | yes | yes | 98 | 60 | 20 | 80 | 400 |
| Flatpea | sod | no | no | yes | yes | 98 | 55 | 20 | 75 | 10 |
| Serecia lespedeza | bunch | no | yes | yes | yes | 98 | 60 | 20 | 80 | 335 |
| **Cereals** | | | | | | | | | | |
| Winter wheat | bunch | no | no | no | no | 98 | 85 | | 85 | 15 |
| Winter rye | bunch | no | no | yes | yes | 98 | 85 | | 85 | 18 |
| Spring oats | bunch | no | no | no | no | 98 | 85 | | 85 | 13 |
| Sundangrass | bunch | no | yes | no | no | 98 | 85 | | 85 | 55 |
| Japanese millet | bunch | yes | no | yes | yes | 98 | 80 | | 80 | 155 |

[1] Growth habit refers to the ability of the species to either form a dense sod by vegetative means (stolons, rhizomes, or roots) or remain in a bunch or single plant form. If seeded heavily enough, even bunch formers can produce a very dense stand. This is sometimes called a sod, but not in the sense of a sod formed by vegetative means.

[2] Once established, plants may grow at a somewhat lower pH, but cover generally is only adequate at pH 6.0 or above.

[3] *Minimum seed lots are truly minimum, and seed lots to be used for revegetation purposes should equal or exceed these standards.* Thus, deertongue grass should germinate 75% or better. Crownvetch should have at least 40% readily germinable seed and 30% hard seed. Commonly, seed lots are available that equal or exceed minimum specifications. Remember that disturbed sites are adverse for plant establishment. Ready germination refers to seed that germinates during the period of the germination test and that would be expected, if conditions are favorable, to germinate rapidly when planted. The opposite of ready germination is dormant seed, of which hard seed is one type.

[4] Switchgrass seed is sold only on the basis of PLS.

[5] Need specific legume inoculant. Inoculant suitable for garden peas and sweetpeas usually is satisfactory for flatpea.

[6] Birdsfoot trefoil is adapted over the entire state, except in the extreme southeast where crown and root rots may injure stands.

Penn State, “Erosion Control and Conservation Plantings on Noncropland,”

## TABLE 11.4
## Recommended Seed Mixtures

| Mixture Number | Species | Seeding Rate - Pure Live Seed [1] | |
|---|---|---|---|
| | | Most Sites | Adverse Sites |
| 1 [2] | Spring oats (spring), or | 64 | 96 |
| | Annual ryegrass (spring or fall), or | 10 | 15 |
| | Winter wheat (fall), or | 90 | 120 |
| | Winter rye (fall) | 56 | 112 |
| 2 [3] | Tall fescue, or | 60 | 75 |
| | Fine fescue, or | 35 | 40 |
| | Kentucky bluegrass, plus | 25 | 30 |
| | Redtop[4], or | 3 | 3 |
| | Perennial ryegrass | 15 | 20 |
| 3 | Birdsfoot trefoil, plus | 6 | 10 |
| | Tall fescue | 30 | 35 |
| 4 | Birdsfoot trefoil, plus | 6 | 10 |
| | Reed canarygrass | 10 | 15 |
| 5[8] | Crownvetch, plus | 10 | 15 |
| | Tall fescue, or | 20 | 25 |
| | Perennial ryegrass | 20 | 25 |
| 6 [5,8] | Crownvetch, plus | 10 | 15 |
| | Annual ryegrass | 20 | 25 |
| 7[8] | Birdsfoot trefoil, plus | 6 | 10 |
| | Crownvetch, plus | 10 | 15 |
| | Tall fescue | 20 | 30 |
| 8 | Flatpea, plus | 20 | 30 |
| | Tall fescue, or | 20 | 30 |
| | Perennial ryegrass | 20 | 25 |
| 9 [6] | Serecia lespedeza, plus | 10 | 20 |
| | Tall fescue, plus | 20 | 25 |
| | Redtop[4] | 3 | 3 |
| 10 | Tall fescue, plus | 40 | 60 |
| | Fine fescue | 10 | 15 |
| 11 | Deertongue, plus | 15 | 20 |
| | Birdsfoot trefoil | 6 | 10 |
| 12 [7] | Switchgrass, or | 15 | 20 |
| | Big Bluestem, plus | 15 | 20 |
| | Birdsfoot trefoil | 6 | 10 |
| 13 | Orchardgrass, or | 20 | 30 |
| | Smooth bromegrass, plus | 25 | 35 |
| | Birdsfoot trefoil | 6 | 10 |

Penn State, “Erosion Control and Conservation Plantings on Noncropland”

1. PLS is the product of the percentage of pure seed times percentage germination divided by 100. For example, to secure the actual planting rate for switchgrass, divide 12 pounds PLS shown on the seed tag. Thus, if the PLS content of a given seed lot is 35%, divide 12 PLS by 0.35 to obtain 34.3 pounds of seed required to plant one acre. All mixtures in this table are shown in terms of PLS.
2. If high-quality seed is used, for most sites seed spring oats at a rate of 2 bushels per acre, winter wheat at 11.5 bushels per acre, and winter rye at 1 bushel per acre. If germination is below 90%, increase these suggested seeding rates by 0.5 bushel per acre.
3. This mixture is suitable for frequent mowing. Do not cut shorter than 4 inches.
4. Keep seeding rate to that recommended in table. These species have many seeds per pound and are very competitive. To seed small quantities of small seeds such as weeping lovegrass and redtop, dilute with dry sawdust, sand, rice hulls, buckwheat hulls, etc.
5. Use for highway slopes and similar sites where the desired species after establishment is crownvetch.

6. Use only in extreme southeastern or extreme southwestern Pennsylvania. *Serecia lespedeza* is not well adapted to most of PA.
7. Do not mow shorter than 9 to 10 inches.
8. Seed mixtures containing crown vetch should not be used in areas adjacent to wetlands or stream channels due to the invasive nature of this species.

## TABLE 11.5
## Recommended Seed Mixtures for Stabilizing Disturbed Areas

| Site Condition | Nurse Crop | Seed Mixture (Select one mixture) |
|---|---|---|
| **Slopes and Banks (not mowed)** | | |
| Well-drained | 1 plus | 3, 5, 8, or 12[1] |
| Variable drainage | 1 plus | 3 or 7 |
| **Slopes and Banks (mowed)** | | |
| Well-drained | 1 plus | 2 or 10 |
| **Slopes and Banks (grazed/hay)** | | |
| Well-drained | 1 plus | 2, 3, or 13 |
| **Gullies and Eroded Areas** | 1 plus | 3, 5, 7, or 12[1] |
| **Erosion Control Facilities (BMPs)** | | |
| Sod waterways, spillways, frequent water flow areas | 1 plus | 2, 3, or 4 |
| Drainage ditches | | |
| Shallow, less than 3 feet deep | 1 plus | 2, 3, or 4 |
| Deep, not mowed | 1 plus | 5 or 7 |
| Pond banks, dikes, levees, dams, diversion channels, And occasional water flow areas | | |
| Mowed areas | 1 plus | 2 or 3 |
| Non-mowed areas | 1 plus | 5 or 7 |
| For hay or silage on diversion channels and occasional water flow areas | 1 plus | 3 or 13 |
| **Highways** [2] | | |
| Non-mowed areas | | |
| Pure crownvetch[3] | 1 plus | 5 or 6 |
| Well-drained | 1 plus | 5, 7, 8, 9, or 10 |
| Variable drained | 1 plus | 3 or 7 |
| Poorly drained | 1 plus | 3 or 4 |
| Areas mowed several times per year | 1 plus | 2, 3, or 10 |
| **Utility Right-of-way** | | |
| Well-drained | 1 plus | 5, 8, or 12[1] |
| Variable drained | 1 plus | 3 or 7 |
| Well-drained areas for grazing/hay | 1 plus | 2, 3, or 13 |
| **Effluent Disposal Areas** | 1 plus | 3 or 4 |
| **Sanitary Landfills** | 1 plus | 3, 5, 7, 11[1], or 12[1] |
| **Surface mines** | | |
| Spoils, mine wastes, fly ash, slag, settling basin Residues and other severely disturbed areas (lime to soil test) | 1 plus | 3, 4, 5, 7, 8, 9, 11[1], or 12[1] |
| Severely disturbed areas for grazing/hay | 1 plus | 3 or 13 |

Penn State, “Erosion Control and Conservation Plantings on Noncropland”

1. For seed mixtures 11 and 12, only use spring oats or weeping lovegrass (included in mix) as nurse crop.
2. Contact the Pennsylvania Department of Transportation district roadside specialist for specific suggestions on treatment techniques and management practices.
3. Seed mixtures containing crown vetch should not be used in areas adjacent to wetlands or stream channels due to the invasive nature of this species.

MULCHING - Mulches absorb rainfall impact, increase the rate of infiltration, reduce soil moisture loss due to evaporation, moderate soil temperatures, provide a suitable environment for germination, and protect the seedling from intense sunlight. All seeded areas should be mulched or blanketed to minimize the potential for failure to establish an adequate vegetative cover. Mulching may also be used as a temporary stabilization of some disturbed areas in non-germinating seasons.

**FIGURE 11.4**
**Straw Mulch Applied at 3 Tons/Acre**



PA DEP

**Rule of thumb: If you are seeing a lot of bare ground, there is not enough straw.**
**(Caution: Too much straw can be as harmful as too little straw.)**

Mulches should be applied at the rates shown in Table 11.6

Straw and hay mulch should be anchored or tackified immediately after application to prevent being windblown. A tractor-drawn implement may be used to “crimp” the straw or hay into the soil — about 3 inches. This method should be limited to slopes no steeper than 3H:1V. The machinery should be operated on the contour. Note: Crimping of hay or straw by running over it with tracked machinery is not recommended.

Polymeric and gum tackifiers mixed and applied according to manufacturer’s recommendations may be used to tack mulch. Avoid application during rain and on windy days. A 24-hour curing period and a soil temperature higher than $45^{O}$ F are typically required. Application should generally be heaviest at edges of seeded areas and at crests of ridges and banks to prevent loss by wind. The remainder of the area should have binder applied uniformly. Binders may be applied after mulch is spread or sprayed into the mulch as it is being blown onto the soil. Applying straw and binder together is generally more effective.

Synthetic binders, or chemical binders, may be used as recommended by the manufacturer to anchor mulch provided sufficient documentation is provided to show they are non-toxic to native plant and animal species.

Mulch on slopes of 8% or steeper should be held in place with netting. Lightweight plastic, fiber, or paper nets may be stapled over the mulch according to manufacturer's recommendations.

Shredded paper hydromulch should not be used on slopes steeper than 5%. Wood fiber hydromulch may be applied on steeper slopes provided a tackifier is used. The application rate for any hydromulch should be 2,000 lb/acre at a minimum.

**TABLE 11.6**
**Mulch Application Rates**

| Mulch Type | Application Rate (Min.) | | | Notes |
|---|---|---|---|---|
| | Per Acre | Per 1,000 sq. ft. | Per 1,000 sq. yd. | |
| Straw | 3 tons | 140 lb. | 1,240 lb. | Either wheat or oat straw, free of weeds, not chopped or finely broken |
| Hay | 3 tons | 140 lb. | 1,240 lb. | Timothy, mixed clover and timothy or other native forage grasses |
| Wood Chips | 4 - 6 tons | 185 - 275 lb. | 1,650 - 2,500 lb. | May prevent germination of grasses and legumes |
| Hydromulch | 1 ton | 47 lb. | 415 | See limitations above |

COMPOSTING - Compost has been shown to be an effective means of temporary stabilization for some areas that are to be vegetated. In addition to holding soil particles in place while vegetation becomes established, it has the added benefits of providing filtering of water infiltrating the soil, increased retention of soil moisture, and providing some plant nutrients.



Source Unknown

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**MATERIAL**

Compost material should be as described in Table 4.2.

**COMPOST FOR EROSION CONTROL**

When used as a mulch replacement, the application rate (thickness) of the compost should be ½" to ¾". Compost is not recommended for slopes steeper than 2H:1V unless a netting or confinement system is used in conjunction with the compost.

Compost should be placed evenly and should provide 100% soil coverage. No soil should be visible. On highly unstable soils, use compost in conjunction with appropriate structural measures. Spread the compost uniformly, and then track, or compact, the compost layer using a bulldozer or other appropriate equipment. Alternatively, apply compost using a pneumatic, or blower, unit. Project compost directly at soil, thereby preventing water from moving between the soil-compost interface. Apply compost layer approximately 3 feet beyond the top of the slope or overlap it into existing vegetation. Follow by seeding or ornamental planting.

Where planning immediate grass, wildflower, or legume seeding or ornamental planting, use only a well-composted product that contains no substances toxic to plants. Very coarse composts should be avoided if the slope is to be landscaped or seeded, as it will make planting and crop establishment more difficult. Composts containing fibrous particles that range in size produce a more stable mat.

Note: Compost should not be used instead of erosion control blanketing.

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# Bureau of Forestry Planting and Seeding Guidelines 2015

## 1. Key Principles

Supplemental planting on State Forest lands is a common practice for activities such as re-vegetating a log landing after harvest, erosion and sedimentation control, forage and cover habitat in wildlife openings, and reclamation and restoration in gas development areas. The Bureau of Forestry utilizes native species in supplemental plantings whenever possible; however, there are occasions when native species do not fully support the purpose of the planting and non-native species may be justified. This document provides guidance on how best to plant native grasses, forbs, shrubs and trees on state forest lands, as well as the appropriate use of non-native plantings. This document also provides information on general seed mixes recommended by the Ecological Services Section and alterations for specific need. As per Forest Stewardship Council certification guidelines, many non-native species are required to be monitored following planting.

The Bureau of Forestry has researched many species being considered for planting on state forest lands and have determined that the species fit into three categories:

1. **Invasive:** Deemed invasive. Do not plant.
2. **Potentially Invasive:** Avoid planting, except in special situations (after Ecological Services consultation).
3. **Non-invasive**: Native species deemed non-aggressive and non-native species found not to be invasive.

These categories are discussed in greater detail in Sections 2 (herbaceous species) and Section 3 (tree and shrubs), including recommended species and seed mixes.

Invasive: Deemed Invasive: Do Not Plant

Any plant classified as a **noxious weed** by the PA of Agriculture is barred for use on State Forest lands. It is illegal to cultivate, sell, transport, or plant any species classified as a noxious weed in PA.

Plants on DCNR Invasive Plant List are prohibited from use on State Forest lands, according to policies set forth in the State Forest Resource Management Plan. Some of these species may have been planted on State Forest lands in the past. However, current standards do not allow the use of these plants on State Forest lands. This includes species on DCNR's 'Invasive Plant Watch list.'

Potentially Invasive: Avoid planting except in special circumstances or situations

Some species may have invasive potential, depending on conditions, or as noted by other states. In addition, some non-native species do not provide quality wildlife habitat/forage and may not be compatible with planted tree seedlings during reforestation activities. There may be special circumstances or situations that require the use of these species, such as unique erosion control needs or limited availability of native seed. The species mentioned in this category **should be avoided** whenever possible in favor of more acceptable native alternatives. Consultation with Ecological Services is required prior to the use of these species, and monitoring may be required following planting.

Non-invasive: Native species deemed non-aggressive and non-native species found not to be invasive.

There are many species to choose for seed mixes and planting on State Forest lands, both native and not native to Pennsylvania. For the species listed in this document, there is little to no evidence to suggest that any of these non-native species will have invasive tendencies, or the listed native species will have aggressive tendencies. These are the species recommended for use on State Forest lands. Other

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species native to Pennsylvania may be used at the District's discretion; however, other non-native species should be discussed with Ecological Services prior to their use.

**Non-native Plantings Monitoring**

Non-native plant species listed under category 2 (potentially invasive) WILL require monitoring. Category 3 (non-invasive) species may require monitoring after consultation with Ecological Services. This monitoring should take place once within 5 years of planting and should be completed by district staff, with help from Ecological Services. During monitoring, the attached data form should be completed and submitted to Ecological Services. If requested, Ecological Services will be available to assist with plant identification. Species in Category 1 (invasive) should not be planted. If they have been planted, treatment and/or removal is recommended.

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## 2. Planting Guidance for Grasses and Herbaceous Plants

The sowing of grass seed mixes is a long-standing practice used on state forest lands to stabilize soils following disturbance. While the Bureau has traditionally used grass seed mixes to retire log landings and timber sale haul roads, there has been an increased use of native grasses for permanent herbaceous openings for wildlife and for reclamation practices in areas surrounding energy and right-of-way development. Combining native wildflowers and forbs to grass seed mixes increase the ecological value of restoration practices, attracting pollinators and other insects which then builds a more diverse food web and provides an additional food sources for wildlife.

When undertaking a seeding project please consider the following:

Pre-planning:

- Anticipate ordering seed 6 months in advance to ensure seed availability. The best time to purchase native seed is in fall to be sure the supplier has enough in stock for spring plantings. Be sure to specify **PLS (pure live seed)** when ordering native seed. PLS factors in germination rates to ensure the amount of seed of an individual species is used to achieve adequate cover.
- State-listed or PA Species of Concern may not be planted unless a species recovery plan has been developed and local genetic stock is available. If a district is interested in planting state-listed species, please consult with Ecological Services.
- Seeding rates listed below may be changed when a higher density is desired for erosion control or other purposes. However, many of the warm season grasses are much larger in stature at maturity than non-native cool season grasses.
- When choosing species for a seed mix, attempt to use species representative of the area and consider the management objectives (wildlife opening, road corridor, log landing revegetation) for the site. Any mix should have both warm-season and cool-season growing species. Plan ahead for long-term maintenance of the species selected.

Soil Preparation:

- In activities that cause excessive soil compaction, such as log landings or gas development, the **topsoil and subsoil should be segregated and piled** before disturbance and returned to original contour with as little compaction as possible before seeding. Ripping the soil sublayer prior to spreading topsoil is recommended to lessen compaction and increase infiltration.
- **Lime and fertilizer are not generally recommended for native seed mixes.** If lime and fertilizer are used, be sure to **reduce the nitrogen content** (first number in the N-P-K ratio), as this will promote weedy plants or invasives and can potentially kill native seed.
- Seed may be lightly worked into the soil using a rake or bedsprings, but disking will likely bury the seeds too deep and may not be successful. Disking should only be conducted prior to spreading seed.

Planting:

- Use straw, **not hay**, to reduce the potential for introduction of weed seed. Hay should only be used if the cost or availability of straw is prohibitive. Invasive seed can also be introduced from contaminated fill material or seeders. Be sure seeding equipment is clean and free of any seed used previously whether on or off State Forest lands.

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- Temporary cover crops should be added to all mixes to improve soil stabilization and increase the chance of establishment. Cover crops can be applied before the desired mix if waiting for the optimum time to plant native seed. When using in combination with another mix, they should be applied at a rate of 1 bushel (~30lbs) per acre. If used alone on a site, they should be applied at 2 bushels (~60lbs) per acre.

  Spring oats (*Avena fatua*) if the seeding prior to August 15th
  Winter rye (*Secale cereale*) if the seeding after August 15th
  **Annual rye (*Lollium multiflorum*) may be used instead of oats or winter rye

- Observations of warm season grass plantings suggest **April through early May is the optimum time for planting and establishing native species** in the first growing season. Winter seeding may be successful (late October through late April), but make sure the seed will not lie wet in winter. If initial reseeding must take place in mid-summer, plant a cover crop of Oats for stabilization and plant native grasses the following April.

- For late fall/early winter plantings, native warm season grasses and wildflowers will experience dormancy conditions and may not germinate well the first year. For spring plantings, some native grasses and wildflowers will germinate the first year with most germinating the second year.

Ecological Considerations:

- Jute matting is required for use on state forest lands for erosion control. The use of synthetic matting is prohibited. Synthetic matting is made of a stiff, microfilament netting that may entangle and cause injury or mortality to wildlife.

- When the objective is long-term restoration, rather than temporary cover, it may be important that stock is from local genetic material. Seed companies may provide the genetic origin or offer species collected from different stock. When available, select PA Ecotypes.

- For wildlife habitat, it is important to provide varied structure with good interspersion of bare ground, beneath a shaded canopy which allows small mammals and birds to move freely at ground level, search for seeds, insects and roosting cover. In other cases, on steep slopes or poorer sites, higher rates may be necessary to achieve desired conditions.

- Native warm season grasses typically invest more initial resources in root growth rather than vegetative growth. This provides excellent soil retention to alleviate erosion and sedimentation issues; however, cannot always be confirmed by the quantity of above-ground, green vegetative growth.

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Maintenance of Native Herbaceous and Grass Plantings

- Typically, mowing of native grasses should first take place on the 3rd year following initial planting. Mowing should be completed no earlier than November 1st and no later than April 1st for native, perennial warm season grasses. These grasses should be cut back to 8" in height. **Cutting lower than 4" may harm the development of the native grass seedlings**.

- Disking can be done every 3 to 4 years to break up root mats and large clumps of grasses, this treatment should be conducted from November 1st to April 1st.

- In the second and subsequent growing seasons, the site should be checked for problematic weeds or invasive plants and spot treated.

**Grasses and Herbaceous Species Lists:**

1. Invasive: Deemed Invasive: Do Not Plant

A number of grasses and forbs are considered Invasive by DCNR. Plants on DCNR Invasive Plant List are prohibited from use on State Forest lands, according to policies set forth in the State Forest Resource Management Plan. Please carefully review this list prior to making seeding or planting selections.

2. Potentially Invasive: Avoid planting except in special circumstances or situations

The use of the species listed below should be limited in most circumstances. This list was created through examining neighboring states' invasive plant lists, communications with foresters, specialists and resource managers, and research on species behavior. Native and non-native alternatives to these species are provided within Category 3. This list is revised periodically based on field observations and literature review.

| Cool Season Grasses | | | |
|---|---|---|---|
| Kentucky bluegrass | *Poa pratensis* | Creeping red fescue | *Festuca rubra* |
| Other bluegrasses | *Poa species* | Redtop grass | *Agrostis gicantea* |
| Orchard grass | *Dactylis glomerata* | | |
| **Legumes** | | | |
| Yellow sweet-clover | *Melilotus officinalis* | White sweet-clover | *Melilotus alba* |

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3. Non-invasive: Native species deemed non-aggressive and non-native species found not to be invasive.

There are many species to choose for seed mixes and planting on State Forest lands, both native and not native to Pennsylvania. For these species below, there is little to no evidence to suggest these any of these non-native species will have invasive tendencies, or that any of these native species will have aggressive tendencies. Other native grasses, legumes, and wildflowers not included on this list may also be used if conditions are appropriate.

| Native Warm Season Grasses | | | |
|---|---|---|---|
| Big Bluestem | *Andropogon gerardii* | Switch Grass | *Panicum virgatum* |
| Indiangrass | *Sorgastrum nutans* | Purpletop | *Tridens flavus* |
| Deertongue grass | *Dicanthelium clandestinum* | Little bluestem | *Schizachyrium scoparium* |

| Native Cool Season Grasses | | | |
|---|---|---|---|
| Virginia wildrye* | *Elymus virginicus* | Autumn bentgrass | *Agrostis perennans* |
| Canada wildrye* | *Elymus canadensis* | Povertygrass | *Danthonia compressa* |
| Riverbank wildrye* | *Elymus riparius* | | *Danthonia spicata* |

| Native Legumes | | | |
|---|---|---|---|
| Partridge pea | *Chamaechrista fasciculata* | Showy tick-trefoil | *Desmodium canadense* |
| Senna | *Senna herbecarpa* | | |

| Non-native grasses | | | |
|---|---|---|---|
| Perennial ryegrass | *Lolium perenne* | Oats | Avena fatua |
| Timothy | *Phleum pratense* | Millet | *Millium spp.* |
| Winter wheat | *Triticum aestivum* | Hard fescue | *Festuca trachyphylla* |
| Cereal rye | *Secale cereale* | Alfalfa | *Medicago stavia* |
| Buckwheat | *Fagopyrum esculentum* | Barley | *Hordeum vulgare* |

| Non-native legumes | | | |
|---|---|---|---|
| White clover | *Trifolium repens* | Birds foot trefoil | *Lotus corniculatus* |
| Red clover | *Trifolium pratense* | Flat pea | *Lathyrus sylvestris* |
| Alsike white clover | *Trifoloium hybridum* | Crimson clover | *Trifolium incarnatum* |

| Native Wildflowers | | | |
|---|---|---|---|
| Black-eyed susan | *Rudbeckia hirta* | Tall white beardtongue | *Penstemon digitalis* |
| Cardinal flower | *Lobelia cardinalis* | Ox-eye sunflower | *Heliopsis helianthoides* |
| Common milkweed | *Asclepias syriaca* | Purple bergamot | *Monarda fistulosa* |
| Evening primrose | *Oenothera biennis* | Goldenrods | *Solidago spp.* |
| Ironweed | *Veronia altissima* | Asters | *Symphyotrichum spp.* |
| Purple coneflower | *Echinacea purpurea* | | |

| Native Species for Riparian or Wetland Habitats | | | |
|---|---|---|---|
| Fox sedge | *Carex vulpinoidea* | Pennsylvania sedge | *Carex pensylvanica* |
| Woolgrass | *Scirpus cyperinus* | Bluejoint grass | *Calamagrostis candensis* |
| Soft rush | *Juncus effusus* | Blue lobelia | *Lobelia siphilitica* |
| Joe-pye weed | *Eupatorium purpureum* | | |

* *The seed awns of the wildryes (Elymus spp.) have been shown in certain circumstances to become attached to the dog's fur, penetrating the skin and leading to the potential for grass awn migration disease. Ecological Services is researching potential native cool season grass to replace these species.*

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**Basic Native Seed Mix and Potential Additions**

## BOF General Native Seed Mix

Cover Crop: 30 lbs/ac Oats (*Avena fatua*)

| | |
|---|---|
| 3 lb PLS | Big bluestem (*Andropogon gerardii*) |
| 3 lb PLS | Little bluestem (*Schizachyrium scoparium*) |
| 2 lb PLS | Indiangrass (*Sorghastrum nutans*) |
| 2 lb PLS | Switchgrass (*Panicum virgatum*) |
| 2 lb PLS | Deertongue (*Dicanthelium clandestinum*) |
| 6 lb PLS | Virginia wildrye (*Elymus virginicus*) |
| 3 lb | Partridge pea (*Chamaecrista fasciculata*) |

Total: 21 lbs/acre

*Listed below are some additions or alterations to the recommended seed mix depending on unique situations or management goals.*

**To attract pollinators, consider adding these native wildflowers…**

| | |
|---|---|
| 1-3 lb | Senna (*Senna hebecarpa*) |
| 0.5-2 lb | Showy tick-trefoil (*Desmodium canadense*) |
| 0.5-2 lb | Canada goldenrod (*Solidago canadensis*) |
| 0.5-2 lb | Common milkweed (*Alclepias syriaca*) |
| 0.5-2 lb | Wild bergamot (*Monarda fistulosa)* |
| 0.5-1 lb | Black-eyed susan (*Rudbeckia hirta*) |
| 0.5-1 lb | Ox-eye sunflower (*Heliopsis helianthoides*) |

*Typically 0.5 lbs per acre is sufficient when added to the above Native mix. If the expressed goals of the site is to attract pollinators, consider adding more seed per acre.*

**In shaded sites reduce the mix to…**

| | |
|---|---|
| 3 lb PLS | Virginia wildrye (Elymus virginicus) |
| 3 lb PLS | Canada wildrye (Elymus canadensis) |
| 5 lb | Autumn bentgrass (Agrostis perennans) |
| 2 lb PLS | Deer tongue (Dicanthelium clandestinum) |
| 30 lb | Cover Crop |

Total: 43 lb/acre

*This is a short-lived perennial mix that will allow for natural herbaceous and woody succession following timber sale retirement.*

**To simply control erosion and sedimentation reduce the mix to…**

| | |
|---|---|
| 10 lb PLS | Deertongue ((Dicanthelium clandestinum) or Switchgrass (Panicum virgatum) |
| 5 lb PLS | Virginia wildrye (Elymus virginicus) |
| 5 lb | Autumn bentgrass (Agrostis perennans) |
| 2 lb | Partridge pea (Chamaecrista fasciculata) |
| 30 lb | Cover Crop |

Total: 52 lb/acre

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**Basic Native/Non-Native Seed Mix**

## BOF General Native/Non-native Seed Mix

Areas with slopes less than 15%

| | |
|---|---|
| 2 lb | Timothy (*Phleum pretense*) |
| 6 lb | Perennial ryegrass (*Lolium perenne)* |
| 6 lb PLS | Virginia wildrye (*Elymus virginiana*) |
| 2 lb PLS | Little bluestem (*Schizachyrium scopariu* |
| 2 lb PLS | Big bluestem (*Andropogon gerardii*) |
| 6 lb | White clover (*Trifolium repens*) |
| 4 lb | Partridge pea (*Chamaecrista fasciculata* |
| 0.5 lb | Black-eyed susan (*Rudbeckia hirta*) |

TOTAL: 28.5 lb/acre

Areas with slopes greater than 15%

| | |
|---|---|
| 6 lb | Timothy (*Phleum pretense*) |
| 4 lb | Perennial ryegrass (*Lolium perenne)* |
| 4 lb PLS | Virginia wildrye (*Elymus virginiana*) |
| 3 lb PLS | Little bluestem (*Schizachyrium scoparium*) |
| 3 lb PLS | Big bluestem (*Andropogon gerardii*) |
| 3 lb PLS | Indiangrass (*Sorghastrum nutans*) |
| 6 lb | White clover (*Trifolium repens*) |
| 4 lb PLS | Deertongue (*Panicum clandestinum*) |
| 2 lb | Partridge pea (*Chamaecrista fasciculata*) |
| 0.5 lb | Black-eyed susan (*Rudbeckia hirta*) |

TOTAL: 35.5 lb/ac

All attempts should be made to use all native seed mixes at sites on State Forest lands. At sites with many acres that need planted, in areas with severely steep slopes, or for projects where funds available for purchasing seed may be limited, this mix of native and non-native species may be more applicable. All additions discussed on the previous page can also be applied to this seed mix.

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**Comparison Chart: Warm Season vs. Cool Season Grasses (Source: NRCS)**

Use this comparison chart to help decide which grass type best fits the desired goals or outcomes of the planting. Generally, cool season grasses prefer growing when temperatures are between 65 and 80 degrees and warm season grasses prefer temperatures between 80 and 95 degrees. Differences between the two types are described below.

| Topic | Warm Season Grasses | Cool Season Grasses |
|---|---|---|
| **Erosion Control and Water Quality** | Provide long-term benefits for erosion control and sediment trapping.<br>Provide nutrient uptake during the summer when cool-season grasses are dormant. | Provide short-term and long-term benefits for erosion control and sediment trapping.<br>Provide nutrient uptake earlier in spring and later in the fall than warm season grasses. |
| **Wildlife Habitat** | Excellent nesting and feeding habitat.<br>Bunchgrasses provide openings for feeding, maintaining overhead protection from predators.<br>Remain standing for good winter protection.<br>Diverse - supporting a balanced mix of native plant species and insect populations. | Due to earlier "green-up," provide a better source of food (green foliage and insects) in early spring than warm season grasses.<br>Mat down more rapidly than warm season grasses as they age, degrading nesting quality, feeding, and overhead protection. |
| **Establishment** | Seed may be more expensive and less readily available than cool-season grasses.<br>Usually do not need much lime or fertilizer.<br>Tolerates poor soil conditions (drought, nutrient- poor and/or low pH) better than cool-season grasses.<br>Seeds are slow to germinate and seedlings usually need 2 to 3 years to establish. However, root structures are forming and providing erosion control even when not noticeably green aboveground. | Relatively inexpensive, readily available seeds.<br>Have higher nutrient requirements than warm season grasses. Less tolerant of poor soil conditions. May need fertilizer maintenance.<br>Seedlings are usually well established 1 to 2 years after planting. Rapid seedling growth results in less weed competition during establishment.<br>Can be seeded in spring or late summer. Can also be seeded with cool season legumes.<br>More susceptible to drought. |
| **Maintenance** | Maintained by using prescribed burning or, mowing to 6 inches tall.<br>Grasses are long-lived and usually do not need reseeding.<br>Selective herbicides may be used for weed control. | Maintained by mowing on 2- to 3-year rotation, and by overseeding with legumes every 3 to 4 years.<br>As stands mature, grasses may thin out and need to be reseeded.<br>Selective herbicides may be used for weed control. |

## 3. Planting Guidance for Shrubs and Trees

There are occasions when planting seedlings is the most efficient method of ensuring that the next forest contains a desired species or to help forests recover after negative forest health impacts. For example, eastern white pine is commonly planted in areas without mature pines to produce seed.

Supplemental planting is the planting of species already present in the stand, but at less than desirable levels. This artificial regeneration supplements the regeneration present, and should target relatively open areas. A wide spacing is normal for supplemental planting (10-15 ft. spacing). Underplanting, a form of supplemental planting, is simply planting shade tolerant seedlings under an existing canopy. This can be done for the same reasons as enrichment planting, or to add understory species to the existing stand.

Enrichment planting is done in stands to establish desirable tree species, often after timber harvests. This can be done to increase diversity and wildlife value to the stand. Planting trees and shrubs along riparian areas can also be considered enrichment planting.

Reforestation planting is done to establish forest cover over an area previously forested, but not currently forested. This is done in areas where natural regeneration is lacking.

One of the keys to a successful plantation is matching the seedling species with existing site characteristics. If a particular species requires soil fertilization, then select a different species better suited for the site. Some species, such as white pine, can grow almost anywhere there is adequate light. Newly planted seedlings need protection from deer browse damage in much of the region.

**Additional Notes**

In addition to the above restrictions on specific species/genera, the following planting guidelines are to be followed on State Forest lands:

- **The planting of non-native species in State Forest Wild and Natural Areas may be permitted under limited circumstances after receiving approval via an State Forest Environmental Review (SFER)**.

- Native tree species with no special status may be planted. Pennsylvania stock is preferred and cultivars should be avoided. Use Penn Nursery as the primary supplier of seedling stock when possible or a suitable alternative that uses regional genetic stock.

- Former plantations of exotic species (Norway spruce, red pine, etc.) may be replaced to the same species. Conversion of plantations to natural native stands is encouraged unless there is special attachment to the plantation (e.g. CCC significance).

**Tree and Shrub Species Lists:**

1. Invasive: Deemed Invasive: Do Not Plant

A number of trees and shrubs are considered Invasive by DCNR. Plants on DCNR Invasive Plant List are prohibited from use on State Forest lands, according to policies set forth in the State Forest Resource Management Plan. Please carefully review this list prior to making seeding or planting selections.

2. Potentially Invasive: Avoid planting except in special circumstances or situations

The use of the species listed below should be limited in most circumstances. This list was created through examining neighboring states' invasive plant lists, communications with foresters, specialists and resource managers, and research on species behavior. Native and non-native alternatives to these species are provided within Category 3. This list is revised periodically based on field observations and literature review.

| Deciduous Trees and Shrubs | |
|---|---|
| Sawtooth oak | *Quercus acutissima* |

3. Non-invasive: Native species deemed non-aggressive and non-native species found not to be invasive.

Conifer and shrubs may provide cover, food, or structure for various wildlife species. Soft mast producing trees and shrubs provide food for many birds and small mammals. Hard mast producing trees and shrubs provide food for mammals and some birds. Hard mast can also be stored for consumption later. The following species may be used in openings, ROWs, early successional habitats, where underrepresented in the forest, or other suitable places on State Forest lands. This list is not all inclusive, many other PA native species can be considered.

| Conifers | | | |
|---|---|---|---|
| White pine | *Pinus strobus* | Red spruce | *Picea rubens* |
| Virginia pine | *Pinus virginiana* *(south of route I-80)* | Red pine | *Pinus resinosa* *(north of route I-80)* |
| White spruce | *Picea glauca* | Pitch pine | *Pinus rigida* |
| Black spruce | *Picea mariana* *(wet areas)* | | |

| Non-native Conifers | |
|---|---|
| Norway spruce** | *Picea abies* |

| Soft-mast Producing Trees/Shrubs | | | |
|---|---|---|---|
| Serviceberry | *Amelanchier arborea* | Washington hawthorn | *Crataegus phaenopyrum* |
| Smooth serviceberry | *Amelanchier laevis* | America sweet crabapple | *Malus coronaria* |
| Staghorn sumac | *Rhus typhina* | Low serviceberry | *Amelanchier stolonifera* |
| American Mtn Ash | *Sorbus americana* | Cockspur hawthorn | *Crataegus crus-galli* |
| Large-seed hawthorn | *Crataegus macrosperma* | White hawthorn | *Crataegus punctata* |
| Frosted hawthorn | *Crataegus pruinosa* | | |

| Hard-mast Producing Trees |
|---|

| | | | |
|---|---|---|---|
| Dwarf chinquapin oak | *Quercus prinoides* | American hazelnut | *Corylus americana* |
| Scrub oak | *Quercus ilicifolia* | Red Oak | *Quercus rubra* |
| Black locust | *Robinia psuedoacacia (south of route I-80)* | | |

Non-native Hard-mast Producing Trees

| | | | |
|---|---|---|---|
| Chinese chestnut | *Castanea mollissima* | American chestnut hybrids | *Castanea dentata x mollissima* |

Blackberry / Raspberry Species

| | | | |
|---|---|---|---|
| Common blackberry | *Rubus allegheniensis* | Black raspberry | *Rubus occidentalis* |
| Smooth blackberry | *Rubus canadensis* | Red raspberry | *Rubus idaeaus* |

Shrubs

| | | | |
|---|---|---|---|
| Arrow wood viburnum | *Viburnum dentatum* | Graystem dogwood | *Cornus racemosa* |
| Nannyberry viburnum | *Viburnum lentago* | Silky dogwood | *Cornus amomum* |
| Buttonbush | *Cephalanthus occidentalis* | Elderberry | *Sambucus canadensis* |
| Alder | *Alnus spp.* | Native Chokeberries | *Aronia spp.* |
| American hazelnut | *Corylus Americana* | Ninebark | *Physocarpus opulifolius* |

***If Norway spruce is used to replace eastern hemlock, consider planting with another native conifer (for example, white pine, red spruce, or white spruce) to increase opportunities for wildlife. A mixture of species will be required to compensate for the loss of eastern hemlock.*

**Riparian Areas**

Streams impacted by management activities and the riparian areas may be planted for canopy coverage or habitat enhancement. Forested riparian areas provide filter capabilities, stream bank stabilization, stream shading, additions of organic material to the stream, and shelter and food for wildlife.

Please consult the riparian tree and shrub list below. When planning riparian habitat planting projects, please partner with Ecological Services biologists to develop structure and composition specifications to meet habitat goals. Different riparian species may require different habitat and proper planning will help ensure suitable habitat is created.

Species recommended for stream crossing can include the following list, but be sure to use species native to the geographic region of interest.

Trees

| | | | |
|---|---|---|---|
| Bigtooth aspen | *Populus grandidentata* | Black gum | *Nyssa sylvatica* |
| Quaking aspen | *Populus termuloides* | Eastern hemlock | *Tsuga canadensis* |
| Black willow | *Salix nigra* | Red maple | *Acer rubrum* |
| Black cherry | *Prunus serotina* | Yellow birch | *Betula alleghaniensis* |
| Tulip poplar | *Liriodendron tulipifera* | American sycamore | *Platanus occidentalis* |
| Eastern white pine | *Pinus strobus* | Black spruce | *Picea mariana* |
| Red spruce | *Picea rubens* | Norway spruce** | *Picea abies* |
| Silver maple | *Acer saccharinum* | | |

Small Trees

| | | | |
|---|---|---|---|
| Flowering dogwood | *Cornus florida* | Serviceberry | *Amelanchier arborea* |
| Staghorn sumac | *Rhus typhina* | Smooth serviceberry | *Amelanchier laevis* |
| Smooth sumac | *Rhus glabra* | Low serviceberry | *Amelanchier stolonifera* |

| | | | |
|---|---|---|---|
| Winged sumac | *Rhus aromatica* | Redbud | *Cercis canadensis* |

Shrubs

| | | | |
|---|---|---|---|
| Alder | *Alnus spp.* | Winterberry holly | *Ilex verticilata* |
| Chokeberry | *Aronia melanocarpa* | Silky dogwood | *Cornus amomum* |
| Buttonbush | *Cephalanthus occidentalis* | Elderberry | *Sambucus Canadensis* |
| Choke cherry | *Prunus virginiana* | Highbush blueberry | *Vaccinium corymbosum* |
| Gray dogwood | *Cornus racemosa* | Arrow-wood viburnum | *Viburnum dentatum* |
| Blackhaw | *Viburnum prunifolium* | Inkberry | *Ilex glabra* |
| Witch hazel | *Hamamelis virginiana* | Red-osier dogwood | *Cornus sericea* |
| Ninebark | *Physocarpus opulifolius* | | |

**Wildlife Use of Native Shrub and Tree Species**

| Species | Wildlife Species |
|---|---|
| **Shrubs** | |
| Arrowwood viburnum (*Viburnum dentatum)* | Fruit eaten by songbirds |
| Northern bayberry (*Myrica pensylvanica)* | Fruit and seeds eaten by songbirds. Provides habitat for ground-dwelling wildlife. |
| Flowering crabapple (*Malus spp.)* | Fruit eaten by birds, deer, small mammals. |
| Dogwoods | Bluebird, Cardinal, Cedar waxwing, rabbit, ruffed grouse, wild turkey, wood thrush. |
| Gray dogwood (*Cornus racemosa)* | Fruit eaten by pheasant, turkey, grouse. |
| Red osier dogwood (*Cornus sericea)* | Fruit eaten by songbirds, grouse, quail, turkey. Twigs browsed by deer and turkey. |
| Silky dogwood (*Cornus amomum)* | Sometimes browsed by rabbits and deer. |
| Elderberry (*Sambucus americana)* | Fruit eaten by many birds including bluebird, brown thrasher, cardinal, indigo bunting, rose-breasted grosbeak, pheasant and dove. Recommended for rabbit, quail and turkey. |
| American hazelnut (*Corylus americana*) | Nuts eaten by squirrel, deer, jays, grouse, and pheasant. Recommended by quail and turkey. |
| Nannyberry (*Viburnum lentago*) | Fruit eaten by songbirds. Recommended for turkey. |
| Hawthorn (*Crataegus spp.*) | Fox sparrow, gray fox, raccoon, ruffed grouse. |
| Alder (*Alnus spp.)* | Beaver, goldfinch, ruffed grouse |
| **Pines/Softwoods** | |
| Eastern white pine (*Pinus strobus*) | Roosting trees for birds. Seeds eaten by a wide variety of birds, squirrels, and mice. Recommended for turkey. |
| Pine | Beaver, black-capped chickadee, brown creeper, gray squirrel, mourning dove, porcupine, and nuthatches. |
| **Non-mast producing Species** | |
| Bigtooth aspen (*Populus grandidentata*) | Twigs and barks eaten by deer and beavers. Buds and catkins eaten by ruffed grouse. Recommended for porcupine. |
| **Soft Mast Producing Species** | |

| | |
|---|---|
| Serviceberry (*Amelanchier arborea*) | Fruits eaten by bluebird, cardinal, cedar waxwing, grey catbird, scarlet tanager, and veery. Recommended for turkey, beaver, and deer. |
| **Hard Mast Producing Species** | |
| Oaks | Black bear, blue jay, raccoon, ruffed grouse, white-tailed deer, turkey, wood duck |

Adapted from :
*MacGowan, B.J. "Designing hardwood tree plantings for wildlife." USFS FNR-213. North Central Research Station, USDA Forest Service &Department of Forestry and Natural Resources, Purdue University.

*Forest Stewardship #5: Wildlife. Penn State Extension publication.

**Species Considerations for Conifer Planting**

| Species | Wildlife Habitat Characteristics | Present Distribution* | Site Requirements | Shade Tolerance/Growth |
|---|---|---|---|---|
| Red Spruce (*Picea rubens*) | Lacking lower limb structure & thermal characteristics of hemlock.<br><br>Northern flying squirrel feeds on the fruiting body of the mycorrhizae. | Northern PA, and higher elevations in northern Appalachian mountains. | Higher elevation, good moisture regime. Grows well on poor sites, acidic and shallow soils. | Tolerant- Very Tolerant.<br><br>Long-lived (350-400 years), slow growing. |
| | | | | |
| Norway Spruce (*Picea abies)* | Retains lower limbs. | Throughout PA. | Tolerant of wide range of moisture regime and pH. | Very shade tolerant. |
| | | | | |
| White Spruce (*Picea glauca*) | Retains lower limbs. | Northern PA | Tolerant of wide range of moisture regime and pH. | Intermediate shade tolerance. Long lived (250-300 years) |
| | | | | |
| Black Spruce *(Picea mariana*) | Small dbh at maturity, retains lower limbs, shallow rooting. | Northern PA | Moisture regime important, prefers peat, and wet organic soils. Common in swamps or bogs. | Tolerant. 200 year lifespan typical. |
| | | | | |
| White Pine (*Pinus strobus*) | Gets large, provides thermal cover, retains more lower limbs than red pine | Throughout PA | Tolerant of wide range of moisture regime and pH in northern North America. | Intermediate shade tolerance. Long lived. |

| | | | | |
|---|---|---|---|---|
| Red Pine (*Pinus resinosa*) | Medium to large tree. Does not retain lower limbs | Northern PA | Tolerant of xeric sites, does well on sandy soils | Very intolerant, fast growth |
| | | | | |
| Pitch Pine (*Pinus rigida*) | Medium sized tree | Mainly southern and eastern PA | Acidic soil, tolerant of fire | Intolerant |
| | | | | |
| Virginia Pine (*Pinus virginiana*) | Relatively short | Southern PA | Grows well on xeric, nutrient poor sites | Intolerant |

## 2015 FSC Non-Native Plantings Data Collection Form

Date:_____

Collected by: _____

Opening type (e.g. log landing, haul road, wildlife opening): _____

Lat/Long: _____

Sale #:_____

Date seeded/planted: _____

Date and rate fertilized: _____

Rough size (square or linear feet): _____

% Bare soil: _____

Other treatments (e.g. shelterwood, herbicide, prescribed fire, etc., and date):

_____

Species planted (including relative rates of application):

_____

_____

| Code | Cover % of the Species | Number of Plants in each Species |
|---|---|---|
| 10 | 100 | any number |
| 9 | >75, but <100 | any number |
| 8 | 50 to 75 | any number |
| 7 | 33 to 50 | any number |
| 6 | 25 to 33 | any number |
| 5 | 10 to 25 | any number |

| | | |
|---|---|---|
| 4 | 5 to 10 | any number |
| 3 | 1 to 5 | scattered |
| 2 | <1 | very scattered |
| 1 | 2 or 3 plants | seldom |
| + | 1 plant | solitary |

**Opening**:

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

Species: _____ Code: _____

**Surrounding area**:

Seeded/planted species found beyond the originally planted/seeded area? Yes or No

If Yes, what species?: _____

Approximate size (square feet): _____

Average # stems or % cover: _____

General plant community or habitat type: _____

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**Additional site notes**:

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**SEED MIXTURES AND MULCH FOR REVEGETATION**

| Item | 1. Forestland/Non-Agricultural Land Mix (Utility ROW & Unmowed Slopes/Banks) and 2. Forestland/Non-Agricultural Land + Food Plot Mix[2] | | | |
|---|---|---|---|---|
| **Permanent Seed and Mulch Application Rates** | | | **% Purity** | **Total Germination %** |
| Seed[1] | Perennial Rye Grass | 7 pounds/acre | 98 | 90 |
| Seed[1] | Creeping Red Fescue | 16 pounds/acre | 97 | 85 |
| Seed[1] | Ladino Clover | 5 pounds/acre | 99 | 90 |
| Seed[1] | Tall Fescue (endophyte fungus free) | 25 pounds/acre | 98 | 85 |
| Seed[1] | Red Top | 2 pounds/acre | 98 | 90 |
| Seed[1] | Birdsfoot Trefoil (upright variety) Inoculated | 5 pounds/acre | 98 | 80 |
| Mulch | Grass hay or cereal straw | 3 tons/acre | N/A | N/A |
| **Temporary Seed and Mulch Application Rates** | | | | |
| Seed[1,4] | Annual Rye Grass | 40 pounds/acre | 95 | 85 |
| Mulch | Grass hay or cereal straw | 3 tons/acre | N/A | N/A |

| Item | 3. Agricultural/Pastureland Seed Mix | | | |
|---|---|---|---|---|
| **Permanent Seed and Mulch Application Rates** | | | **% Purity** | **Total Germination %** |
| Seed[1] | Orchard Grass | 20 pounds/acre | 95 | 85 |
| Seed[1] | Timothy | 20 pounds/acre | 99 | 90 |
| Seed[1] | Birdsfoot Trefoil (Inoculated) | 6 pounds/acre | 98 | 80 |
| Seed[1] | Ladino Clover | 6 pounds/acre | 99 | 90 |
| Mulch | Grass hay or cereal straw | 3 tons/acre | N/A | N/A |
| **Temporary Seed and Mulch Application Rates** | | | | |
| Seed[1,4] | Annual Rye Grass | 40 pounds/acre | 95 | 85 |
| Mulch | Grass hay or cereal straw | 3 tons/acre | N/A | N/A |

| Item | 4. Residential Mix (Utility ROW in and around Mowed Yards) | | | |
|---|---|---|---|---|
| **Permanent Seed and Mulch Application Rates** | | | **% Purity** | **Total Germination %** |
| Seed[1] | Kentucky Bluegrass | 50 pounds/acre | 98 | 85 |
| Seed[1] | Creeping Red Fescue | 66 pounds/acre | 97 | 85 |
| Seed[1] | Fiji Perennial Rye Grass | 28 pounds/acre | 98 | 90 |
| Seed[1] | ASP 6006 Perennial Rye Grass | 28 pounds/acre | 98 | 90 |
| Seed[1] | ASP 6004 Perennial Rye Grass | 28 pounds/acre | 98 | 90 |
| Mulch | Grass hay or cereal straw | 3 tons/acre | N/A | N/A |
| **Temporary Seed and Mulch Application Rates** | | | | |
| Seed[1,4] | Annual Rye Grass | 40 pounds/acre | 95 | 85 |

| | | | | |
|---|---|---|---|---|
| Mulch | Grass hay or cereal straw | 3 tons/acre | N/A | N/A |

| **Item** | **5. Winter Stabilization Mix (Utility ROW and Unmowed Slopes and Banks)** | | | |
|---|---|---|---|---|
| **Permanent Seed and Mulch Application Rates** | | | **% Purity** | **Total Germination %** |
| Seed[1] | Aroostook Annual Rye Grass | 50 pounds/acre (60 lbs/acre, adverse sites) | 98 | 85 |
| Mulch | Grass hay or cereal straw | 3 tons/acre | N/A | N/A |
| **Temporary Seed and Mulch Application Rates** | | | | |
| Seed[3,4] | Annual Rye Grass | 50 pounds/acre | 95 | 85 |
| Mulch | Grass hay or cereal straw | 3 tons/acre | N/A | N/A |

| **Item** | **6. Wetland Mix (Stabilization of Reclaimed Wetlands w/in the Utility ROW)** | | | |
|---|---|---|---|---|
| **Temporary Seed and Mulch Application Rates** | | | | |
| Seed[1,4] | Annual Rye Grass | 40 pounds/acre | 95 | 85 |
| Mulch | None | N/A | N/A | N/A |

| **Item** | **7. Droughty Sites Mix (Areas where rock is blasted or dug in the forests with acid soils, and wood chips are a acidifying component)** | | | |
|---|---|---|---|---|
| **Permanent Seed and Mulch Application Rates** | | | **% Purity** | **Total Germination %** |
| Seed[1] | Hard Fescue | 10 pounds/acre | 98 | 85 |
| Seed[1] | Sheep Fescue | 10 pounds/acre | 98 | 85 |
| Seed[1] | Chewing Fescue | 10 pounds/acre | 98 | 85 |
| Seed[1] | Creeping Red Fescue | 10 pounds/acre | 97 | 85 |
| Seed[1] | Orchard Grass | 10 pounds/acre | 95 | 85 |
| Seed[1] | White Clover | 10 pounds/acre | 99 | 90 |
| Seed[1] | Red Top | 3 pounds/acre | 98 | 90 |
| Mulch | Grass hay or cereal straw | 3 tons/acre | N/A | N/A |
| **Temporary Seed and Mulch Application Rates** | | | | |
| Seed[1,4] | Annual Rye Grass | 40 pounds/acre | 95 | 85 |
| Mulch | Grass hay or cereal straw | 3 tons/acre | N/A | N/A |

| | **Pollinator seed mix** | |
|---|---|---|
| | Permanent Seed Mix | |
| seed | Spring oats (Avena Fatua) (if seeding prior to August 15th) | 30 lb/ac |
| seed | Winter rye (Secale cereale) (if seeding after August 15th) | 30 lb/ac |
| seed | Big bluestem (Andropogon gerardii) | 3 lb/ac |
| seed | Little bluestem (Schizachyrium scoparium) | 3 lb/ac |

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| | | |
|---|---|---|
| seed | Indiangrass (Sorghastrum nutans) | 2 lb/ac |
| seed | Switchgrass (Panicum virgatum) | 2 lb/ac |
| seed | Deertongue (Dicanthelium clandestinum) | 2 lb/ac |
| seed | Virginia wildrye (Elymus virginicus) | 6 lb/ac |
| seed | Partridge pea (Chamaecrista fasciculata) | 3 lb/ac |
| seed | Senna (Senna hebecarpa) | 0.5 lb/ac |
| seed | Showy tick-trefoil (Desmodium canadense) | 0.5 lb/ac |
| seed | Canada goldenrod (Solidago canadensis) | 0.5 lb/ac |
| seed | Common milkweed (Alclepias syriaca) | 0.5 lb/ac |
| seed | Wild bergamot (Monarda fistulosa) | 0.5 lb/ac |
| seed | Black-eyed susan (Rudbeckia hirta) | 0.5 lb/ac |
| seed | Ox-eye sunflower (Heliopsis helianthoides) | 0.5 lb/ac |
| mulch | cereal straw | 3 tons/ac |

Notes:

[1] All seed is pure live seed. Seeding dates are flexible, but ideal during spring through early fall.

[2] Forestland/Non-Agricultural Land + Food Plot Mix is only utilized where specified by landowner lease agreement dictates its use. Chicory, red and white clover, and other **perennial** herbs can be utilized as may be required in the Food Plot Mix.

[3] All seed is pure live seed. Seeding dates are ideal during fall through early winter.

[4] All annual rye grass applied after October 1 should be Aroostook variety and is required after October 15. Aroostook annual rye grass may be seeded into November for winterization with some degree of success, if weather cooperates.

**DIVISION OF NATURAL RESOURCES**
**Wildlife Resources Section**
**Operations Center**
**P.O. Box 67**
**Elkins, West Virginia 26241-3235**
**Telephone (304) 637-0245**
**Fax (304) 637-0250**

**Earl Ray Tomblin**
***Governor***

**Robert A. Fala**
***Director***

May 12, 2015

Ms. Stephanie Frazier
Equitrans, LP
625 Liberty Avenue, Suite 1700
Pittsburgh, PA 15222

Dear Ms. Frazier:

We have reviewed our files for information on rare, threatened and endangered (RTE) species and sensitive habitats for the area of the proposed Equitrans Expansion Project in Wetzel County, WV (Docket No. PF15-22).

We have no known records of any RTE species or sensitive habitats within the project area. The Wildlife Resources Section knows of no surveys that have been conducted in the area for rare species or rare species habitat. Consequently, this response is based on information currently available and should not be considered a comprehensive survey of the area under review.

The information provided above is the product of a database search and retrieval. This information does not satisfy other consultation or permitting requirements for disturbances to the natural resources of the state, and further consultation may be required. Additionally, any concurrence requirements for federally listed species must come from the US Fish and Wildlife Service.

Thank you for your inquiry, and should you have any questions please feel free to contact me at the above number, or barbara.d.sargent@wv.gov. Enclosed please find an invoice.

Sincerely,

Barbara Sargent
Environmental Resources Specialist
Wildlife Diversity Unit

enclosure

S:\Monthly\Barb\Invoices\Equitrans.doc

NO. 215-583

# INVOICE

## *West Virginia Division of Natural Resources*

Wildlife Resources Section, P.O. Box 67, Elkins, WV 26241
Attention: Ms. Patty Fordyce

**In Account With:** Equitrans, LP
625 Liberty Avenue, Suite 1700
Pittsburgh, PA 15222

**Date:** May 12, 2015

**Attention:** Ms. Stephanie Frazier

---

For the retrieval and compilation of information on rare, threatened and endangered species and sensitive habitats for the proposed Equitrans Expansion Project in Wetzel County, WV (Docket No. PF15-22).

**AMOUNT DUE: $75.00**

Make check payable to WV Division of Natural Resources. **Please reference the invoice number on your check.** Mail to the above address and to the attention of Ms. Fordyce.

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Pennsylvania Fish & Boat Commission
established 1866

**Division of Environmental Services**
Natural Gas Section
450 Robinson Lane
Bellefonte, PA 16823

May 19, 2015

**IN REPLY REFER TO**
SIR# 44257

Equitrans
Stephanie Frazier
625 Liberty Avenue
Pittsburgh, Pennsylvania 15222

**RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species**
**PNDI Search No.**
**Equitrans Expansion Project.**
**GREENE County: - WASHINGTON County:**

Dear Stephanie Frazier:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

**Freshwater Mussels**

Rare or protected freshwater mussel species are known from the vicinity of the project area in South Fork Tenmile Creek, Greene County:

Round Pigtoe (*Pleurobema sintoxia*, Rare)
Three-ridge (*Amblema plicata*, Rare)
Wabash Pigtoe (*Fusconaia flava*, Rare)

Freshwater mussels are the most imperiled taxonomic group in North America. Nearly 20% of the species historically known to occur in the Commonwealth are now extirpated (locally extinct). Additionally 60% of Pennsylvania's remaining species are of conservation concern. We are concerned about direct and indirect (i.e., runoff) effects that the proposed project may have on the species of concern. The freshwater mussel species known from the project area are especially vulnerable to physical (dredging, rip-rap, etc.) and chemical (pH, dissolved oxygen, temperature, heavy metals and organic

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contaminants) changes to their aquatic environment. Therefore, **we recommend using directional boring** rather than open cutting for the South Fork Tenmile Creek crossing. Open cutting will most likely adversely impact the species of concern. Work should be conducted from the bank (e.g., no in-stream disturbance). Likewise, no erosion or sediment should be allowed to enter into the river (e.g., strict erosion and sedimentation control measures need to be employed).

**Provided that directional boring methodology is used, in-stream work on South Fork Tenmile Creek is avoided, strict E&S control measures are maintained, and best management practices are employed,** we do not foresee any significant adverse impacts from the proposed activity to the mussel species of special concern or any other rare or protected species under Pennsylvania Fish & Boat Commission jurisdiction **provided that the applicant implement the following contingencies to prevent impacts to water quality from drilling/boring operations:**

• Have a designated environmental inspector on site for the duration of the entire crossing operation

• Stop the bore/drill immediately if anyone on site observes an Inadvertent Return.

• Have a Vac Truck on site or on call (within three hours) to begin clean-up of the release in the stream channel to prevent downstream migration of drilling fluids

• Notify PFBC Bureau of Law Enforcement Regional Office within 24 hours http://fishandboat.com/dir_regions.htm (NC 814-359-5250; NE 570-477-5717; NW 814-337-0444; SW 814-445-8974)

Additionally, any release of sediment to the stream should be reason to initiate contact with the PFBC Bureau of Law Enforcement to address these issues. Any unauthorized disturbance, unpermitted discharge, or release of sediment(s) that is determined to be a pollution event (generally described http://www.fish.state.pa.us/fishpub/summary/reporting.html) per the Pennsylvania Fish and Boat Code will be subject to the appropriate legal enforcement action.

**If, however, the work will necessitate any direct (e.g. equipment intrusion) or indirect impacts (e.g. runoff) to South Fork Tenmile Creek, then we request that a mussel survey and mussel relocation be conducted.** The mussel survey would examine the proposed right-of-way (ROW) (direct impact area) as well as the indirect area. All live mussels encountered within the area of direct impact would be collected and relocated out of harm's way if the stream crossing is proposed to be open-cut. The mussel survey can be conducted by the PFBC or a qualified malacologist. Mussels are more readily detectible near the substrate surface during appropriate seasons (May 1 to October 15) and water temperatures (generally above 55 °F). In addition, a cursory mussel survey will require appropriate stream conditions, including normal flow and relatively clear water.

If you decide that you would like the PFBC to conduct the mussel survey, please schedule a field meeting with us so that we can complete an evaluation of mussel habitat quality as well as a mussel survey to determine presence/absence, location, and abundance of mussel species within or adjacent to the proposed project area.

Enclosed is a list of qualified malacologists and a PFBC approved mussel survey protocol if you prefer to arrange for a non-PFBC mussel survey. Prior to conducting a survey, the qualified malacologist should submit a proposed survey and relocation plan to this office. Upon completion of the mussel survey and relocation, please send a copy of the final report to this office for further evaluation. We look forward to receiving this information.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not

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necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

**If you have any questions regarding this review, please contact Gary Smith at 814-279-3080 and refer to the SIR # 44257.** Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

Heather A. Smiles, Chief
Natural Gas Section

HAS/GAS/dn

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COMMONWEALTH OF PENNSYLVANIA
**Pennsylvania Game Commission**
**2001 ELMERTON AVENUE**
**HARRISBURG, PA 17110-9797**

*"To manage all wild birds, mammals and their habitats for current and future generations."*

**Division of Environmental Planning and Habitat Protection**
**717-783-5957**

**ADMINISTRATIVE BUREAUS:**

ADMINISTRATION.....717-787-5670
HUMAN RESOURCES.....717-787-7836
FISCAL MANAGEMENT.....717-787-7314
CONTRACTS AND PROCUREMENT.....717-787-6594
LICENSING.....717-787-2084
OFFICE SERVICES.....717-787-2116
WILDLIFE MANAGEMENT.....717-787-5529
INFORMATION & EDUCATION.....717-787-6286
WILDLIFE PROTECTION.....717-783-6526
WILDLIFE HABITAT MANAGEMENT.....717-787-6818
REAL ESTATE DIVISION.....717-787-6568
AUTOMATED TECHNOLOGY SERVICES.....717-787-4076

www.pgc.state.pa.us

June 30, 2015 **PGC ID Number: 201505050202 Update**

Dale Sparks
Environmental Solutions & Innocations, Inc.
4525 Este Ave.
Cincinnati, OH 45232
dsparks@envsi.com

Re: EQT – Equitrans Expansion Project (*Update*)
Large Project PNDI Review
Greene, Allegheny & Washington Counties, PA

Dear Mr. Sparks,

Thank you for submitting your Pennsylvania Natural Diversity Inventory (PNDI) Large Project Environmental Review request. The Pennsylvania Game Commission (PGC) screened this project for potential impacts to species and resources of concern under PGC responsibility, which includes birds and mammals only.

**No Impact Anticipated – PNDI Species**

PNDI records indicate species or resources of concern are located in the vicinity of the project. However, based on the information you submitted concerning the nature of the project, the immediate location, and our detailed resource information, the PGC has determined that no impact is likely. Therefore, no further PNDI coordination with the PGC will be necessary for this project at this time.

This response represents the most up-to-date summary of the PNDI data files and is valid for two (2) years from the date of this letter. An absence of recorded information does not necessarily imply actual conditions on site. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered

Should the proposed work continue beyond the period covered by this letter, please resubmit the project to the PGC at the following address as an "Update" (including an updated PNDI receipt, project narrative and accurate map):

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning & Habitat Protection

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2001 Elmerton Avenue
Harrisburg, PA 17110-9797

If the proposed work has not changed and no additional information concerning listed species is found, the project will be cleared for PNDI requirements by the PGC for an additional 2 years.

This finding applies to impacts to birds and mammals only. To complete your review of state and federally-listed threatened and endangered species and species of special concern, please be sure that the U.S. Fish and Wildlife Service, the PA Department of Conservation and Natural Resources, and/or the PA Fish and Boat Commission have been contacted regarding this project as directed by the online PNDI ER Tool found at www.naturalheritage.state.pa.us.

Please be sure to include the above-referenced PGC ID Number on any future correspondence with the PGC regarding this project.

Sincerely,

John Taucher
Division of Environmental Planning & Habitat Protection
Bureau of Wildlife Habitat Management
Phone: 717-787-4250, Extension 3632
Fax: 717-787-6957
E-mail:jotaucher@pa.gov

A PNHP Partner

Pennsylvania Natural Heritage Program

JWT/jwt

cc: H:\OIL&GAS_PNDI_Reviews\Southwest Region

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pennsylvania
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

BUREAU OF FORESTRY

July 22, 2015 **PNDI Number: 22453**

**Dale Sparks**
**Environmental Solutions & Innovations, Inc.**
4525 Este Avenue
Cincinnati, OH 45232
Email: dsparks@envsi.com (hard copy will not follow)

**Re: Equitrans Expansion Project**
**Allegheny, Washington, and Greene Counties, PA**

Dear Mr. Sparks,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Large Project Number 22453 for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

**Potential Impact Anticipated**

PNDI records indicate species or resources under DCNR's jurisdiction are located in the project vicinity. Based on a detailed PNDI review, DCNR determined potential impacts to the following threatened or endangered species or species of special concern.

**Segment H318**

| Scientific Name | Common Name | PA Current Status | PA Proposed Status |
|---|---|---|---|
| *Baptisia australis* | Blue False-indigo | Not Listed | Threatened |
| *Erythronium albidum* | White Trout-lily | Not Listed | Rare |
| *Iodanthus pinnatifidus* | Purple Rocket | Endangered | Endangered |
| *Scutellaria saxatilis* | Rock Skullcap | Undetermined | Endangered |
| *Trillium nivale* | Snow Trillium | Rare | Rare |

**Segments H316/H158-M80**

| Scientific Name | Common Name | PA Current Status | PA Proposed Status |
|---|---|---|---|
| *Erythronium albidum* | White Trout-lily | Not Listed | Rare |
| *Scutellaria saxatilis* | Rock Skullcap | Undetermined | Endangered |
| *Tipularia discolor* | Cranefly Orchid | Rare | Rare |
| *Trillium nivale* | Snow Trillium | Rare | Rare |

**Survey Request**
DCNR requests a survey for the following species:

- ***Baptisia australis* (Blue False-indigo):** locally documented on a rich wooded riverine slope; prefers open woods, stream banks, and sandy floodplains; flowers May – June
- ***Erythronium albidum* (White Trout-lily):** locally documented in floodplain forest and on rich wooded slopes along rivers and creeks; prefers moist woods and rich slopes, especially on limestone; flowers April – May

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- ***Iodanthus pinnatifidus* (Purple Rocket):** locally documented on a rich wooded riverine slope; prefers moist alluvial woods and wooded slopes; flowers May – June
- ***Scutellaria saxatilis* (Rock Skullcap):** locally documented in sycamore scrub floodplain; prefers low woods, rocky stream banks, and roadsides; flowers July – August
- ***Tipularia discolor* (Cranefly Orchid):** locally documented in red oak mixed hardwood forest; prefers deciduous forest and stream banks; leaf visible fall, winter, and spring
- ***Trillium nivale* (Snow Trillium):** locally documented on rich stream valley wooded slopes; prefers stream valleys and wooded slopes, especially on limestone; flowers late March – April

✓ A survey for the above species should be conducted by a qualified botanist *at the appropriate time of year and then submitted to our office for review*. **Your botanist should carefully review the new DCNR Botanical Survey Protocols available at http://www.gis.dcnr.state.pa.us/hgis-er/Login.aspx. These protocols are recommended to ensure that the all necessary information is collected and that survey reports are prepared properly. It is the expectation of DCNR that these protocols will be followed when conducting surveys for species under our jurisdiction.**

✓ Your botanist should *fill out the field survey form while performing their survey:* http://www.gis.dcnr.state.pa.us/hgis-er/hgis/2012%20DCNR%20Field%20Survey%20Form.pdf. Contact our office prior to the survey for detailed information about the species, or for a list of qualified surveyors.

✓ Any target and non-target state-listed species found during the site visit should be reported to our office. Mitigation measures and monitoring may be requested if species or communities of special concern are found on or adjacent to site.

✓ If the land type(s) does not exist on site, a survey may not be necessary; please submit a habitat assessment report which describes the current land cover, habitat types, and species found on site.

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative and accurate map). As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review.

**Should you have any questions or concerns, please contact Jason Ryndock, Ecological Information Specialist, by phone (717-705-2822) or via email (c-jryndock@pa.gov).**

Sincerely

Greg Podniesinski, Section Chief
Natural Heritage Section

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
110 Radnor Road, Suite 101
State College, Pennsylvania 16801-4850

July 27, 2015

Stephanie Frazier
Equitrans, L.P.
625 Liberty Avenue
Suite 1700
Pittsburgh, PA 15222

RE: USFWS Project #2015-0578

Dear Ms. Frazier:

Thank you for your letter of April 27, 2015, regarding information about federally listed and proposed endangered and threatened species within the area affected by Equitrans, L.P., proposed Equitrans Expansion project located in Allegheny, Washington, and Greene counties, Pennsylvania, and Wetzel County, West Virginia. The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species and the Migratory Bird Treaty Act (MBTA, 16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755, as amended) to ensure the protection of migratory bird species.

The proposed project consists of the replacement and expansion of compressor stations, installation of pipelines, and a new interconnect to deliver natural gas volumes into Mountain Valley Pipeline, LLC's proposed pipeline in West Virginia.

Federally Listed Species

The proposed project is located within the range of the Indiana bat (*Myotis sodalis*), a species that is federally listed as endangered and within the range of the federally threatened northern long-eared bat (*Myotis septentrionalis*). On May 4, 2015, the northern long-eared bat listing became effective; more information on the new listing of this species can be found at: http://www.fws.gov/midwest/endangered/mammals/nlba/index.html

Land-clearing associated with the project may result in the death or injury of roosting Indiana bats if tree-cutting is conducted during the time of year when bats may be present (*i.e.*, April 1 to September 30). Due to the potential for these bat species to occur within the project area, the Service recommends that measures be implemented to avoid killing or injuring them. This can be accomplished by carrying out tree-cutting activities from October 1 to March 31, during which time bats are hibernating or concentrated near their hibernacula. This seasonal restriction on tree cutting applies to trees that are greater than or equal to 3 inches in diameter at breast

height (d.b.h). Where possible, retain shagbark hickory trees, dead and dying trees, and large diameter trees (greater than 12 inches d.b.h.) to serve as roost trees for bats. Where possible, also retain forested riparian corridors and forested wetlands.

If you are unable to adopt the tree-cutting restrictions detailed above, a bat survey of the project area should be conducted between May 15 and August 15 by a qualified, Service-approved biologist (see enclosed list) using the 2015 RANGE-WIDE INDIANA BAT SUMMER SURVEY GUIDELINES April 2015, which can be found at the following link: http://www.fws.gov/northeast/pafo/surveys.html.
Survey results should be submitted to the Service for review and concurrence.

Please advise this office as to whether you intend to conduct bat surveys, or assume bats are present and implement a seasonal restriction on tree-cutting.

Assessment of Risks to Migratory Birds

The Service is the principal Federal agency charged with protecting and enhancing populations and habitat of migratory bird species. The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. While the MBTA has no provision for authorizing incidental take, the Service recognizes that some birds may be killed even if all reasonable measures to avoid take are implemented.

The potential exists for avian mortality from habitat destruction and alteration within the project boundaries. Site-specific factors that should be considered in project siting to avoid and minimize the risk to birds include avian abundance; the quality, quantity and type of habitat; geographic location; type and extent of bird use (*e.g.* breeding, foraging, migrating, etc.); and landscape features. Please review the enclosed information for general recommendations for avoiding and minimizing impacts to migratory birds within and around the project area. Please be aware that since these are general guidelines, some of them may not be applicable to the current project design or they may have already been included in the project design.

*To avoid potential delays in reviewing your project, please use the above-referenced USFWS project tracking number in any future correspondence regarding this project.*

If you have any questions regarding this matter, please contact Pamela Shellenberger of my staff at 814-234-4090.

Sincerely,

Lora L. Zimmerman
Field Office Supervisor

Enclosures
cc: USFWS – West Virginia Field Office

## U.S. FISH AND WILDLIFE SERVICE
## Pennsylvania Field Office

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## QUALIFIED BAT SURVEYORS

The following list includes persons known by the U.S. Fish and Wildlife Service to have the skills and experience to conduct surveys for Indiana bats. Any individuals handling or conducting surveys for state or federally listed bats must first obtain a permit from the Pennsylvania Game Commission. All state and federally listed bat captures must be reported in writing to the Service and Commission within 72 hours. Bat surveys will be overseen by a qualified surveyor, who will be present in the field at all times during the investigation. Summer surveys should be carried out in accordance with the Service's most recent summer survey guidance. If any state or federally listed bats are captured during summer surveys, a surveyor with bat telemetry experience should be prepared to place a transmitter on the bat(s) to identify roost trees and foraging habitat. Various sampling and survey techniques, including mist-netting, radio-telemetry, harp-trapping, acoustic surveys and hibernacula surveys, are used to detect and monitor bats. Some individuals on this list may not be qualified to conduct all types of sampling.

This information is not to be construed as an endorsement of individuals or firms by the Service or any of its employees. Persons not on this list, but who have documented experience in conducting scientific studies of, or successful searches for, Pennsylvania State or federally listed bats may submit their qualifications to the Service for review. The submission must include documentation that the requestor has experience successfully locating and identifying state or federally listed bats in their hibernacula and their summer habitat. Additions to and deletions from this list are at the sole discretion of the Service. This list is subject to revision at any time without prior notice.

---

Chris Sanders, Matt Hopkins, Chelsea Rider, Keith Christenson, Amanda Brumbaugh, Jason Collins, Elise Merrill, Aaron Covalt, & Sarah Dewees.
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dancox79@gmail.com

Bradley Steffen
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## Adaptive Management Practices for Conserving Migratory Birds

The Fish and Wildlife Service is the principal Federal agency charged with protecting and enhancing populations and habitat of migratory bird species. The Migratory Bird Treaty Act (MBTA, 16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755, as amended) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. While the MBTA has no provision for authorizing incidental take, the Service recognizes that some birds may be killed even if all reasonable measures to avoid take are implemented. Unless the take is authorized, it is not possible to absolve individuals, companies or agencies from liability (even if they implement avian mortality avoidance or similar conservation measures). However, the Office of Law Enforcement focuses on those individuals, companies, or agencies that take migratory birds with disregard for their actions and the law.

The potential exists for avian mortality from habitat destruction and alteration within the project boundaries. Site-specific factors that should be considered in project siting to avoid and minimize the risk to birds include avian abundance; the quality, quantity and type of habitat; geographic location; type and extent of bird use (*e.g.* breeding, foraging, migrating, etc.); and landscape features.

We offer the following recommendations to avoid and minimize impacts to migratory birds within and around the project area:

1. Where disturbance is necessary, clear natural or semi-natural habitats (*e.g.*, forests, woodlots, reverting fields, shrubby areas) and perform maintenance activities (*e.g.*, mowing) between September 1 and March 31, which is outside the nesting season for most native bird species. Without undertaking specific analysis of breeding species and their respective nesting seasons on the project site, implementation of this seasonal restriction will avoid take of most breeding birds, their nests, and their young (*i.e.*, eggs, hatchlings, fledglings).

2. Minimize land and vegetation disturbance during project design and construction. To reduce habitat fragmentation, co-locate roads, fences, lay down areas, staging areas, and other infrastructure in or immediately adjacent to already-disturbed areas (*e.g.*, existing roads, pipelines, agricultural fields) and cluster development features (*e.g.*, buildings, roads) as opposed to distributing them throughout land parcels. Where this is not possible, minimize roads, fences, and other infrastructure.

3. Avoid permanent habitat alterations in areas where birds are highly concentrated. Examples of high concentration areas for birds are wetlands, State or Federal refuges, Audubon Important Bird Areas, private duck clubs, staging areas, rookeries, leks, roosts, and riparian areas. Avoid establishing sizable structures along known bird migration pathways or known daily movement flyways (*e.g.*, between roosting and feeding areas).

4. To conserve area-sensitive species, avoid fragmenting large, contiguous tracts of wildlife habitat, especially if habitat cannot be fully restored after construction. Maintain

contiguous habitat corridors to facilitate wildlife dispersal. Where practicable, concentrate construction activities, infrastructure, and man-made structures (*e.g.*, buildings, cell towers, roads, parking lots) on lands already altered or cultivated, and away from areas of intact and healthy native habitats. If not feasible, select fragmented or degraded habitats over relatively intact areas.

5. Develop a habitat restoration plan for the proposed site that avoids or minimizes negative impacts to birds, and that creates functional habitat for a variety of bird species. Use only plant species that are native to the local area for revegetation of the project area.

If you have any questions regarding these measures, please contact Lora Zimmerman of the Pennsylvania Field Office located in State College, PA at 814-234-4090.

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**DIVISION OF NATURAL RESOURCES**
**324 4th Avenue, Room 328**
**South Charleston, WV 25303-1228**
**Telephone (304) 558-2754**
**Fax (304) 558-2768**
**TDD (304) 558-1439**

**Earl Ray Tomblin**
***Governor***

**Robert A. Fala**
***Director***

November 18, 2015

MEMORANDUM TO: Paul Friedman, Project Manager

FROM: Clifford L. Brown

SUBJECT: Comments on Resource Reports 2 - Water Use and Quality and 3 - Fisheries, Vegetation and Wildlife for the planned Equitrans Expansion Project, Docket No. CP16-13-000

The West Virginia Division of Natural Resources Wildlife Resources Section has completed review of the Resource Reports 2 and 3 for the planned Equitrans Expansion Project, FERC Docket No. CP16-13-000. The following comments are provided for your consideration.

- The confluence of the receiving stream, North Fork Fishing Creek, is within 300 feet of the construction area and is classed as a High Quality Stream with the potential for populations of State protected mussels. Special attention to sediment and erosion control practices will limit potential impacts to downstream aquatic life.

- Stream restoration in North Fork Fishing Creek was conducted under a Consent Order from the West Virginia Department of Environmental Protection. The restoration area is also downstream of the construction area. Special attention to sediment and erosion control practices will limit potential impacts to restored stream sections.

- Spawning season dates for West Virginia State 401 Water Quality Certification Conditions for Nationwide Permits are April-June for warm water streams and September 15 - March 31 for trout waters and adjacent tributaries. If stream work cannot be avoided during these dates, for the respective stream designation, WRS requests that the impacts be evaluated to aid in our determination to grant or deny a spawning season waiver.

If you have questions, please contact Mr. Clifford L. Brown at (304) 637-0245, or by email at Clifford.L.Brown@wv.gov .

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Pennsylvania Fish & Boat Commission
established 1866

**Division of Environmental Services**
Natural Gas Section
450 Robinson Lane
Bellefonte, PA 16823

January 5, 2016

**IN REPLY REFER TO**
SIR# 44257

Environmental Solutions & Innovations, Inc.
John Spaeth
4525 Este Avenue
Cincinnati, Ohio 45232

**RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species**
**PNDI Search No.**
**Equitrans Expansion Project.**
**GREENE County: - WASHINGTON County:**

Dear John Spaeth:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

On October 11, 2015, you conducted a mussel presence/absence survey at the proposed pipeline crossing of South Fork Tenmile Creek (39.90999 -80.09235). According to the resulting report, timed searches yielded four live individuals of three species: two Fragile Papershell (Leptodea fragilis) in the downstream indirect effects area, one Giant Floater (*Pyganodon grandis*) in the upstream indirect effects area, and one Fluted-shell (*Lasmigona costata*) in the direct effects area. I concur with the results of this evaluation. The project proposes to traverse South Fork Tenmile Creek via HDD techniques; therefore, I do not foresee the proposed project resulting in adverse impacts to the mussel species of special concern. If proposed crossing method on the South Fork Tenmile Creek changes, you will need to contact this office for further consultation and we will recommend moving mussels out of the affected areas.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated

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with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

**If you have any questions regarding this review, please contact Gary Smith at 814-279-3080 and refer to the SIR # 44257.** Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

Heather A. Smiles, Chief
Natural Gas Section

HAS/GAS/dn

TETRA TECH

July 8, 2015

Serena Bellew
Director, Bureau for Historic Preservation
State Historic Preservation Office
Pennsylvania Historical and Museum Commission
400 North Street
Commonwealth Keystone Building, 2nd Floor
Harrisburg, PA 17120-0093

Subject: Initiation of Section 106 Consultation, Proposed Equitrans Expansion Project (FERC Docket No. PF15-22-000), Greene, Allegheny, and Washington Counties, Pennsylvania, and Wetzel County, West Virginia

Dear Ms. Bellew:

On behalf of Equitrans, LP, of Pittsburgh, Pennsylvania, Tetra Tech, Inc., hereby submits the accompanying Pennsylvania Historical and Museum Commission (PHMC) form, "Request to Initiate SHPO Consultation on State and Federal Undertakings," with attachments, concerning construction of new natural gas transmission pipelines and associated facilities in southwestern Pennsylvania, as well as in the neighboring West Virginia panhandle. The Pennsylvania portion of the proposed Equitrans Expansion Project (Project) entails replacement of an existing compressor station in Franklin Township, Greene County, with a new facility and construction of several new pipeline segments that have a current total length of 7.30 miles. The Project requires a license from the Federal Energy Regulatory Commission (FERC) and is subject to consultation under Section 106 of the National Historic Preservation Act of 1966, as amended.

Based upon Project activities and locations and information available from PHMC's online Cultural Resources Geographic Information System (CRGIS), Tetra Tech anticipates that identification surveys for archeological and above-ground resources may be required as part of the Section 106 consultation process. Such surveys would be conducted in accordance with PHMC's *Guidelines for Archaeological Investigations in Pennsylvania* (2008) and *Guidelines for Architectural Investigations in Pennsylvania* (2014). Tetra Tech's proposed work plan and an unanticipated discoveries plan are included with this submittal.

Tetra Tech invites your comments on the Project, including guidance concerning the need for cultural resources surveys.

Sincerely yours,

Christopher L. Borstel, Ph.D., RPA
Cultural Resources Specialist

Tetra Tech, Inc.
1000 The American Road, Morris Plains, NJ 07950
Tel 973.630.8000 Fax 973.630.8025 www.tetratech.com

Pennsylvania Historical & Museum Commission

# PROJECT REVIEW FORM

## Request to Initiate SHPO Consultation on State and Federal Undertakings

| SHPO USE ONLY |
|---|
| DATE RECEIVED: |
| ER NUMBER: |

REV: 5/2012

## SECTION A: GENERAL PROJECT INFORMATION

**Is this a new submittal?** (●) YES ( ) NO OR ( ) **This is additional information for ER Number:**

| | | | |
|---|---|---|---|
| Project Name | Equitrans Expansion Project | County | Multiple |
| Project Address | Jefferson, Morgan, and Franklin Twps, Greene Co.; Forward Twp., Allegheny Co., and Union Twp., Washington Co. | | |
| City/State/ Zip | See "Project Address" | Municipality | See "Project Address" |

## SECTION B: PRIMARY CONTACT INFORMATION

| | | | |
|---|---|---|---|
| Name | Christopher L. Borstel, Ph.D., RPA | Phone | (973) 630-8358 |
| Company | Tetra Tech, Inc. | Fax | (973) 630-8025 |
| Street/P.O. Box | 1000 The American Road | Email | chris.borstel@tetratech.com |
| City/State/Zip | Morris Plains NJ 07950 | | |

## SECTION C: PROJECT DESCRIPTION

**This project is located on: (check all that apply)** ☐ Federal property ☐ State property ☐ Municipal property ☑ Private property

**List all Federal and State agencies and programs (funding, permits, licenses) involved in this project**

| Agency Type | Agency/Program/Permit Name | Project/Permit/Tracking Number (if applicable) |
|---|---|---|
| Federal | Federal Regulatory Energy Commission | Docket No. PF15-22-000 |
| | | |
| | | |

**Proposed Work – Attach project description, scope of work, site plans, and/or drawings**

Project includes (check all that apply): ☑ Construction ☑ Demolition ☐ Rehabilitation ☐ Disposition

Total acres of project area: TBD Total acres of earth disturbance: TBD

Are there any buildings or structures within the project area? (●) Yes ( ) No Approximate age: ca. 1844-1980

| This project involves properties listed in or eligible for listing in the National Register of Historic Places, or designated as historic by a local government | Yes | No | Unsure | Name of historic property or historic districts | Monongahela River Navigation System (NRE); P&LE RR Corridor (NRE) |
|---|---|---|---|---|---|
| | (●) | ( ) | ( ) | | |

**Please print and mail completed form and all attachments to:**

**PHMC**
**State Historic Preservation Office**
**400 North St.**
**Commonwealth Keystone Building, 2nd Floor**
**Harrisburg, PA 17120-0093**

**Attachments – Please include the following information with this form**

- ☑ **Map** – 7.5' USGS quad showing project boundary and Area of Potential Effect
- ☑ **Description/Scope** – Describe the project, including any ground disturbance and previous land use
- ☑ **Site Plans/Drawings** – Indicate the location and age, if known, of all buildings in the project area
- ☑ **Photographs** – Attach prints or digital photographs showing the project site, including images of all buildings and structures keyed to a site plan

**SHPO DETERMINATION (SHPO USE ONLY)** SHPO REVIEWER:

- ☐ There are **NO HISTORIC PROPERTIES** in the Area of Potential Effect
- ☐ The project will have **NO EFFECT** on historic properties
- ☐ The project will have **NO ADVERSE EFFECTS** on historic properties:
- ☐ The project will have **NO ADVERSE EFFECTS WITH CONDITIONS** (see attached)
- ☐ **SHPO REQUESTS ADDITIONAL INFORMATION** (see attached)

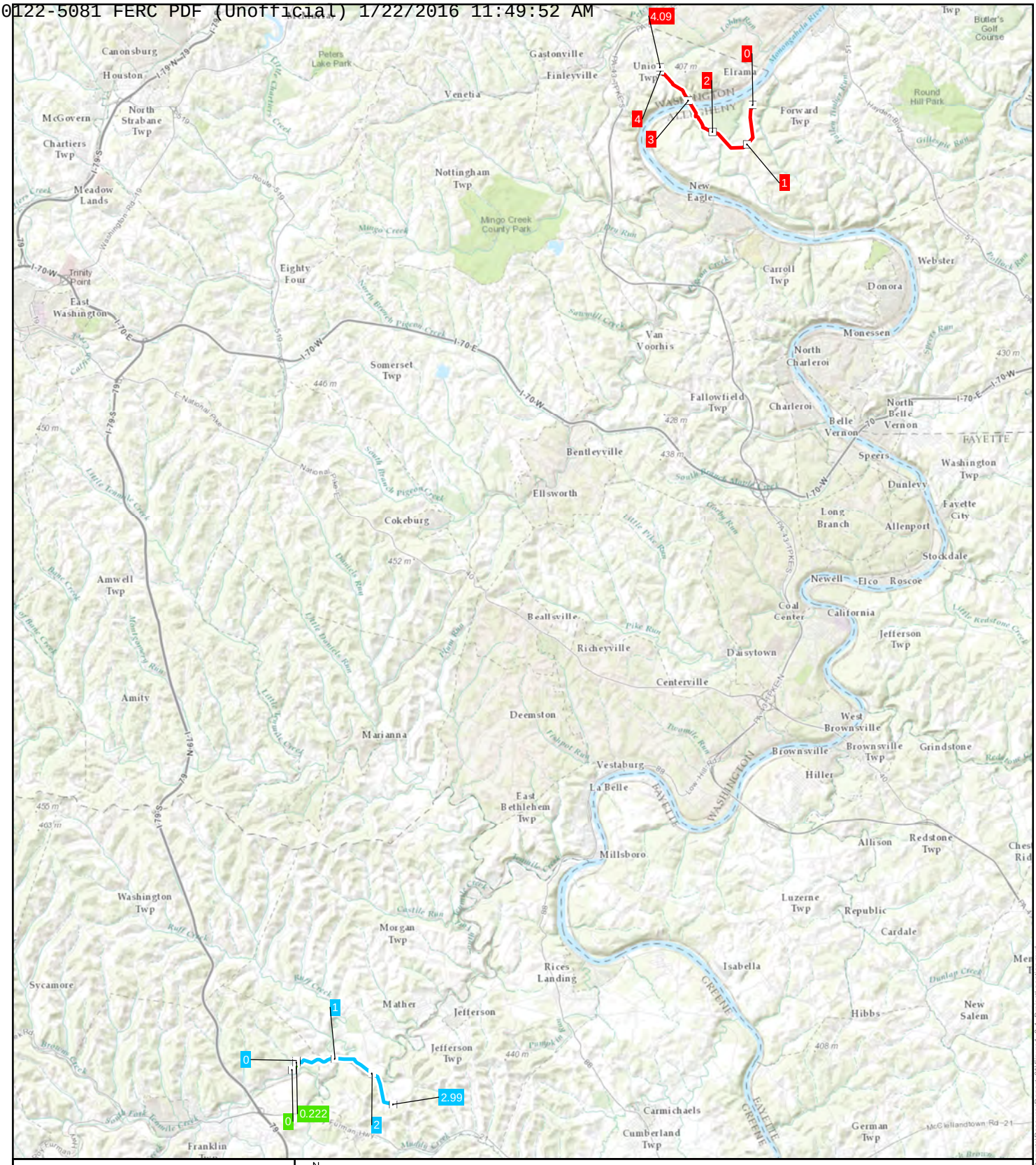
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Equitrans Expansion Project (FERC Docket No. PF15-22-000)

Jefferson, Morgan, and Franklin townships, Greene County, Pennsylvania
Forward Township, Allegheny County, Pennsylvania
Union Township, Washington County, Pennsylvania

**ATTACHMENT A: PROJECT MAPS**

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**Equitrans Expansion Project**

N

NAD 1983 UTM 17N

1:200,000

0 2.5 5 Miles

EQUITRANS

**Figure 1.2-1**
**Project Location**

**May 2015**

## Legend

- Milepost
- H-318
- H-158/M80
- H-316

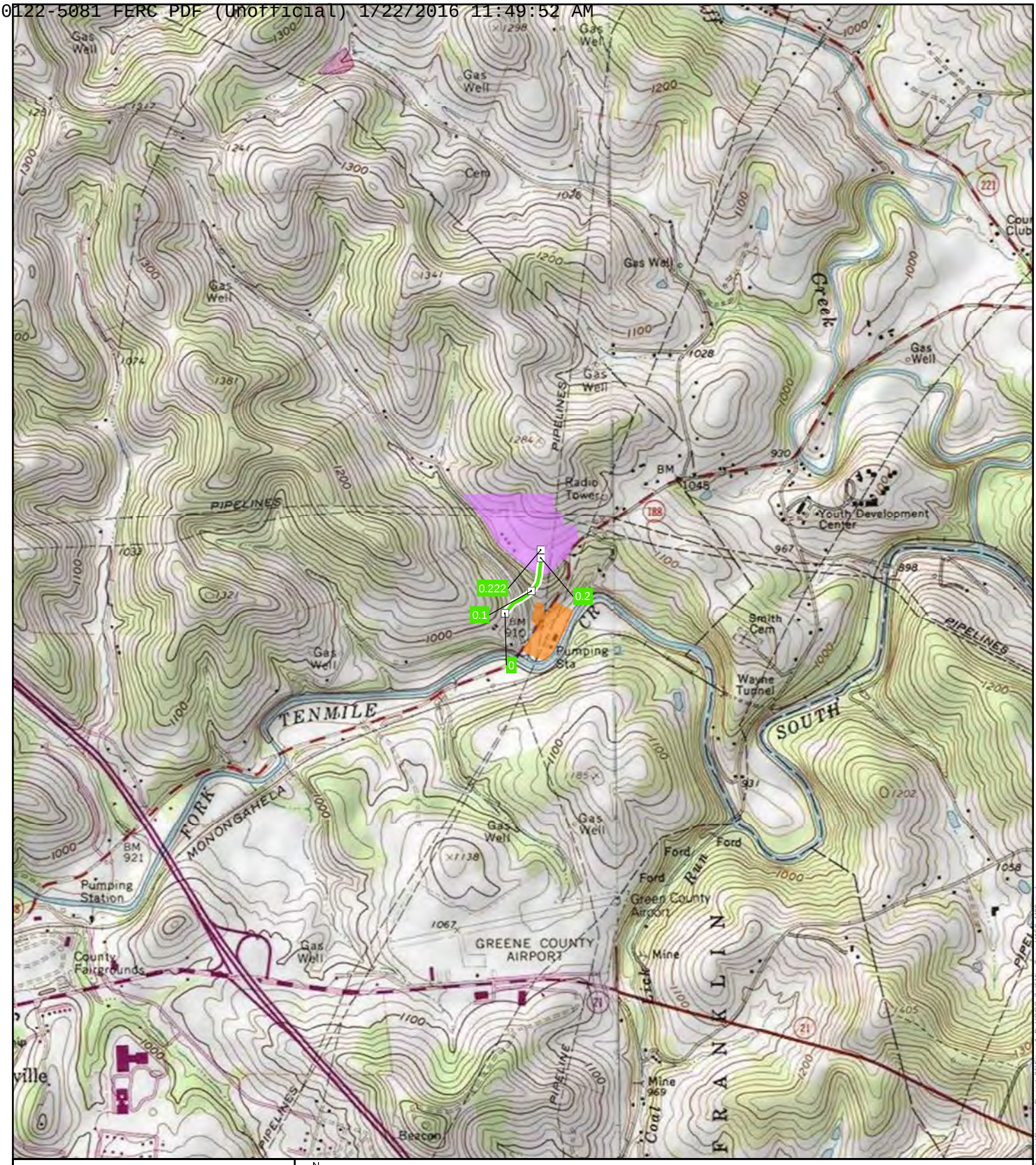



Data Sources: ESRI Streaming Data (2014)

Project Data Date: 5/5/2015

Document Path: P:\EQT-Equitrans\Equitrans_to_MVP\GIS\Spatial\MXD\ResourceReports\ResourceReport_01\Figure1_2-1_ProjectLocation.mxd

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**Equitrans Expansion Project**

N

NAD 1983 UTM 17N 1:24,000

0 0.5 1 Miles

EQUITRANS

**Appendix 1-B**
**USGS 7.5 Minute**
**Topographic Maps**

**Page 1 of 3**

**May 2015**

## Legend

- Milepost
- H-158/M80
- Existing Pratt Compressor Station Site
- Proposed Redhook Comperssor Station Site

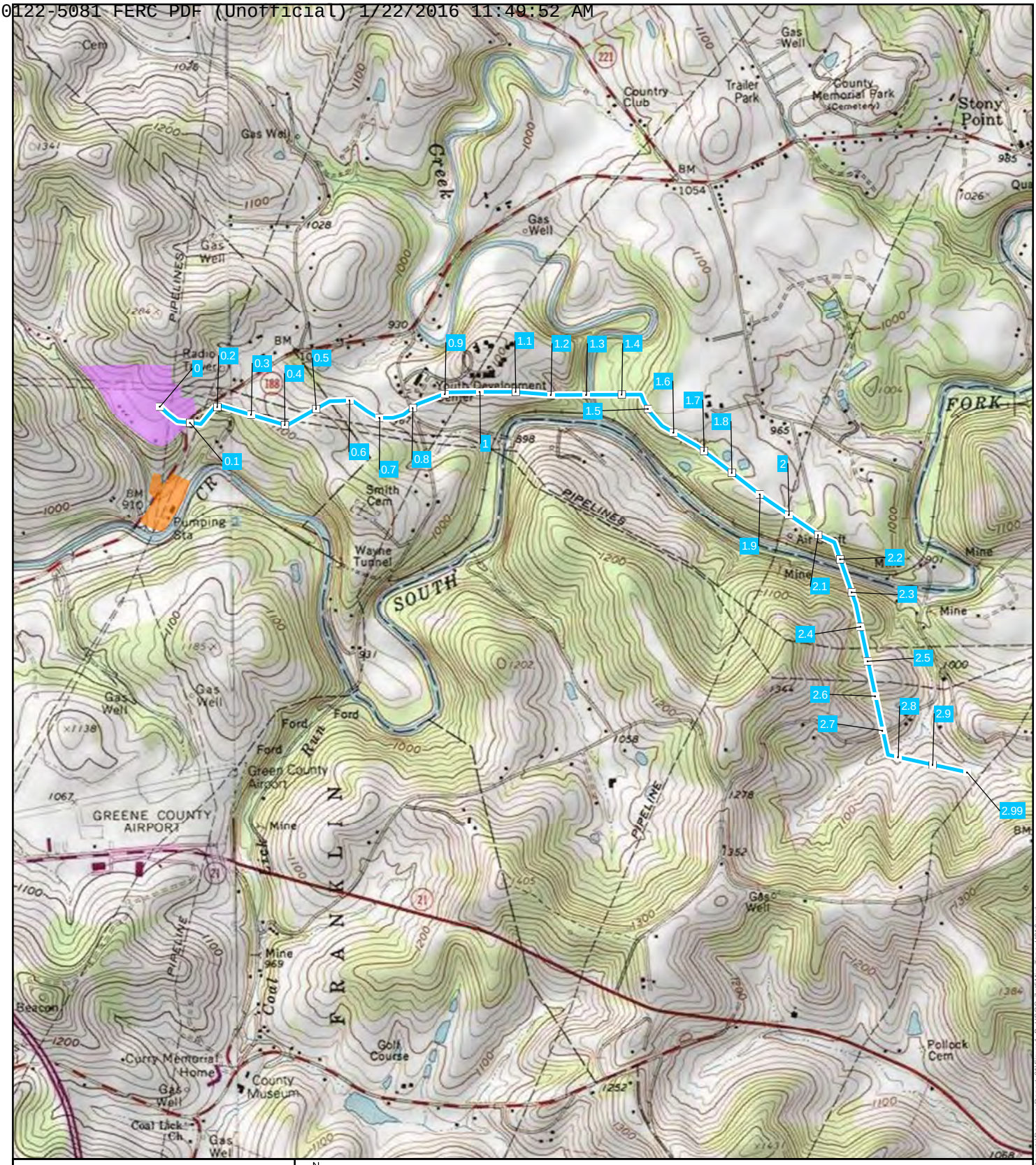


Data Sources: ESRI Streaming Data (2014)

Project Data Dates:
H-158/M80: 5/5/2015
Pratt Compressor Station, Redhook Compressor Station: 4/15/2015

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**Equitrans Expansion Project**

N

NAD 1983 UTM 17N 1:24,000

0 0.5 1 Miles

EQUITRANS

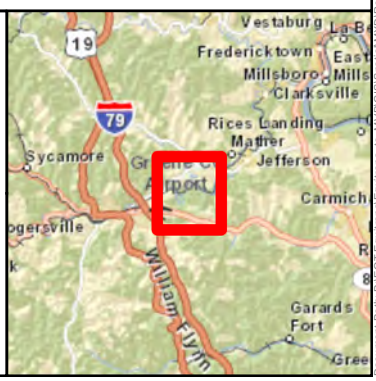
**Appendix 1-B**
**USGS 7.5 Minute**
**Topographic Maps**

**Page 2 of 3**

**May 2015**

## Legend

- Milepost
- H-316
- Existing Pratt Compressor Station Site
- Proposed Redhook Comperssor Station Site

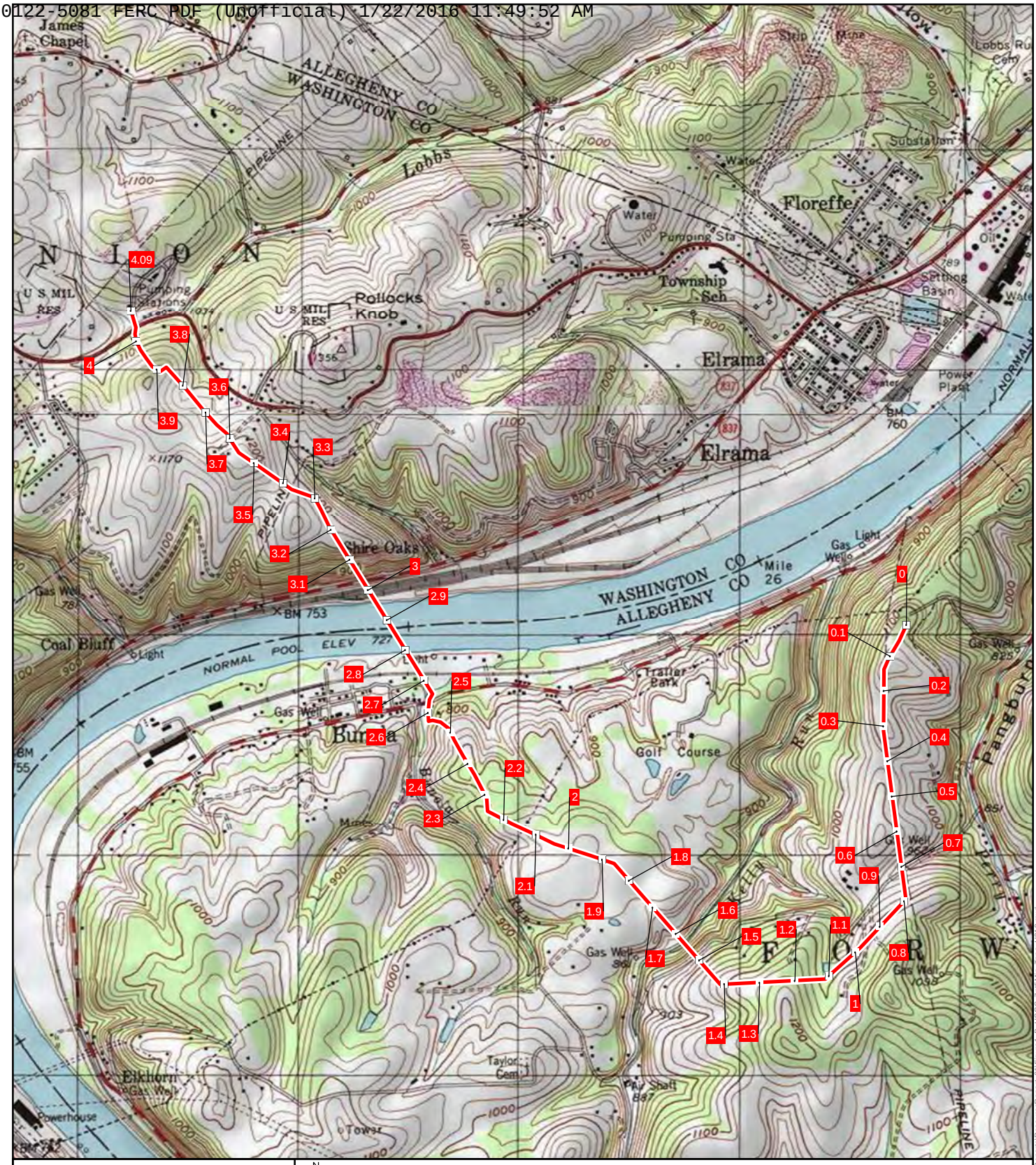



Data Sources: ESRI Streaming Data (2014)

Project Data Dates:
H-316: 5/5/2015
Pratt Compressor Station, Redhook Compressor Station: 4/15/2015

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**Equitrans Expansion Project**

N

NAD 1983 UTM 17N 1:24,000

0 0.5 1 Miles

EQUITRANS

**Appendix 1-B**
**USGS 7.5 Minute**
**Topographic Maps**

**Page 3 of 3**

**May 2015**

## Legend

- Milepost
- H-318




Data Sources: ESRI Streaming Data (2014)

Project Data Date: 5/5/2015

Document Path: P:\EQT-Equitrans\Equitrans_to_MVP\GIS\Spatial\MXD\ResourceReports\ResourceReport_01\Figure1_B_USGS_7p5Min_Topo_H318.mxd

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Equitrans Expansion Project (FERC Docket No. PF15-22-000)

Jefferson, Morgan, and Franklin townships, Greene County, Pennsylvania
Forward Township, Allegheny County, Pennsylvania
Union Township, Washington County, Pennsylvania

# ATTACHMENT B: PROJECT DESCRIPTION

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**Equitrans Expansion Project (FERC Docket No. PF15-22-000)**

Jefferson, Morgan, and Franklin townships, Greene County, Pennsylvania
Forward Township, Allegheny County, Pennsylvania
Union Township, Washington County, Pennsylvania
Wetzel County, West Virginia

## PROJECT DESCRIPTION

Equitrans, LP, of Pittsburgh, Pennsylvania, proposes to make several improvements to its existing natural gas pipeline system in southwestern Pennsylvania and northern West Virginia to increase system capacity and improve its ability to serve customers in the eastern United States. Collectively, these improvements are called the Equitrans Expansion Project (Project).

The Project is located in Greene, Allegheny, and Washington counties, Pennsylvania, and in Wetzel County, West Virginia. The Project will add up to 600,000 dekatherms per day (Dth/day) of north-to south firm capacity on the Equitrans system. The Project includes:

1. The replacement of the 4,800-horsepower Pratt Compressor Station in Franklin Township, Greene County, Pennsylvania, with a new 31,300-horsepower Redhook Compressor Station at a nearby location in the same township;
2. Construction in Jefferson, Morgan, and Franklin townships, Greene County, Pennsylvania, of up to approximately 4 miles of 30-inch diameter pipeline between the proposed Redhook Compressor Station and the existing H-302 pipeline;
3. Construction of up to approximately 5 miles of 24-inch diameter pipeline between the Equitrans' existing Applegate Gathering System, Forward Township, Allegheny County, Pennsylvania, and its existing H-148 pipeline in neighboring Union Township, Washington County, Pennsylvania; and
4. Construction of the proposed Webster interconnect, Wetzel County, West Virginia, to deliver natural gas volumes into the proposed Mountain Valley Pipeline, a separate project now in the design phase and environmental and permitting review.

The Project is designed to transport natural gas from the northern portion of Equitrans' system south to a future interconnection with Mountain Valley, as well as to existing interconnects on the southern portion of Equitrans' system with Texas Eastern Transmission, LP and Dominion Transmission, Inc. The Project will provide shippers with the flexibility to transport additional natural gas produced in the central Appalachian Basin to meet the growing demand by local distribution companies, industrial users, and power generation facilities located in local, northeastern, Mid-Atlantic, and southeastern regions of the United States. The Project will also increase system reliability, efficiency, and operational flexibility for the benefit of all Equitrans customers.

Design and environmental review of the Project are now underway. On April 1, 2015, Equitrans submitted a filing with Federal Energy Regulatory Commission (FERC), pursuant to Section 157.21(b) of agency regulations, to initiate the FERC's pre-filing review process. If this and subsequent steps in the review process are successful, FERC will issue a license authorizing Project construction. FERC's licensing of the Project constitutes a federal undertaking, necessitating consultations between FERC and the State

Historic Preservation Officers (SHPOs) in Pennsylvania and West Virginia pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), and related statutes and regulations. Equitrans has contracted with Tetra Tech, Inc. (Tetra Tech), through its Boston, Massachusetts, office, to conduct Phase I cultural resources studies to obtain necessary information to support Section 106 consultations and related environmental reviews.

**Description of Project Actions in Pennsylvania**

The project involves the construction of natural gas pipelines of various diameters in approximately 38,560 feet (7.30 miles) of alignment and demolition and construction for compressor stations on two parcels (Table 1).

**Table 1: Key Project Dimensions, Pennsylvania Elements**

| Project Element | Diameter (in) | Length (ft) | ROW Width (ft) | | Yards and Work-spaces | Access Roads (ft) | | Length HDD (ft) |
|---|---|---|---|---|---|---|---|---|
| | | | Temp. | Perm. | | Temp. | Perm. | |
| Pratt Compressor Station | N/A | 8.7 acres | - | - | - | - | - | 0 |
| Redhook Compressor Station | N/A | 28.9 acres | - | - | - | - | - | 0 |
| M-80 / H-158 | 6 / 12, respectively | 1,170 | 75 | 50 | 1 | 0 | 520 | 0 |
| H-316 | 30 | 15,790 | 110 | 50 | 10 | 3,300 | 3,900 | TBD |
| H-318 | 24 | 21,600 | 100 | 50 | 9 | 5,700 | 0 | TBD |

*Note: Project design as of May 5, 2015. All quantities are preliminary.*

The proposed pipelines will be located within permanent 50-foot rights-of-way (ROWs) comprising direct easements purchased from the property owner or owners whose land the lines cross. Construction of the pipelines will take place in temporary ROWs of variable width, with associated contractor yards and additional temporary workspaces extending outside the temporary ROWs (Table 1). Where buildings stand in the proposed ROW, Equitrans will acquire and remove them. Construction of the lines will involve a sequence of steps within the temporary ROWs, typically involving clearing of trees, shrubs, and other vegetation; removal and stockpiling of topsoil; excavation of the pipeline trench; pipe stringing, welding and coating, and inspection; lowering the pipeline into the trench; backfilling and rough grading; replacement of topsoil, final grading, and site restoration. Open pipeline trenches will typically be a minimum of 12 inches wider than the pipe diameter and 18 to 24 inches deeper. Major waterbodies will be crossed using horizontal directional drilling (HDD), which avoids disturbance to the channel or basin by employing a boring machine with precise spatial control to install the line between workzones on the banks of the stream or waterbody. During construction, areas adjacent to the pipeline trench will be part of the active work zone and will be used for equipment movements, storing and stockpiling of materials, supplies, and equipment, and related activities. Addition contractor yards may be established to receive and store materials, supplies, and equipment until needed in the construction zone. In places access roads to the temporary ROW, workspaces, and

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yards will be established. In general, these access roads will follow existing field drives and woods roads, which may need to be widened, straightened, graded, or graveled to make them suitable for use as construction site access roads. In addition, depending on local conditions new temporary roads may need to be established where field drives or woods roads do not currently exist. In general, permanent roads will be improved using the same techniques as used for temporary roads. Ground disturbances will occur in all parts of the temporary ROW and in additional workspaces and contractor yards as a result of construction activities, equipment movements, and storing and stockpiling. Depending on the existing condition of access routes, roads may require either minimal improvement (such as grading) or substantial enhancement. Following completion of the pipeline, all areas will be restored by grading and seeding as needed. The permanent ROW and other permanent facilities will be kept in an open condition, while portions of the temporary ROW outside the permanent alignment will be allowed to return to their previous or natural vegetation.

At the Pratt and Redhook compressor stations, both demolition and construction will take place. Equitrans plans to abandon the Pratt Compressor Station through demolition of most above-ground elements by the fourth quarter of 2018, after completing the Redhook Compressor Station. Following abandonment, Equitrans will retain ownership of the parcel, since existing pipelines run through it. At the Redhook Compressor Station, Equitrans plans to acquire several residential properties and demolish or remove the dwellings and outbuildings on them. Construction of the Redhook Compressor Station will involve clearing and grubbing of patches of trees; construction of an all-weather gravel access road; excavation, filling, grading, and related earthwork; construction of foundations and installation of below ground structures and piping; and construction of above-ground facilities, including compressors and various associated buildings. Current information indicates that while most of the structures will be approximately one story high, there may be an exhaust stack or stacks up to approximately 40 feet high. Portions of the parcel outside the compressor station footprint and access road may be used for staging during construction.

Additional details regarding individual Project elements follow. Locations are given relative to centerline mileposts (MPs) estimated from available Project maps (Attachment A). Buildings and other features of potential or known interest for Section 106 consultations have been assigned temporary letter identifiers (EPP-a to EPP-o). These are discussed in a subsequent section, and their locations are shown in Attachment A. Photos of these properties obtained from available online imagery are included as Attachment C.

***Pratt Compressor Station*** *(existing), Franklin Twp., Greene Co., PA*
*Address: 532 Jefferson Road, Waynesburg, PA 15370*
*Quad Map: Waynesburg, PA, 7.5-minute USGS quadrangle map*

Equitrans's existing Pratt Compressor Station (EPP-a) is situated on an 8.7-acre parcel the intersection of Jefferson Road (PA-188) and Strope Road in Franklin Township. It is located on what topographic mapping indicates is the floodplain or low terraces of the South Fork of Tenmile Creek (hereinafter Tenmile Creek), a tributary of the lower Monongahela River drainage. The station was constructed in 1950, with subsequent alterations. Above-ground structures at the station occupy a fenced compound (the yard) measuring approximately 340 by 640 feet and having an estimated area of 4.3 acres. Underground gas pipelines occupy portions of the 8.7-acre parcel outside the compound. As described

above, Equitrans plans to abandon the station through demolition of most above-ground elements, while retaining ownership of the parcel.

***Redhook Compressor Station*** *(proposed), Franklin Twp., Greene Co., PA*
*Address: 127 Braden Run Road, Waynesburg, PA 15370 (approximate)*
*Quad Map: Waynesburg, PA*

Equitrans proposes to construct a replacement for the Pratt Compressor Station within a 28.9-acre parcel situated, at their nearest points, approximately 460 feet to the north of Pratt. The parcel is bounded on the southeast by Jefferson Road (PA-188), on the southwest by Braden Run Road, on the north by an existing pipeline right-of-way (ROW), and on the northeast by existing gas pipeline facilities owned by others. Equitrans and Tetra Tech are currently developing the design for the new Redhook Compressor Station, which will have a substantially greater capacity than the existing station. Current information subject to change indicates that the station will occupy the south-central portion of the parcel.

The parcel as a whole consists of rolling terrain on a hillside above Braden Run to the west and Tenmile Creek to the east. It contains several residential properties and outbuildings (EPP-b to EPP-g), as well as existing underground gas pipelines and associated above-ground infrastructure. Equitrans plans to acquire and demolish the dwellings and other non-gas buildings within the 28.9-acre Redhook parcel, followed by construction of the new compressor station within a portion of the parcel boundaries.

*Collocated* ***Pipelines M-80*** **and** ***H-158*** *(relocated), Franklin Twp., Greene Co., PA*
*Address: Begins—212-350 Strope Road, Waynesburg, PA 15370 (approximate)*
*Ends—127 Braden Run Road, Waynesburg, PA 15370 (approximate)*
*Quad Map: Waynesburg, PA*

Pipelines M-80 and H-158 are existing pipeline segments serving the Pratt Compressor Station that will be rebuilt in a new, collocated alignment as 6- and 12-inch-diameter, respectively, lines to serve the proposed Redhook Compressor Station. In their new alignment, the M-80 / H-158 lines will extend approximately 1,170 feet (0.222 mile) north from their beginning at a new interconnection with an existing pipeline northwest of the intersection of Strope and Jefferson roads to their terminus at the planned Redhook Compressor Station. Outside the Redhook parcel, the pipeline will be constructed in a 75-foot temporary ROW, with a contractor yard extending outside it along Strope Road. The alignment slopes to the south and southwest, and beyond Redhook it is largely wooded. The planned temporary ROW and immediately adjacent areas contain no houses or other buildings.

***Pipeline H-316*** *(proposed), Franklin, Morgan, and Jefferson Twps., Greene Co., PA*
*Address: Begins—127 Braden Run Road, Waynesburg, PA 15370 (approximate)*
*Ends—122-144 Crayne School Road, Jefferson PA 15344 (approximate)*
*Quad Maps: Waynesburg, PA, and Mather, PA*

The proposed 30-inch H-316 Pipeline will extend approximately 15,790 feet (2.99 miles) to the east and south from its beginning at the planned Redhook Compressor Station to a new interconnection with Equitrans' H-302 pipeline at a location in an agricultural field approximately 0.31 mile south-southeast of the intersection of Crayne School and Ankrom roads. Outside the Redhook parcel, the pipeline will be constructed in a 110-foot temporary ROW. Current plans identify 10 locations for additional temporary

workspaces and contractor yards that extend beyond the temporary ROW. This project segment also includes approximately 3,900 feet (0.74 mile) of permanent access road and 3,300 feet (0.63 mile) of temporary construction roads, both of which will be mostly established along existing field drives. Terrain is rolling, and land use is a mix of agricultural land (apparently primarily hay meadow), woodland, and existing gas pipeline ROW. The alignment crosses two substantial streams: Ruff Creek (MP 1.31) and Tenmile Creek (MP 2.23). A dwelling and outbuildings (EPP-g), to be acquired and demolished, is located at MP 0.10, and the alignment crosses a Norfolk Southern Railway branch rail line (ex-Monongahela Railway) at MP 2.25 (EPP-h). Current plans envision traversing the line across Tenmile Creek and the adjoining rail line by HDD.

***Pipeline H-318*** *(proposed), Forward Twp., Allegheny Co., and Union Twp., Washington, Co., PA*
*Address: Begins—None (UTM = Zone 17 T, 591,760 m E, 4455044 m N [NAD 1983])*
*Ends—4107 Finleyville-Elrama Road, Finleyville, PA 15332 (approximate)*
*Quad Maps: Monongahela, PA, and Glassport, PA*

The proposed 24-inch H-318 Pipeline will extend from the existing Applegate Gathering System (operated by EQT Gathering) in Forward Township to a proposed new interconnect with Equitrans' H-148 line in neighboring Union Township. Although a direct northwesterly line between the beginning and ending points is just 2.7 miles, the alignment is constrained by a combination of residential, industrial, and recreational development, river crossing locations, and terrain to a longer route of 21,600 feet (4.09 miles) that runs to the south for approximately 1 mile before swinging to the northwest. The route begins at an existing facility located approximately 1,900 feet west of the intersection of Pangburn Hollow and Saddlers Hollow roads and ends on property already owned or controlled by Equitrans on the western side of the Finleyville-Elrama Road, approximately 800 feet west of Lobbs Run Road. The pipeline will be constructed in a 100-foot temporary ROW. Current plans identify nine locations for additional temporary workspaces and contractor yards that are situated outside or extend beyond the temporary ROW, including the Robb Lane Work Site, located at the former Pennsylvania Army National Guard Finleyville Armory (ex-Missile Launcher Area for Nike Missile Battery PI-43) (EPP-o), approximately 0.2 mile west of the pipeline terminus. This project segment also includes approximately 5,700 feet (1.08 miles) of temporary construction roads, involving a combination of existing field drives and new alignments. Terrain is rolling, and land use is a mix of agricultural land (apparently primarily hay meadow) and woodland. The alignment crosses substantial named watercourses at Kelly Run (MP 1.58) and the Monongahela River (MP 2.8 to 2.97). It passes 0.05 to 0.16 mile southwest of Riverview Golf Course (MP 1.6 to 1.9) and just east of the hamlet of Bunola (MP 2.6 to 2.7). It also crosses beneath a CSX Corporation rail line (MP 2.72), Pool No. 3 of the Monongahela River Navigation System (MP 2.8 to 2.97), and Norfolk Southern's Shire Oaks Railyard (MP 3.0) (EPP-k to EPP-m, respectively). Current plans envision crossing beneath the Monongahela River and the adjoining rail lines by HDD. At its northern end, the proposed interconnect Equitrans' H-148 line will be located immediately south of an existing building (originally a dwelling but current function is unknown) (EPP-n) and may involve demolition of this building.

**Area of Potential Effects (APE)**

The area of potential effects (APE) for the Project consists of those areas where ground disturbance will occur as a result of construction activities (including staging and stockpiling)—the direct effects APE—

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plus a surrounding zone where the project will result in visual changes from construction of structures with substantial height and from permanent removal of trees—the visual effects APE.

The terrain of the Project area is rolling, and no assessment of the visibility or effects of landscape and vegetation alterations due to the Project has been completed to date.

**Study Area**

For purposes of Project planning and design, Equitrans has requested that archeological investigations consider a study area 300 feet wide centered on the Project centerline. This study area will encompass the 75- to 110-foot temporary ROW and allowing for minor adjustments in alignment without triggering the need for re-survey. It will also encompass many of the currently-designated contractor yards and additional temporary workspaces. The study area would be expanded where such yards and workspaces exceed the 300-foot corridor.

**Online Historic Preservation File Review and Preliminary Identification of Properties of Potential Historic Concern**

In February and May 2015, Tetra Tech conducted reviews of the online Pennsylvania Cultural Resources Geographic Information System (CRGIS) maintained by the Pennsylvania Historical and Museum Commission (PHMC) to assemble initial information on previous survey activities and inventoried archeological sites and standing properties in the direct effects study area and immediately adjacent locations. This review found that although the Project as a whole has not previously been systematically surveyed for archeological and historic resources, since the 1980s more than a dozen previous compliance studies and one or more historic architectural surveys have been performed across portions of it.

This review found that eight archeological sites have been inventoried within 0.25 mile of the Project (Table 1). None of these sites is situated within the direct effects study area.

**Table 1: Inventoried Archeological Sites within 0.25 Mile of the Project**

| Site Number | Site Name | Site Type | NRHP Status | Distance to Project CL | |
|---|---|---|---|---|---|
| | | | | Miles | Element |
| 36AL0634 | Site 1 | Open Habitation, Prehistoric | Undetermined | 0.15 | H-318 |
| 36GR0200 | Site 200-1 | Open Habitation, Prehistoric, Late Archaic | Undetermined | 0.23 | H-316 Access Road |
| 36GR0203 | Springhouse Site | Historic Domestic Site | Not Eligible | 0.12 | H-316 |
| 36GR0275 | Hogue-Crayne Site | Farmstead; Historic Domestic Site | Not Eligible | 0.17 | H-316 |
| 36GR0405 | Site 200-3 | Historic Domestic Site | Undetermined | 0.23 | H-316 |
| 36WH0018 | Metzgar Farm (Fisher Site 60) | Village | Undetermined | 0.23 | H-318 |
| 36WH0094 | Denniston Site | Open Prehistoric Site, Unknown Function | Undetermined | 0.25 | H-318 |

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| | | | | | |
|---|---|---|---|---|---|
| 36WH1306 | Lentz Site | Open Prehistoric Site, Unknown Function | Undetermined | 0.25 | H-318 |

Source: CRGIS (PHMC 2015)

The review also identified three properties that have been listed on the National Register of Historic Places (NRHP) or have been determined eligible for listing (Table 2). The project crosses two of these properties, both of which are NRHP-eligible linear historic resources (districts): the Monongahela River Navigation System and the adjacent Pittsburgh and Lake Erie Railroad.

**Table 2: Historic Properties Listed on and Eligible For the National Register of Historic Places (NRHP) within 0.25 Mile of the Project**

| Key No. | Property Name | Property Type | NRHP Status | Distance to Project | |
|---|---|---|---|---|---|
| | | | | Miles | Element |
| 001187 | Dusmal House | Two-story Federal-style stone house, built 1839 | Listed, 1975 (NRIS 75001675) | 0.19 | H-318 |
| 105678 | Monongahela River Navigation System (Historic District)—Pool 3 | River impoundment above Dam and Lock No. 3, established 1844; altered 1907 | Eligible (NRHP draft MPDF has been prepared [2010]) | 0.0 | H-318 |
| 116800 156264 | Pittsburgh & Lake Erie Railroad (Linear Historic Resource) | Railroad corridor established ca. 1880 | Eligible (per Key No. 116800 inventory record) | 0.0 | H-318 |

Source: CRGIS (PHMC 2015)

Review of current aerial and streetview imagery available from Google Earth and Microsoft Bing, along with the review of CRGIS has yielded a list of 15 extant properties within the direct effects study area that appear to be of potential interest for historic architectural field survey documentation and/or Section 106 assessment of Project effects (Table 3; Attachments A and C). Additional properties of concern may be identified following establishment of a visual / indirect effects APE for the Project.

**Table 3: Non-Archeological Properties in the Project 300-Foot Direct Effects Study Area Known or Estimated to be Greater than 50 Years Old**

| Temporary Identifier | Property Name | Property Type | NRHP Status | Distance to Project | |
|---|---|---|---|---|---|
| | | | | Feet | Element |
| EEP-a | Pratt Compressor Station, Waynesburg | Natural gas pipeline facility, built 1950 and subsequently altered | Not yet surveyed | 0 | Pratt |
| EEP-b | House on Braden Run Road, Waynesburg | Dwelling and outbuildings; one-story frame house built ca. 1930-1940 | Not yet surveyed | 0 | Redhook |
| EEP-c | House on Braden Run Road, Waynesburg | Dwelling and outbuildings; one-story | Not yet surveyed | 0 | Redhook |

**Table 3: Non-Archeological Properties in the Project 300-Foot Direct Effects Study Area Known or Estimated to be Greater than 50 Years Old**

| Temporary Identifier | Property Name | Property Type | NRHP Status | Distance to Project | |
|---|---|---|---|---|---|
| | | | | Feet | Element |
| | | frame house built ca. 1930-1940 | | | |
| EEP-d | House on Braden Run Road, Waynesburg | Dwelling and outbuildings; one-story frame house built ca. 1930-1940 | Not yet surveyed | 0 | Redhook |
| EEP-e | House on Braden Run Road, Waynesburg | Dwelling and outbuildings; mobile home built ca. 1970-1980 | Not yet surveyed | 0 | Redhook |
| EEP-f | Outbuilding cluster east of Jefferson Road, Waynesburg | Group of approximately four outbuildings, possibly built before 1965 | Not yet surveyed | 0 | Redhook |
| EEP-g | 592 Jefferson Road, Waynesburg | Dwelling and outbuildings; two-story house built ca. 1930-1940 | Not yet surveyed | 0<br>0 | Redhook<br>H-316 |
| EEP-h (Key No. 156260) | Monongahela Railway (Linear Historic Resource), ~0.23 route mi west of Crayne School Road | Railroad corridor established ca. 1900 | Not locally surveyed; unevaluated | 0 | H-316 |
| EEP-i (Possible site of Key No. 070528) | Building identified in CRGIS as Survey No. 003-43-J7; possibly on Bunola Rd., Bunola | CRGIS records property as building constructed ca. 1860 and ca. 1879 in Late Victorian style | Possibly demolished or incorrectly mapped in CRGIS. Aerial imagery dating 1956 to 2014 shows mapped location to be vacant | 40 | H-318 |
| EEP-j (Possible site of Key No. 070524) | Building identified in CRGIS as Survey No. 003-43-J6; possibly on Bunola Rd., Bunola | CRGIS records property as a vernacular-style building constructed ca. 1900 and ca. 1919 | Possibly demolished or incorrectly mapped in CRGIS. Aerial imagery dating 1956 to 2014 shows mapped location to be vacant | 150 | H-318 |

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**Table 3: Non-Archeological Properties in the Project 300-Foot Direct Effects Study Area Known or Estimated to be Greater than 50 Years Old**

| Temporary Identifier | Property Name | Property Type | NRHP Status | Distance to Project | |
|---|---|---|---|---|---|
| | | | | Feet | Element |
| EEP-k (Key Nos. 116800 156264 | Pittsburgh & Lake Erie Railroad (Linear Historic Resource), east end of Bunola | Railroad corridor established ca. 1880 | Not locally surveyed; portions have been determined eligible | 0 | H-318 |
| EEP-l (Key No. 105678) | Monongahela River Navigation System (Historic District)—Pool 3, ~3.25 mi above Dam No. 3 | River impoundment for navigational purposes | Eligible | 0 | H-318 |
| EEP-m | Shire Oaks Railyard, Elrama | Historic Rail Yard, est. ca. 1907 | Not yet surveyed | 0 | H-318 |
| EEP-n | 4107 Finleyville-Elrama Road, Finleyville | One-story frame house built ca. 1930-1940 | Not yet surveyed | 0 | H-318 |
| EEP-o (Key No. 105226) | Elrama Armory Complex / Nike Missile Battery PI-43 – Battery PI-43 Missile Launcher Area / PAARNG Finleyville Armory | Early Cold War anti-aircraft missile battery for defense of Pittsburgh; active 1955-1974. PAARNG armory 1974-2009 | Largely Demolished: Not Eligible (SHPO, 1996) | 0 | H-318 Robb Lane Work Site |

Sources: CRGIS (PHMC 2015); Google Earth and Microsoft Bing aerial and streetview imagery

**Reference Cited**

Pennsylvania Historical and Museum Commission. 2015. *Pennsylvania's Cultural Resources Geographic Information System (CRGIS)*. Accessed February-May 2015 at https://www.dot7.state.pa.us/ce/Home/Index.

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Equitrans Expansion Project (FERC Docket No. PF15-22-000)

Jefferson, Morgan, and Franklin townships, Greene County, Pennsylvania
Forward Township, Allegheny County, Pennsylvania
Union Township, Washington County, Pennsylvania

**ATTACHMENT C: PHOTOGRAPHS**

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*Photo 1: Pratt Compressor Station (EPP-a). View east. Image source: Google Earth streetview, May 2012.*

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*Photo 2: Pratt Compressor Station (EPP-a). View south. Image source: Google Earth streetview, May 2012.*

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*Photo 3: Redhook Compressor Station parcel. Houses EPP-b (left) and EPP-c (right) on Braden Run Road. View east. Image source: Google Earth streetview, May 2012.*

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*Photo 4: Redhook Compressor Station parcel. House EPP-d on Braden Run Road. View east. Image source: Google Earth streetview, May 2012.*

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*Photo 5: Redhook Compressor Station parcel. House EPP-e on Braden Run Road. View north-northeast. Image source: Google Earth streetview, May 2012.*

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*Photo 6: Proposed location of Redhook Compressor Station in grove of trees at center-left of photo. View north from Braden Run Road. Google Earth streetview, May 2012.*

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*Photo 7: Oblique aerial image of Redhook parcel (above and to right of road) and Pipeline H-316 (lower left) with EEP-f and EEP-g. View east. Image source: Microsoft Bing bird's eye view, ca. 2012.*

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*Photo 8: Pipeline H-316 at its exit from the Redhook parcel. House EEP-g at 592 Jefferson Road, Waynesburg. Since this image was made, vertical aerial imagery shows that the garage at left has been removed. View south. Image source: Google Earth streetview, May 2012.*

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*Photo 9: Oblique aerial image of Pipeline H-316 at crossing of Monongahela Railway (EEP-h) and the South Fork of Tenmile Creek. Approximate alignment of pipeline shown by dashed line. View north. Image source: Microsoft Bing bird's eye view, ca. 2012.*

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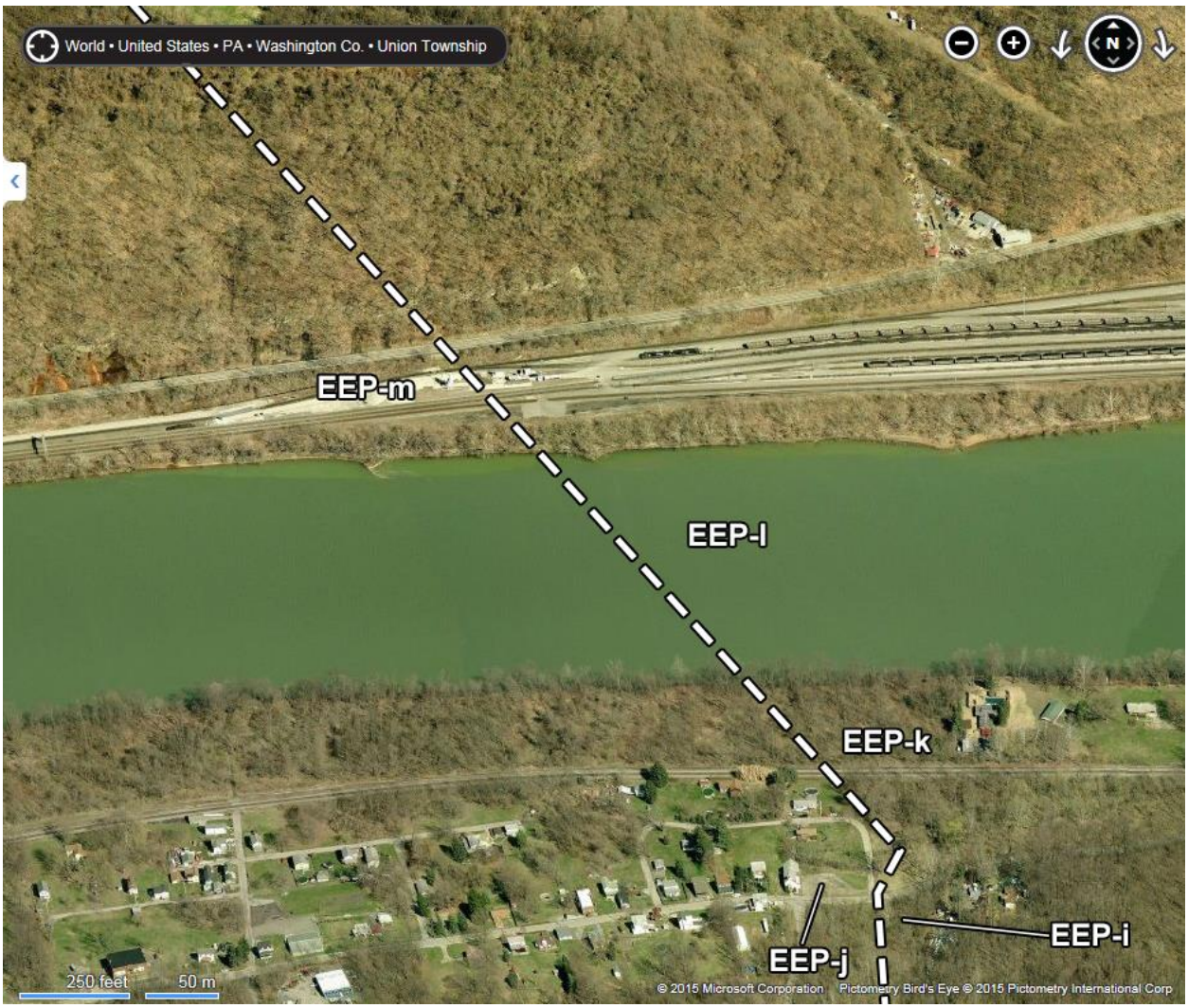



*Photo 10: Oblique aerial image of Pipeline H-318 at crossing of Monongahela River (center) at Bunola, Pennsylvania (lower left). Image shows EEP-i, -j, -k, -l, and –m. Approximate alignment of pipeline is depicted by dashed line. View north. Image source: Microsoft Bing bird's eye view, ca. 2012.*

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*Photo 11: Terminus of Pipeline H-318 at 4107 Finleyville-Elrama Road, Finleyville, with EEP-n near image center. View north. Image source: Google Earth streetview, May 2012.*

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*Photo 12: Entrance road to contractor yard (EEP-o) at the former Pennsylvania Army National Guard Finleyville Armory (ex-Missile Launcher Area for Nike Missile Battery PI-43), 0.2 mile west of Pipeline H-318 terminus. Yard area will be located at top of hill at right. View north. Image source: Google Earth streetview, May 2012.*

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*Photo 13: Oblique aerial view of proposed contractor yard (EEP-o) at the former Pennsylvania Army National Guard Finleyville Armory (ex-Missile Launcher Area for Nike Missile Battery PI-43), 0.2 mile west of Pipeline H-318 terminus. Image source: Microsoft Bing bird's eye view, ca. 2012.*

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Equitrans Expansion Project (FERC Docket No. PF15-22-000)

Jefferson, Morgan, and Franklin townships, Greene County, Pennsylvania
Forward Township, Allegheny County, Pennsylvania
Union Township, Washington County, Pennsylvania

# ATTACHMENT D: PENNSYLVANIA WORK PLAN

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# EQITRANS EXPANSION PROJECT
# ARCHAEOLOGY AND HISTORIC ARCHITECTURE WORK PLAN FOR PENNSYLVANIA SEGMENT

Prepared for

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July 2015

Prepared by



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## 1.0 Introduction

Equitrans, LP (Equitrans), of Pittsburgh, Pennsylvania, proposes to make several improvements to its existing natural gas pipeline system in southwestern Pennsylvania and northern West Virginia to increase system capacity and improve its ability to serve customers in the eastern United States. Collectively, these improvements are called the Equitrans Expansion Project (Project).

The Project is located in Greene, Allegheny, and Washington counties, Pennsylvania, and in Wetzel County, West Virginia. The Project includes:

1. The replacement of the 4,800-horsepower Pratt Compressor Station in Franklin Township, Greene County, Pennsylvania, with a new 31,300-horsepower Redhook Compressor Station at a nearby location in the same township;
2. Construction in Jefferson, Morgan, and Franklin townships, Greene County, Pennsylvania, of up to approximately 4 miles of 30-inch diameter pipeline between the proposed Redhook Compressor Station and the existing H-302 pipeline;
3. Construction of up to approximately 5 miles of 24-inch diameter pipeline between the Equitrans' existing Applegate Gathering System, Forward Township, Allegheny County, Pennsylvania, and its existing H-148 pipeline in neighboring Union Township, Washington County, Pennsylvania; and
4. Construction of the proposed Webster interconnect, Wetzel County, West Virginia, to deliver natural gas volumes into the proposed Mountain Valley Pipeline, a separate project now in the design phase and environmental and permitting review.
5. Staging areas for construction equipment will be sited along the Project corridor and at nearby locations.

This work plan describes the methods proposed for a Phase I archaeological investigation and for historic architectural investigation to be undertaken within the Pennsylvania portion of the Project. The cultural resources investigations for this project will be performed in conformance with FERC's 2002 *Guidelines for Reporting on Cultural Resources Investigations For Pipeline Projects*; other applicable FERC regulations (18 CFR 380); the National Historic Preservation Act of 1966, as amended (NHPA); "Protection of Historic Properties," (Title 36 Code of Federal Regulations Part 800 [36 CFR 800], as amended through 2004) of the Advisory Council on Historic Preservation (ACHP); the Native American Graves Protection and Repatriation Act (NAGPRA), and the Pennsylvania Historical and Museum Commission's (PHMC) *Guidelines for Archaeological Investigations in Pennsylvania* (2008) and *Guidelines for Architectural Investigations in Pennsylvania* (2014) and other applicable state and federal statutes and guidelines.

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## 2.0 Archaeology Research Design

The goal of the Phase I investigation is to identify cultural resources within the Project study area and Areas of Potential Effects that are potentially eligible for listing on the National Register of Historic Places (NRHP), including previously-documented and undocumented resources. Research objectives will focus on gathering sufficient information on each resource to be able to recommend whether further cultural resource investigations are necessary to evaluate NRHP eligibility. The methodologies to achieve these objectives will include background research, assessment of archaeological sensitivity, fieldwork, artifact analysis, and site type identification. In combination, these objectives and methodologies constitute the research design which guides the Phase I investigation.

### 2.1 Background Research

Background research will focus on the pipeline route plus a 1-mile buffer on either side of the centerline, temporary contractor yards and work areas, and Project infrastructure such as interconnects and compressor stations. PHMC site files will be consulted to assemble information on previously-recorded archaeological sites, including, as available from the PHMC files, location, functional or thematic type, contents, structure, and key archaeological characteristics. These data will be reviewed to provide information on the range of archaeological site and historic property types and their possible frequency of occurrence that may be expected in the Project study area.

Research about context will focus on the three counties through which the Project traverses, plus any pertinent topics that have been published for southwestern Pennsylvania. These research topics will include but not be limited to geology, soils, plants, wildlife, prehistoric settlement patterns, historical patterns of Euro-American settlement and other regional historical themes (as identified by PHMC in its list of regional historic context statements [see http://www.portal.state.pa.us/portal/server.pt/community/national_register_of_historic_places_in_pennsylvania/3780/historic_contexts_by_region/1995107]) potentially relevant to the identification and evaluation of archaeological resources in the study area, such as agriculture, exploration and settlement, small-scale industry, military history, and transportation.

Research will utilize the archived resources at PHMC, including data in the Pennsylvania Archaeological Site Survey (PASS), available through PHMC's online Cultural Resources Geographic Information System (CRGIS) and at the commission's offices in Harrisburg. Additional sources to be consulted may include historic maps and aerial images, historical societies, and local universities or libraries.

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## 2.2 Area of Potential Effects (APE) for Archaeology

Based upon Tetra Tech's assessment of how the Project may potentially affect below- and above-ground historic properties, the area of potential effects (APE) can be understood as defined by two types of potential Project impacts, direct and indirect. The direct effects APE, which is concerned primarily with potential impacts to archaeological resources (if present), will include areas containing the pipeline, appurtenant facilities, extra work spaces, access roads, and any other areas that would experience ground disturbance due to pipeline construction and operation. The indirect effects APE for the Project, which is primarily concerned with potential impacts to historic architectural resources (including buildings, structures, objects, sites, and districts, if present), will include areas that may be affected visually by pipeline construction and operation. The direct effects APE as Tetra Tech proposes to define it is discussed below, while the proposed definition for the indirect effects APE is discussed below in Section 3.0 Historic Architecture. Tetra Tech will consult with PHMC regarding the proposed APE for the Project prior to fieldwork.

The direct effects APE for archaeological field investigation is proposed as the pipeline centerline plus 150 feet to both sides, creating a 300-foot wide corridor the length of the Project pipeline. As currently planned, the different pipeline segments will involve temporary rights-of-way (ROWs) of different widths:

- M-80 / H-158: 75-foot temporary ROW;
- H-316: 110-foot temporary ROW; and
- H-318: 100-foot temporary ROW

The temporary ROW will contain the pipeline trench (12 feet or wider at the surface) and adjoining soil stockpiles, work areas, and travel corridors. In places, the temporary ROW will be expanded to include temporary contractor work yards of variable widths. In all, the planned 300-foot APE will be wide enough to accommodate the temporary ROW and the adjoining work yards, where needed, and will also allow for minor adjustments in the alignment during final design and construction without triggering the need for additional last-minute archaeological survey. In addition, in places the temporary contractor yards and work zones will extend beyond the 300-foot corridor, and in these locations the direct effects APE would be expanded to include such areas. The field study area for access roads would include a 100-foot wide corridor for the length of each respective access road. The study area would contain the access road right-of-way which would measure 50 feet wide and would provide some flexibility to avoid sensitive resources as described above for the pipeline. Finally, the direct effects APE will include the locations of two compressor stations—the existing 8.7-acre Pratt Compressor Station and the proposed Redhook Compressor Station of up to 28.9 acres. In all, the direct effects APE as defined above is estimated to have an area of approximately 279 acres (computation of 5/4/2015).

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## 2.3 Archaeological Sensitivity in Project APE

Archaeological sensitivity is a concept for operationalizing efficient field prospecting for archaeological resources in the context of cultural resources management. Sensitivity is defined as a qualitative or quantitative assessment of a project area that describes the likelihood or potential that a given location or general landform may contain archaeological sites. Evaluations of archaeological sensitivity provide a means for efficiently allocating survey resources within a given study area by indicating which areas should receive greater and lesser amounts of effort, based upon their relatively high or relatively low sensitivity. While it is possible to develop sensitivity models based upon inductive statistics or upon deductive analyses of ethnographic, historical, and other data, various considerations suggest that for purposes of this survey a qualitative model based on professional experience and judgment will suffice. These considerations include the overall relatively small Project APE, the linear nature of most Project elements, the rolling character of the terrain, and the limited amount of existing, reliable and meaningful archaeological data from the Project's immediate vicinity.

Archaeological sensitivity for the Project will be assessed based upon a desktop review of terrain and other environmental information for the area. This assessment will be refined following an initial reconnaissance, which will focus on geomorphological issues.

### 2.3.1 Desktop Assessment of Archaeological Sensitivity

At the pole ends of the assessment of archaeological sensitivity for this Project are proximity to a previously-recorded archaeological site and areas of demonstrable, substantial prior disturbance. All other things being equal, locations within approximately 330 feet (100 meters) of recorded sites are regarded as having elevated sensitivity because site boundaries have not necessarily been well defined by prior archaeological surveys or because humans tend to occupy the same general locations repeatedly over time. On the other hand, prior substantial ground disturbance leads to the destruction of sites through the disruption of the original spatial relationships among artifacts, the obliteration of soil features produced by past human occupations, and the wholesale removal of soil materials containing archaeological deposits. Normal land clearance and field cultivation for agricultural purposes is not considered to be "substantial" ground disturbance. Substantial ground disturbance indicates that an area is non-sensitive for archaeological resources, and such disturbance would be demonstrated by an appropriate combination of historical records such as maps and aerial imagery, field inspection of surface features that indicate the present of artificial landforms, and examination of soil profiles that indicate the extent and severity of prior ground disturbance.

Other factors indicative of elevated archaeological sensitivity include ground slope and proximity to water sources. Humans tend to prefer level or nearly level ground as locations for sustained activities that may tend to lead to the formation of archaeological deposits. Most activities are

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easier, more comfortable, and more efficient on such ground, and structures are more easily constructed and maintained on it. Both prehistoric sites, such as task stations, camps, and other settlements, and historic sites, such as dwellings, farmsteads, shops, and mills, are most frequently located on level ground. A related terrain consideration is proximity to edge features such as breaks in slopes that define terraces, benches, hillslope shoulders, and the like. Such locations tend to optimize access to varied terrain, offer good security and visibility of surrounding terrain, and often provide good runoff or drainage. Areas of excessive slope—here defined as slopes greater than 15 percent—are generally considered unlikely to represent terrain that would have encouraged substantial pre-modern occupation. However, rock shelters, ledges, or caves may be present in such areas and could preserve archaeological sites.

In general, patterns of prehistoric site distribution throughout the Eastern Woodlands correlate well with locations that minimize distance to water sources, including rivers, streams, lakes, springs, and wetlands. Water was essential for human survival, not only for drinking and cooking, but also as transportation routes and as sources of fish and shellfish, aquatic plants, and game. Regional surveys of archaeological site locations in the Northeast, Middle Atlantic, and Southeast have reported maximum characteristic site distances to water ranging from around 330 to 920 feet (100 to 280 meters) (e.g., Brooks et al. 2010:152; Funk 1993:70; Hasenstab 1991; Keener et. al. 2008:36; Loftfield 1981; Lothrop 1987:29). For purposes of this survey, it will be assumed that distances of 330 feet (100 meters) or less to a water source are an indication of elevated archaeological sensitivity. Water sources include springs, rivers, streams, lakes, ponds, and wetlands, and for purposes here will be defined as those features mapped on U.S. Geological Survey (USGS) 7.5-minute quadrangle maps (scale 1:24,000) or by the National Wetland Inventory (NWI) program of the U.S. Fish and Wildlife Service (USFWS).

Historic archaeological site sensitivity will be assessed based on a review of PHMC site and historic resources files and historic cartographic sources including nineteenth-century county atlases and historic USGS quadrangle sheets to obtain approximate geographic coordinates for Map-Documented Structures (MDSs) potentially located in the vicinity of the Project APE for archaeology. Survey of the APE in the vicinity of an MDS will be triggered if the MDS appears to be located 330 feet (100 meters) or less from the edge of the APE, based on either visible traces of the MDS such as a cellarhole or traces of a foundation or upon map analysis. A certain degree of cartographic imprecision is inherent in the nineteenth century county atlases and, to a somewhat lesser extent, the late-nineteenth century USGS 15-minute quadrangle maps. Exact locations of the MDSs will be determined through additional map analysis or field inspections.

In sum, for purposes of this survey, the archaeological sensitivity of Project area landforms will be categorized as follows:

> **High Sensitivity**—level or nearly level ground (<15 percent slope) within 330 feet of a water source; or proximity (<330 feet) to a previously-recorded archaeological site or MDS.

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**Moderate Sensitivity**—level or nearly level ground (<15 percent slope) greater than 330 feet from a water source but within 330 feet of a topographic edge feature, such as the outer edge of a bench, terrace, or hillslope shoulder.
**Low Sensitivity**—level or nearly level ground (<15 percent slope) more than 330 feet from a water source, edge feature, known site, or MDS; or areas of excessively sloping ground (≥15 percent slope).
**Non-Sensitive**—areas that have experienced substantial prior ground disturbance to a depth containing or exceeding that of Holocene epoch sediments or to the depth of anticipated Project ground disturbance plus a 3.3-foot (1-meter) buffer.

### 2.3.2 Geomorphological Reconnaissance

In accordance with PHMC guidelines, Tetra Tech will conduct a geomorphological reconnaissance of the Project area to identify locations that potentially contain archaeologically-sensitive, deeply buried Holocene Epoch (and immediately preceding terminal Wisconsinan Stage) deposits that may be subject to disturbance as a result of Project construction and operation. Tetra Tech staff member Christopher L. Borstel, Ph.D., RPA, who is listed by PHMC as qualified to perform geomorphological research ("Archaeological Professionals Working In Pennsylvania" consultants list, May 14, 2015) will conduct this reconnaissance. The reconnaissance will involve field inspection of localities with landforms that appear to have the potential to contain deeply buried deposits based upon desktop review of topographic maps, aerial imagery, soils data, and geological background literature. If field inspection confirms the potential for deep deposits, then appropriate deep testing will take place to assess the presence or absence of archaeological resources in these locations. If appropriate, Tetra Tech may recommend that limited backhoe trench be completed to confirm the potential presence of deep deposits.

## 2.4 Phase I Archaeological Field Investigation, Laboratory Analysis, and Reporting

Equitrans will conduct the Phase I subsurface archaeological survey in accordance with this work plan, once the concurrence of PHMC is received. In addition, the survey will conform to PHMC's (2008).

*Field Investigation*

Table 1 summarizes the field survey protocol. In accordance with PHMC guidelines, shovel tests will be arrayed along linear transects at intervals of 50 feet (15 meters) in high sensitivity areas and 100 feet (30) meters in moderate or low sensitivity areas with slopes of less than 15 percent. A maximum of 10 percent of moderate and low probability areas will be tested at 50-foot intervals to refine and validate the sensitivity model.

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## Table 1: Phase I Archaeological Survey Field Methods

| Field Method | Description | Guidelines* Page |
|---|---|---|
| Pedestrian Survey | Application: Used in areas of 80 percent or greater surface visibility or 15 percent or greater slope.<br>Method: Systematic coverage at 3-meter intervals in high and moderate sensitivity areas; 7.6- to 15-meter intervals in low sensitivity cultivated fields; and 15 meters in areas excess slope (>15 percent) and surface visibility less than 80 percent. | 19 (Items 1-2) |
| Shovel Test Interval | High sensitivity areas where archaeological deposits are unlikely to occur at depths exceeding 3.3 feet (1 meter): 50 feet (15 meters).<br>Moderate and low sensitivity areas with slopes <15 percent: 100 feet (30 meters), with up to 10 percent of such areas tested at 50-foot intervals for model validation and refinement. | 20 (Item 3, §1) |
| Shovel Test Dimensions | Surface dimensions 50 centimeters square or 57 centimeters in diameter. | 20 (Item 3, §1) |
| Radial Testing | Application: Shovel testing used to define site boundaries and to confirm isolated finds.<br>Interval: 2.5 meters for isolated finds; 5 meters in other situations.<br>Form: Cruciform; a shovel test expanded to a 1x1-meter unit may be substituted for radial shovel tests for the investigation of isolated finds. | 20 (Item 3, §3) |
| Deep Testing | Application: Used in areas where HDD will not be employed and there is the potential, based on geomorphological assessment, for archaeological deposits at depths exceeding approximately 1 meter.<br>Method: Possible limited machine trenching to verify potential for deep deposits, followed by excavation of 1x1- or 2x2-meter test units at intervals of 15 or 30 meters, depending on anticipated depth of deposits. | 20-21 (Item 3, §§4-6) |
| Artifact Recovery | General Approach: Collection of observed, portable artifacts—i.e., discarded and abandoned objects of human manufacture. In general, all observed artifacts will be collected for laboratory processing. However, sampling or field record documentation may be employed in situations where artifacts comprise a uniform, ubiquitous type and occur in abundance in a particular test unit or locality (e.g., cinders, window glass, brick; bottle glass in a trash dump). Unless critical for the understanding of a specific archaeological context, modern objects (estimated <~50 years old) will not be collected, but will be noted as appropriate in field records.<br>Method:<br>*Surface:* Artifacts observed during pedestrian survey will be piece-mapped to submeter accuracy by GPS. | 20 (Item 3, §2) |

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| | | |
|---|---|---|
| | *Subsurface:* Excavated soil sieved through 0.25-inch (6-mm) hardware cloth screens | |
| Site Definition | Surface: 3 or more prehistoric artifacts on the surface within 15 meters or 10 or more different artifacts of at least two different types within 1 acre;<br>Subsurface: 2 or more prehistoric artifacts or 3 or more diagnostic historic artifacts of at least two different types in adjacent shovel tests 15 meters apart. | Appendix B |
| **Guidelines for Archaeological Investigations in Pennsylvania* (PHMC 2008).<br>Measurement equivalents: Test Units: 50 centimeters – 20 inches; 57 centimeters – 22.5 inches; 1 meter – 3.3 feet; 2 meters – 6.6 feet. Sampling intervals: 2.5 meters – 8 feet; 3 meters – 10 feet; 5 meters – 16 feet; 7.6 meters – 25 feet; 15 meters – 50 feet; 30 meters – 100 feet. | | |

Shovel tests will be hand-excavated and will typically measure 50 by 50 centimeters square or 57 centimeters in diameter at the surface. They will be excavated to a depth below which archaeological deposits are not likely to occur or until an impasse is reached below which hand excavation is not possible. In upland settings with limited alluvial deposits, it is anticipated that shovel tests will be around 30 to 40 centimeters (12-16 inches) deep. Deeper soils are anticipated on stream floodplains, and may extend to one meter or more. In areas of deep alluvium, shovel testing will be augmented with deep testing to assess the potential for buried cultural horizons. Tetra Tech will identify locations containing soil layers that exceed the ability of hand-held tools to reach terminal depths. Where such locations cannot be avoided by Project impacts, Tetra Tech will present recommendations regarding machine-assisted deep testing strategies. It is anticipated that horizontal direct drilling (HDD) will be utilized to convey the pipeline across major streams. Some HDD pads may also require deep testing if situated on flood plains.

Soil will be screened through 0.25-inch mesh sieves to facilitate systematic artifact recovery. Any non-modern artifacts that are recovered will be retained for cleaning, identification, and inventory. Each shovel test will be assigned a unique, project-specific identifier. Shovel test results will be recorded using standard terminology, such as USDA soil texture categories and Munsell color codes. Each shovel test will be promptly backfilled after excavation and recordation. Shovel test locations will be recorded using a GPS receiver with sub-meter accuracy. Digital photographs of typical conditions and features of notable interest will be taken as necessary to document the field investigation.

Areas displaying greater than 80 percent ground visibility will be investigated through pedestrian survey. Transects aligned at 15-meter separation, as possible, will be walked by the field team. Observed non-modern artifacts will be noted, mapped using GPS at sub-meter accuracy, and collected.

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Pedestrian survey will be conducted in areas where ground slopes exceed 15 percent to ascertain whether rockshelters, ledge overhangs, or caves are present and to check for the presence of foundations or other historic archaeological features. Non-sensitive areas that have experienced substantial prior ground disturbance will be inspected and documented.

*Laboratory Analysis*

Artifacts recovered from shovel testing and pedestrian survey will be cleaned, analyzed, and inventoried in Tetra Tech's archaeology lab. The analysis of prehistoric lithic artifacts will be grounded in an approach linking attributes of form and function to particular stages in stone tool reduction and use strategies.

Historic period artifacts will be classified by major functional groups, e.g., architectural, household, and personal. They will then further be categorized by material class, e.g., square-cut nail, bottle glass, and clothing buttons.

At the conclusion of analysis, all artifacts will be placed in acid-free reclosable polyethylene bags and tagged with relevant provenience information. If all or part of the artifact assemblage is determined to possess research value, it will be cataloged and curated for long-term storage according to PHMC standards (2008).

*Report*

Following fieldwork, Tetra Tech will prepare a full Phase I archaeological survey report conforming to PHMC standards and guidelines. The report will include, but will not be limited to: introduction; environmental, prehistoric, and historic background; sensitivity model; field methods; survey results; recommendations and conclusions; and bibliography. The report will be supported by appropriate appendices and illustrative materials. If sites are located Tetra Tech will submit new PASS forms to PHMC for any newly-discovered sites and updated PASS forms for previously documented sites.

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## 3.0 Historic Architecture

Most of the Project's potential effects on aboveground resources are expected to be visual and indirect. Therefore, the APE for aboveground resources is based on potential indirect effects. The indirect effects APE is more expansive than the direct effects APE and encompasses the latter, as well as areas beyond it. The APE for indirect effects generally relates to aboveground resources including historic buildings, structures, objects, districts, and landscapes. The indirect effects APE includes: those areas where the character of a historic property's use or setting that contributes to its historic significance may be permanently disturbed; where the character of the property's use or physical features within the property's setting that contribute to its historic significance may be changed; where the property is removed from its historic location; or any locations where the introduction of visual, atmospheric, or audible elements diminish the integrity of the property's significant historic features. The proposed APE for indirect effects is 0.25 mile for pipeline segments and 0.50 mile for aboveground facilities, but may vary depending on PHMC consultation, viewshed analysis and site specific factors.

In general, the APE for historic architecture would include all areas that might be visually affected by pipeline construction and operation. Typical components or actions of pipeline construction and operation that result in adverse visual effects are structures, such as the compressor stations, and forest clearing to create a corridor or to widen an existing one.

*Background Research*

Once the indirect effects APE has been established in consultation with the PHMC, site file research using information in Pennsylvania's online CRGIS database will be conducted.

Information on all previously-inventoried properties located within the indirect effects APE will be assembled into the Project's GIS. Historical sources collected during background research for the archaeology phase will be reviewed to develop an understanding of the region's history and significant trends, themes, and events that will need to be considered during survey and evaluations. As appropriate, additional contextual material, including but not limited to "Agricultural Resources of Pennsylvania, ca. 1700-1960" Multiple Property Documentation Form (PHMC 2007), will be reviewed and incorporated in the background review. This review will also inform survey expectations. Finally, historical maps will be geo-referenced in GIS to project the locations of towns, factories, battlefields, and other mapped resources.

*Field Investigation*

With the assistance of a GIS specialist, the Project architectural historian will review historical maps and other sources to identify the possible locations of unrecorded properties within the indirect effects APE that are potentially 45 years of age or older. All accessible public rights-of-

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way within the APE will be driven, and the architectural historian will record all properties style-dated as 45 years of age or older, in accordance with PHMC's *Guidelines for Architectural Investigations in Pennsylvania* (2014). (While the NHPA requires survey of resources greater than 50 years of age, the 45-year mark allows survey data to be current through the construction phase.) Working from public rights-of-way (ROWs), each property will be digitally photographed and a GPS reading will be taken. Primary resource types include dwellings, farms, schools, churches, cemeteries, commercial properties, factories, and others. Notes will be made on the resource's architectural style and age based on a number of published references. Records will also be made of each resource's condition, additions or deletions, associated outbuildings, and cultural landscape. It is expected that rural historic farmsteads will be found within the APE and will require recording, and the cultural landscapes of such farms will be described. Where secondary structures exist, they will also be recorded. A minimum of two photographic views, front and oblique, will be taken from public rights-of-way of each structure, where possible. Views will also be taken of secondary resources and their setting. Spatial data will be organized via GIS. GPS data for each property will be entered into the Project's GIS for use in mapping surveyed properties.

*Site Form Preparation*

State survey forms will then be completed for each resource, using the appropriate PHMC Historic Resource Survey Form (HRSF). These forms vary according to resource type and are completed in Word, PDF, or similar document formats.

*Reporting*

All reporting will comply with the pertinent state guidelines, the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48 Fed. Reg. 44716-42), National Register Bulletins, and FERC's Guidelines for *Reporting on Cultural Resources Investigations for Pipeline Projects*.

All inventoried properties will be evaluated for their eligibility for nomination to the National Register. Properties will be classified as either eligible, not eligible, or eligibility unknown – additional information needed to make a determination.

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## 4.0 Tribal Outreach

Equitrans has developed a list of Native American Tribes who may have historical connection to the Project area and who may have interest or concerns about results of surveys or the presence of known sensitive tribal traditional cultural properties. Consultation letters informing the respective tribes about the Project including a map were sent to the identified Tribes on April 27, 2015. To date, Equitrans has received two responses. One from Bonney Hartley, the Tribal Historic Preservation Officer for the Stockbridge-Munsee Mohican Tribe, stating the Tribe does not wish to consult on the Project as it is outside their area of interest in Pennsylvania. The second response was from Susan Bachor the Delaware Tribe Historic Preservation Representative, who is continuing consultation for the Pennsylvania portion of the Project.

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## 5.0 Unanticipated Discovery Plan

On behalf of Equitrans, Tetra Tech has developed a Project-specific plan that would outline the procedures that would be followed in the event that an archaeological site or human remains are found during the course of Project construction and operation. Such plans are required by FERC and would include a protocol to be followed in the field and would provide contact information for key local individuals who would need to be contacted should an unanticipated discovery be made.

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Equitrans Expansion Project (FERC Docket No. PF15-22-000)

Jefferson, Morgan, and Franklin townships, Greene County, Pennsylvania
Forward Township, Allegheny County, Pennsylvania
Union Township, Washington County, Pennsylvania

# ATTACHMENT E: UNANTICIPATED FINDS PLAN

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# EQUITRANS EXPANSION PROJECT

Plan for Unanticipated Historic Properties and Human Remains
Pennsylvania and West Virginia

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**July 2015**

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# 1.0 INTRODUCTION

Equitrans, LP (Equitrans), of Pittsburgh, Pennsylvania, proposes to make several improvements to its existing natural gas pipeline system in southwestern Pennsylvania and northern West Virginia to increase system capacity and improve its ability to serve customers in the eastern United States. Collectively, these improvements are called the Equitrans Expansion Project (Project). Equitrans recognizes that despite the extensive archaeological field investigations that are conducted prior to Project construction, it is nonetheless possible that potentially significant cultural resources could be discovered during Project construction, especially during excavation activities. Equitrans recognizes its role to protect and preserve cultural resources that might be found during construction activities, in accordance with federal and state legislation. Cultural resources in this context are defined as archaeological sites, objects, and features, and include human remains and associated grave goods.

This Plan for Unanticipated Historic Properties and Human Remains (Plan) was developed by Tetra Tech, Inc. (Tetra Tech) on behalf of Equitrans. This Plan will be submitted for review by the Pennsylvanian Historical & Museum Commission (PHMC) and the West Virginia Division of Culture and History (WVDCH). The PHMC and WVDCH represent the State Historic Preservation Officers (SHPOs) in Pennsylvania and West Virginia, respectively. Their offices are referred to generally as SHPO in this Plan. This Plan summarizes the approach Equitrans will follow to address the discovery of archaeological finds during construction activities within the Project's Area of Potential Effects (APE).

# 2.0 GUIDELINES, REGULATIONS AND LEGISLATION FOR UNANTICIPATED CULTURAL RESOURCES AND HUMAN REMAINS

This Plan will be followed in the event that cultural resources and/or human remains are encountered during construction of the Project. The stipulations of the Plan as set forth below are in accordance with the current guidelines detailed in the following federal and state guidelines, regulations and legislation:

## 2.1 FEDERAL

- Sections 106 and 110 of the National Historic Preservation Act (NHPA), as amended (54 United States Code (USC) 306108 and 306101 et seq.)
- Section 6 of the Archaeological Resources Protection Act, as amended (16 USC 470ee)
- Secretary of the Interior's Standards for Archaeology and Historic Preservation (48 FR 44716-42)
- Advisory Council for Historic Preservation (ACHP): *Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects* (ACHP February 23, 2007)
- Federal Energy Regulatory Agency (FERC) Office of Pipeline Regulation: *Guidelines for Reporting on Cultural Resources Investigations* (FERC 2002)

## 2.2 PENNSYLVANIA

- Pennsylvania SHPO's *Guidelines for Archaeological Investigations in Pennsylvania* (November 2008)
- Pennsylvania's Cemeteries and Graveyards Protected Act of 1849, P.L. 397, No. 296
- Pennsylvania's Historic Burial Places Preservation Act of 1994, P.L. 141, No. 22

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## 2.2 WEST VIRGINIA

- West Virginia SHPO's *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Report Preparation*
- West Virginia State Code 29-1-8, and its implementing regulations, Title 82, Series 2: "Standards and Procedures for Administering State Historic Preservation Programs"
  West Virginia State Code 29-1-8a, "Protection of human skeletal remains, grave artifacts and grave markers," and its implementing regulations, Title 82, Series 3: "Standards and Procedures for Granting Permits to Excavate Archaeological Sites and Unmarked Graves"

# 3.0 CONSULTATION WITH SHPOs AND NATIVE AMERICAN TRIBES

Equitrans has develop a list of Native American Tribes who may have historical connection to the Project area and who may have interest or concerns about results of surveys or the presence of known sensitive tribal traditional cultural properties. Consultation letters informing the respective tribes about the Project including a map were sent to the identified Tribes on April 27, 2015. To date, Equitrans has received no responses from any of the tribes. If responses are received, tribes who expressed an interest in ongoing communication will be included in Section 5 -Contacts Table in this Plan. In the event that cultural resources and/or human remains are encountered during construction, Equitrans will contact the interested tribes and appropriate SHPO to inform and elicit responses.

# 4.0 UNANTICIPATED DISCOVERY PROTOCOL

## 4.1 TRAINING

Equitrans will be responsible for advising construction personnel on the procedures to follow in the event that historic properties or human remains (an unanticipated discovery) are discovered during construction activities. Training will occur as part of the pre-construction on-site training program for all construction personnel.

Copies of this Plan will be incorporated into all relevant construction documents, and will be available in hard copy format on-site during construction. The training will emphasize the procedures to follow in the event that an unanticipated discovery is encountered during Project construction.

## 4.2 NOTIFICATION AND ASSESSMENT PROCEDURES (NOT INCLUDING HUMAN REMAINS)

The following steps outline the protocols to be taken in the event an unanticipated discovery is made during Project construction:

(1) Work in the immediate vicinity of the discovery should cease once an unanticipated discovery has been revealed;

(2) Notify the Environmental Inspector (EI) of the unanticipated discovery;

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(3) Flag or fence off the discovery location and take measures to ensure the security and integrity of the discovery. Work in the area of the discovery will not resume until the EI grants clearance;

(4) The EI will contact the Equitrans Project Manager (PM) and the Project Environmental Coordinator (EC);

(5) The EC will contact the Project Archaeologist (PA);

(6) The PA will conduct a preliminary assessment of the discovery to determine whether it is potentially a significant archaeological site;

(7) If the PA determines that the find is not an archaeological site, the PA will report the information to the EI and the EC. The EI will then grant clearance to the construction crews for work to resume;

(8) If the PA determines that the find may be an archaeological site and potentially significant, the PA will inform the EI and EC of this determination;

(a) The PE will notify the FERC, the relevant SHPO, and Interested Tribes of the determination. Work will not resume until authorized by the FERC and other appropriate agencies;

(b) Following consultation with the relevant SHPO and the FERC (and Interested Tribes if appropriate), the PA will evaluate the discovery and asses its horizontal and vertical extent, cultural association(s), and degree of disturbance. Equitrans will ensure that the PA has full access to the discovery;

(c) The PA will inform the EI, EC, the FERC, and the relevant SHPO of the findings and recommendations. If the finds are determined to not be significant, the EI and EC, after consultation with the FERC, the relevant SHPO, and if appropriate Interested Tribes, will grant clearance to the construction team to resume work. If a determination of significance is made, EC will authorize the archaeological investigators to develop an archaeological treatment plan which will be submitted to the FERC, the relevant SHPO, and when appropriate Interested Tribes, for review;

(d) If the potentially significant discovery cannot be avoided by Project construction, Equitrans, in consultation with the FERC, the relevant SHPO, and when appropriate Interested Tribes, will authorize the archaeological investigators to implement the mitigation plan;

(e) At the conclusion of archaeological fieldwork, the PA will submit a report of the treatment results and recommendations to Equitrans. Equitrans will provide the report for review to the FERC, the relevant SHPO, and when appropriate Interested Tribes;

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(f) Upon receiving written acceptance of the results of the implemented treatment from the FERC, the EC and EI will grant clearance to the construction team to resume work.

## 4.3 NOTIFICATION AND ASSESSMENT PROCEDURES (HUMAN REMAINS)

Human remains are physical remains of a human body or bodies including, but not limited to, bones, teeth, hair, and preserved soft tissues (mummified or otherwise preserved) of an individual. Remains may be articulated or disarticulated bones or teeth. Disturbance of human remains, burial places and or burial offerings and other grave furnishings without appropriate permits is a felony in Pennsylvania and West Virginia.

The following steps outline the protocols to be taken in the event an unanticipated discovery of human remains is made during Project construction.

(1) Cease work in the immediate vicinity of the discovery once an unanticipated discovery has been made;

(2) Ensure that all human remains and/or grave items are left in place and treated with dignity and respect. Do not collect, disturb, or remove materials determined to be human remains or associated grave objects;

(3) Notify the EI of the discovery that appears to be associated with human remains or an unmarked grave;

(4) Flag or fence off the discovery location, and take measures to ensure the security and integrity of the discovery. Work will not resume in the area of the find until the EI grants clearance to recommence;

(5) The EI will contact the PM and the EC;

(6) The EC will notify the PA;

(7) The PA will examine the discovery. If the PA determines that the finds are human remains or funerary grave items, the PA will immediately notify the EI and EC. The PM will notify the appropriate law enforcement agency. The EC will notify the FERC, the relevant SHPO, and Interested Tribes. The NPS and USFS will be notified if the discovery is located on property managed by their agency;

a. Pennsylvania Archaeology Guidelines require the coroner be notified of the discovery.

b. West Virginia Code requires communication of finds to the county sheriff within 48 hours (§29-1-8a (d)), although as a matter of practice the sheriff should be notified on the day of the discovery.

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If, upon inspection by the appropriate legal authorities, the remains are determined to be forensic and not archaeological (i.e., of a criminal nature), then Equitrans must await action by the authorities before construction may resume;

(8) If the remains are determined to be archaeological in nature, Equitrans in consultation with the FERC and the appropriate SHPO will determine whether a Project modification can avoid disturbing the remains. If Project actions cannot avoid the remains, Equitrans, in consultation with the FERC, the SHPO, and Interested Tribes as appropriate, will direct the PA to develop a disinterment/re-interment treatment plan in consultation with the SHPO;

(a) Once the treatment plan is approved by FERC, the relevant SHPO, and Interested Tribes as appropriate, the EC will authorize the PA to implement the treatment plan;

(i) **In Pennsylvania** the PMHC, which serves as the SHPO, will notify potential lineal descendants or culturally affiliated groups within one week of the discovery. The PHMC will consider the concerns and recommendations of all parties who are able to establish lineal descent or cultural affiliation with the individual(s) associated with the burial site.

(ii) Once consultation is completed, the PHMC will develop and direct a final treatment plan. This should be completed within fifteen days. The plan may recommend any of a number of treatment plans.

(c) The treatment plan will address the curation of any artifacts recovered in the process of excavation and provide for appropriate final disposition of the remains in accordance with applicable laws. Equitrans will be responsible for all costs associated with the discovery, evaluation and agency consultation, excavation, investigation and study, disinterment, re-interment, reporting, and curation of any human remains and associated funerary items encountered during Project construction; and,

(d) Project construction may resume only after successful implementation of the treatment plan (which may entail excavation of all identifiable human remains and associated features and artifacts, disinterment or removal of human remains and associated grave goods), and after Equitrans receives written approval by the FERC, the relevant SHPO, and Interested Tribes if appropriate.

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## 5.0 CONTACTS TABLE

| | |
|---|---|
| **EQUITRANS** | |
| **Project Environmental Coordinator (EC)**<br>Stephanie Frazier<br>Supervisor Permitting – Environmental<br>EQT Corporation<br>625 Liberty Avenue<br>Suite 1700<br>Pittsburgh, PA 15222 | |
| **Environmental Inspector (EI)**<br>To Be Determined Prior to Construction | **Project Archaeologist (PA)**<br>Christopher Borstel<br>Tetra Tech<br>1000 The American Rd.<br>Morris Plains, NJ 07950<br>Tel: (973) 630-8358<br>Email: chris.borstel@tetratech.com |
| **FEDERAL AGENCY CONTACTS** | |
| **FEDERAL ENERGY REGULATORY COMMISSION**<br>Paul Friedman, Archaeologist<br>Federal Energy Regulatory Commission<br>888 1st Street NE<br>Washington, DC 20426<br>Paul.Friedman@ferc.gov | |
| **STATE HISTORIC PRESERVATION OFFICE CONTACTS** | |
| **PENNSYLVANIA**<br>Serena Bellew<br>Bureau Director / Deputy State Historic Preservation Officer<br>Pennsylvania Historical and Museum Commission<br>Bureau for Historic Preservation<br>Commonwealth Keystone Building, Second Floor<br>400 North Street<br>Harrisburg, PA 17120-0093<br>(717) 705-4035<br>sbellew@pa.gov | Doug McLearen<br>Division Chief, Archaeology and Protection<br>Pennsylvania Historical and Museum Commission<br>Bureau for Historic Preservation<br>Commonwealth Keystone Building, Second Floor<br>400 North Street<br>Harrisburg, PA 17120-0093<br>(717) 772-0925<br>dmclearen@pa.gov |
| **WEST VIRGINIA**<br>Susan Pierce<br>Director/Deputy State Historic Preservation Officer<br>West Virginia Division of Culture and History<br>The Culture Center, Capitol Complex<br>1900 Kanawha Boulevard East<br>Charleston, WV 25305-0300<br>Tel: (304) 558-0240 ext. 158<br>Email: susan.m.pierce@wv.gov | Lora A. Lamarre-DeMott<br>Senior Archaeologist<br>West Virginia Division of Culture and History<br>The Culture Center, Capitol Complex<br>1900 Kanawha Boulevard East<br>Charleston, WV 25305-0300<br>Tel: (304) 558-0240 ext. 711<br>Email: lora.a.lamarre@wv.gov |
| **INTERESTED TRIBES** | |
| **To be included based on response to consultation letters.** | |

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| **LAW ENFORCEMENT CONTACTS** | |
|---|---|
| **PENNSYLVANIA** | |
| Green County Coroner<br>PO Box 440 Jefferson, PA 15344<br>(724) 883-4477 | Greene County Sheriff<br>10 E High St # 106, Waynesburg, PA 15370<br>(724) 852-5218 |
| Allegheny County Coroner (Medical Examiner's Office)<br>1520 Penn Ave, Pittsburgh, PA 15222<br>(412) 350-4800 | Allegheny County Sheriff<br>Allegheny County Courthouse, 436 Grant St # 111<br>Pittsburgh, PA<br>(412) 350-4700 |
| Washington County Coroner<br>100 W Beau St # 203, Washington, PA 15301<br>(724) 228-6785 | Washington County Sheriff<br>100 W Beau St # 303, Washington, PA 15301<br>(724) 223-4719 |
| **WEST VIRGINIA** | |
| Wetzel County Coroner & Medical Examiner<br>619 Virginia Street West<br>Charleston, West Virginia 25302<br>(304) 558-6920 | Wetzel County Sheriff<br>John E. Brookover<br>PO Box D<br>New Martinsville, WV 26155<br>(304) 455-8218 |

TETRA TECH

July 8, 2015

Susan M. Pierce, Deputy SHPO
Attention: Review and Compliance Staff
State Historic Preservation Office
WV Division of Culture and History
1900 Kanawha Boulevard East
Charleston, WV 25305

Subject: Initiation of Section 106 Consultation, Proposed Equitrans Expansion Project (FERC Docket No. PF15-22-000), Greene, Allegheny, and Washington Counties, Pennsylvania, and Wetzel County, West Virginia

Dear Ms. Pierce:

On behalf of Equitrans, LP of Pittsburgh, Pennsylvania, Tetra Tech, Inc., hereby submits a request to initiate consultations concerning the proposed construction of a new natural gas pipeline custody-transfer interconnect station in the vicinity of the hamlet of Mobley, Wetzel County, West Virginia. This proposed facility is part of the larger Equitrans Expansion Project (Project), situated primarily in Pennsylvania, whose purpose is to increase the capacity and improve the capacity to transfer product across Equitrans' pipeline system. The Project requires a license from the Federal Energy Regulatory Commission (FERC) and is subject to consultation under Section 106 of the National Historic Preservation Act of 1966, as amended. The attachments accompanying this letter detail the Project and list known cultural resources in its vicinity.

Based upon Project activities and locations and information available from the WVSHPO online Geographic Information System (CRGIS), Tetra Tech anticipates that identification surveys for archeological and above-ground resources may be required as part of the Section 106 consultation process. The proposed project adjoins the centerline of the proposed Mountain Valley Pipeline (MVP), another Equitrans project for which Tetra Tech is the cultural resources contractor. The enclosed work plan and unanticipated discoveries plan are modeled on that for MVP, which WVDCH has previously approved. We are planning to coordinate efforts with the MVP survey and to avoid unnecessary duplication and would only conduct field investigations of the Wetzel County interconnect in portions of the APE not investigated by the MVP survey; however, we will report the results of the Wetzel County interconnect as a complete, standalone document.

Tetra Tech invites your comments on the Project, including guidance concerning the need for cultural resources surveys.

Sincerely yours,

Christopher L. Borstel, Ph.D., RPA
Cultural Resources Specialist

Tetra Tech, Inc.
1000 The American Road, Morris Plains, NJ 07950
Tel 973.630.8000 Fax 973.630.8025 www.tetratech.com

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Equitrans Expansion Project (FERC Docket No. PF15-22-000)

Webster Interconnect
Wetzel County, West Virginia

**ATTACHMENT A:**
**WEST VIRGINIA SHPO**
**INFORMATION SHEET FOR SECTION 106 REVIEW PROJECTS**

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**West Virginia SHPO**
**Information Sheet for Section 106 Review Projects**

| Item | Information |
|---|---|
| **I. GENERAL INFORMATION** | |
| New project? | Yes |
| FR # | N/A |
| a. Project Name | Equitrans Expansion Project—Webster Interconnect<br><br>Developer: Equitrans, LP, Pittsburgh, Pennsylvania |
| b. Federal Agency | Federal Energy Regulatory Agency (FERC)<br><br>Docket No. PF15-22-000 |
| c. Federal Agency Contact | Paul Friedman, Archaeologist<br>Federal Energy Regulatory Commission<br>888 1st Street NE<br>Washington, DC 20426<br>Paul.Friedman@ferc.gov |
| d. State Agency | N/A |
| e. State Agency Contact | N/A |
| f. Project Contact Person | Christopher L. Borstel, Ph.D., RPA<br>Tetra Tech, Inc.<br>1000 The American Road<br>Morris Plains, NJ 07950<br>973-630-8358<br>chris.borstel@tetratech.com |
| g. Project Address | See Project Location, below |
| h. Project Location ***(Subject to Revision)*** | SW quadrant of intersection of North Fork Road (CR-15) and Shuman Hill Road (CR-80) south of North Fork of Fishing Creek, Mobley, Wetzel County, WV<br><br>UTM: Zone 17S 539,017m E 4,378,265m N (NAD 1983) *(Project center)*<br><br>USGS 7.5-minute quadrangle map: Big Run, WV<br><br>*See Attachment B for map.* |
| i. Project Description | Project involves construction of a natural gas pipeline interconnect between the Equitrans' proposed Mountain Valley Pipeline H-600 (WV SHPO FR # 15-67-MULTI) and its existing H-306 pipeline. The interconnect will be built on a 1.37-acre parcel. Construction will involve vegetation clearance; excavations; foundation work; installation of valve(s), meter(s), and other pipeline elements; backfilling; and site restoration. No demolition of existing buildings is required. The currently proposed location of the interconnect is adjacent to a small existing facility, which is presumed to be related to a gas pipeline. It is not clear whether a separate access road will be required.<br><br>*Additional project description is included as Attachment C* |
| j. Photographs | Field inspection has not yet been completed. Oblique aerial images of the Project location from Microsoft Bing are included as Attachment D. |

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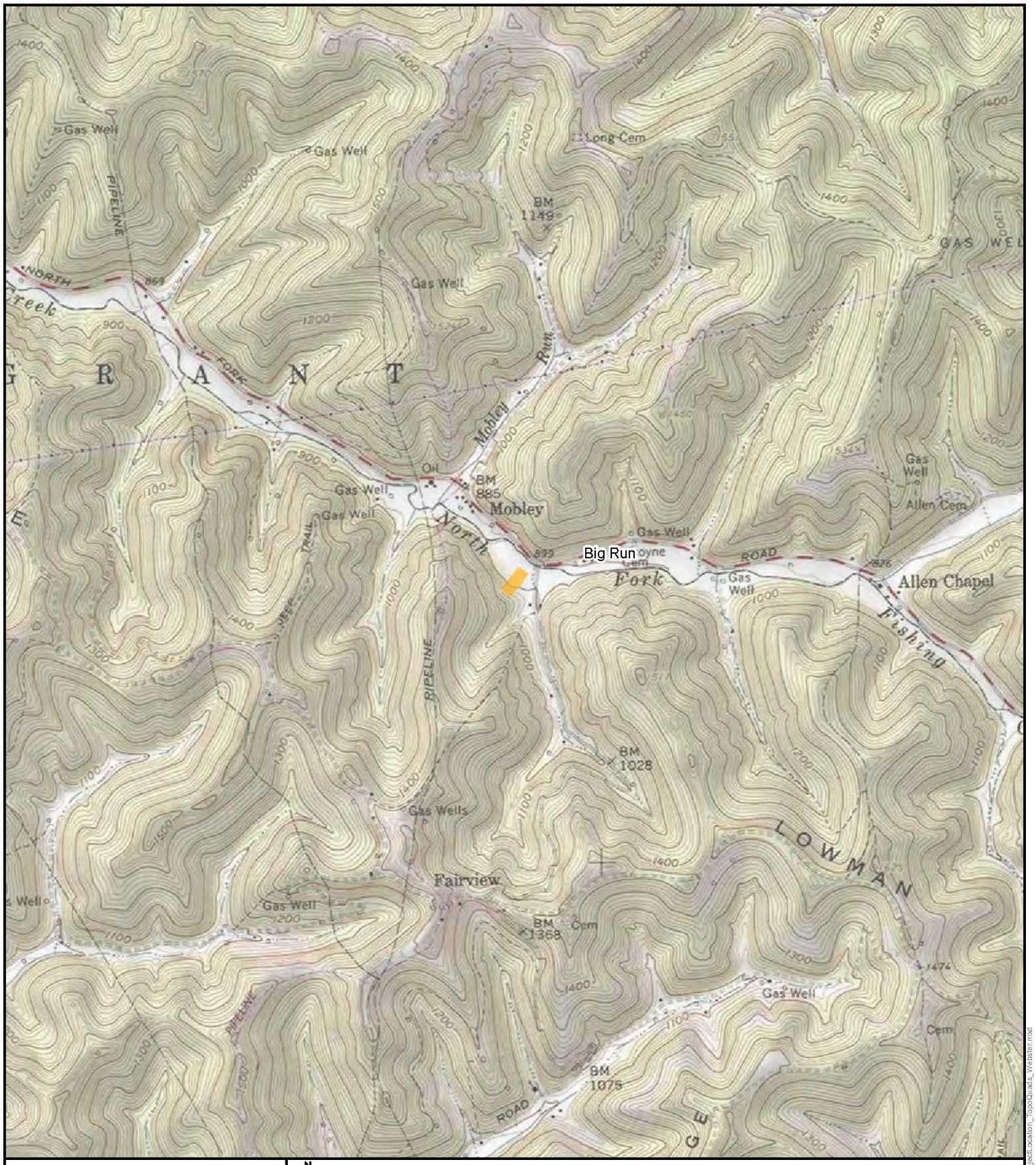
| Item | Information |
|---|---|
| k. Building(s) Date(s) of Construction in Direct Effects APE | No buildings |
| **II. Identification of Cultural Resources** | |
| a. Known Archeological Sites | Within 1 mile of Project, per check of WV SHPO GIS on 5/27/15:<br>• 46-WZ-78—20th-century field scatter, 300 feet to north<br>• 46-WZ-79—20th-century field scatter, 150 feet to north<br>*Information from Tetra Tech archeological survey of Mountain Valley Pipeline is pending.* |
| b. Cemeteries | Within 1 mile of Project, per check of WV SHPO GIS on 5/27/15:<br>• 46-WZ-89—Kilcoyne Cemetery (1838-2001), 0.32 miles to northeast<br>• 46-WZ-90—Hostuttler Cemetery (1892-2004), 0.81 miles to southwest |
| c. Structures | Within 1 mile of Project, per check of WV SHPO GIS on 5/27/15:<br>• No inventoried structures<br>• Nearest inventoried structures are located in Burchfield, approximately 2.1 miles to north; none have been determined NRHP-eligible<br>*Information from Tetra Tech architectural survey of Mountain Valley Pipeline is pending.* |
| d. Historic Structures or Districts | Within 1 mile of Project, per check of WV SHPO GIS on 5/27/15:<br>• No NRHP-listed or eligible structures or districts<br>• Nearest NRHP-listed property is the Fish Creek Covered Bridge (NRIS No. 81000609) in Hundred, WV, approximately 9.6 miles to north-northeast.<br>*Information from Tetra Tech architectural survey of Mountain Valley Pipeline is pending.* |
| | See also Attachment E |

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Equitrans Expansion Project (FERC Docket No. PF15-22-000)

Webster Interconnect
Wetzel County, West Virginia

**ATTACHMENT B: PROJECT MAP**




**Equitrans Expansion Project**

NAD 1983 UTM 17N 1:24,000 0 0.5 1 Miles

EQUITRANS

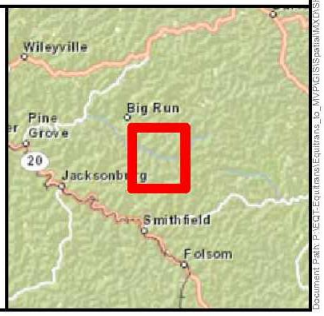
**Project Location**
**1:24,000 Topographic Quadrangle**
**Webster Interconnect**

**May 2015**

Data Sources: ESRI Streaming Data (2014)

**Legend**

Proposed Webster Interconnect Site



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Equitrans Expansion Project (FERC Docket No. PF15-22-000)

Webster Interconnect
Wetzel County, West Virginia

**ATTACHMENT C: PROJECT DESCRIPTION**

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**Equitrans Expansion Project (FERC Docket No. PF15-22-000)**

Jefferson, Morgan, and Franklin townships, Greene County, Pennsylvania
Forward Township, Allegheny County, Pennsylvania
Union Township, Washington County, Pennsylvania
Wetzel County, West Virginia

## PROJECT DESCRIPTION

Equitrans, LP, of Pittsburgh, Pennsylvania, proposes to make several improvements to its existing natural gas pipeline system in southwestern Pennsylvania and northern West Virginia to increase system capacity and improve its ability to serve customers in the eastern United States. Collectively, these improvements are called the Equitrans Expansion Project (Project).

The Project is located in Greene, Allegheny, and Washington counties, Pennsylvania, and in Wetzel County, West Virginia. The Project will add up to 600,000 dekatherms per day (Dth/day) of north-to south firm capacity on the Equitrans system. The Project includes:

1. The replacement of the 4,800-horsepower Pratt Compressor Station in Franklin Township, Greene County, Pennsylvania, with a new 31,300-horsepower Redhook Compressor Station at a nearby location in the same township;
2. Construction in Jefferson, Morgan, and Franklin townships, Greene County, Pennsylvania, of up to approximately 4 miles of 30-inch diameter pipeline between the proposed Redhook Compressor Station and the existing H-302 pipeline;
3. Construction of up to approximately 5 miles of 24-inch diameter pipeline between the Equitrans' existing Applegate Gathering System, Forward Township, Allegheny County, Pennsylvania, and its existing H-148 pipeline in neighboring Union Township, Washington County, Pennsylvania; and
4. Construction of the proposed Webster interconnect, Wetzel County, West Virginia, to deliver natural gas volumes into the proposed Mountain Valley Pipeline, a separate project now in the design phase and environmental and permitting review.

The Project is designed to transport natural gas from the northern portion of Equitrans' system south to a future interconnection with Mountain Valley, as well as to existing interconnects on the southern portion of Equitrans' system with Texas Eastern Transmission, LP and Dominion Transmission, Inc. The Project will provide shippers with the flexibility to transport additional natural gas produced in the central Appalachian Basin to meet the growing demand by local distribution companies, industrial users, and power generation facilities located in local, northeastern, Mid-Atlantic, and southeastern regions of the United States. The Project will also increase system reliability, efficiency, and operational flexibility for the benefit of all Equitrans customers.

Design and environmental review of the Project are now underway. On April 1, 2015, Equitrans submitted a filing with Federal Energy Regulatory Commission (FERC), pursuant to Section 157.21(b) of agency regulations, to initiate the FERC's pre-filing review process. If this and subsequent steps in the review process are successful, FERC will issue a license authorizing Project construction. FERC's licensing of the Project constitutes a federal undertaking, necessitating consultations between FERC and the State

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Historic Preservation Officers (SHPOs) in Pennsylvania and West Virginia pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), and related statutes and regulations. Equitrans has contracted with Tetra Tech, Inc. (Tetra Tech), through its Boston, Massachusetts, office, to conduct Phase I cultural resources studies to obtain necessary information to support Section 106 consultations and related environmental reviews.

**Description of Project Actions in West Virginia**

***Webster Interconnect*** *(proposed), Wetzel Co., WV*

*Address: SW of intersection of North Fork and Shuman Mill roads (CR-15 and -80, respectively), Mobley, WV*

*Quad Map: Big Run, WV, 7.5-minute USGS quadrangle map*

In West Virginia, Equitrans plans to install a new custody-transfer interconnect station between the pipeline serving the Pennsylvania portion of the Project and the planned Mountain Valley Pipeline. The station will consist of meter(s), pressure/flow control valve(s), over pressure protection, isolation block valves, and associated instrumentation and controls in order to measure and control the flow of natural gas between Equitrans and Mountain Valley. The interconnect site will be located in a fenced and gated area, as close as practical to the actual intersection of the Equitrans H-306 pipeline and the proposed Mountain Valley H-600 pipeline in order to keep the length of the interconnecting piping to a minimum. Equitrans currently plans to locate the interconnect on a 1.37-acre parcel of valley floor and side slope south of North Fork of Fishing Creek (Table 1).

**Table 1: Key Project Dimensions, West Virginia Element**

| Project Element | Diameter (in) | Length (ft) | ROW Width (ft) | | Yards and Work-spaces | Access Roads (ft) | | Length HDD (ft) |
|---|---|---|---|---|---|---|---|---|
| | | | Temp. | Perm. | | Temp. | Perm. | |
| Webster Interconnect | N/A | 1.37 acres | - | - | - | - | - | 0 |

*Note: Project design as of May 5, 2015. Dimensions are preliminary.*

Construction of the Webster Interconnect will involve clearing and grubbing of any trees within the worksite; excavation, filling, grading, and related earthwork as needed; construction of foundations and installation of below ground structures and piping; construction of above-ground valves, pressure control devices, and instrumentation sheds; and site restoration and installation of fencing. Currently available information indicates that the 1.37-acre parcel represents the limit of construction-related ground disturbance, except for the possible need for a minor all-weather gravel access road. The maximum above-ground height of the interconnect is assumed to be 15 feet.

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Equitrans Expansion Project (FERC Docket No. PF15-22-000)

Webster Interconnect
Wetzel County, West Virginia

**ATTACHMENT D: PHOTOGRAPHS**

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*Photo 1: Oblique aerial image of Webster Interconnect parcel. View south. Image source: Microsoft Bing bird's eye view, ca. 2010.*

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*Photo 2: Oblique aerial image of Webster Interconnect parcel. View north. Image source: Microsoft Bing bird's eye view, ca. 2010.*

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Equitrans Expansion Project (FERC Docket No. PF15-22-000)

Webster Interconnect
Wetzel County, West Virginia

**ATTACHMENT E: REVIEW of WV SHPO GIS, May 27, 2015**

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**Table E-1: Inventoried Archeological Sites within 1 Mile of the Project**

| Site Number | Site Name | Site Type | NRHP Status | Distance to Project CL | |
|---|---|---|---|---|---|
| | | | | Miles | Element |
| 46-WZ-78 | WC1-1 | Field scatter of early 20th-century artifacts | Recommended Not Eligible | 0.06 | Webster Interconnect |
| 46-WZ-79 | WC1-2 | Field scatter of early 20th-century artifacts | Recommended Not Eligible | 0.03 | Webster Interconnect |

Source: WV SHPO GIS, 5/27/2015

**Table E-2: Inventoried Historic Cemeteries within 1 Mile of the Project**

| ID Number | Cemetery Name | Description | NRHP Status | Distance to Project CL | |
|---|---|---|---|---|---|
| | | | | Miles | Element |
| 46-WZ-89 | Kilcoyne | Small family cemetery containing approximately 27 burials, dating 1838-2001 | Not Evaluated | 0.32 | Webster Interconnect |
| 46-WZ-90 | Hostuttler | Small family cemetery containing approximately 23 burials, dating 1893-2004 | Not Evaluated | 0.81 | Webster Interconnect |

Source: WV SHPO GIS, 5/27/2015

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Equitrans Expansion Project (FERC Docket No. PF15-22-000)

Webster Interconnect
Wetzel County, West Virginia

**ATTACHMENT F: WORK PLAN**

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# EQITRANS EXPANSION PROJECT
# ARCHAEOLOGY AND HISTORIC ARCHITECTURE WORK PLAN FOR WEST VIRGINIA SEGMENT

Prepared for

**EQUITRANS, LP**
**625 LIBERTY AVENUE, SUITE 1700**
**PITTSBURGH, PA 15222**

July 2015

Prepared by

TETRA TECH

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## 1.0 Introduction

Equitrans, LP (Equitrans), of Pittsburgh, Pennsylvania, proposes to make several improvements to its existing natural gas pipeline system in southwestern Pennsylvania and northern West Virginia to increase system capacity and improve its ability to serve customers in the eastern United States. Collectively, these improvements are called the Equitrans Expansion Project (Project).

The Project is located in Wetzel County, West Virginia and Greene, Allegheny, and Washington counties, Pennsylvania. The Project includes:

1. Construction of the proposed Webster interconnect, Wetzel County, West Virginia, to deliver natural gas volumes into the proposed Mountain Valley Pipeline, a separate project now in the design phase and environmental and permitting review.
2. The replacement of the 4,800-horsepower Pratt Compressor Station in Franklin Township, Greene County, Pennsylvania, with a new 31,300-horsepower Redhook Compressor Station at a nearby location in the same township;
3. Construction in Jefferson, Morgan, and Franklin townships, Greene County, Pennsylvania, of up to approximately 4 miles of 30-inch diameter pipeline between the proposed Redhook Compressor Station and the existing H-302 pipeline;
4. Construction of up to approximately 5 miles of 24-inch diameter pipeline between the Equitrans' existing Applegate Gathering System, Forward Township, Allegheny County, Pennsylvania, and its existing H-148 pipeline in neighboring Union Township, Washington County, Pennsylvania; and
5. Staging areas for construction equipment will be sited along the Project corridor and at nearby locations.

This work plan describes the methods proposed for a Phase I archaeological investigation and for historic architectural investigation to be undertaken within the West Virginia portion of the Project. The cultural resources investigations for this project will be performed in conformance with FERC's 2002 *Guidelines for Reporting on Cultural Resources Investigations For Pipeline Projects*; other applicable FERC regulations (18 CFR 380); the National Historic Preservation Act of 1966, as amended (NHPA); "Protection of Historic Properties," (Title 36 Code of Federal Regulations Part 800 [36 CFR 800], as amended through 2004) of the Advisory Council on Historic Preservation (ACHP); the Native American Graves Protection and Repatriation Act (NAGPRA), and the West Virginia State Historic Preservation Office (SHPO), also referred to as the West Virginia Division of Culture and History (WVDCH), *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Report Preparation* and other applicable state and federal statutes and guidelines.

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The proposed Webster interconnect parcel is fairly small, approximately 1.37 acres. The parcel is located adjacent to, and contains a portion of, the pipeline ROW for the Mountain Valley Pipeline Project (MVP) which serves as a sister project to the Equitrans Expansion Project (Figure 1). With the exception of the southwest portion of the parcel, the majority of survey will likely fall under the MVP archaeological survey and will also essentially be within the study area for architectural resources for MVP. Therefore, the work plan presented for the Project is modeled after the MVP archaeological and architectural work plan, as amended, to which the WV SHPO provided concurrence comments on November 21, 2014 (15-67-MULTI) and May 8, 2015 (15-67-MULTI-5).




**Figure 1. Location of the Webster Interconnect Parcel and the MVP Pipeline Route**

## 2.0 Archaeology Research Design

The goal of the Phase I investigation is to identify cultural resources within the area of potential effects (APE) for the Project that may be potentially eligible for listing on the National Register

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of Historic Places (NRHP), including previously-documented and undocumented resources. Research objectives will focus on gathering sufficient information on each resource to be able to recommend whether further cultural resource investigations are necessary to evaluate NRHP eligibility. The methodologies to achieve these objectives will include background research, predictive modeling of site distribution, fieldwork, artifact analysis, and site type identification. In combination, these objectives and methodologies constitute the research design which guides the Phase I investigation.

## 2.1 Background Research

Background research for archaeological survey will comply with WVDCH and FERC guidelines. Background research will include a review of known archaeological resources within one mile of the compressor station. Prior to fieldwork, Tetra Tech will consult the National Register of Historic Places (NRHP), and, if necessary, the WVDCH files in Charleston, West Virginia. Sources that may be available online would also be consulted. Additional sources that may be examined include historic maps and aerial images, historical societies, and local universities or libraries.

Research about context will focus on Wetzel County where the Project is located, plus any pertinent topics that have been published for the broader surrounding regions. These research topics will include but not be limited to geology, soils, plants, wildlife, prehistoric settlement patterns, historical patterns of Euro-American settlement, slavery, the Civil War, and the transition of farming from subsistence and tenancy to agribusiness, and mineral extraction industry history as it relates to the Project area. Research will utilize the archived resources at WVDCH in Charleston, West Virginia and various libraries in the Project area, local and county historical societies, available online documentary and cartographic resources, and relevant published material.

## 2.2 Area of Potential Effects (APE) for Archaeology

The actual definition of the APE requires consultation with WVDCH. Tetra Tech will consult with the WVDCH regarding the proposed APE for the Project prior to performing any fieldwork specifically and exclusively conducted for the present Project. However, owing to the overlap between this Project and MVP, Tetra Tech also expects to draw on the MVP field survey for much of the data for this consultation, and archeological survey in the vicinity of the area of overlap was underway or had just been completed as of late May 2015 (J.T. Marine, Tetra Tech, personal communication). Based on the approved MVP work plan, Tetra Tech proposes two APE sections for the Project. The direct effects APE, which is concerned primarily with potential impacts to archaeological resources (if present), will include areas containing the pipeline, appurtenant facilities, extra work spaces, access roads, and any other areas that would undergo

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ground disturbance due to pipeline construction and operation. The indirect effects APE for the Project, which is primarily concerned with potential impacts to historic architectural resources (including buildings, structures, objects, sites, and districts), will include areas that may be affected visually by pipeline construction and operation. The direct effect APE is discussed below, the indirect effects APE is discussed within Section 3.0 Historic Architecture.

Tetra Tech anticipates that the APE for archaeology would be identified to include all locations where construction of the Project involves ground disturbance, such as that resulting from grubbing and clearing, grading for access roads and staging areas, and excavation of the compressor station foundation. Prior to commencing field investigation, Tetra Tech would use environmental factors such as distance to water, topographic elevation, among others, predict areas of high sensitivity (i.e. areas that are likely to contain archaeological resources that may be eligible to the NRHP) and areas of low sensitivity (i.e. areas that are likely not to contain archaeological resources that may be NRHP-eligible). In compliance with WVDCH guidelines, the Phase I archaeological survey will involve field observation of the entire APE using a variety of field methods determined by the field context (e.g., pedestrian survey where ground visibility exceeds 75 percent, shovel testing in areas of limited ground visibility, walkover and noted observations in areas of steep slopes that exceed 20 percent).

As previously discussed, a large portion of the Webster interconnect footprint will likely be covered by the MVP cultural resource surveys of the portion of the pipeline which falls within the interconnect footprint. The Project team with coordinate with the MVP team to determine if there is overlap between the Project APE and determine if additional survey is needed for the southwest portion of the parcel which may not be accounted for during the MVP pipeline survey.

### 2.3 Archaeological Sensitivity in Project APE

Archaeological sensitivity is described as the relative potential for specific locations or generalized landform types to contain archaeological resources, mediated by the presence of key environmental factors (e.g., geomorphology, water sources, well-drained soils, natural resources) or built-environment infrastructure (e.g., roads, railroads, and canals). Reliable estimates of archaeological sensitivity, or potential, are essential for the implementation of effective and meaningful survey strategies.

Based on a preliminary desktop assessment of publicly available date including Federal Emergency Management Agency flood maps, United States Department of Agriculture soils data, topographic maps, and WVDCH's WV SHPO Map Viewer the parcel exhibits low to moderate archaeological sensitivity.

Two previously documented archaeological sites are located within 1 mile of the parcel:

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- Site 46-WZ-78 (WC1-1) consisting of a field scatter of early 20th-century artifacts recommended as not eligible for the NRHP and located 0.06 mile from the parcel; and,
- Site 46-WZ-79 (WC1-2) consisting of a field scatter of early 20th-century artifacts recommended as not eligible for the NRHP and located 0.03 mile from the parcel.

Due to the parcel's location within a valley adjacent to the North Fork Fishing Creek and the two nearby historic archaeological sites, historic sensitivity for the parcel is assessed as moderate.

Prehistoric sensitivity of the parcel is considered moderate within the northeastern portion of the parcel which is located within a floodplain adjacent to the North Fork Fishing Creek and contains well-drained Skidmore gravelly loams associated with floodplains and toe slopes. The southwestern portion of the parcel exhibits low prehistoric sensitivity due to slopes ranging from 35 to 70 percent and an increased distance, over 400 feet, to the North Fork Fishing Creek.

Initial desktop sensitivity assessments will be refined based on additional research, pedestrian reconnaissance of the parcel, and the results of the MVP archaeological testing within the parcel and the general area.

## 2.4 Phase I Archaeological Field Investigation, Laboratory Analysis, and Reporting

Tetra Tech will conduct the Phase I subsurface archeological survey in accordance with this work plan and WVDCH's guidelines, once concurrence of the planned approached is reached with the WVDCH.

*Field Investigation*

In accordance with WVDCH guidelines, shovel tests will be arrayed along linear transects at intervals of 10-15 meters. They will be hand-excavated and will measure 0.50 x 0.50 meters in diameter. Shovel tests will be excavated to a depth below which archaeological deposits are not likely to occur or until an impasse is reached below which hand excavation is not possible. In upland settings with limited alluvial deposits, it is anticipated that shovel tests will be around 30 to 40 centimeters (12-16 inches) deep. Deeper soils are anticipated on stream floodplains, and may extend to one meter or more. In areas of deep alluvium, shovel testing will be augmented with deep testing to assess the potential for buried cultural horizons. However, based on a desktop review of Federal Emergency Management Agency floodplain maps, deep testing within the Webster interconnect parcel, if required, would be confined to the northeastern portion and fall within the MVP archaeological survey of the pipeline ROW. Soil will be screened through 0.25-inch mesh sieves to facilitate systematic artifact recovery. Any non-modern artifacts that are recovered will be retained for cleaning, identification, and inventory. Each shovel test will be assigned a unique, project-specific identifier. Shovel test results will be recorded using standard

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terminology, such as USDA soil texture categories and Munsell color codes. Each shovel test will be promptly backfilled after excavation and recordation. Shovel test locations will be recorded using a GPS receiver with sub-meter accuracy. Digital photographs of typical conditions and features of notable interest will be taken as necessary to document the field investigation.

Areas displaying greater than 75 percent ground visibility will be investigated through pedestrian survey. Transects aligned at 10 to 15-meter separation, as possible, will be walked by the field team. Observed non-modern artifacts will be noted, mapped using GPS at sub-meter accuracy, and collected.

*Laboratory Analysis*

Artifacts recovered from shovel testing and pedestrian survey will be cleaned, analyzed, and inventoried in Tetra Tech's archaeology lab. The analysis of prehistoric lithic artifacts will be grounded in an approach linking attributes of form and function to particular stages in stone tool reduction and use strategies.

Historic period artifacts will be classified by major functional groups, e.g., architectural, household, and personal. They will then further be categorized by material class, e.g., square-cut nail, bottle glass, and clothing buttons.

At the conclusion of analysis, artifacts will be placed in acid-free reclosable polyethylene bags and tagged with relevant provenience information. If all or part of the artifact assemblage is determined to possess research value, it will be cataloged and curated for long-term storage according to WVDCH standards.

*Report*

Following fieldwork, Equitrans will prepare a full Phase I cultural resources investigation report conforming to WVDCH standards and guidelines. The report will include, but will not be limited to: introduction; environmental, prehistoric, and historic background; sensitivity model; field methods; survey results; recommendations and conclusions; and bibliography. The report will be supported by appropriate appendices and illustrative materials. If sites are located Equitrans will submit new site forms to WVDCH for any newly-discovered sites and updated site forms for previously documented sites.

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## 3.0 Historic Architecture

The APE for indirect effects generally relates to aboveground resources including historic structures and landscapes. The indirect effects APE includes: those areas where the character of a historic property's use or setting that contributes to its historic significance may be permanently disturbed; where the character of the property's use or physical features within the property's setting that contribute to its historic significance may be changed; where the property is removed from its historic location; or any locations where the introduction of visual, atmospheric, or audible elements diminish the integrity of the property's significant historic features. The proposed APE for indirect effects is 0.50 mile for aboveground facilities, but may vary depending on WVDCH consultation, viewshed analysis and site specific factors.

In general, the APE for historic architecture would include all areas that might be visually affected by the compressor station construction and operation. Typical components or actions of pipeline construction and operation that result in adverse visual effects are structures, such as the compressor stations, and forest clearing to clear parcels or widen an existing one.

*Background Research*

Once the indirect effects APE has been established in consultation with the WVDCH, additional site file research through the WVDCH will be conducted.

A preliminary search of the WVDCH's WV SHPO Map Viewer identified two cemeteries within 1 mile of the parcel:

- Site 46-WZ-89—Kilcoyne Cemetery (1838-2001), 0.32 mile to northeast
- Site 46-WZ-90—Hostuttler Cemetery (1892-2004), 0.81 mile to southwest

No other previously identified above ground resources were documented with 2 miles of the parcel.

Information on previously-inventoried properties located within the indirect effects APE will be assembled into the Project's GIS. Historical sources collected during background research for the archaeology phase will be reviewed to develop an understanding of the region's history and significant trends, themes, and events that will need to be considered during survey and evaluations. This review will also inform survey expectations. Finally, historical maps will be geo-referenced in GIS to project the locations of towns, factories, battlefields, and other mapped resources.

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*Field Investigation*

With the assistance of a GIS specialist, the Project architectural historian will review historical maps and other sources to identify the possible locations of unrecorded properties within the indirect effects APE that are potentially 50 years of age. The architectural historian will drive to each potential historic architectural resource in the APE, as well as all previously recorded resources and National Register-listed properties, to document the properties. The architectural historian will record all properties style-dated as 50 years of age or older in accordance with WVDCH guidelines. Working from public rights-of-way (ROWs), each property will be digitally photographed and a GPS reading will be taken. Primary resource types include dwellings, farms, schools, churches, cemeteries, commercial properties, factories, and others. Notes will be made on the resource's architectural style and age based on a number of published references. Records will also be made of each resource's condition, additions or deletions, associated outbuildings, and cultural landscape. It is expected that rural historic farmsteads will be found within the APE and will require recording, and the cultural landscapes of such farms will be described. Where secondary structures exist, they will also be recorded. A minimum of two photographic views will be taken from public rights-of-way of each structure: front and oblique. Views will also be taken of secondary resources and their setting. All of this information will be recorded in Trimble GPS units and entered into a tailored database. Spatial data will be organized via GIS. GPS data for each property will be entered into the Project's GIS for use in mapping surveyed properties.

*Site Form Preparation*

State site forms will then be completed for each resource, using the WVDCH West Virginia Historic Property Form. Information presented in the site form will include: a detailed site plan or sketch map, a USGS quadrangle map with site location noted, representative photographs of the site, a discussion of artifact densities or percentages, a discussion of diagnostic artifacts recovered, and if structural or foundation remnants are identified, a site plan or sketch map of each foundation will be included. Two copies of each site form will be submitted separately, one for the WVDCH's permanent site records and one as an appendix to the technical report. Site forms will be printed on acid-free paper.

*Reporting*

All reporting will comply with the WVDCH guidelines, the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48 Fed. Reg. 44716-42), National Register Bulletins, and FERC's Guidelines for *Reporting on Cultural Resources Investigations for Pipeline Projects*.

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All inventoried properties will be evaluated for their eligibility for nomination to the National Register. Properties will be classified as either eligible, not eligible, or eligibility unknown – additional information needed to make a determination.

## 4.0 Tribal Outreach

Equitrans has developed a list of Native American Tribes who may have historical connection to the Project area and who may have interest or concerns about results of surveys or the presence of known sensitive tribal traditional cultural properties. Consultation letters informing the respective tribes about the Project including a map were sent to the identified Tribes on April 27, 2015. To date, Equitrans has received two responses. One from Bonney Hartley, the Tribal Historic Preservation Officer for the Stockbridge-Munsee Mohican Tribe, stating the Tribe does not wish to consult on the Project as it is outside their area of interest in Pennsylvania. The second response was from Susan Bachor the Delaware Tribe Historic Preservation Representative, who is continuing consultation for the Pennsylvania portion of the Project.

## 5.0 Unanticipated Discovery Plan

On behalf of Equitrans, Tetra Tech will develop a Project-specific plan for the West Virginia section that would outline the procedures that would be followed in the event that an archaeological site or human remains are found during the course of Project construction and operation. Such plans are required by FERC and would include a protocol to be followed in the field and would provide contact information for key local individuals who would need to be contacted should an unanticipated discovery be made.

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## 6.0 References Cited

Federal Energy Regulatory Commission [FERC]. 2002. Guidelines for Reporting on Cultural Resources Investigations for Pipeline Projects. Department of Energy, Washington, D.C.

West Virginia Division of Culture and History [WVDCH]. No Date. Guidelines for Phase I, II, and III Archaeological Investigations and Technical Report Preparation. Online at http://www.wvculture.org/shpo/techreportguide/guidelines.html, accessed July 18, 2015.

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Equitrans Expansion Project (FERC Docket No. PF15-22-000)

Webster Interconnect
Wetzel County, West Virginia

**ATTACHMENT G: UNANTICIPATED DISCOVERIES PLAN**

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# EQUITRANS EXPANSION PROJECT

Plan for Unanticipated Historic Properties and Human Remains
Pennsylvania and West Virginia

**Prepared for**

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**PITTSBURGH, PA 15222**

**Prepared by**

TETRA TECH

**July 2015**

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# 1.0 INTRODUCTION

Equitrans, LP (Equitrans), of Pittsburgh, Pennsylvania, proposes to make several improvements to its existing natural gas pipeline system in southwestern Pennsylvania and northern West Virginia to increase system capacity and improve its ability to serve customers in the eastern United States. Collectively, these improvements are called the Equitrans Expansion Project (Project). Equitrans recognizes that despite the extensive archaeological field investigations that are conducted prior to Project construction, it is nonetheless possible that potentially significant cultural resources could be discovered during Project construction, especially during excavation activities. Equitrans recognizes its role to protect and preserve cultural resources that might be found during construction activities, in accordance with federal and state legislation. Cultural resources in this context are defined as archaeological sites, objects, and features, and include human remains and associated grave goods.

This Plan for Unanticipated Historic Properties and Human Remains (Plan) was developed by Tetra Tech, Inc. (Tetra Tech) on behalf of Equitrans. This Plan will be submitted for review by the Pennsylvanian Historical & Museum Commission (PHMC) and the West Virginia Division of Culture and History (WVDCH). The PHMC and WVDCH represent the State Historic Preservation Officers (SHPOs) in Pennsylvania and West Virginia, respectively. Their offices are referred to generally as SHPO in this Plan. This Plan summarizes the approach Equitrans will follow to address the discovery of archaeological finds during construction activities within the Project's Area of Potential Effects (APE).

# 2.0 GUIDELINES, REGULATIONS AND LEGISLATION FOR UNANTICIPATED CULTURAL RESOURCES AND HUMAN REMAINS

This Plan will be followed in the event that cultural resources and/or human remains are encountered during construction of the Project. The stipulations of the Plan as set forth below are in accordance with the current guidelines detailed in the following federal and state guidelines, regulations and legislation:

## 2.1 FEDERAL

- Sections 106 and 110 of the National Historic Preservation Act (NHPA), as amended (54 United States Code (USC) 306108 and 306101 et seq.)
- Section 6 of the Archaeological Resources Protection Act, as amended (16 USC 470ee)
- Secretary of the Interior's Standards for Archaeology and Historic Preservation (48 FR 44716-42)
- Advisory Council for Historic Preservation (ACHP): *Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects* (ACHP February 23, 2007)
- Federal Energy Regulatory Agency (FERC) Office of Pipeline Regulation: *Guidelines for Reporting on Cultural Resources Investigations* (FERC 2002)

## 2.2 PENNSYLVANIA

- Pennsylvania SHPO's *Guidelines for Archaeological Investigations in Pennsylvania* (November 2008)
- Pennsylvania's Cemeteries and Graveyards Protected Act of 1849, P.L. 397, No. 296
- Pennsylvania's Historic Burial Places Preservation Act of 1994, P.L. 141, No. 22

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## 2.2 WEST VIRGINIA

- West Virginia SHPO's *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Report Preparation*
- West Virginia State Code 29-1-8, and its implementing regulations, Title 82, Series 2: "Standards and Procedures for Administering State Historic Preservation Programs"
  West Virginia State Code 29-1-8a, "Protection of human skeletal remains, grave artifacts and grave markers," and its implementing regulations, Title 82, Series 3: "Standards and Procedures for Granting Permits to Excavate Archaeological Sites and Unmarked Graves"

# 3.0 CONSULTATION WITH SHPOs AND NATIVE AMERICAN TRIBES

Equitrans has develop a list of Native American Tribes who may have historical connection to the Project area and who may have interest or concerns about results of surveys or the presence of known sensitive tribal traditional cultural properties. Consultation letters informing the respective tribes about the Project including a map were sent to the identified Tribes on April 27, 2015. To date, Equitrans has received no responses from any of the tribes. If responses are received, tribes who expressed an interest in ongoing communication will be included in Section 5 -Contacts Table in this Plan. In the event that cultural resources and/or human remains are encountered during construction, Equitrans will contact the interested tribes and appropriate SHPO to inform and elicit responses.

# 4.0 UNANTICIPATED DISCOVERY PROTOCOL

## 4.1 TRAINING

Equitrans will be responsible for advising construction personnel on the procedures to follow in the event that historic properties or human remains (an unanticipated discovery) are discovered during construction activities. Training will occur as part of the pre-construction on-site training program for all construction personnel.

Copies of this Plan will be incorporated into all relevant construction documents, and will be available in hard copy format on-site during construction. The training will emphasize the procedures to follow in the event that an unanticipated discovery is encountered during Project construction.

## 4.2 NOTIFICATION AND ASSESSMENT PROCEDURES (NOT INCLUDING HUMAN REMAINS)

The following steps outline the protocols to be taken in the event an unanticipated discovery is made during Project construction:

(1) Work in the immediate vicinity of the discovery should cease once an unanticipated discovery has been revealed;

(2) Notify the Environmental Inspector (EI) of the unanticipated discovery;

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(3) Flag or fence off the discovery location and take measures to ensure the security and integrity of the discovery. Work in the area of the discovery will not resume until the EI grants clearance;

(4) The EI will contact the Equitrans Project Manager (PM) and the Project Environmental Coordinator (EC);

(5) The EC will contact the Project Archaeologist (PA);

(6) The PA will conduct a preliminary assessment of the discovery to determine whether it is potentially a significant archaeological site;

(7) If the PA determines that the find is not an archaeological site, the PA will report the information to the EI and the EC. The EI will then grant clearance to the construction crews for work to resume;

(8) If the PA determines that the find may be an archaeological site and potentially significant, the PA will inform the EI and EC of this determination;

(a) The PE will notify the FERC, the relevant SHPO, and Interested Tribes of the determination. Work will not resume until authorized by the FERC and other appropriate agencies;

(b) Following consultation with the relevant SHPO and the FERC (and Interested Tribes if appropriate), the PA will evaluate the discovery and asses its horizontal and vertical extent, cultural association(s), and degree of disturbance. Equitrans will ensure that the PA has full access to the discovery;

(c) The PA will inform the EI, EC, the FERC, and the relevant SHPO of the findings and recommendations. If the finds are determined to not be significant, the EI and EC, after consultation with the FERC, the relevant SHPO, and if appropriate Interested Tribes, will grant clearance to the construction team to resume work. If a determination of significance is made, EC will authorize the archaeological investigators to develop an archaeological treatment plan which will be submitted to the FERC, the relevant SHPO, and when appropriate Interested Tribes, for review;

(d) If the potentially significant discovery cannot be avoided by Project construction, Equitrans, in consultation with the FERC, the relevant SHPO, and when appropriate Interested Tribes, will authorize the archaeological investigators to implement the mitigation plan;

(e) At the conclusion of archaeological fieldwork, the PA will submit a report of the treatment results and recommendations to Equitrans. Equitrans will provide the report for review to the FERC, the relevant SHPO, and when appropriate Interested Tribes;

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(f) Upon receiving written acceptance of the results of the implemented treatment from the FERC, the EC and EI will grant clearance to the construction team to resume work.

## 4.3 NOTIFICATION AND ASSESSMENT PROCEDURES (HUMAN REMAINS)

Human remains are physical remains of a human body or bodies including, but not limited to, bones, teeth, hair, and preserved soft tissues (mummified or otherwise preserved) of an individual. Remains may be articulated or disarticulated bones or teeth. Disturbance of human remains, burial places and or burial offerings and other grave furnishings without appropriate permits is a felony in Pennsylvania and West Virginia.

The following steps outline the protocols to be taken in the event an unanticipated discovery of human remains is made during Project construction.

(1) Cease work in the immediate vicinity of the discovery once an unanticipated discovery has been made;

(2) Ensure that all human remains and/or grave items are left in place and treated with dignity and respect. Do not collect, disturb, or remove materials determined to be human remains or associated grave objects;

(3) Notify the EI of the discovery that appears to be associated with human remains or an unmarked grave;

(4) Flag or fence off the discovery location, and take measures to ensure the security and integrity of the discovery. Work will not resume in the area of the find until the EI grants clearance to recommence;

(5) The EI will contact the PM and the EC;

(6) The EC will notify the PA;

(7) The PA will examine the discovery. If the PA determines that the finds are human remains or funerary grave items, the PA will immediately notify the EI and EC. The PM will notify the appropriate law enforcement agency. The EC will notify the FERC, the relevant SHPO, and Interested Tribes. The NPS and USFS will be notified if the discovery is located on property managed by their agency;

a. Pennsylvania Archaeology Guidelines require the coroner be notified of the discovery.

b. West Virginia Code requires communication of finds to the county sheriff within 48 hours (§29-1-8a (d)), although as a matter of practice the sheriff should be notified on the day of the discovery.

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If, upon inspection by the appropriate legal authorities, the remains are determined to be forensic and not archaeological (i.e., of a criminal nature), then Equitrans must await action by the authorities before construction may resume;

(8) If the remains are determined to be archaeological in nature, Equitrans in consultation with the FERC and the appropriate SHPO will determine whether a Project modification can avoid disturbing the remains. If Project actions cannot avoid the remains, Equitrans, in consultation with the FERC, the SHPO, and Interested Tribes as appropriate, will direct the PA to develop a disinterment/re-interment treatment plan in consultation with the SHPO;

(a) Once the treatment plan is approved by FERC, the relevant SHPO, and Interested Tribes as appropriate, the EC will authorize the PA to implement the treatment plan;

(i) **In Pennsylvania** the PMHC, which serves as the SHPO, will notify potential lineal descendants or culturally affiliated groups within one week of the discovery. The PHMC will consider the concerns and recommendations of all parties who are able to establish lineal descent or cultural affiliation with the individual(s) associated with the burial site.

(ii) Once consultation is completed, the PHMC will develop and direct a final treatment plan. This should be completed within fifteen days. The plan may recommend any of a number of treatment plans.

(c) The treatment plan will address the curation of any artifacts recovered in the process of excavation and provide for appropriate final disposition of the remains in accordance with applicable laws. Equitrans will be responsible for all costs associated with the discovery, evaluation and agency consultation, excavation, investigation and study, disinterment, re-interment, reporting, and curation of any human remains and associated funerary items encountered during Project construction; and,

(d) Project construction may resume only after successful implementation of the treatment plan (which may entail excavation of all identifiable human remains and associated features and artifacts, disinterment or removal of human remains and associated grave goods), and after Equitrans receives written approval by the FERC, the relevant SHPO, and Interested Tribes if appropriate.

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## 5.0 CONTACTS TABLE

| | |
|---|---|
| **EQUITRANS** | |
| **Project Environmental Coordinator (EC)**<br>Stephanie Frazier<br>Supervisor Permitting – Environmental<br>EQT Corporation<br>625 Liberty Avenue<br>Suite 1700<br>Pittsburgh, PA 15222 | |
| **Environmental Inspector (EI)**<br>To Be Determined Prior to Construction | **Project Archaeologist (PA)**<br>Christopher Borstel<br>Tetra Tech<br>1000 The American Rd.<br>Morris Plains, NJ 07950<br>Tel: (973) 630-8358<br>Email: chris.borstel@tetratech.com |
| **FEDERAL AGENCY CONTACTS** | |
| **FEDERAL ENERGY REGULATORY COMMISSION**<br>Paul Friedman, Archaeologist<br>Federal Energy Regulatory Commission<br>888 1st Street NE<br>Washington, DC 20426<br>Paul.Friedman@ferc.gov | |
| **STATE HISTORIC PRESERVATION OFFICE CONTACTS** | |
| **PENNSYLVANIA**<br>Serena Bellew<br>Bureau Director / Deputy State Historic Preservation Officer<br>Pennsylvania Historical and Museum Commission<br>Bureau for Historic Preservation<br>Commonwealth Keystone Building, Second Floor<br>400 North Street<br>Harrisburg, PA 17120-0093<br>(717) 705-4035<br>sbellew@pa.gov | Doug McLearen<br>Division Chief, Archaeology and Protection<br>Pennsylvania Historical and Museum Commission<br>Bureau for Historic Preservation<br>Commonwealth Keystone Building, Second Floor<br>400 North Street<br>Harrisburg, PA 17120-0093<br>(717) 772-0925<br>dmclearen@pa.gov |
| **WEST VIRGINIA**<br>Susan Pierce<br>Director/Deputy State Historic Preservation Officer<br>West Virginia Division of Culture and History<br>The Culture Center, Capitol Complex<br>1900 Kanawha Boulevard East<br>Charleston, WV 25305-0300<br>Tel: (304) 558-0240 ext. 158<br>Email: susan.m.pierce@wv.gov | Lora A. Lamarre-DeMott<br>Senior Archaeologist<br>West Virginia Division of Culture and History<br>The Culture Center, Capitol Complex<br>1900 Kanawha Boulevard East<br>Charleston, WV 25305-0300<br>Tel: (304) 558-0240 ext. 711<br>Email: lora.a.lamarre@wv.gov |
| **INTERESTED TRIBES** | |
| **To be included based on response to consultation letters.** | |

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| **LAW ENFORCEMENT CONTACTS** | |
|---|---|
| **PENNSYLVANIA** | |
| Green County Coroner<br>PO Box 440 Jefferson, PA 15344<br>(724) 883-4477 | Greene County Sheriff<br>10 E High St # 106, Waynesburg, PA 15370<br>(724) 852-5218 |
| Allegheny County Coroner (Medical Examiner's Office)<br>1520 Penn Ave, Pittsburgh, PA 15222<br>(412) 350-4800 | Allegheny County Sheriff<br>Allegheny County Courthouse, 436 Grant St # 111<br>Pittsburgh, PA<br>(412) 350-4700 |
| Washington County Coroner<br>100 W Beau St # 203, Washington, PA 15301<br>(724) 228-6785 | Washington County Sheriff<br>100 W Beau St # 303, Washington, PA 15301<br>(724) 223-4719 |
| **WEST VIRGINIA** | |
| Wetzel County Coroner & Medical Examiner<br>619 Virginia Street West<br>Charleston, West Virginia 25302<br>(304) 558-6920 | Wetzel County Sheriff<br>John E. Brookover<br>PO Box D<br>New Martinsville, WV 26155<br>(304) 455-8218 |

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**Attachment 5-3**

**(Revised January 22, 2016)**

**List of Towns/Communities within 10 Miles of the Project**

| Name | State | County | Project Component | Direction from Pipeline | Distance from Pipeline a/ (miles) |
|---|---|---|---|---|---|
| Baldwin | PA | Allegheny | H-318 | N | 8.7 |
| Bethel Park | PA | Allegheny | H-318 | NW | 6.2 |
| Blaine Hill | PA | Allegheny | H-318 | NE | 3.4 |
| Boston | PA | Allegheny | H-318 | NE | 7.1 |
| Brentwood | PA | Allegheny | H-318 | N | 8.2 |
| Broughton | PA | Allegheny | H-318 | N | 5.1 |
| Buena Vista | PA | Allegheny | H-318 | E | 7.0 |
| Castle Shannon | PA | Allegheny | H-318 | N | 8.3 |
| Clairton | PA | Allegheny | H-318 | N | 4.3 |
| Dravosburg | PA | Allegheny | H-318 | NE | 7.7 |
| Duquesne | PA | Allegheny | H-318 | N | 9.9 |
| Elizabeth | PA | Allegheny | H-318 | NE | 2.8 |
| Glassport | PA | Allegheny | H-318 | N | 6.1 |
| Greenock | PA | Allegheny | H-318 | NE | 7.9 |
| Industry | PA | Allegheny | H-318 | E | 6.9 |
| Jefferson Hills | PA | Allegheny | H-318 | N | 3.1 |
| Liberty | PA | Allegheny | H-318 | NE | 6.4 |
| Library | PA | Allegheny | H-318 | NW | 3.5 |
| Lincoln | PA | Allegheny | H-318 | NE | 4.8 |
| McKeesport | PA | Allegheny | H-318 | NE | 8.0 |
| Mount Lebanon | PA | Allegheny | H-318 | NW | 8.3 |
| Mount Vernon | PA | Allegheny | H-318 | E | 6.8 |
| Piney Fork | PA | Allegheny | H-318 | N | 1.2 |
| Pleasant Hills | PA | Allegheny | H-318 | N | 5.2 |
| Port Vue | PA | Allegheny | H-318 | N | 7.1 |
| Smithdale | PA | Allegheny | H-318 | E | 6.9 |
| South Park Township | PA | Allegheny | H-318 | N | 3.5 |
| Upper St. Clair | PA | Allegheny | H-318 | NW | 8.3 |
| Versailles | PA | Allegheny | H-318 | NE | 7.2 |
| West Elizabeth | PA | Allegheny | H-318 | NE | 2.4 |
| West Mifflin | PA | Allegheny | H-318 | N | 7.7 |
| White Oak | PA | Allegheny | H-318 | NE | 9.5 |
| Whitehall | PA | Allegheny | H-318 | N | 7.5 |
| Arnold City | PA | Fayette | H-318 | SE | 9.1 |
| Belle Vernon | PA | Fayette | H-318 | S | 7.7 |
| Fairhope | PA | Fayette | H-318 | S | 8.8 |
| Fayette City | PA | Fayette | H-318 | S | 9.7 |
| Naomi | PA | Fayette | H-318 | S | 8.8 |
| Ronco | PA | Fayette | H-316 | E | 9.0 |
| Carmichaels | PA | Greene | H-316 | E | 6.0 |

**Attachment 5-3**

**(Revised January 22, 2016)**

**List of Towns/Communities within 10 Miles of the Project**

| Name | State | County | Project Component | Direction from Pipeline | Distance from Pipeline a/ (miles) |
|---|---|---|---|---|---|
| Clarksville | PA | Greene | H-316 | NE | 5.0 |
| Crucible | PA | Greene | H-316 | E | 7.2 |
| Dry Tavern | PA | Greene | H-316 | E | 4.9 |
| Fairdale | PA | Greene | H-316 | E | 6.4 |
| Jefferson | PA | Greene | H-316 | NE | 2.3 |
| Mather | PA | Greene | H-316 | NE | 1.9 |
| Morrisville | PA | Greene | H-159/M-80 | W | 2.2 |
| Nemacolin | PA | Greene | H-316 | E | 8.5 |
| Rices Landing | PA | Greene | H-316 | E | 5.5 |
| Rogersville | PA | Greene | H-159/M-80 | W | 7.7 |
| Waynesburg | PA | Greene | H-159/M-80 | W | 3.1 |
| West Waynesburg | PA | Greene | H-159/M-80 | W | 3.8 |
| Aaronsburg | PA | Washington | H-318 | NE | 8.4 |
| Allenport | PA | Washington | H-318 | S | 9.6 |
| Baidland | PA | Washington | H-318 | S | 2.9 |
| Bentleyville | PA | Washington | H-318 | S | 8.5 |
| Charleroi | PA | Washington | H-318 | S | 6.1 |
| Courtney | PA | Washington | H-318 | SW | 1.6 |
| Deemston | PA | Washington | H-316 | N | 8.5 |
| Donora | PA | Washington | H-318 | SE | 4.5 |
| Dunlevy | PA | Washington | H-318 | S | 8.7 |
| Ellsworth | PA | Washington | H-318 | SW | 9.7 |
| Elrama | PA | Washington | H-318 | N | 0.8 |
| Finleyville | PA | Washington | H-318 | W | 2.1 |
| Fredericktown | PA | Washington | H-316 | NE | 7.6 |
| Gastonville | PA | Washington | H-318 | W | 2.6 |
| Lawrence | PA | Washington | H-318 | W | 8.9 |
| Linden | PA | Washington | H-318 | W | 9.6 |
| Long Branch | PA | Washington | H-318 | S | 9.0 |
| Marianna | PA | Washington | H-305 | N | 6.6 |
| McMurray | PA | Washington | H-318 | W | 6.9 |
| Millsboro | PA | Washington | H-316 | NE | 7.2 |
| Monongahela | PA | Washington | H-318 | S | 2.3 |
| New Eagle | PA | Washington | H-318 | SW | 1.8 |
| North Charleroi | PA | Washington | H-318 | S | 5.2 |
| Speers | PA | Washington | H-318 | S | 7.5 |
| Thomas | PA | Washington | H-318 | W | 7.0 |
| Thompsonville | PA | Washington | H-318 | W | 8.3 |
| Twilight | PA | Washington | H-318 | S | 7.7 |
| Van Voorhis | PA | Washington | H-318 | S | 5.1 |

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**Attachment 5-3**

**(Revised January 22, 2016)**

**List of Towns/Communities within 10 Miles of the Project**

| Name | State | County | Project Component | Direction from Pipeline | Distance from Pipeline a/ (miles) |
|---|---|---|---|---|---|
| Wickerham Manor-Fisher | PA | Washington | H-318 | S | 3.4 |
| Wylandville | PA | Washington | H-318 | W | 9.2 |
| Collinsburg | PA | Westmoreland | H-318 | E | 7.4 |
| Cowansburg | PA | Westmoreland | H-318 | E | 8.9 |
| Fellsburg | PA | Westmoreland | H-318 | SE | 5.9 |
| Lynnwood-Pricedale | PA | Westmoreland | H-318 | S | 7.6 |
| Monessen | PA | Westmoreland | H-318 | S | 5.5 |
| North Belle Vernon | PA | Westmoreland | H-318 | S | 7.2 |
| Sutersville | PA | Westmoreland | H-318 | E | 6.3 |
| Webster | PA | Westmoreland | H-318 | SE | 4.5 |
| West Newton | PA | Westmoreland | H-318 | E | 8.1 |
| Folsom | WV | Wetzel | H319/Webster | S | 5.7 |
| Hundred | WV | Wetzel | Mobley Tap | N | 10.1 |
| Jacksonburg | WV | Wetzel | H319/Webster | W | 5.1 |
| Littleton | WV | Wetzel | Mobley Tap | N | 10.6 |
| Pine Grove | WV | Wetzel | H319/Webster/ Mobley Tap | W | 7.5 |
| Reader | WV | Wetzel | H319/Webster/ Mobley Tap | W | 10.0 |
| Smithfield | WV | Wetzel | H319/Webster | S | 4.1 |

**NOTES:**

a/ Distance was determined by calculating each community (represented as a GIS point file) to the closest point along the closest pipeline.

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**Attachment 5-8**

**(Revised January 22, 2016)**

**Police Departments, Fire departments, Hospitals and Schools in Counties affected by the Project**

| | Pennsylvania | | | West Virginia |
|---|---|---|---|---|
| | **Allegheny** | **Greene** | **Washington** | **Wetzel** |
| **Police a/** | | | | |
| Number of Police Departments | 70 | 0 | 14 | 6 |
| **Fire a/** | | | | |
| Number of Fire Departments | 26 | 0 | 0 | 13 |
| **Hospitals b/** | | | | |
| Number of Hospitals | 37 | 1 | 5 | 1 |
| Number of Beds | 8,939 | 58 | 461 | 48 |
| **Public Schools c/** | | | | |
| Number of Schools | 303 | 14 | 56 | 9 |
| Number of Students | 150,293 | 5,188 | 28,226 | 2,757 |

**Notes:**

a/ Source: ESRI database.

b/ Sources: Compiled from the ESRI database, the American Hospital Directory website www.ahd.com (accessed January 2016), and: PA Bureau of Health Statistics, 2000. Directory of Pennsylvania Hospitals and Ambulatory Surgery Centers.

c/ Source: Compiled from the National Center for Education Statistics, http://nces.ed.gov/ccd/districtsearch/. Accessed January 2016.

**Attachment 5-10**

**(Revised January 22, 2016)**

**Housing Data for Each County Affected by the Project**

| | Housing Units 2014 a/ | | | | Hotels and Motels b/ | | Campgrounds and RV Parks c/ | |
|---|---|---|---|---|---|---|---|---|
| | Total Housing Units | Rental Vacancy Rate | Units Available for Rent | For Seasonal, Recreational, or Occasional Use a/ | Number of Facilities | Number of Rooms | Number of Facilities | Number of Spaces |
| **PENNSYLVANIA** | **5,578,393** | **6** | **98,736** | **172,037** | **NA** | **NA** | **NA** | **NA** |
| **Allegheny County** | 589,211 | 4.6 | 8,952 | 1,858 | 159 | 18,273 | 0 | 0 |
| Elizabeth Borough | 723 | 0 | 68 | 0 | 0 | 0 | 0 | 0 |
| West Elizabeth Borough | 307 | 10.3 | 54 | 0 | 0 | 0 | 0 | 0 |
| **Greene County** | 16,440 | 6 | 249 | 585 | 7 | 380 | 1 | 37 |
| Mather CDP | 286 | 0 | 48 | 16 | 0 | 0 | 0 | 0 |
| Morrisville Borough | 3,720 | 5.0 | 360 | 25 | 0 | 0 | 0 | 0 |
| **Washington County** | 93,442 | 5.7 | 1,215 | 612 | 32 | 2,651 | 1 | 38 |
| Elrama CDP | 148 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Monongahela City | 2,236 | 3.4 | 424 | 0 | 0 | 0 | 0 | 0 |
| **WEST VIRGINIA** | **883,197** | **7.8** | **17,304** | **45,044** | **NA** | **NA** | **NA** | **NA** |
| **Wetzel County** | 8,148 | 8.7 | 142 | 419 | 5 | 267 | 4 | **NA** |
| Smithfield Town | 105 | 18.5 | 42 | 10 | 0 | 0 | 0 | 0 |

**NOTES:**

CDP = Census Designated Place

a/ Data collected from the US Census American FactFinder website (http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t). Accessed January 2016.

b/ Data collected from STR, 2015. Hotel Census Counts – Properties and Rooms. Pennsylvania and West Virginia. Accessed January 2016.

Visitors Bureau website http://wetzelcvb.org/Websites/page.aspx?page=Parks+%26+Recreation). Both accessed January 2016.

**Attachment 5-11**

**(Revised January 22, 2016)**

**General Population Data for Each County Crossed by the EEP Project a/**

| | Pennsylvania | | | | | | | | | | West Virginia | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **State** | **Allegheny County** | **Elizabeth Borough** | **West Elizabeth Borough** | **Greene County** | **Mather CDP** | **Morrisville Borough** | **Washington County** | **Elrama CDP** | **Monogahela City** | **State** | **Wetzel County** | **Smithfield Town** |
| Total Population | 12,858,729 | 1,229,172 | 1,397 | 636 | 38,171 | 536 | 8,689 | 208,157 | 345 | 4,260 | 1,853,881 | 16,314 | 166 |
| Population Density | 285.2 | 1683.6 | 581.2 | NA | 66.3 | NA | 4,996 | 242.9 | NA | NA | 77.1 | 45.6 | NA |
| Per Capita Income | 28,912 | 32,378 | 22,025 | 20,126 | 22,847 | 4,576 | 30,426 | 29,816 | 11,157 | 21,716 | 23,237 | 20,996 | 7,727 |
| Unemployment Rate (%) | 8.6 | 7.6 | 13.0 | 4.4 | 6.4 | 1.8 | 11.4 | 7.1 | 22.0 | 12.7 | 8.2 | 8.0 | 18.4 |
| Civilian Workforce | 6,502,948 | 655,358 | 769 | 362 | 16,021 | 225 | 4,759 | 106,567 | 91 | 2,062 | 820,262 | 6,105 | 38 |

**NOTES:**

CDP = Census Designated Place

a/ Data collected from the US Census American FactFinder website (http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t) except for Population Density, which was collected from the US Census QuickFacts website (http://www.census.gov/quickfacts/#table/PST045215/00). Note that the latter website only includes towns with a population greater than 5,000. Accessed January 2016.

**Attachment 5-12 d/**

**(Revised January 22, 2016)**

**Population Characteristic for Each County and Census Tract Crossed by the Project Compared to Percentages for the State as a Whole**

| | Pennsylvania | | | | | | | | | | | West Virginia | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Allegheny County | | Greene County | | | | | Washington County | | | | Wetzel County | |
| **Geographic Area/Characteristic** | **Common-wealth Total** | **County Total** | **Census Tract 495, Block Group 1** | **County Total** | **Census Tract 9702, Block Group 3** | **Census Tract 9703, Block Group 3** | **Census Tract 9703, Block Group 4** | **Census Tract 9705, Block Group 2** | **County Total** | **Census Tract 7711, Block Group 1** | **Census Tract 7711, Block Group 2** | **State Total** | **County Total** | **Census Tract 305, Block Group 4** |
| Population (2010) | 12,702,379 | 1,223,348 | 1,911 | 38,686 | 870 | 997 | 1,143 | 771 | 207,820 | 1,478 | 2,540 | 1,852,994 | 16,583 | 788 |
| Median Household Income (2013) | 53,115 | 52,390 | 44,000 | 46,485 | 52,396 | 39,063 | 56,852 | 54,219 | 55,323 | 61,086 | 81,379 | 41,576 | 38,066 | 32,443 |
| **Population Category as Percent of Total Population/Households** | | | | | | | | | | | | | | |
| White a/ | 79.5 | 80.6 | 97.2 | 94.1 | 99.0 | 99.0 | 98.4 | 98.1 | 93.4 | 97.4 | 98.4 | 93.2 | 98.4 | 99.6 |
| African American/Black a/ | 10.4 | 13.1 | 1.2 | 3.3 | 0.0 | 0.0 | 0.0 | 0.0 | 3.2 | 1.5 | 0.0 | 3.4 | 0.1 | 0.0 |
| American Indian/Alaska Native a/ | 0.1 | 0.1 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 |
| Asian a/ | 2.7 | 2.8 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 0.0 | 0.0 | 0.7 | 0.2 | 0.0 |
| Native HI & Other Pacific Islander a/ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Some Other Race a/ | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 |
| Two or More Races a/ | 1.4 | 1.7 | 0.0 | 0.9 | 0.0 | 0.0 | 1.0 | 1.4 | 1.4 | 0.0 | 0.0 | 1.3 | 0.6 | 0.0 |
| Hispanic Origin (any race) a/ | 5.7 | 1.6 | 0.0 | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 0.0 | 0.0 | 1.2 | 0.5 | 0.0 |
| Total Minority Populations a/ | 20.5 | 19.4 | 2.8 | 5.9 | 1.0 | 1.0 | 1.6 | 1.9 | 6.6 | 2.6 | 1.6 | 6.8 | 1.6 | 0.4 |
| Households in Poverty b/ | 12.9 | 13.1 | 5.3 | 13.9 | 7.5 | 18.4 | 5.7 | 13.1 | 10.8 | 8.1 | 11.9 | 17.8 | 20.5 | 15.2 |
| Disability c/ | 13.3 | 13.0 | 19.7 | 18.6 | 33.1 | 41.1 | 35.5 | 50.2 | 14.5 | 2.2 | 5.6 | 19.3 | 16.1 | 38.4 |
| Children (under 18 years of age) a/ | 22.0 | 19.8 | 18.7 | 19.9 | 17.2 | 20.7 | 22.7 | 14.5 | 20.5 | 20.5 | 18.8 | 20.9 | 20.9 | 24.2 |
| Elderly (over 64 years of age) a/ | 14.7 | 15.9 | 22.4 | 14.6 | 17.8 | 15.9 | 14.3 | 16.8 | 16.6 | 17.5 | 16.8 | 15.4 | 18.9 | 15.4 |
| Limited English Speaking Households b/ | 2.3 | 1.4 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 0.3 | 0.1 | 0.0 |

**NOTES:**

a/ Percent of total population

b/ Percent of total households

c/ Percent of total civilian noninstitutionalized population

d/ Data collected from the US Census American FactFinder website (http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t)

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**(Revised January 22, 2016)**

**Approximate Maximum and Minimum Elevations[1] for Project Routes and Features**

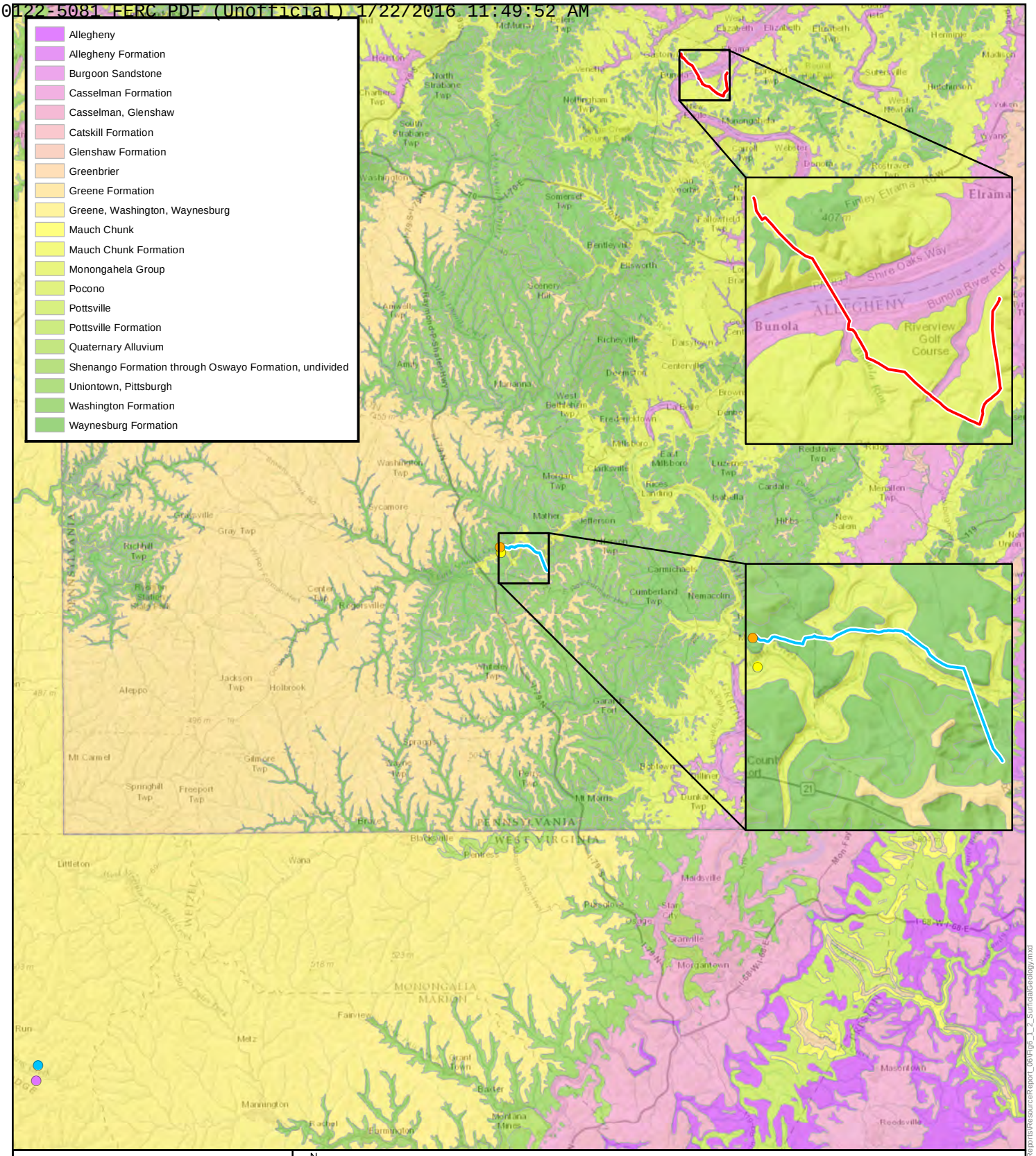
| Facility | Minimum (feet) | Maximum (feet) |
|---|---|---|
| H-158/M-80 | 920 | 1051 |
| H-305 | 1064 | 1146 |
| H-316 | 876 | 1164 |
| H-318 | 728 | 1238 |
| H-319 | 893 | 896 |
| Pratt Compressor Station | 900 | 945 |
| Redhook Compressor Station | 1015 | 1095 |
| Webster Interconnect | 895 | 911 |
| Mobley Tap | 932 | 936 |
| Applegate L/R Site | 1108 | 1112 |
| Hartson L/R Site | 1056 | 1090 |
| H-302 Tap L/R Site | 1121 | 1144 |

Source: Fenneman and Johnson 1946.

[1]All elevations above mean sea level.

Note: the L/R at H-316 at station 0+00 occurs within the Redhook Compressor Station Site.

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**Equitrans Expansion Project**

N

1:400,000

0 5 10 Miles

EQUITRANS

**Figure 6.1-2**
**Surficial Geology in the Proposed Project Area**

**(Revised January 22, 2016)**

Data Sources: ESRI Streaming Data (2014), USGS

## Legend

- H-316
- H-318
- Webster Interconnect/H-319 Pipeline
- Mobley Tap
- Redhook Compressor Station/H-158, H-305, and M80 Pipelines
- Pratt Compressor Station




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**Table 6.3-1**

**(Revised January 22, 2016)**

**Oil and Gas Wells Within 0.25 Mile of the Proposed Project Route Corridor**

| Feature | API Number | Status | County | Quadrangle | Latitude (DD) | Longitude (DD) | MP | Type | Near Feature | Distance (ft) | Direction |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H-158/M-80 | 059-25617 | Active | Greene | Waynesburg | 39.913336 | -80.134244 | 0 | Oil & Gas, Coal | ATWS | 967 | W |
| | 059-25585 | Active | Greene | Waynesburg | 39.913356 | -80.134178 | 0 | Oil & Gas, Coal | ATWS | 947 | W |
| | 059-26423 | Proposed But Never Materialized | Greene | Waynesburg | 39.913164 | -80.134231 | 0 | Oil & Gas, Coal | ATWS | 975 | W |
| | 059-25585 | Active | Greene | Waynesburg | 39.913356 | -80.134178 | 0 | Oil & Gas, Coal | ATWS | 947 | W |
| | 059-01984 | Abandoned | Greene | Waynesburg | 39.916693 | -80.124771 | end | Oil & Gas, Coal | Temporary Construction ROW | 1083 | E |
| | 059-01939 | Abandoned | Greene | Waynesburg | 39.919241 | -80.135827 | end | Oil & Gas, Coal | ATWS | 1263 | NW |
| | 059-02020 | Abandoned | Greene | Waynesburg | 39.916693 | -80.124771 | end | Oil & Gas, Coal | Temporary Construction ROW | 1083 | E |
| H-305 | 059-01984 | Abandoned | Greene | Waynesburg | 39.916693 | -80.124771 | 0 | Oil & Gas, Coal | Temporary Construction ROW | 954 | E |
| | 059-01939 | Abandoned | Greene | Waynesburg | 39.919241 | -80.135827 | end | Oil & Gas, Coal | Access Road ROW | 1044 | W |
| | 059-21800 | Active | Greene | Waynesburg | 39.921181 | -80.132869 | end | Oil & Gas, Coal | Access Road ROW | 1057 | N |
| | 059-02124 | Abandoned | Greene | Waynesburg | 39.920476 | -80.134579 | end | Oil & Gas, Coal | Access Road ROW | 1034 | NW |
| | 059-02020 | Abandoned | Greene | Waynesburg | 39.916693 | -80.124771 | 0 | Oil & Gas, Coal | Temporary Construction ROW | 954 | E |
| H-316 | 059-01984 | Abandoned | Greene | Mather | 39.916693 | -80.124771 | 0.24 | Oil & Gas, Coal | Permanent Operation ROW | 0 | W |
| | 059-02020 | Abandoned | Greene | Mather | 39.916693 | -80.124771 | 0.24 | Oil & Gas, Coal | Permanent Operation ROW | 0 | W |
| | 059-01860 | PADEP Abandoned List | Greene | Mather | 39.916842 | -80.123328 | 0.31 | Oil & Gas, Coal | Temporary Construction ROW | 115 | N |
| | 059-02016 | Active | Greene | Mather | 39.916693 | -80.116438 | 0.72 | Oil & Gas, Unavailable | Temporary Construction ROW | 0 | W |
| | 059-24135 | Active | Greene | Mather | 39.920691 | -80.111351 | 1.01 | Oil & Gas, Coal | Temporary Construction ROW | 1049 | N |
| | 059-01241 | Active | Greene | Mather | 39.915111 | -80.107694 | 1.21 | Oil & Gas, Coal | Permanent Operation ROW | 765 | S |
| | 059-22604 | Plugged OG Well | Greene | Mather | 39.918966 | -80.103967 | 1.43 | Oil & Gas, Coal | Access Road ROW | 417 | NW |
| | 059-21048 | Plugged OG Well | Greene | Mather | 39.905226 | -80.088988 | 2.66 | Oil & Gas, Coal | Permanent Operation ROW | 321 | E |
| | 059-24955 | Active | Greene | Mather | 39.900363 | -80.088706 | 2.98 | Oil & Gas, Coal | ATWS | 82 | SW |
| | 059-25009 | Active | Greene | Mather | 39.904655 | -80.084092 | 2.7 | Oil & Gas, Coal | Access Road ROW | 628 | N |
| | 059-24498 | Proposed But Never Materialized | Greene | Mather | 39.903444 | -80.090742 | 2.73 | Oil & Gas, Coal | Permanent Operation ROW | 309 | W |
| | 059-23780 | Proposed But Never Materialized | Greene | Mather | 39.916166 | -80.102076 | 1.57 | Oil & Gas, Coal | Temporary Construction ROW | 0 | W |
| | 059-21887 | Active | Greene | Mather | 39.963241 | -80.175714 | 0 | Oil & Gas, Coal | ATWS | 575 | NE |
| | 059-23778 | Proposed But Never Materialized | Greene | Mather | 39.922916 | -80.096465 | 1.5 | Oil & Gas, Coal | Access Road ROW | 1196 | N |
| | 059-23782 | Proposed But Never Materialized | Greene | Mather | 39.917888 | -80.098882 | 1.6 | Oil & Gas, Coal | Access Road ROW | 563 | S |

**Table 6.3-1**

**(Revised January 22, 2016)**

**Oil and Gas Wells Within 0.25 Mile of the Proposed Project Route Corridor**

| Feature | API Number | Status | County | Quadrangle | Latitude (DD) | Longitude (DD) | MP | Type | Near Feature | Distance (ft) | Direction |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 059-25243 | Proposed But Never Materialized | Greene | Mather | 39.917888 | -80.098882 | 1.6 | Oil & Gas, Coal | Access Road ROW | 563 | S |
| | 059-24956 | Proposed But Never Materialized | Greene | Mather | 39.898599 | -80.092229 | end | Oil & Gas, Coal | ATWS | 1256 | SW |
| | 059-23779 | Proposed But Never Materialized | Greene | Mather | 39.920693 | -80.093715 | 1.7 | Oil & Gas, Coal | Access Road ROW | 1132 | E |
| | 059-23781 | Proposed But Never Materialized | Greene | Mather | 39.913582 | -80.098993 | 1.8 | Oil & Gas, Coal | Temporary Construction ROW | 91 | SW |
| | 059-22618 | Proposed But Never Materialized | Greene | Mather | 39.916007 | -80.101559 | 1.59 | Oil & Gas, Coal | Permanent Operation ROW | 0 | W |
| | 059-21991 | Active | Greene | Mather | 39.963775 | -80.175747 | 0 | Oil & Gas, Coal | ATWS | 722 | NE |
| | 059-24133 | Active | Greene | Mather | 39.922382 | -80.09842 | 1.5 | Oil & Gas, Coal | Access Road ROW | 992 | N |
| | 059-26686 | Active | Greene | Mather | 39.961486 | -80.175389 | 0 | Oil & Gas, Coal | ATWS | 542 | E |
| H-318 | 003-00070 | Plugged OG Well | Allegheny | Monongahela | 40.22653 | -79.920427 | 0.68 | Oil & Gas, Non-Coal | Temporary Construction ROW | 815 | SE |
| | 003-00209 | Plugged OG Well | Allegheny | Monongahela | 40.2312 | -79.920964 | 0.65 | Oil & Gas, Non-Coal | Access Road ROW | 70 | E |
| | 003-00435 | Inactive | Allegheny | Monongahela | 40.239424 | -79.916012 | 0 | Oil & Gas, Non-Coal | Access Road ROW | 198 | S |
| | 003-00733 | Plugged OG Well | Allegheny | Monongahela | 40.227512 | -79.935769 | 1.6 | Oil & Gas, Non-Coal | ATWS | 628 | SW |
| | 003-00783 | Plugged OG Well | Allegheny | Monongahela | 40.236842 | -79.948308 | 2.6 | Oil & Gas, Non-Coal | ATWS | 336 | W |
| | 003-01077 | PADEP Plugged | Allegheny | Monongahela | 40.239381 | -79.949204 | 2.8 | Oil & Gas, Non-Coal | Temporary Construction ROW | 412 | W |
| | 003-20001 | Active | Allegheny | Monongahela | 40.226141 | -79.919653 | 0.9 | Oil & Gas, Non-Coal | Temporary Construction ROW | 1059 | SE |
| | 003-20012 | Active | Allegheny | Monongahela | 40.224768 | -79.922876 | 1.09 | Oil & Gas, Non-Coal | Temporary Construction ROW | 478 | E |
| | 003-20012 | Active | Allegheny | Monongahela | 40.224768 | -79.922876 | 1.09 | Oil & Gas, Non-Coal | Temporary Construction ROW | 478 | E |
| | 003-20017 | Active | Allegheny | Monongahela | 40.243571 | -79.924311 | 0 | Oil & Gas, Non-Coal | H318_PermanentSite | 1191 | NW |
| | 003-20017 | Active | Allegheny | Monongahela | 40.243571 | -79.924311 | 0 | Oil & Gas, Non-Coal | H318_PermanentSite | 1191 | NW |
| | 003-20020 | Active | Allegheny | Monongahela | 40.231494 | -79.920012 | 0.68 | Oil & Gas, Non-Coal | Access Road ROW | 352 | E |
| | 003-20022 | Active | Allegheny | Monongahela | 40.245356 | -79.920335 | 0 | Oil & Gas, Non-Coal | Access Road ROW | 1223 | N |
| | 003-20023 | Active | Allegheny | Monongahela | 40.239585 | -79.915238 | 0 | Oil & Gas, Non-Coal | Access Road ROW | 79 | S |
| | 003-20026 | Active | Allegheny | Monongahela | 40.241788 | -79.918848 | 0 | Oil & Gas, Non-Coal | Access Road ROW | 10 | W |
| | 003-20078 | Plugged OG Well | Allegheny | Monongahela | 40.24014 | -79.925922 | 0.1 | Oil & Gas, Non-Coal | Temporary Construction ROW | 962 | W |
| | 003-20792 | Active | Allegheny | Monongahela | 40.238082 | -79.919117 | 0.2 | Oil & Gas, Coal | Access Road ROW | 764 | S |
| | 003-20803 | Inactive | Allegheny | Monongahela | 40.245493 | -79.919833 | 0 | Oil & Gas, Coal | Access Road ROW | 1245 | N |
| | 003-20804 | Inactive | Allegheny | Monongahela | 40.24563 | -79.919654 | 0 | Oil & Gas, Coal | Access Road ROW | 1290 | N |
| | 003-22051 | Active | Allegheny | Monongahela | 40.231044 | -79.930947 | 1.6 | Oil & Gas, Coal | ATWS | 883 | NE |
| | 003-22053 | Active | Allegheny | Monongahela | 40.235372 | -79.948297 | 2.48 | Oil & Gas, Coal | ATWS | 718 | SW |
| | 125-00465 | Inactive | Washington | Glassport | 40.251124 | -79.970956 | end | Oil & Gas, Coal | Access Road | 951 | SW |

**Table 6.3-1**

**(Revised January 22, 2016)**

**Oil and Gas Wells Within 0.25 Mile of the Proposed Project Route Corridor**

| Feature | API Number | Status | County | Quadrangle | Latitude (DD) | Longitude (DD) | MP | Type | Near Feature | Distance (ft) | Direction |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 125-00666 | Active | Washington | Monongahela | 40.249528 | -79.960833 | 3.7 | Oil & Gas, Coal | Temporary Construction ROW | 546 | SW |
| | 125-00685 | Active | Washington | Glassport | 40.255472 | -79.966689 | end | Oil & Gas, Coal | ATWS | 100 | NW |
| | 125-00686 | Active | Washington | Glassport | 40.254694 | -79.963139 | end | Oil & Gas, Coal | ATWS | 103 | NW |
| | 125-00687 | Active | Washington | Glassport | 40.252944 | -79.960944 | 3.96 | Oil & Gas, Coal | Temporary Construction ROW | 266 | NE |
| | 125-00688 | Active | Washington | Glassport | 40.254694 | -79.963139 | end | Oil & Gas, Coal | ATWS | 962 | N |
| | 125-00689 | Inactive | Washington | Glassport | 40.251612 | -79.968165 | end | Oil & Gas, Coal | Access Road | 706 | S |
| | 125-00691 | Active | Washington | Glassport | 40.252167 | -79.964139 | 3.96 | Oil & Gas, Coal | Temporary Construction ROW | 568 | W |
| | 125-27645 | Active | Washington | Monongahela | 40.244972 | -79.957683 | 2.93 | Oil & Gas, Coal | Access Road ROW | 986 | S |
| | 125-27646 | Active | Washington | Monongahela | 40.244944 | -79.957697 | 2.93 | Oil & Gas, Coal | Access Road ROW | 996 | S |
| | 125-27647 | Active | Washington | Monongahela | 40.244919 | -79.957711 | 2.93 | Oil & Gas, Coal | Access Road ROW | 1006 | S |
| | 125-27648 | Active | Washington | Monongahela | 40.244894 | -79.957725 | 2.93 | Oil & Gas, Coal | Access Road ROW | 1016 | S |
| | 125-27649 | Active | Washington | Monongahela | 40.244869 | -79.957739 | 2.93 | Oil & Gas, Coal | Access Road ROW | 1026 | S |
| | 125-27649 | Active | Washington | Monongahela | 40.244869 | -79.957739 | 2.93 | Oil & Gas, Coal | Access Road ROW | 1026 | S |
| H-319 | 103-02535 | Active | Wetzel (WV) | Big Run | 39.552965 | -80.54354 | 0 | Gas | ATWS | 118 | E |
| | 103-02384 | Active | Wetzel (WV) | Big Run | 39.55554 | -80.547511 | end | Gas | ATWS | 1210 | NW |
| Pratt Compressor Station | 059-01984 | Abandoned | Greene | Waynesburg | 39.916693 | -80.124771 | Area within 0.25 mile of Project Features | Oil & Gas, Coal | Pratt CS | 1170 | NE |
| | 059-02020 | Abandoned | Greene | Waynesburg | 39.916693 | -80.124771 | | Oil & Gas, Coal | Pratt CS | 1170 | NE |
| Redhook Compressor Station | 059-01939 | PADEP Orphan List | Greene | Waynesburg | 39.916824 | -80.123328 | | Oil & Gas, Coal | Redhook CS | 1300 | W |
| | 059-01860 | PADEP Abandoned List | Greene | Waynesburg | 39.916842 | -80.123328 | | Oil & Gas, Coal | Redhook CS | 921 | E |
| | 059-01984 | Abandoned | Greene | Waynesburg | 39.916693 | -80.124771 | | Oil & Gas, Coal | Redhook CS | 515 | E |
| | 059-02020 | Abandoned | Greene | Waynesburg | 39.916693 | -80.124771 | | Oil & Gas, Coal | Redhook CS | 515 | E |
| Webster Inter-connect | 103-02535 | Active | Wetzel (WV) | Big Run | 39.552965 | -80.54354 | | Gas | H306 Tap | 193 | E |
| | 103-02384 | Active | Wetzel (WV) | Big Run | 39.55554 | -80.547511 | | Gas | Access Road ROW | 1240 | NW |
| | 103-02422 | Active | Wetzel (WV) | Big Run | 39.549174 | -80.540638 | | NAVL | ATWS | 1191 | E |
| | 103-02524 | Active | Wetzel (WV) | Big Run | 39.54991 | -80.548575 | | Gas | ATWS | 1097 | W |

Sources: PADEP 2015a; WVDEP 2015.

PADEP = Pennsylvania Department of Environmental Protection; OG = oil/gas; NAVL = Not Available

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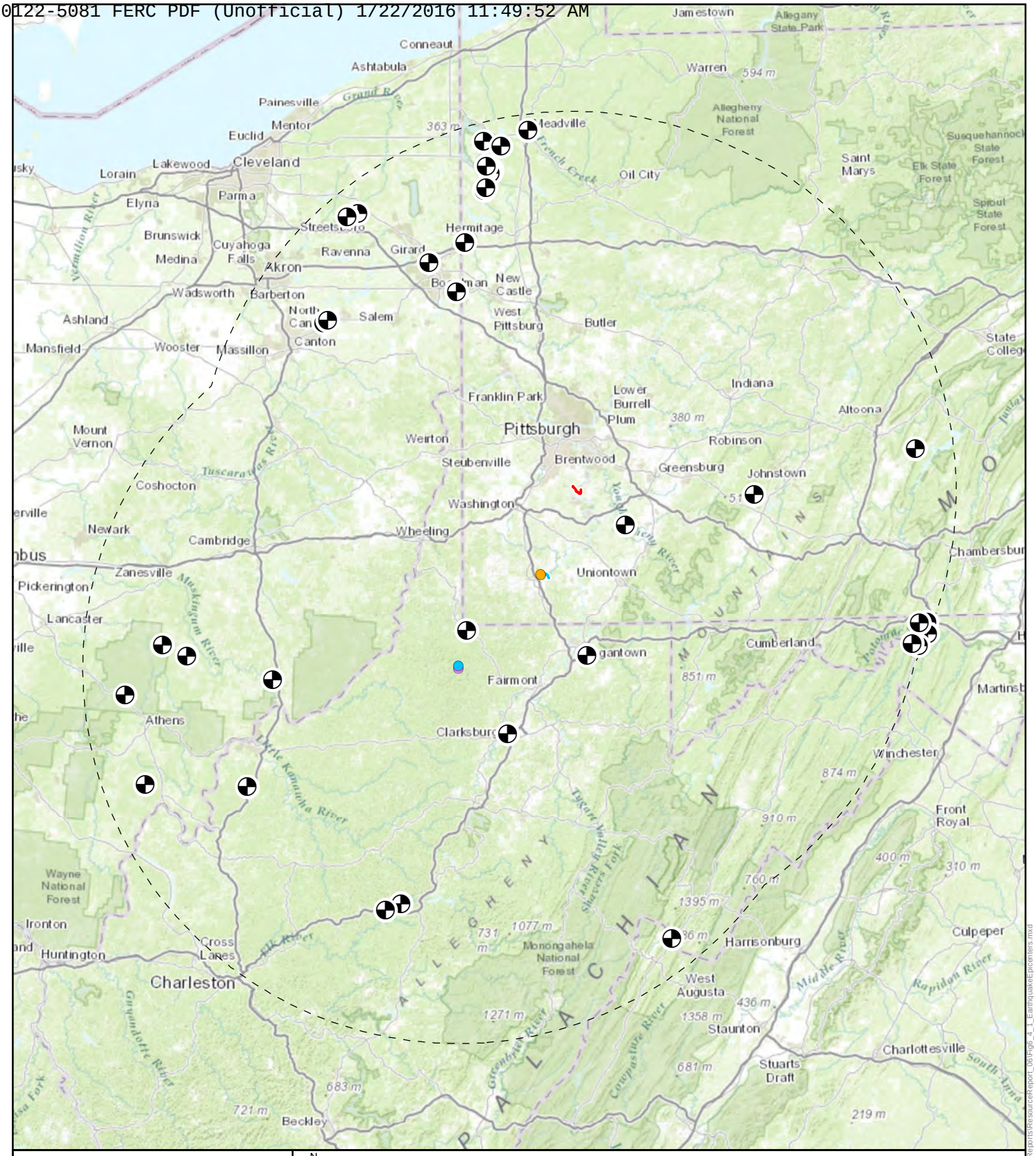
**Table 6.4-2**
**(Revised January 22, 2016)**
**Seismic Events within 100 Miles of the Project Route**

| Magnitude/Location | Date | Nearest Project Feature | Distance (mi) | Direction |
|---|---|---|---|---|
| M 2.6 - Jennerstown, PA | 1982/02/03 | H-318 | 46.10 | E |
| M 3.2 - Shermansville, PA | 1985/04/14 | H-318 | 94.98 | N |
| M 3.3 - Perryopolis, PA | 1965/10/08 | H-318 | 14.68 | SE |
| M 5.1 - Greenville (Osgood), PA | 1998/10/09 | H-318 | 86.89 | N |
| M 5.1 - Greenville (Osgood), PA | 1998/09/25 | H-318 | 86.57 | N |
| M 4.1 - Littleton, WV | 1824/07/15 | H-319 | 10.42 | N |
| M 3.1 - Morgantown, WV | 1976/05/06 | H-316 | 23.00 | S |
| M 5.1 - Greenville (Osgood), PA | 1998/10/16 | H-318 | 86.19 | N |
| M 5.1 - Greenville (Osgood), PA | 1998/10/22 | H-318 | 86.37 | N |
| M 5.1 - Greenville (Osgood), PA | 1998/10/23 | H-318 | 86.29 | N |
| M 5.1 - Greenville (Osgood), PA | 1998/11/01 | H-318 | 86.31 | N |
| M 3.7 - Meadville, PA | 1852/09/15 | H-318 | 95.55 | N |
| Sharon area, PA | 1873/08/17 | H-318 | 71.10 | N |
| M 2.9 - Greenville, PA | 1936/08/26 | H-318 | 82.32 | N |
| M 3.6 - Hancock, MD | 1962/09/07 | H-318 | 98.40 | E |
| M 3.6 - Berkeley Spring, WV | 1963/10/10 | H-318 | 99.77 | E |
| M 3.1 - Clarksburg, WV | 1966/09/28 | H-319 | 21.81 | SE |
| M 3.6 - Berkeley Spring, WV | 1969/05/22 | H-318 | 98.76 | E |
| M 3.6 - Berkeley Spring, WV | 1970/05/27 | H-318 | 97.05 | E |
| M 2.3 - Atlantic, PA | 1998/11/07 | H-318 | 92.60 | N |
| M 4.2 - Alliance, OH | 2000/08/07 | H-318 | 79.38 | NW |
| M 2.8 - Nelson, OH | 1988/03/31 | H-318 | 92.55 | NW |
| M 3.2 - Garrettsville, OH | 1885/08/15 | H-318 | 93.63 | NW |
| M 4.2 - Alliance, OH | 1927/10/29 | H-318 | 78.89 | NW |
| M 2.9 - Greenville, PA | 1890/12/15 | H-318 | 82.84 | N |
| Near the Muskingum River, Ohio | 1776 | H-319 | 72.41 | W |
| M 3.8 - In southeast Ohio, near Pomeroy | 11/5/1926 | H-319 | 88.98 | W |
| M 4 - Near Zanesville, Ohio | 6/20/1952 | H-319 | 79.11 | W |
| M 4.6 - In Virginia | 5/2/1853 | H-319 | 91.86 | SE |
| M 3.3 - In southern Blair County, Pennsylvania | 7/15/1938 | H-318 | 89.79 | E |
| M 3.0 - 2km SSW of Lowellville, Ohio | 3/10/2014 | H-318 | 60.45 | N |
| M 3.5 - 2km ESE of Nelsonville, Ohio | 11/20/2013 | H-319 | 89.04 | W |
| M 3.4 - 11km WSW of Sutton, West Virginia | 3/31/2013 | H-319 | 64.52 | S |
| M 3.7 - Youngstown-Akron urban area, Ohio | 12/31/2011 | H-318 | 70.86 | NW |
| M 3.1 - Ohio | 8/31/2011 | H-319 | 49.50 | W |
| M 3.4 - West Virginia | 4/4/2010 | H-319 | 67.33 | S |
| M 4.5 - Pennsylvania | 9/25/1998 | H-318 | 88.47 | N |
| M 3.1 - Potomac-Shenandoah region | 4/26/1978 | H-318 | 96.66 | E |
| M 3.4 - West Virginia | 10/20/1974 | H-319 | 64.43 | W |

M = Richter Magnitude

Earthquake Data Source: PA DCNR (2003), USGS (2015)

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**Equitrans Expansion Project**

N

1:2,250,000

0 25 50 Miles

EQUITRANS

**Figure 6.4-1**
**Known Earthquake Epicenters within 100 miles of the Project Area**

**(Revised January 22, 2016)**

Data Sources: ESRI Streaming Data (2014), PA DCNR, USGS

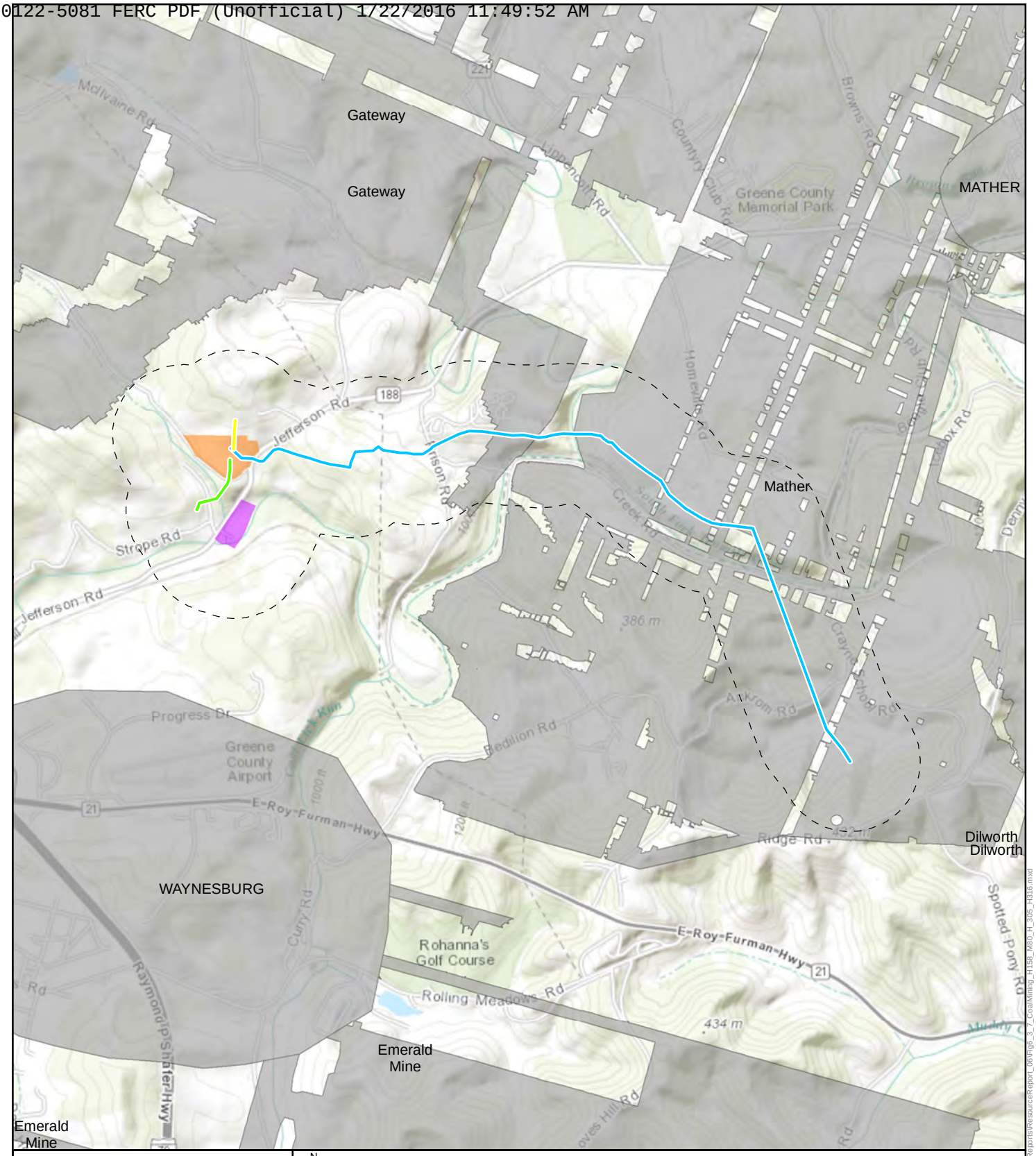
**Legend**

- H-316
- H-318
- Webster Interconnect/H-319 Pipeline
- Mobley Tap
- Redhook Compressor Station/H-158, H-305, and M80 Pipelines
- Pratt Compressor Station
- 100-mile Buffer
- Historic Earthquake Epicenter




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**Equitrans Expansion Project**

N

1:30,000

0 0.25 0.5 Miles

EQUITRANS

**Figure 6.3-7**
**Coal Mining Operations within 0.25 miles of the Project Area: H-158/M80, H-305, and H-316 Pipelines, and Redhook and Pratt Compressor Stations**
**(Revised January 22, 2016)**

Data Sources: ESRI Streaming Data (2014), PADEP, USGS

## Legend

- H-158/M80
- H-305
- H-316
- Redhook Compressor Station
- Pratt Compressor Station
- Quarter-mile Buffer
- Mined Area




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**Equitrans Expansion Project**

N

1:24,000

0 0.25 0.5 Miles

EQUITRANS

**Figure 6.3-8**
**Coal Mining Operations within 0.25 miles of the Proposed Project Area: H-318**

**(Revised January 22, 2016)**

Data Sources: ESRI Streaming Data (2014),PADEP, USGS

**Legend**

- H-318
- Quarter-mile Buffer
- Mined Area




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**Attachment 7-1**

**(Revised January 22, 2016)**

**Appendix 7-C**

**Potential Contaminated Sites within 0.25 Miles of the Project***

| Site Name | Site Address | *Database Listing | Potential Contaminant | Media | Distance (feet) | Proposed Mitigation Measures |
|---|---|---|---|---|---|---|
| Equitrans Hartson Compressor Station | 4111 Finleyville Elrama Road<br>Finleyville, PA 15332 | ICIS-Air<br>RCRA-SQG<br>PA-EFACTS<br>RCRAINFO<br>E-GGRT<br>EIS<br>AIRS/AFS | None<br>(in compliance with permits) | air | ~100 | NA |
| Iams SR STP (residential sewage treatment plant) | 4124 Elrama Road<br>Finleyville, PA 15332 | ICIS-NPDES Non-Major | None<br>(in compliance with permit) | groundwater | ~200 | NA |
| PA Dept. of Corrections -<br>Waynesburg State Correctional Institution | 630 Jefferson Road<br>Waynesburg, PA 15370 | ICIS-Air | None<br>(in compliance with permit) | air | ~100 | NA |

* Sources: Pennsylvania DEP eMapPa US EPA Envirofacts Facility Registry Service and West Virginia DEP TAGIS GIS Resources Toxic Release Inventory and Open Dump Cleanup Projects.

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**Attachment 8-5**

**(Revised January 22, 2016)**

**Table 8.1-5**

**Public Roadways and Railroads Crossed by the Project a/ b/**

| Facility | County | Roadway Name | Road Surface | Milepost | Road Crossing Method | Road Jurisdiction |
|---|---|---|---|---|---|---|
| M-80/H-158 | Greene County, PA | Braden Run Road (T588) | Asphalt | 0.15 | Conventional Bore | Local |
| H-316 | Greene County, PA | Jefferson Road/Pennsylvania Route 188 (PA 188) | Asphalt | 0.09 | Conventional Bore | State |
| H-316 | Greene County, PA | Prison Road | Asphalt | 0.8 | Open Cut | Local |
| H-316 | Greene County, PA | Monongahela Railway | N/A | 2.25 | HDD | - |
| H-316 | Greene County, PA | Creek Road (T555) | Rock Base | 2.29 | HDD | Local |
| H-316 | Greene County, PA | Ankrom Road (T543) | Asphalt | 2.75 | HDD | Local |
| H-318 | Allegheny County, PA | Rippel Road | Asphalt | 0.7 | Conventional Bore | Local |
| H-318 | Allegheny County, PA | Rippel Road | Asphalt | 1.63 | Conventional Bore | Local |
| H-318 | Allegheny County, PA | Raccoon Run Road | Asphalt | 1.7 | Conventional Bore | State |
| H-318 | Allegheny County, PA | Bunola River Road | Asphalt | 2.76 | Conventional Bore | State |
| H-318 | Allegheny County, PA | Conrail/CSXT Railroad | N/A | 2.85 | HDD | - |
| H-318 | Washington County, PA | Federal Railroad Administration Railroad | N/A | 3.13 | HDD | - |
| H-318 | Washington County, PA | Conrail Railroad | N/A | 3.14 | HDD | - |
| H-318 | Washington County, PA | Conrail Railroad | N/A | 3.15 | HDD | - |
| H-318 | Washington County, PA | 5th Street/Pennsylvania Route 837 (PA 837) | Asphalt | 3.16 | HDD | State |
| H-318 | Washington County, PA | Seneca Drive | Asphalt | 3.7 | Open Cut | Local |
| H-318 | Washington County, PA | Finleyville-Elrama Road | Asphalt | 4.16 | Conventional Bore | State |
| H-319 | Wetzel County, WV | County Road 80 | Asphalt | 0.03 | Conventional Bore | County |

a/ H-305 does not cross any public roadways or railroads. The Mobley Tap, Redhook Compressor Station and Webster Interconnect are adjacent to but do not cross any roads.

b/ It is assumed that all roads are public.

**Attachment 8-8**

**(Revised January 22, 2016)**

**Table 8.2-1**

**Residences and Buildings within 50 feet of the Proposed Pipeline Construction Work Area a/**

| Pipeline Segment | County | Building Type | Milepost | Direction | Distance | | Occupied |
|---|---|---|---|---|---|---|---|
| | | | | | From Edge of Workspace | From Pipeline Centerline | |
| H-158/M-80 b/ | Greene County, PA | Residence | 0.18 | West | 26 | 81 feet | Yes |
| H-316 | Greene County, PA | Outbuilding | 0.03 | Northeast | Inside temporary right-of-way | 20 feet | No |
| H-316 | Greene County, PA | Garage and Outbuilding | 0.1 | Inside ATWS Area | Inside ATWS Area | Inside ATWS Area | No |
| H-316 | Greene County, PA | Outbuilding | 0.95 | North | Inside temporary right-of-way | 20 feet | No |

a/ The H-305, H-318, H-319 pipelines, Redhook Compressor Station, Pratt Compressor Station, Mobley Tap, and Webster Interconnect do not have any structures within 50 feet of the construction workspace.

b/ This residence is located on the Redhook Compressor Station site and Equitrans is currently negotiating with the landowner to purchase the property.

received
12/1/15
ams

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHWEST REGIONAL OFFICE

November 25, 2015

**CERTIFIED MAIL: 7014 2120 0003 9955 1441**

Mark Sowa
Equitrans, LP
625 LIBERTY AVE STE 1700
Pittsburgh, PA 15222

Re: Determination of Administrative Incompleteness
Plan Approval Application PA-30-00234A
Red Hook Compressor Station
APS No. 883599, AUTH No. 1095207
Franklin Township, Greene County

Dear Mr. Sowa:

The Department of Environmental Protection ("Department") has reviewed the above referenced application and has determined that it is not administratively complete pursuant to 25 Pa. Code §127.12d. The following list specifies the items which must be included in the resubmittal of your application or the submission of additional information. Please aware that, pursuant to 25 Pa. Code §127.12d(c), this information must be received within 10 working (business) days of receipt of this request or "the Department will return the application and fees to the applicant."

**Information Necessary for Administrative Completeness**

1. In order for the Department to meet its obligations under Section 507 of the Pennsylvania History Code ("History Code"), 37 Pa.C.S. §507, please provide a copy of the Cultural Resource Notice submitted to the Pennsylvania Historical and Museum Commission ("PHMC") for the project in accordance with Implementation of the *Pennsylvania History Code: Policy and Procedures for Applicants for DEP Permits and Plan Approvals* (DEP Document 012-0700-001; March 16, 2002). Please also include proof of receipt and the response from PHMC. A copy of the policy is included for your reference.

2. Provide the Pennsylvania Natural Diversity Index (PNDI) Review receipt for the proposed project area. Include impact clearance letters if proof of agency coordination is required. The clearance letter is not required for administrative completeness, but must be provided prior to plan approval issuance. The PNDI search tool can be found at http://www.gis.dcnr.state.pa.us/hgis-er/PNDI_Introduction.aspx. A copy of the Department's *Policy for Pennsylvania Natural Diversity Inventory (PNDI) Coordination During Permit Review and Evaluation* (DEP Document 021-0200-001, May 25, 2013) is included for your reference.

If you have questions about your application, please contact me at 412-442-5231 or via email at dtomko@pa.gov and refer to PA-30-00234A, Application No. 883599.

Sincerely,

Devin P. Tomko
Air Quality Engineering Specialist
Air Quality Program

Enclosures (2)

CC: PA-30-00234A (thru D. Tomko) (w/o enclosures)
Operations – Scott Wineman (w/o enclosures)
Harrisburg – Permits (thru D. Tomko) (w/o enclosures)

Mr. Tom Muscenti
Trinity Consultants
4500 BROOKTREE RD STE 103
WEXFORD, PA 15090

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**Attachment 9-5**

**Table 9.1-4**

**(Revised January 22, 2016)**

**Federal Class I Areas Closest to the Project Sites**

| Class I Area | Managing Agency | Direction from Site | Distance to Site | |
|---|---|---|---|---|
| | | | Kilometers | Miles |
| **Class I Areas near Redhook Compressor Station** | | | | |
| Dolly Sods, WV | National Forest Service | Southeast of Redhook | ~122 | ~76 |
| Otter Creek, WV | National Forest Service | Southeast of Redhook | ~110 | ~68 |
| Shenandoah, VA | National Forest Service | Southeast of Redhook | ~220 | ~137 |
| **Class I Areas near Webster Interconnect** | | | | |
| Dolly Sods, WV | National Forest Service | Southeast of Webster | ~120 | ~75 |
| Otter Creek, WV | National Forest Service | Southeast of Webster | ~100 | ~62 |
| Shenandoah, VA | National Forest Service | Southeast of Webster | ~215 | ~134 |
| **Class I Areas near Mobley Tap** | | | | |
| Dolly Sods, WV | National Forest Service | Southeast of Mobley | ~120 | ~75 |
| Otter Creek, WV | National Forest Service | Southeast of Mobley | ~100 | ~62 |
| Shenandoah, VA | National Forest Service | Southeast of Mobley | ~215 | ~134 |
| **Class I Areas near Mobley H302 Tap** | | | | |
| Dolly Sods, WV | National Forest Service | Southeast of H302 | ~112 | ~70 |
| Otter Creek, WV | National Forest Service | Southeast of H302 | ~100 | ~62 |
| Shenandoah, VA | National Forest Service | Southeast of H302 | ~215 | ~134 |
| **Class I Areas near Webster H306 Tap** | | | | |
| Dolly Sods, WV | National Forest Service | Southeast of H306 | ~115 | ~72 |
| Otter Creek, WV | National Forest Service | Southeast of H306 | ~100 | ~62 |
| Shenandoah, VA | National Forest Service | Southeast of H306 | ~210 | ~130 |
| **Class I Areas near H148 Tap** | | | | |
| Dolly Sods, WV | National Forest Service | Southeast of H148 | ~145 | ~90 |
| Otter Creek, WV | National Forest Service | Southeast of H148 | ~140 | ~87 |
| Shenandoah, VA | National Forest Service | Southeast of H148 | ~240 | ~150 |

**Attachment 9-7a**

**(Revised January 22, 2016)**

**Potential-to-Emit Emissions from the Pratt Compressor Station**

| Pollutant | Emission Rates (tpy) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Engine #1** | **Engine #2** | **Engine #3** | **Engine #4** | **Engine #5** | **Generator #1** | **Heaters** | **Fugitives** | **Site-Wide** |
| CO | 20.9 | 20.9 | 18.9 | 18.9 | 18.9 | 0.4 | 2.9 | --- | < 99** |
| $NO_X$ | 20.9 | 20.9 | 18.9 | 18.9 | 18.9 | 0.7 | 3.5 | --- | < 99** |
| PM / $PM_{10}$ / $PM_{2.5}$ | 2.5 | 2.5 | 2.0 | 2.0 | 2.0 | 0.0 | 0.3 | --- | 11.2 |
| $SO_2$ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | --- | 0.1 |
| VOC* | 9.4 | 9.4 | 9.8 | 9.8 | 9.8 | 0.2 | 0.2 | 1.3 | 49.9 |
| GHG ($CO_2e$) | 5964.2 | 5964.2 | 4859.8 | 4859.8 | 4859.8 | 129.7 | 4411.4 | 820.3 | 31869.0 |
| Total HAP | 3.3 | 3.3 | 2.8 | 2.8 | 2.8 | 0.1 | 0.1 | 0.1 | 15.3 |

*VOC = NMNEHC + HCHO.

** Site-wide limit in Title V Permit # 30-00110

Note: All equipment will be removed from the Pratt Compressor Station upon operation of the Redhook Compressor Station. Only portions of above-ground piping will be retained at the facility.

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**Attachment 9-7b**

**Table 9.1-5**

**(Revised January 22, 2016)**

**NSR Major Source Thresholds**

| Pollutant | Potential Site-Wide PTE (tpy) a/ | Major Source Threshold (tpy) | NSR Program | Subject to Major NSR? |
|---|---|---|---|---|
| $PM_{10}$ | 18.58 | 250 | PSD | No |
| $PM_{2.5}$ | 18.58 | 250 | PSD | No |
| $SO_2$ | 3.24 | 250 | PSD | No |
| CO | 76.69 | 250 | PSD | No |
| $NO_X$ | 92.73 | 100 | NNSR b/ | No |
| VOC | 30.59 | 50 | NNSR | No |
| $CO_2$ | 152,729 | NA c/ | PSD | No |
| $CH_4$ | 571.10 | NA c/ | PSD | No |
| $N_2O$ | 0.28 | NA c/ | PSD | No |
| $CO_2e$ | 167,091 | NA c/ | PSD | No |
| Total HAPs | 14.99 | 25 | PSD | No |
| HCHO d/ | 7.53 | 10 | PSD | No |

a/ PTE includes site-wide emissions from all sources, including storage tanks, fugitive leaks, and blowdowns.

b/ $NO_2$ is also a regulated PSD pollutant with a major source threshold of 250 tpy.

c/ Only applicable if another pollutant exceeds major source threshold for PSD.

d/ HCHO is the greatest single HAP emitted at the facility.

Emissions from all fugitive sources (including compressor blowdowns) at the proposed facility are included in the totals above. Additional details regarding blowdowns are provided in Table 11 of Appendix 9-C.

NSR = noise sensitive receptor; PTE = Potential to Emit; tpy = tons per year

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H-318

H-316

Mobley Tap

Webster Interconnect

# Equitrans Expansion Project

EQUITRANS℠

**Attachment 10-3**
**Figure 10.2-1**
**Other Pipeline Systems, Electric Transmission Lines and Major Highways in Allegheny, Greene, & Washington Counties (PA) & Wetzel County (WV)**

(Revised January 22, 2016)

Data Sources: ESRI Data, Ventyx

N

1:400,000

0 5 10 Miles

## Legend

**Existing Natural Gas Pipeline Systems**
- Dominion Transmission, Inc. Pipeline
- Columbia Gas Pipeline
- Texas Eastern Transmission (TETCO) Pipeline
- Sunoco Mariner East Oil Pipeline

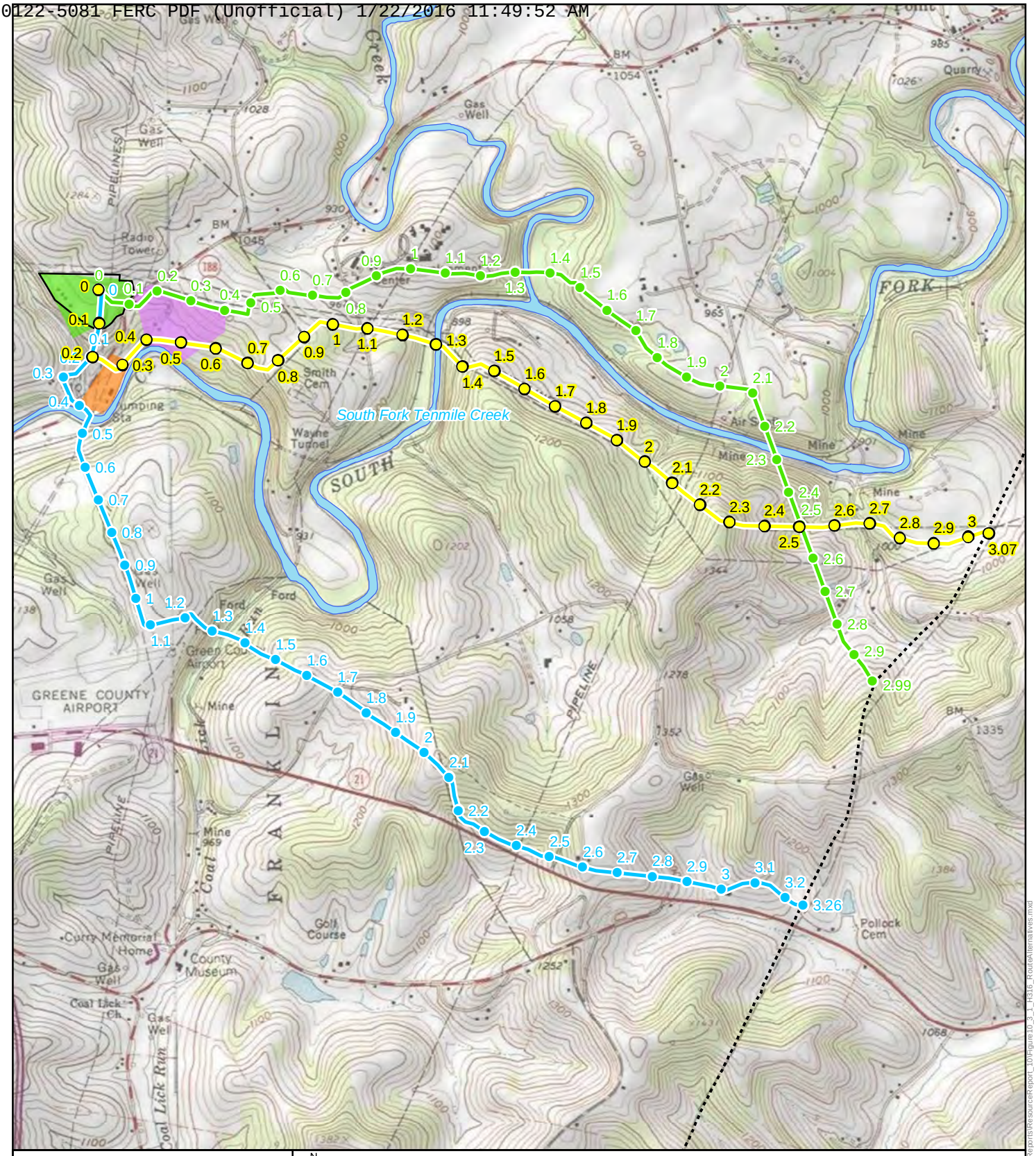
**Existing Transmission Lines**
- 4kV
- 69kV
- 115kV
- 138kV
- 345kV
- 500kV
- 765kV

- Interstate Higway
- US Highway
- State/County Road
- County Boundary
- State Boundary




Document Path: P:\EQT-Equitrans\Equitrans_to_MVP\GIS\SpatialMXD\ResourceReports\ResourceReport_10\Figure10_2_1_ForeignPipelines.mxd

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**Equitrans Expansion Project**

N

1:24,000

0 0.5 1 Miles

EQUITRANS

**Attachment 10-4**
**Figure 10.3-1**
**H-316 Pipeline Route Alternatives**

**(Revised January 22, 2016)**

Data Sources: ESRI 10.1, ESRI Streaming Data (2014)

**Legend**

- H-316 Proposed Route
- H-316 Alternative 1
- H-316 Alternative 2
- H-302
- Existing Pratt Compressor Station Site
- Proposed Redhook Compressor Station (6/17/2015)
- Redhook Alternative Site East
- Redhook Alternative Site West




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**Attachment 10-6**

**(Revised January 22, 2016)**

Revised Tables 10.3-1 through 10.3-5. 10.3-7, 10.3-8 and 10.4-1

Note: Information identified as “Pending” and Revised Tables 10.3-6, 10.3-9 and 10.3-11 are expected to be responded to by February 5, 2016.

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**Table 10.3-1**
**(revised January 22, 2016)**
**Comparison of Alternative Routes 1 and 2 to the Proposed Route**

| Feature | Alternative Route 1 | | Alternative Route 2 | | Proposed Route | |
|---|---|---|---|---|---|---|
| | Constr. | Oper. | Constr. | Oper. | Constr. | Oper. |
| **General** | | | | | | |
| Total length (miles) | 3.3 | 3.3 | 3.1 | 3.1 | 3.0 | 3.0 |
| Length adjacent to existing ROW (miles) | 2.8 | 2.8 | 2.8 | 2.8 | 0.6 | 0.6 |
| Land disturbed within construction ROW (acres) a/c/ | 45.0 | N/A | 43.6 | N/A | 34.1 | N/A |
| **Land Use** | | | | | | |
| Populated areas b/ within 0.5 mile (number) | 1 | 1 | 1 | 1 | 1 | 1 |
| NRHP designated or eligible historic properties | 0 | 0 | 0 | 0 | 0 | 0 |
| Landowner parcels crossed (number) | 29 | 29 | 29 | 25 | 41 | 41 |
| Residences within 50 feet of construction work | 1 | N/A | 0 | N/A | 2 | N/A |
| **Resources** | | | | | | |
| Forested Land crossed (miles) c/d/ | 1.3 | 1.3 | 2.2 | 2.2 | 0.9 | 0.9 |
| Interior Forest Crossed (miles) | Pending | Pending | Pending | Pending | Pending | Pending |
| Forested Wetlands (miles) c/ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Forested Wetlands (acres) c/ | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 |
| Forests (miles) c/ | 1.3 | 1.3 | 2.2 | 2.2 | 0.9 | 0.9 |
| Forests (acres) c/ | 19.6 | 7.8 | 33.7 | 13.5 | 12.9 | 5.5 |
| Cropland crossed (miles) | 0.7 | 0.7 | 0.4 | 0.4 | 1.3 | 1.3 |
| Wetlands (NWI) crossed (feet) | 131.2 | 131.2 | 86.4 | 86.4 | 199.2 | 199.2 |
| Perennial waterbody (source) crossings (number) | 1 | 1 | 1 | 1 | 2 | 2 |
| Streams with drinking water designation (number) e/ | 0 | 0 | 0 | 0 | 0 | 0 |
| Major River crossings (number) | 0 | 0 | 0 | 0 | 0 | 0 |
| Habitat of listed threatened and endangered species | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Natural Heritage Inventory Core Habitat (feet) | 835.0 | 835.0 | 1250.0 | 1250.0 | 1948.0 | 1948.0 |
| Steep slopes (>20%) crossed (feet) | 2,398.6 | 2,398.6 | 3,576.7 | 3,576.7 | 1,515.2 | 1,515.2 |
| Steep side-slopes crossed (feet) | Pending | Pending | Pending | Pending | Pending | Pending |
| Shallow bedrock crossed (miles) | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 |
| Karst geology crossed (miles) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Landslide-prone soils crossed (miles) | 3.3 | 3.3 | 3.1 | 3.1 | 3.0 | 3.0 |

a/ Assuming 125-foot-wide construction ROW.
b/ City, town, village center, or dense residential development.
c/ Does not include area of HDD.
d/ Forested Land based on following National Land Cover Dataset Land Use Types: Forested Upland, Deciduous Forest, Evergreen Forest, Mixed Forest, Woody Wetlands, Palustrine Forested Wetland, Estuarine Forested Wetland
e/ No data were identified that associate drinking water designations to streams.
N/A Not Applicable
NRHP = National Register of Historic Places
NWI = National Wetland Inventory
ROW = right-of-way

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**Table 10.3-2**
**(Revised January 22, 2016)**
**Comparison of Elrama Alternative and Proposed Route**

| Feature | Elrama | | Proposed Route | |
|---|---|---|---|---|
| | Constr. | Oper. | Constr. | Oper. |
| **General** | | | | |
| Total length (miles) | 3.6 | 3.6 | 4.3 | 4.3 |
| Length adjacent to existing ROW (miles) | 2.9 | 2.9 | 0.8 | 0.8 |
| Land disturbed within construction ROW (acres) a/c/ | 37.3 | N/A | 43.1 | N/A |
| **Land Use** | | | | |
| Populated areas b/ within 0.5 mile (number) | 5 | 5 | 3 | 3 |
| NRHP designated or eligible historic properties within 0.5 mile | 0 | 0 | 1 | 1 |
| Landowner parcels crossed (number) | 44 | 43 | 28 | 27 |
| Residences within 50 feet of construction work space (number) | 10 | N/A | 0 | N/A |
| **Resources** | | | | |
| Forested Land crossed (miles) c/d/ | 1.6 | 1.6 | 1.7 | 1.7 |
| Interior Forest Crossed (miles) | Pending | Pending | Pending | Pending |
| Interior Forest Crossed (acres) | Pending | Pending | Pending | Pending |
| Forested Wetlands (miles) c/ | 0.0 | 0.0 | 0.0 | 0.0 |
| Forested Wetlands (acres) c/ | 0.0 | 0.0 | 0.0 | 0.0 |
| Forests (acres) c/ | 19.5 | 9.5 | 21.5 | 10.9 |
| Cropland crossed (miles) | 0.1 | 0.1 | 1.2 | 1.2 |
| Wetlands (NWI) crossed (feet) | 901.7 | 901.7 | 883.8 | 883.8 |
| Perennial waterbody (source) crossings (number) | 2 | 2 | 2 | 2 |
| Streams with drinking water designation (number) e/ | 0 | 0 | 0 | 0 |
| Major River crossings (number) | 1 | 1 | 1 | 1 |
| Habitat of listed threatened and endangered species crossed (miles) | 0.0 | 0.0 | 0.0 | 0.0 |
| Natural Heritage Inventory Core Habitat (feet) | 0.0 | 0.0 | 0.0 | 0.0 |
| Steep slopes (>20%) crossed (feet) | 3,283.4 | 3,283.4 | 1,142.6 | 1,142.6 |
| Steep side-slopes crossed (feet) | Pending | Pending | Pending | Pending |
| Shallow bedrock crossed (miles) | 0.1 | 0.1 | 0.9 | 0.9 |
| Karst geology crossed (miles) | 3.6 | 3.6 | 4.3 | 4.3 |
| Landslide-prone soils crossed (miles) | 3.6 | 3.6 | 4.3 | 4.3 |

a/ Assuming 100-foot-wide construction ROW.
b/ City, town, village center, or dense residential development.
c/ Crossing is adjacent to existing utility corridor.
d/ Forested Land based on following National Land Cover Dataset Land Use Types: Forested Upland, Deciduous Forest, Evergreen Forest, Mixed Forest, Woody Wetlands, Palustrine Forested Wetland, Estuarine Forested Wetland.
e/ No data were identified that associate drinking water designations to streams.
N/A Not Applicable
NRHP = National Register of Historic Places
NWI = National Wetland Inventory
ROW = right-of-way

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**Table 10.3-3**
**(Revised January 22, 2016)**
**Comparison of Pollocks Knob Alternative and Proposed Route**

| Feature | Pollocks Knob | | Proposed Route | |
|---|---|---|---|---|
| | Construction | Operation | Construction | Operation |
| **General** | | | | |
| Total length (miles) | 2.4 | 2.4 | 4.3 | 4.3 |
| Length adjacent to existing ROW (miles) | 0.0 | 0.0 | 0.8 | 0.8 |
| Land disturbed within construction ROW (acres) | 14.3 | N/A | 43.1 | N/A |
| **Land Use** | | | | |
| Populated areas b/ within 0.5 mile (number) | 2 | 5 | 3 | 3 |
| NRHP designated or eligible historic properties | 1 | 1 | 1 | 1 |
| Landowner parcels crossed (number) | 26 | 26 | 28 | 27 |
| Residences within 50 feet of construction work | 2 | N/A | 0 | N/A |
| **Resources** | | | | |
| Forested Land crossed (miles) c/d/ | 0.7 | 0.7 | 1.7 | 1.7 |
| Interior Forest Crossed (miles) | Pending | Pending | Pending | Pending |
| Interior Forest Crossed (acres) | Pending | Pending | Pending | Pending |
| Forested Wetlands (miles) c/ | 0.0 | 0.0 | 0.0 | 0.0 |
| Forested Wetlands (acres) c/ | 0.0 | 0.0 | 0.0 | 0.0 |
| Forests (acres) c/ | 8.7 | 4.3 | 21.5 | 10.9 |
| Cropland crossed (miles) | 0.1 | 0.1 | 1.2 | 1.2 |
| Wetlands (NWI) crossed (feet) | 1,408.1 | 1,408.1 | 883.8 | 883.8 |
| Perennial waterbody (source) crossings (number) | 1 | 1 | 2 | 2 |
| Streams with drinking water designation (number) | 0 | 0 | 0 | 0 |
| Major River crossings (number) | 1 | 1 | 1 | 1 |
| Habitat of listed threatened and endangered | 0.0 | 0.0 | 0.0 | 0.0 |
| Natural Heritage Inventory Core Habitat (feet) | 0.0 | 0.0 | 0.0 | 0.0 |
| Steep slopes (>20%) crossed (feet) | 2,857.1 | 2,857.1 | 1,142.6 | 1,142.6 |
| Steep side-slopes crossed (feet) | Pending | Pending | Pending | Pending |
| Shallow bedrock crossed (miles) | 0.4 | 0.4 | 0.9 | 0.9 |
| Karst geology crossed (miles) | 2.4 | 2.4 | 4.3 | 4.3 |
| Landslide-prone soils crossed (miles) | 2.4 | 2.4 | 4.3 | 4.3 |

a/ Assuming 100-foot-wide construction ROW.
b/ City, town, village center, or dense residential development.
c/ Does not include area of HDD.
d/ Forested Land based on following National Land Cover Dataset Land Use Types: Forested Upland, Deciduous Forest, Evergreen Forest, Mixed Forest, Woody Wetlands, Palustrine Forested Wetland, Estuarine Forested Wetland
e/ No data was identified that associates drinking water designations to streams.
N/A Not Applicable
NRHP = National Register of Historic Places
NWI = National Wetland Inventory
ROW = right-of-way

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**Table 10.3-4**
**(Revised January 22, 2016)**
**Comparison of Powerline Alternative and Proposed Route**

| Feature | Powerline | | Proposed Route | |
|---|---|---|---|---|
| | Construction | Operation | Construction | Operation |
| **General** | | | | |
| Total length (miles) | 3.0 | 3.0 | 4.0 | 4.0 |
| Length adjacent to existing ROW (miles) | 1.0 | 1.0 | 0.8 | 0.8 |
| Land disturbed within construction ROW (acres) a/c/ | 28.7 | N/A | 43.1 | N/A |
| **Land Use** | | | | |
| Populated areas b/ within 0.5 mile (number) | 4 | 4 | 3 | 3 |
| NRHP designated or eligible historic properties within | 1 | 1 | 1 | 1 |
| Landowner parcels crossed (number) | 25 | 25 | 28 | 27 |
| Residences within 50 feet of construction work space | 2 | N/A | 0 | N/A |
| **Resources** | | | | |
| Forested Land crossed (miles) c/d/ | 1.9 | 1.9 | 1.7 | 1,7 |
| Interior Forest Crossed (miles) | Pending | Pending | Pending | Pending |
| Interior Forest Crossed (acres) | Pending | Pending | Pending | Pending |
| Forested Wetlands (miles) c/ | 0.0 | 0.0 | 0.0 | 0.0 |
| Forested Wetlands (acres) c/ | 0.0 | 0.0 | 0.0 | 0.0 |
| Forests (acres) c/ | 22.7 | 11.3 | 21.5 | 10.9 |
| Cropland crossed (miles) | 0.3 | 0.3 | 1.2 | 1.2 |
| Wetlands (NWI) crossed (feet) | 891.9 | 891.9 | 883.8 | 883.8 |
| Perennial waterbody (source) crossings (number) | 3 | 3 | 2 | 2 |
| Streams with drinking water designation (number) e/ | 0 | 0 | 0 | 0 |
| Major River crossings (number) | 1 | 1 | 1 | 1 |
| Habitat of listed threatened and endangered species | 0.0 | 0.0 | 0.0 | 0.0 |
| Natural Heritage Inventory Core Habitat (feet) | 0.0 | 0.0 | 0.0 | 0.0 |
| Steep slopes (>20%) crossed (feet) | 3,985.7 | 3,985.7 | 1,142.6 | 1,142.6 |
| Steep side-slopes crossed (feet) | Pending | Pending | Pending | Pending |
| Shallow bedrock crossed (miles) | 0.6 | 0.6 | 0.9 | 0.9 |
| Karst geology crossed (miles) | 3.0 | 3.0 | 4.3 | 4.3 |
| Landslide-prone soils crossed (miles) | 3.0 | 3.0 | 4.3 | 4.3 |

a/ Assuming 100-foot-wide construction ROW.
b/ City, town, village center, or dense residential development.
c/ Does not include area of HDD.
d/ Forested Land based on following National Land Cover Dataset Land Use Types: Forested Upland, Deciduous Forest, Evergreen Forest, Mixed Forest, Woody Wetlands, Palustrine Forested Wetland, Estuarine Forested Wetland.
e/ No data were identified that associate drinking water designations to streams.
N/A Not Applicable
NRHP = National Register of Historic Places
NWI = National Wetland Inventory
ROW = right-of-way

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**Table 10.3-5**
**(Revised January 22, 2016)**
**Comparison of Bunola Alternative and Proposed Route**

| Feature | Bunola | | Proposed Route | |
|---|---|---|---|---|
| | Construction | Operation | Construction | Operation |
| **General** | | | | |
| Total length (miles) | 4.7 | 4.7 | 4.3 | 4.3 |
| Length adjacent to existing ROW (miles) | 1.3 | 1.3 | 0.8 | 0.8 |
| Land disturbed within construction ROW (acres) a/c/ | 48.8 | N/A | 43.1 | N/A |
| **Land Use** | | | | |
| Populated areas b/ within 0.5 mile (number) | 3 | 3 | 3 | 3 |
| NRHP designated or eligible historic properties within 0.5 | 1 | 1 | 1 | 1 |
| Landowner parcels crossed (number) | 30 | 30 | 28 | 27 |
| Residences within 50 feet of construction work space | 2 | N/A | 0 | N/A |
| **Resources** | | | | |
| Forested Land crossed (miles) c/d/ | 2.3 | 2.3 | 1.7 | 1.7 |
| Interior Forest Crossed (miles) | Pending | Pending | Pending | Pending |
| Interior Forest Crossed (acres) | Pending | Pending | Pending | Pending |
| Forested Wetlands (miles) c/ | 0.0 | 0.0 | 0.0 | 0.0 |
| Forested Wetlands (acres) c/ | 0.0 | 0.0 | 0.0 | 0.0 |
| Forests (acres) c/ | 27.3 | 13.8 | 21.5 | 10.9 |
| Cropland crossed (miles) | 1.2 | 1.2 | 1.2 | 1.2 |
| Wetlands (NWI) crossed (feet) | 891.9 | 891.9 | 883.8 | 883.8 |
| Perennial waterbody (source) crossings (number) | 3 | 3 | 2 | 2 |
| Streams with drinking water designation (number) e/ | 0 | 0 | 0 | 0 |
| Major River crossings (number) | 1 | 1 | 1 | 1 |
| Habitat of listed threatened and endangered species | 0.0 | 0.0 | 0.0 | 0.0 |
| Natural Heritage Inventory Core Habitat (feet) | 0.0 | 0.0 | 0.0 | 0.0 |
| Steep slopes (>20%) crossed (feet) | 1,130.9 | 1,130.9 | 1,142.6 | 1,142.6 |
| Steep side-slopes crossed (feet) | Pending | Pending | Pending | Pending |
| Shallow bedrock crossed (miles) | 0.8 | 0.8 | 0.9 | 0.9 |
| Karst geology crossed (miles) | 4.7 | 4.7 | 4.3 | 4.3 |
| Landslide-prone soils crossed (miles) | 4.7 | 4.7 | 4.3 | 4.3 |

a/ Assuming 100-foot-wide construction ROW.
b/ City, town, village center, or dense residential development.
c/ Does not include area of HDD.
d/ Forested Land based on following National Land Cover Dataset Land Use Types: Forested Upland, Deciduous Forest, Evergreen Forest, Mixed Forest, Woody Wetlands, Palustrine Forested Wetland, Estuarine Forested Wetland.
e/ No data were identified that associate drinking water designations to streams.
N/A Not Applicable
NRHP = National Register of Historic Places.
NWI = National Wetland Inventory
ROW = right-of-way

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**Table 10.3-7**
**(Revised January 22, 2016)**
**Comparison of Alternative Interconnect to Proposed Webster Interconnect**

| Feature | Alternative Webster Interconnect | | Proposed Webster Interconnect | |
|---|---|---|---|---|
| | Construction | Operation | Construction | Operation |
| **General** | | | | |
| Total area (acres) | 1.4 | 1.4 | 0.8 | 0.8 |
| Land disturbed within site (acres) | 1.4 | 1.4 | 0.8 | 0.8 |
| **Land Use** | | | | |
| Populated areas a/ within 0.5 mile (number) | 0 | 0 | 0 | 0 |
| NRHP designated or eligible properties within 0.5 mile | 0 | 0 | 0 | 0 |
| Landowner parcels affected (number) | 1 | 1 | 1 | 1 |
| Residences located within site boundary (number) | 0 | 0 | 1 | 1 |
| Residences within 50 feet of site boundary (number) | 0 | 0 | 1 | 1 |
| **Resources** | | | | |
| Forested land affected (acres) b/ | 1.3 | 1.3 | 0.3 | 0.3 |
| Interior Forest affected (acres) | Pending | Pending | Pending | Pending |
| Forested wetlands (acres) | 0.0 | 0.0 | 0.0 | 0.0 |
| Open land (acres) | 0.0 | 0.0 | 0.0 | 0.0 |
| Wetlands (NWI) affected (acres) | 0.0 | 0.0 | 0.0 | 0.0 |
| Perennial waterbody affected (number) | 0 | 0 | 0 | 0 |
| Streams with drinking water designation within site | 0 | 0 | 0 | 0 |
| Major rivers crossing site (number) | 0 | 0 | 0 | 0 |
| Habitat of listed threatened and endangered species | 0.0 | 0.0 | 0.0 | 0.0 |
| Natural Heritage Inventory Core Habitat (feet) | N/A | N/A | N/A | N/A |
| Slopes greater than 8% (acres) | 1.2 | 1.2 | 0.7 | 0.7 |
| Steep slopes >20% (acres) | 0.0 | 0.0 | 0.0 | 0.0 |
| Steep side-slopes crossed (feet) | N/A | N/A | N/A | N/A |
| Shallow bedrock crossed (acres) | 0.4 | 0.4 | 0.8 | 0.8 |
| Karst geology encountered (acres) | 0 | 0 | 0.3 | 0.3 |
| Landslide-prone soils encountered (acres) | 1.4 | 1.4 | 0.8 | 0.8 |

a/ City, town, village center, or dense residential development.
b/ Forested Land based on following National Land Cover Dataset Land Use Types: Forested Upland, Deciduous Forest, Evergreen Forest, Mixed Forest, Woody Wetlands, Palustrine Forested Wetland, Estuarine Forested Wetland.
c/ No data were identified that associate drinking water designations to streams.
N/A Not Applicable
NRHP = National Register of Historic Places
NWI = National Wetland Inventory

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**Table 10.3-8**
**(Revised January 22, 2016)**
**Comparison of Headley Variation and Proposed Route**

| Feature | Headley Variation | | Proposed Route | |
|---|---|---|---|---|
| | Construction | Operation | Construction | Operation |
| **General** | | | | |
| Total length (miles) | 0.6 | 0.6 | 0.4 | 0.4 |
| Length adjacent to existing ROW (miles) | 0.0 | 0.0 | 0.4 | 0.4 |
| Land disturbed within construction ROW (acres) a/c/ | 7.8 | N/A | 5.7 | N/A |
| **Land Use** | | | | |
| Populated areas b/ within 0.5 mile (number) | 2 | 2 | 2 | 2 |
| NRHP designated or eligible historic properties within 0.5 | 0 | 0 | 0 | 0 |
| Landowner parcels crossed (number) | 4 | 3 | 3 | 3 |
| Residences within 50 feet of construction work space | 0 | N/A | 0 | N/A |
| **Resources** | | | | |
| Forested Land crossed (miles) c/d/ | 0.6 | 0.6 | 0.2 | 0.2 |
| Interior Forest affected (miles) | Pending | Pending | Pending | Pending |
| Interior Forest affected (acres) | Pending | Pending | Pending | Pending |
| Forested Wetlands (miles) c/ | 0.0 | 0.0 | 0.0 | 0.0 |
| Forested Wetlands (acres) c/ | 0.0 | 0.0 | 0.0 | 0.0 |
| Forests (acres) c/ | 6.8 | 3.4 | 2.3 | 1.1 |
| Cropland crossed (miles) | 0.1 | 0.1 | 0.3 | 0.3 |
| Wetlands (NWI) crossed (feet) | 0.0 | 0.0 | 0.0 | 0.0 |
| Perennial waterbody (source) crossings (number) | 0 | 0 | 0 | 0 |
| Streams with drinking water designation (number) e/ | 0 | 0 | 0 | 0 |
| Major River crossings (number) | 0 | 0 | 0 | 0 |
| Habitat of listed threatened and endangered species | 0.0 | 0.0 | 0.0 | 0.0 |
| Natural Heritage Inventory Core Habitat (feet) | 0.0 | 0.0 | 0.0 | 0.0 |
| Steep slopes (>20%) crossed (feet) | 1676.5 | 1676.5 | 0.0 | 0.0 |
| Steep side-slopes crossed (feet) | Pending | Pending | Pending | Pending |
| Shallow bedrock crossed (miles) | 0.0 | 0.0 | 0.0 | 0.0 |
| Karst geology crossed (miles) | 0.6 | 0.6 | 0.4 | 0.4 |
| Landslide-prone soils crossed (miles) | 0.6 | 0.6 | 0.4 | 0.4 |

a/ Assuming 100-foot-wide construction ROW.
b/ City, town, village center, or dense residential development.
c/ Does not include area of HDD.
d/ Forested Land based on following National Land Cover Dataset Land Use Types: Forested Upland, Deciduous Forest, Evergreen Forest, Mixed Forest, Woody Wetlands, Palustrine Forested Wetland, Estuarine Forested Wetland.
e/ No data were identified that associate drinking water designations to streams.
N/A Not Applicable
NRHP = National Register of Historic Places.
NWI = National Wetland Inventory
ROW = right-of-way

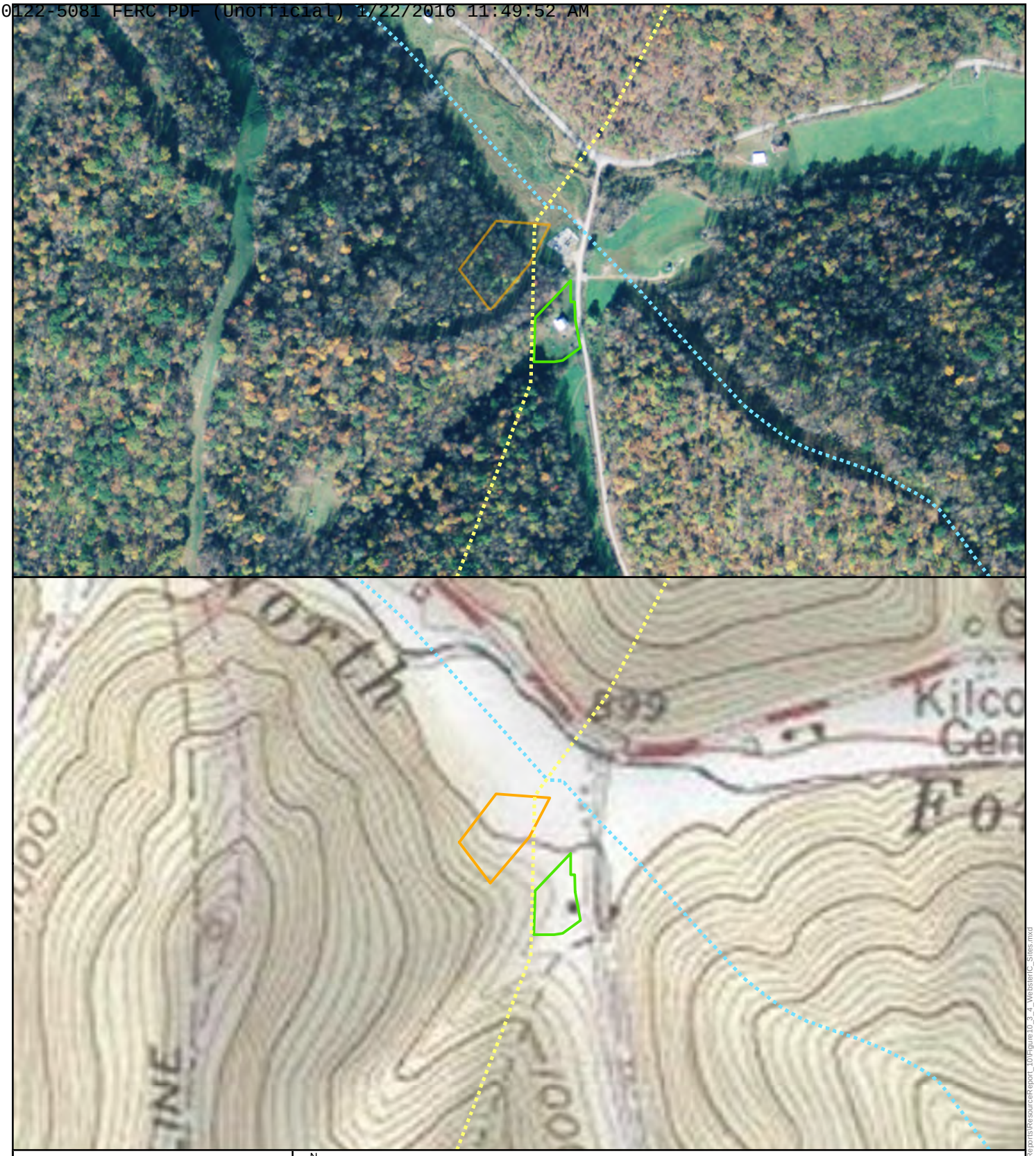
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**Table 10.4-1**
**(Revised January 22, 2016)**
**Comparison of Alternative East and Proposed Redhook Compressor Station Sites**

| Feature | Alternative East Compressor Station Site | | Proposed Redhook Compressor Station Site | |
|---|---|---|---|---|
| | Construction | Operation | Construction | Operation |
| **General** | | | | |
| Total area (acres) | 23.9 | 23.9 | 17.7 | 17.7 |
| Land disturbed within site (acres) | 23.9 | 23.9 | 17.7 | 17.7 |
| **Land Use** | | | | |
| Populated areas a/ within 0.5 mile (number) | 0 | 0 | 0 | 0 |
| NRHP designated or eligible properties within 0.5 mile | 0 | 0 | 0 | 0 |
| Landowner parcels affected (number) | 8 | 8 | 10 | 10 |
| Residences located within site boundary (number) | 2 | 2 | 4 | 4 |
| Residences within 50 feet of site boundary (number) | 3 | 3 | 5 | 5 |
| **Resources** | | | | |
| Forested Land affected (acres) b/ | 18.6 | 18.6 | 4.5 | 4.5 |
| Interior Forest affected (acres) | Pending | Pending | Pending | Pending |
| Forested wetlands (acres) | 0.6 | 0.6 | 0.0 | 0.0 |
| Open land (acres) | 0.0 | 0.0 | 10.7 | 10.7 |
| Wetlands (NWI) affected (acres) | 0.5 | 0.5 | 0.0 | 0.0 |
| Perennial waterbody affected (number) | 0 | 0 | 0 | 0 |
| Streams with drinking water designation within site (number) c/ | 0 | 0 | 0 | 0 |
| Major rivers crossing site (number) | 0 | 0 | 0 | 0 |
| Habitat of listed threatened and endangered species affected | 0.0 | 0.0 | 0.0 | 0.0 |
| Natural Heritage Inventory Core Habitat (feet) | 0.0 | 0.0 | 4.1 | 4.1 |
| Slopes greater than 8% (acres) | 22.9 | 22.9 | 10.6 | 10.6 |
| Steep slopes >20% (acres) | 1.9 | 1.9 | 0.5 | 0.5 |
| Steep side-slopes crossed (feet) | N/A | N/A | N/A | N/A |
| Shallow bedrock encountered (acres) | 0.0 | 0.0 | 0.0 | 0.0 |
| Karst geology encountered (acres) | 0.0 | 0.0 | 0.0 | 0.0 |
| Landslide-prone soils encountered (acres) | 23.9 | 23.9 | 17.7 | 17.7 |

a/ City, town, village center, or dense residential development.
b/ Forested Land based on following National Land Cover Dataset Land Use Types: Forested Upland, Deciduous Forest, Evergreen Forest, Mixed Forest, Woody Wetlands, Palustrine Forested Wetland, Estuarine Forested Wetland.
c/ No data were identified that associate drinking water designations to streams.
N/A Not Applicable
NRHP = National Register of Historic Places
NWI = National Wetland Inventory

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**Equitrans Expansion Project**

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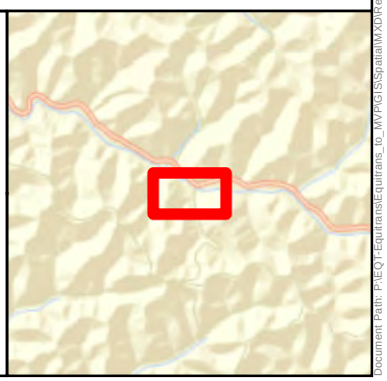
**Attachment 10-10**
**Figure 10.3-4**
**Webster Interconnect**

**(Revised January 22, 2016)**

Data Sources: ESRI 10.1, ESRI Streaming Data (2014)

## Legend

- H-600
- H-306
- Webster Interconnect
- Webster Interconnect Alternative



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