Legal Department

American Electric Power
1 Riverside Plaza
Columbus, OH 43215-2373
AEP.com

Chairman Andre T. Porter
Ohio Power Siting Board
180 East Broad Street
Columbus, Ohio 43215

Hector Garcia
Senior Counsel –
Regulatory Services
(614) 716-3410 (P)
(614) 716-2014 (F)
hgarcia1@aep.com

October 6, 2015

Re: Case No. 15-1666-EL-BLN Request for Expedited Treatment:
In the Matter of the Letter of Notification for the Yager Station Project

Dear Chairman Porter,

Attached please find a copy of the Letter of Notification (LON) for the Yager Station Project by AEP Ohio Transmission Company, Inc. This filing and notice is in accordance with O.A.C. 4906-11-01.

A copy of this filing will also be submitted to the executive director or the executive director's designee. A copy will be provided to the Board Staff via electronic message. The Company will also submit a check in the amount of $2,000 to the Treasurer, State of Ohio, for Fund 5610 for the expedited fees.

If you have any questions, please do not hesitate to contact me.

Respectfully Submitted,

/s/ Hector Garcia

Hector Garcia
Senior Counsel

cc. Counsel OPSB Staff
Patrick Donlon and Jon Pawley, OPSB Staff

LETTER OF NOTIFICATION FOR THE

YAGER STATION PROJECT

PUCO Case No. 15-1666-EL-BLN

Submitted pursuant to OAC 4906-11-01

AEP Ohio Transmission Company, Inc.
(AEP Ohio Transco)

October 2015

LETTER OF NOTIFICATION
Yager Station Project

AEP Ohio Transmission Company, Inc. (AEP Ohio Transco) is providing the following information in accordance with the procedures delineated in Ohio Administrative Code Section 4906-11-01: Letter of Notification Requirements of the Rules and Regulations of the Ohio Power Siting Board (OPSB).

4906-11-01(B) GENERAL INFORMATION

1. The name of the project and applicant's reference number, if any, names and reference numbers(s) of resulting circuits and a brief description of the project, and why the project meets the requirements of a letter of notification.

The proposed installation of the Yager Station Project (Project) is for a specific customer and was identified in the 2015 Long-Term Forecast Reports (LTFRs) for the AEP Ohio Transmission Company (Document 15-1501-EL-FOR).

The Project consists of constructing a new associated 138-69 kV transmission station to be known as Yager Station. As proposed in this Letter of Notification, Yager Station will be constructed on property owned by AEP Ohio Transco. The station is located on an approximately 27-acre overall property adjacent to Patterson Road at Yager Road in Monroe Township, Harrison County, Ohio. Figure 1 shows the location of the project in relation to the surrounding vicinity. The station fenced-in area is approximately 4 acres in size, and situated approximately 100 feet north of Patterson Road and approximately 100 feet east of Yager Road. A preliminary overview of the station equipment layout and grading plan is provided as Figure 2.

The Yager Station property is adjacent to three 138 kV circuits owned and operated by FirstEnergy. Interconnections to these lines, which will be submitted to OPSB by FirstEnergy in a separate filing, will energize Yager Station. Approximately four miles of 138 kV transmission line will be extended generally north to the existing Azalea Station to meet the needs of a specific customer, Utica East Ohio Midstream. Due to the expansion needs of the specific customer at their Leesville Processing Plant and necessary construction schedule for Yager Station, AEP Ohio Transco will submit the Yager-Azalea 138 kV transmission line as a separate Letter of Notification that will follow as the line route is finalized and environmental field studies are completed. The construction of Yager Station will take longer than the construction of the Yager-Azalea 138 kV transmission line. Both projects are necessary to meet the needs of the specific customer.

The Yager-Azalea 138 kV transmission line portion of the Project meets the requirements for a Letter of Notification because it is within the types of projects defined by Item (1)(f) of Attachment A of the interim process defined in the OPSB's September 4, 2012 Finding and Order in Docket 12-1981-GE-BRO. This items states:

> *(1) Rerouting or extension of new construction of single or multiple circuit electric power transmission line(s) as follows:*
>
> *(f) Lines(s) primarily needed to attract or meet the requirements of a specific customer or customers.*

The station portion of the Project is considered an associated facility to the Yager-Azalea 138 kV line.

2. If the proposed letter of notification project is an electric power transmission line or gas or natural gas transmission line, a statement explaining the need for the proposed facility.

The purpose of this Project is to meet the needs of a specific customer. Utica East Ohio Midstream has requested an increase in load capacity from 20 MW to 63 MW at its existing Leesville Plant along Azalea Road west of the Village of Leesville, Carroll County, Ohio. An existing 69kV circuit currently serves the Leesville Plant. The 69kV system does not have the capacity to serve the significant load increase. This 138 kV project will allow AEP Ohio Transco to reliably serve the load increase of the customer.

3. The location of the project in relation to existing or proposed lines and stations shown on maps and overlays provided to the Public Utilities Commission of Ohio in the applicant's most recent long term forecast report.

This project is designed to meet the needs of a specific customer, Utica East Ohio Midstream, and is referenced in AEP Ohio Transmission Company's 2015 LTFRs submitted to the Public Utilities Commission of Ohio. Figure 1 shows the general location of the Project in relation to FirstEnergy's existing four 138 kV lines, which will energize Yager Station.

4. **The alternatives considered and reasons why the proposed location or route is best suited for the proposed facility. The discussion shall include, but not be limited to impacts associated with socioeconomic, natural environment, construction, or engineering aspects of the project.**

   AEP Ohio Transco was contacted by Utica East Ohio Midstream regarding their specific needs. AEP Ohio Transco worked with Utica East Ohio Midstream to identify a solution for their specific projected electrical load needs. Inserting a 138 kV station adjacent to the three existing FirstEnergy 138 kV circuits and extending a 138 kV line to Azalea Station was identified as the best solution. AEP Ohio Transco explored available property options along the three FirstEnergy 138 kV circuits in the area of customer. AEP Ohio Transco identified the selected site, as having developable land adjacent to the three FirstEnergy circuits. This site is adjacent to a 69kV transmission circuit. This 69kV circuit will be routed into Yager Station to reinforce the 69kV system and provide additional capacity for current and future customers. AEP Ohio Transco worked with the property owners to purchase the selected site. AEP Ohio Transco identified no additional sites that were both available and better than the selected location.

5. **The anticipated construction schedule and proposed in-service date of project.**

   Vegetation clearing, which is expected to be minimal, is scheduled to begin in November 2015, and grading is scheduled to begin in December 2015. Once grading is completed, construction of the station will begin in January 2016. The in-service date for the Project is November 2016.

6. **An area map of not less than 1:24,000-scale clearly depicting the facility's centerline with clearly marked streets, roads, and highways, and clearly written instructions for locating and viewing the facility.**

   Figure 1 provides the proposed Project location on the United States Geological Survey (USGS) 7.5-minute topographic maps of the Bowerstown, Ohio and Uhrichsville quadrangles. To access the Project location from public roads, take Interstate 70 East from Columbus for approximately 80 miles to Exit 180B to Interstate 77 North toward Cleveland. After approximately 21 miles, take Exit 65 for U.S. 36 toward Port Washington/Newcomerstown. Turn right onto U.S. 36 East and continue for approximately 15 miles before turning left onto U.S. 250. After approximately 4.5 miles, turn left onto

Patterson Road and continue for approximately 1.5 miles. The project site is located near the intersection of Patterson Road and Yager Road.

7. A list of properties for which the applicant has obtained easements, options, and/or land use agreements necessary to construct and operate the facility and a list of the additional properties for which such agreements have not been obtained.

Yager Station is located on an overall property currently owned by Spring Valley Rd LLC, Todd Armstrong, Raymond W. and Nguyen T. Yager, Robert E. & Nita E. Yager, and George H. Yager. AEP Ohio Transco purchased portions of these properties for the station. The station site will be transferred to AEP Ohio Transco prior to the start of construction. Right-of-way for interconnections to FirstEnergy's three 138 kV circuits across a portion of properties owned by RHDK Investments LLC will also be acquired by AEP Ohio Transco to provide adequate rights-of-way. No additional properties, easements, options, or land use agreements are necessary for the Yager Station portion of the Project.

(C) TECHNICAL FEATURES OF THE PROJECT

1. Operating characteristics, estimated number and types of structures required, and right-of-way and/or land requirements.

Station Characteristics

The equipment and facilities described below will be installed within the fenced area of the proposed station.

Breakers: There will be 15 3000A, 40kA circuit breakers and foundations installed at the switching station.

Switches: Station will contain 38 3000A, 100kA disconnect switches mounted on tubular steel structures.

Bus Arrangement and Structures: The switching station will utilize a breaker-and-a-half configuration with tubular and tapered tubular steel.

Equipment support steel structures will be designed using hot-rolled structural steel shapes such as wide flange, tubing, channels and angles, or as folded plate tapered tubular structures. Dead-end structures will be made of tapered tubular steel. All yard

structures will be ASTM A36, ASTM A500, or ASTM A572 steel hot-dip galvanized for corrosion protection.

Transformers: Station will contain a 138kV/69kV 200MVA transformer.

Control Buildings: The control houses will consist of pre-engineered or factory-fabricated metal buildings to contain all switch control and relay panels and miscellaneous equipment. This would include an RTU, DC distribution panel, batteries, battery chargers, and other miscellaneous equipment. The control houses will include building HVAC and internal lighting. The switch facility will not be manned. Plumbing facilities are not required.

Other Major Equipment: Other equipment can include a 28.8MVAR capacitor bank, surge arresters, metering class current transformers, capacitor voltage transformers (CVT's), and switch service voltage transformers (SSVT's), wave traps, current transformers (CT's) and potential transformers (PT's).

Lighting systems at the switching station will be necessary for safety, security, and to comply with applicable standards. There are two different illumination levels for switch yard lighting systems. NESC Section 11, Table 111-1 recommends a two foot-candle illumination level in stations for general service lighting. The IES Lighting Handbook, Figure 2-1, recommends a 0.5 foot-candle horizontal illumination level for general security lighting. Security lighting is intended to illuminate the areas inside the switching station yard that might attract vandalism or theft. Service lighting is intended to provide additional lighting for unscheduled callouts to the switching station.

2. For electric power transmission lines, the production of electric and magnetic fields during the operation of the proposed electric power transmission line.

(a) Calculated Electric and Magnetic Field Levels – EMF levels are associated with transmission lines. Transmission line EMF data will be submitted with the Letter of Notifications for each transmission line route.

(b) Discussion of the Company's Design Alternatives Regarding EMF Levels– EMF levels are associated with transmission lines. Transmission line EMF data will be submitted with the Letter of Notifications for each transmission line route.

3. **The estimated cost of the project by Federal Energy Regulatory Commission account, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905. of the Revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business).**

   The 2015 capital cost estimates for the proposed project have been tabulated by the Federal Energy Regulatory Commission (FERC) Electric Plant Transmission Accounts:

ESTIMATES OF APPLICABLE INTANGIBLE AND CAPITAL COSTS		
FERC Account Number	**Description**	**Cost**
350	Land and Land Rights	$2,000,000
352	Structures & Improvement	Not Applicable
353	Substation Equipment	$14,000,000
354	Towers & Fixtures	Not Applicable
355	Poles & Fixtures	Not Applicable
356	Overhead Conductors & Devices	Not Applicable
357	Underground Conductors & Devices	Not Applicable
358	Underground-to-overhead Conversion Equipment	Not Applicable
359	Right-of-way Clearing, Roads, Trails or Other Access	$264,000
	TOTAL	**$16,264,000**

(D) SOCIOECONOMIC DATA

1. **A brief description of land use within the vicinity of the proposed project, including: (a) a list of municipalities, townships and counties affected; and (b) estimates of population density adjacent to rights of way within the study corridor (the U.S. census information may be used to meet this requirement.)**

   On behalf of AEP Ohio Transco, AECOM prepared a Socioeconomic, Land Use, and Agricultural District Review Report. This report is included as Appendix A.

2. **The location and general description of all agricultural land (including agricultural district land) existing at least sixty days prior to submission of the letter of notification within the proposed electric power transmission line right-of-way, or within the proposed electric power transmission substation fenced-in area, or within the construction site boundary of a proposed compressor station.**

   On behalf of AEP Ohio Transco, AECOM prepared a Socioeconomic, Land Use, and Agricultural District Review Report. This report is included as Appendix A.

3. **A description of the applicant's investigation (concerning the presence or absence of significant archaeological or cultural resources that may be located within the area likely to be disturbed by the project), a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.**

   An archaeological investigation by Weller & Associates, Inc. was completed for this project. A copy of this report will be provided to the Ohio Power Siting Board under separate cover.

4. **Documentation that the chief executive officer of each municipal corporation and county, and the head of each public agency charged with planning land use in the area in which any portion of the facility is to be located have been notified of the project and have been provided with a copy of the letter of notification. The applicant shall describe the company's public information program used in the siting of the proposed facility. The information submitted shall include either a copy of the material distributed to the public or a copy of the agenda and summary of the meeting(s) held by the applicant.**

   AEP Ohio Transco notified Mr. Don Bethel, Mr. William Host, and Mr. Dale Norris, Harrison County Board of Commissioners; Mr. Robert Sterling, Harrison County Engineer; Mr. Bart A. Busby, Monroe Township Trustee; Mr. Gene Busby, Monroe Township Trustee; and Mr. Ralph T. Ferguson, Monroe Township Trustee in October 2015. Copies of this Letter of Notification have been sent to the Harrison County Commissioners, Harrison County Engineer, Monroe Township Trustees and the Puskarich Public Library. Copies of the cover letters to these officials and the local library are attached in Appendix B. AEP Ohio Transco will advise local officials of features and the status of the proposed Project.

5. **A brief description of any current or pending litigation involving the project known to the applicant at the time of the letter of notification.**

   There is no known current or pending litigation involving this Project.

6. **A listing of local, state, and federal governmental agencies known to have requirements which must be met in connection with the construction of the project, and list of documents that have been or are being filed with those agencies in connection with siting and constructing the project.**

   A Notice of Intent will be filed with the Ohio Environmental Protection Agency for authorization of construction stormwater discharges under General Permit OHC000003. There are no other known local, state, or federal requirements that must be met prior to commencement of the proposed Project.

(E) ENVIRONMENTAL DATA

1. **A description of the applicant's investigation concerning the presence or absence of federal or state endangered species (including endangered species, threatened species, rare species, species proposed for listing, species under review for listing, and species of special interest) that may be located within the area likely to be disturbed by the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.**

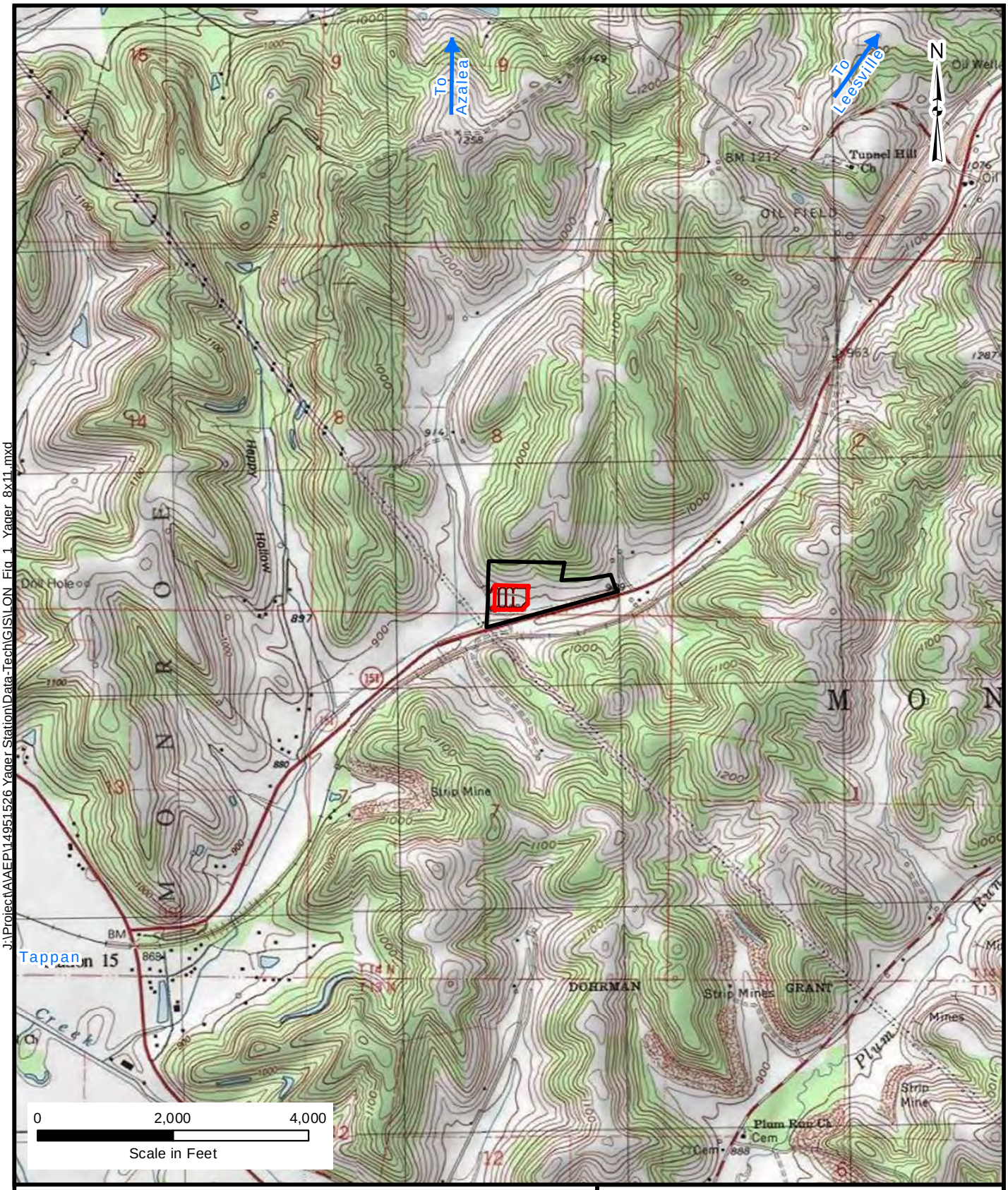
   On behalf of AEP Ohio Transco, AECOM prepared a Threatened and Endangered Species Report. AECOM coordinated with the USFWS and ODNR regarding special status species in the vicinity of the Project. No impacts to threatened or endangered species are expected. The full Threatened and Endangered Species Report for the Project is included as Appendix C.

2. **A description of the applicant's investigation concerning the presence or absence of areas of ecological concern (including national and state forests and parks, floodplains, wetlands, designated or proposed wilderness areas, national and state wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, and wildlife sanctuaries) that may be located within the areas likely to be disturbed by the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.**

   On behalf of AEP Ohio Transco, AECOM prepared an Areas of Ecological Concern, Wetland Delineation, and Stream Assessment Report. Impacts to wetland and streams are expected to be limited to installation of a culvert for the station access road across the ephemeral stream parallel to Yager Road. The full Areas of Ecological Concern, Wetland Delineation, and Stream Assessment Report for the Project is included as Appendix D.

3. **Any known additional information that will describe any unusual conditions resulting in significant environmental, social, health or safety impacts.**

   To the best of AEP Ohio Transco's knowledge, no unusual conditions exist that would result in environmental, social, health, or safety impacts. Construction and operation of the proposed Project will meet all applicable safety standards established by the Occupational Safety and Health Administration, and will be in accordance with the requirements specified in the latest revision of the National Electrical Safety Code as adopted by the Public Utilities Commission of Ohio. The Stormwater Pollution Prevention Plan (SWPPP), which will include the Access Plan, will be provided to the OPSB under separate cover, after submission of this Letter of Notification.



J:\Project\AIAEP\149\1526 Yager Station\Data-Tech\GIS\LON_Fig_1_Yager_8x11.mxd

LEGEND:

- Yager Station Property Boundary
- Yager Station Fence
- Access Drive

AEP OHIO TRANSMISSION COMPANY

Yager Station

FIGURE 1
PROJECT OVERVIEW

JOB NO.60423281

AECOM

DWG. NO. EX-1

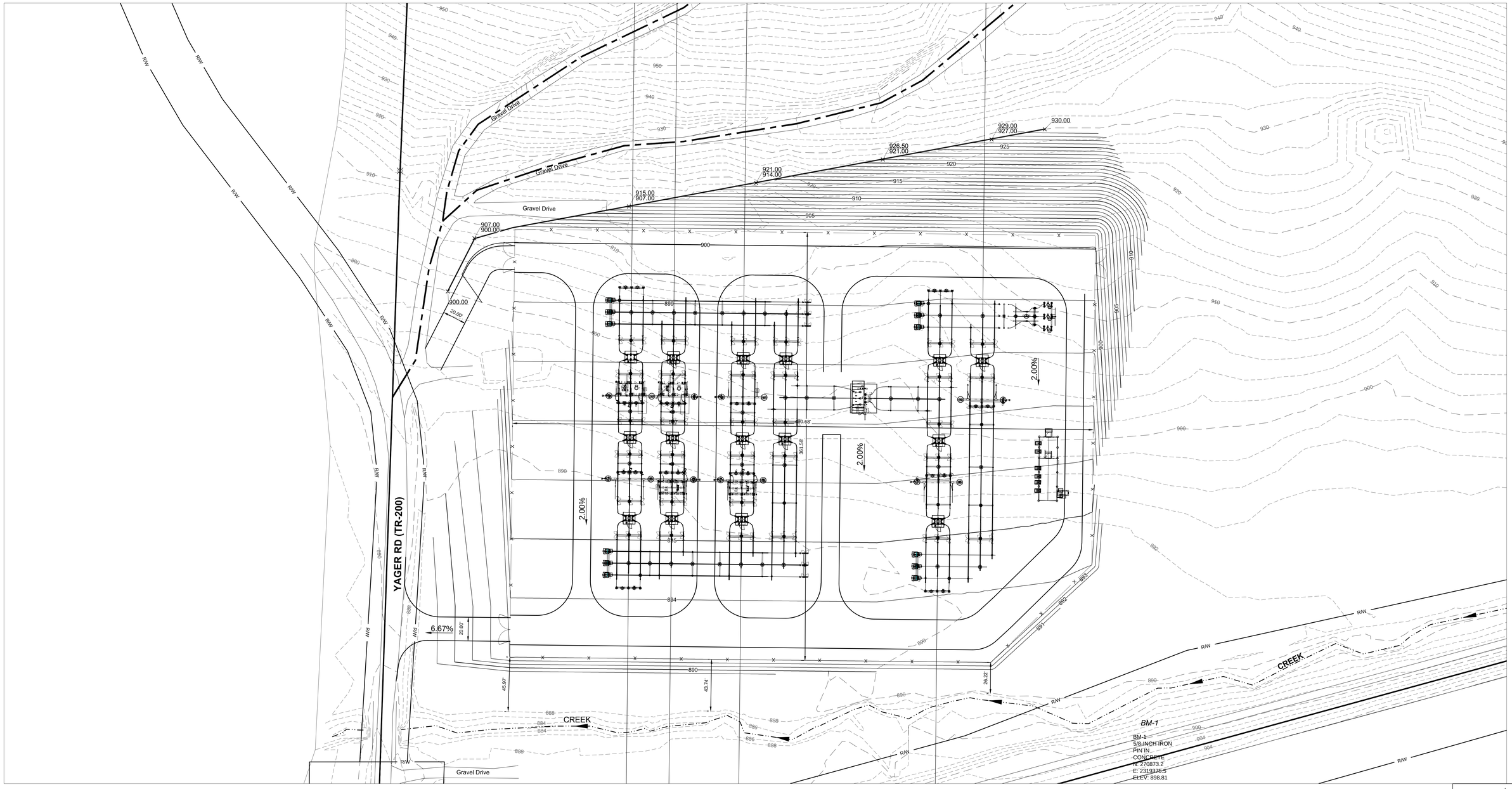


FIGURE 2

ms consultants, inc.
engineers, architects, planners
2221 Schrock Road
Columbus, OH 43229
phone (614) 898-7100
fax (614) 898-7570

OHIO UTILITIES PROTECTION SERVICE
CALL BEFORE YOU DIG
811 OR 1-800-362-2764

OLD DWG #: | STD DWG #:

AMERICAN ELECTRIC POWER

YAGER STATION

OHIO

138/69/34.5KV

SITE PLAN

SCALE: 1"=30'	DR:	ENG:	CH:
AMERICAN ELECTRIC POWER	WO#:	APPD: XXX	DATE: 9/22/15
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215	DWG. NO. EX-1	REV 0	

AEP G (30 X 42)

CM 1 2 3 4 5 6 7 | 3/16 INCH 4 8 12 16 | TENTHS 10 20 30 | INCHES 1 2 3

APPENDIX A

SOCIOECONOMIC, LAND USE, AND AGRICULTURAL DISTRICT REVIEW REPORT

YAGER STATION PROJECT

SOCIOECONOMIC, LAND USE, AND AGRICULTURAL DISTRICT REVIEW REPORT

Prepared for:

American Electric Power Ohio Transmission Company
700 Morrison Road
Gahanna, Ohio 45230

Prepared by:

525 Vine Street, Suite 1800
Cincinnati, Ohio 45202

Project #: 60423281

TABLE OF CONTENTS

FIGURES
(follow text)

Number

1.0 PROJECT DESCRIPTION

This document presents the socioeconomic, land use, and agricultural district review conducted by AECOM for American Electric Power Ohio Transco's (AEP Ohio Transco) proposed Yager Station Project (Project). The Project is needed to meet the needs of a specific customer. In response to the customer's needs, AEP Ohio Transco is proposing to construct a new 138 kV transmission station on an approximately 26-acre property adjacent to Patterson Road at Yager Road in Monroe Township, Harrison County, Ohio.

As part of the Ohio Power Siting Board (OPSB) Letter of Notification (LON) requirements, AEP Ohio Transco is required to assess and report the socioeconomic, land use, and agricultural district characteristics potentially affected by the Project, as stated in Ohio Administrative Code (OAC) Rule 4906-11-01(D)(1) and (2). These rules state:

> ***(D) Socioeconomic data. Describe the social and ecological impacts of the project. This description shall contain the following information:***
>
> ***(1) A brief, general description of land use within the vicinity of the proposed project, including: (a) a list of municipalities, townships, and counties affected; and (b) estimates of population density adjacent to rights-of-way within the study corridor (the U.S. census information may be used to meet this requirement).***
>
> ***(2) The location and general description of all agricultural land (including agricultural district land) existing at least sixty days prior to submission of the letter of notification within the proposed electric power transmission line right-of-way, or within the proposed electric power transmission substation fenced-in area, or within the construction site boundary of a proposed compressor station.***

AEP Ohio Transco retained AECOM to conduct a desktop review of socioeconomic, land use, and agricultural district land characteristics. A study area within 1,000 feet of the 26-acre station property was established. This report will be used to assist AEP Ohio Transco's efforts to avoid or minimize impacts to socioeconomic characteristics and land uses potentially present in the study area during construction activities.

2.0 GENERAL LAND USE DESCRIPTION

Land use within the study area is shown on Figure 1. Current land use characteristics were obtained through review of United States Farm Service Agency National Agricultural Imagery Program aerial photography taken in 2013, the United States Geological Survey (USGS) 7.5-minute topographic map of the Bowerston, Ohio quadrangle (1976, photorevised 1978), and a field reconnaissance conducted on August 18, 2015.

Land uses within the study area include wooded areas, shrub-scrub areas, hayfields, and residential properties. Roads are also present. Wooded area accounts for approximately 39% of the land within 1,000 feet of the Project area while hayfields account for approximately 29%. Shrub-scrub accounts for

approximately 19% of the land within 1,000 feet of the Project area. Approximately 5% of the study area is comprised of residences, associated buildings, and maintained yards. The remainder of the study area is made up of road and railroad rights-of-way.

3.0 POPULATION DENSITY ESTIMATE

Four residential homes were identified within 1,000 feet of the Project area, which is located in Monroe Township, Harrison County, Ohio. Based on 2010 U.S. Census data, the average household size in Monroe County is 2.5 individuals. An estimated population of 10 currently resides within 1,000 feet of the station property. Two of these residences are located within the property boundary of the station. These residences were purchased as part of the station property acquisition and will be demolished prior to station construction.

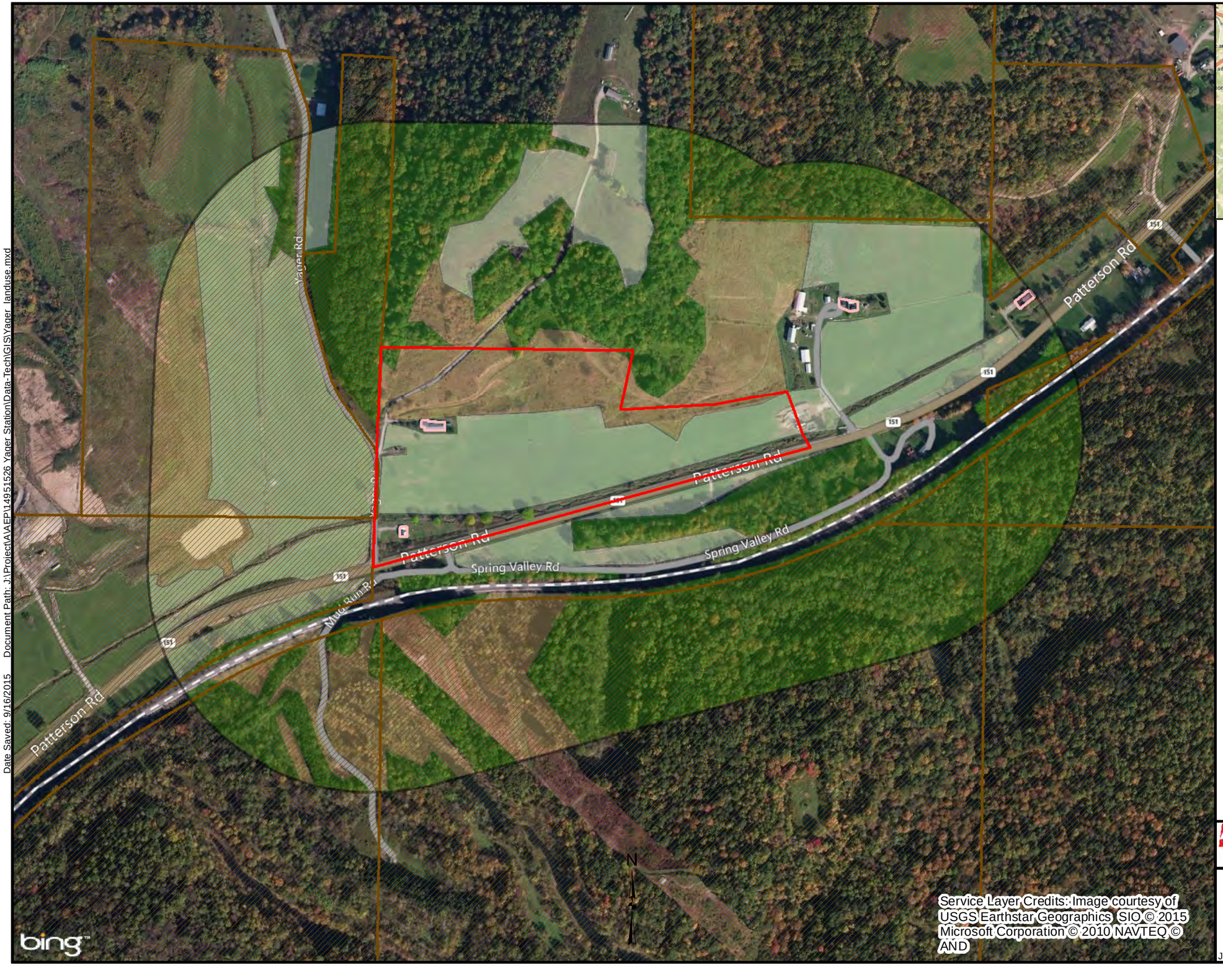
4.0 AGRICULTURAL DISTRICT LAND

AECOM contacted the Harrison County Auditor's office on September 14, 2015 regarding parcels registered in the agricultural district land program. Nine agricultural district parcels were identified within the study area, as shown on Figure 1. None of these parcels are within the boundary of the proposed station property.

5.0 CONCLUSION

The Project is not expected to significantly impact current socioeconomic characteristics, land use, or agricultural district land in the vicinity. The Project is not expected to impact any future land use plans for the area.

Date Saved: 9/16/2015 Document Path: J:\Project\AEP\14951526 Yager Station\Data-Tech\GIS\Yager_landuse.mxd



LEGEND

- Yager Station Property Boundary
- 1,000-foot Yager Station Buffer Study Area
- Hayfield
- Shrub-Scrub
- Wooded
- Residence
- Agricultural District Parcel

N

0 500 1,000

Scale in Feet

AEP OHIO TRANSMISSION COMPANY

Yager Station

FIGURE 1
LAND USE MAP

JOB NO. 60423281

AECOM

APPENDIX B

PUBLIC OFFICIALS LETTERS SERVING COPY OF LETTER OF NOTIFICATION

AEP Ohio
700 Morrison Road
Gahanna, OH 43230

October 2, 2015

Puskarich Public Library
Ms. Sandi Thompson, Director
200 East Market Street
Cadiz, OH 43907

RE: Letter of Notification
Yager Transmission Station Project
Case Number: 15-1666-EL-BLN

Dear Ms. Thompson:

In accordance with Rules 4906 of the Ohio Administrative Code (OAC), AEP Ohio Transmission Company (AEP Ohio Transco) is required to submit a Letter of Notification to the State of Ohio Power Siting Board (OPSB) whenever certain additions are made to our transmission facilities.

The proposed Yager Transmission Station Project, Public Utilities Commission of Ohio Case Number 15-1666-EL-BLN, consists of the construction of a new 138-kV transmission substation on property owned by AEP Ohio Transco in Monroe Township of Harrison County. The purpose of this project is to provide electricity to Utica East Ohio Midstream's facility in the area of the substation. The proposed Yager Substation will be a 4-acre station. This project will be an approximate $17 million investment by AEP Ohio Transco. Construction is anticipated to begin in November 2015.

We ask that this Letter of Notification be made available to the public.

In compliance with Rule 4906-11-01 of the OPSB Rules and Regulations, we have prepared and filed the attached Letter of Notification. This Notice contains details on the line location, project description and construction schedule, and is submitted for your information.

Please feel free to contact me at 614-552-1929 and I would be happy to answer any questions concerning this project.

Sincerely,

Brett E. Schmied
Project Outreach Specialist
AEP Ohio

cc: Todd Sides, Project Manager

AEP Ohio
700 Morrison Road
Gahanna, OH 43230

October 2, 2015

Harrison County Board of Commissioners
Mr. William H. Host
Mr. Dale Ray Norris
Mr. Don Rae Bethel
101 Market Street
Cadiz, OH 43907

RE: Letter of Notification
Yager Transmission Station Project
Case Number: 15-1666-EL-BLN

Dear Commissioners:

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Sincerely,

Brett E. Schmied
Project Outreach Specialist
AEP Ohio

cc: Todd Sides, Project Manager

AEP Ohio
700 Morrison Road
Gahanna, OH 43230

October 2, 2015

Harrison County Engineer
Mr. Robert K. Sterling
32500 Cadiz-Dennison Road
Scio, OH 43988

RE: Letter of Notification
Yager Transmission Station Project
Case Number: 15-1666-EL-BLN

Dear Mr. Sterling:

In accordance with Rules 4906 of the Ohio Administrative Code (OAC), AEP Ohio Transmission Company (AEP Ohio Transco) is required to submit a Letter of Notification to the State of Ohio Power Siting Board (OPSB) whenever certain additions are made to our transmission facilities.

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Brett E. Schmied
Project Outreach Specialist
AEP Ohio

cc: Todd Sides, Project Manager

AEP Ohio
700 Morrison Road
Gahanna, OH 43230

October 2, 2015

Monroe Township Trustee
Mr. Bart A. Busby
601 Busby Drive
Bowerston, OH 44695

RE: Letter of Notification
Yager Transmission Station Project
Case Number: 15-1666-EL-BLN

Dear Mr. Busby:

In accordance with Rules 4906 of the Ohio Administrative Code (OAC), AEP Ohio Transmission Company (AEP Ohio Transco) is required to submit a Letter of Notification to the State of Ohio Power Siting Board (OPSB) whenever certain additions are made to our transmission facilities.

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Brett E. Schmied
Project Outreach Specialist
AEP Ohio

cc: Todd Sides, Project Manager

AEP Ohio
700 Morrison Road
Gahanna, OH 43230

October 2, 2015

Monroe Township Trustee
Mr. Gene Busby
34060 Scio Bowerston Road
Bowerston, OH 44695

RE: Letter of Notification
Yager Transmission Station Project
Case Number: 15-1666-EL-BLN

Dear Mr. Busby:

In accordance with Rules 4906 of the Ohio Administrative Code (OAC), AEP Ohio Transmission Company (AEP Ohio Transco) is required to submit a Letter of Notification to the State of Ohio Power Siting Board (OPSB) whenever certain additions are made to our transmission facilities.

The proposed Yager Transmission Station Project, Public Utilities Commission of Ohio Case Number 15-1666-EL-BLN, consists of the construction of a new 138-kV transmission substation on property owned by AEP Ohio Transco in Monroe Township of Harrison County. The purpose of this project is to provide electricity to Utica East Ohio Midstream's facility in the area of the substation. The proposed Yager Substation will be a 4-acre station. This project will be an approximate $17 million investment by AEP Ohio Transco. Construction is anticipated to begin in November 2015.

We ask that this Letter of Notification be made available to the public.

In compliance with Rule 4906-11-01 of the OPSB Rules and Regulations, we have prepared and filed the attached Letter of Notification. This Notice contains details on the line location, project description and construction schedule, and is submitted for your information.

Please feel free to contact me at 614-552-1929 and I would be happy to answer any questions concerning this project.

Sincerely,

Brett E. Schmied
Project Outreach Specialist
AEP Ohio

cc: Todd Sides, Project Manager

AEP Ohio
700 Morrison Road
Gahanna, OH 43230

October 2, 2015

Monroe Township Trustee
Mr. Ralph T. Ferguson
88290 Plum Run Road
Uhrichsville, OH 44683

RE: Letter of Notification
Yager Transmission Station Project
Case Number: 15-1666-EL-BLN

Dear Mr. Ferguson:

In accordance with Rules 4906 of the Ohio Administrative Code (OAC), AEP Ohio Transmission Company (AEP Ohio Transco) is required to submit a Letter of Notification to the State of Ohio Power Siting Board (OPSB) whenever certain additions are made to our transmission facilities.

The proposed Yager Transmission Station Project, Public Utilities Commission of Ohio Case Number 15-1666-EL-BLN, consists of the construction of a new 138-kV transmission substation on property owned by AEP Ohio Transco in Monroe Township of Harrison County. The purpose of this project is to provide electricity to Utica East Ohio Midstream's facility in the area of the substation. The proposed Yager Substation will be a 4-acre station. This project will be an approximate $17 million investment by AEP Ohio Transco. Construction is anticipated to begin in November 2015.

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Sincerely,

Brett E. Schmied
Project Outreach Specialist
AEP Ohio

cc: Todd Sides, Project Manager

AEP Ohio
700 Morrison Road
Gahanna, OH 43230

October 2, 2015

Monroe Township Fiscal Officer
Ms. Ashley M. Peters
32501 Gundy Ridge Road
Uhrichsville, OH 44683

RE: Letter of Notification
Yager Transmission Station Project
Case Number: 15-1666-EL-BLN

Dear Ms. Peters:

In accordance with Rules 4906 of the Ohio Administrative Code (OAC), AEP Ohio Transmission Company (AEP Ohio Transco) is required to submit a Letter of Notification to the State of Ohio Power Siting Board (OPSB) whenever certain additions are made to our transmission facilities.

The proposed Yager Transmission Station Project, Public Utilities Commission of Ohio Case Number 15-1666-EL-BLN, consists of the construction of a new 138-kV transmission substation on property owned by AEP Ohio Transco in Monroe Township of Harrison County. The purpose of this project is to provide electricity to Utica East Ohio Midstream's facility in the area of the substation. The proposed Yager Substation will be a 4-acre station. This project will be an approximate $17 million investment by AEP Ohio Transco. Construction is anticipated to begin in November 2015.

We ask that this Letter of Notification be made available to the public.

In compliance with Rule 4906-11-01 of the OPSB Rules and Regulations, we have prepared and filed the attached Letter of Notification. This Notice contains details on the line location, project description and construction schedule, and is submitted for your information.

Please feel free to contact me at 614-552-1929 and I would be happy to answer any questions concerning this project.

Sincerely,

Brett E. Schmied
Project Outreach Specialist
AEP Ohio

cc: Todd Sides, Project Manager

APPENDIX C

THREATENED AND ENDANGERED SPECIES SURVEY REPORT

YAGER STATION PROJECT

THREATENED AND ENDANGERED SPECIES SURVEY REPORT

Prepared for:

American Electric Power Ohio Transmission Company
700 Morrison Road
Gahanna, Ohio 43230

Prepared by:

AECOM
525 Vine Street, Suite 1800
Cincinnati, Ohio 45202

Project #: 60423281

September 2015

TABLE OF CONTENTS

TABLES

Number

ATTACHMENT

Number

1.0 PROJECT DESCRIPTION

This document presents the results of the threatened and endangered species assessment conducted by AECOM for American Electric Power Ohio Transco's (AEP Ohio Transco) proposed Yager Station Project (Project). The Project is needed to meet the needs of a specific customer. In response to the customer's needs, AEP Ohio Transco is proposing to construct a new 138 kV transmission station on an approximately 26-acre property adjacent to Patterson Road at Yager Road in Monroe Township, Harrison County, Ohio.

As part of the Ohio Power Siting Board (OPSB) Letter of Notification (LON) requirements, AEP Ohio Transco is required to assess and report the federal and state designated species potentially affected by the Project, as stated in Ohio Administrative Code (OAC) Rule 4906-11-01(E)(1). This rule states:

> ***(E) Environmental data. Describe the environmental impacts of the proposed project. This description shall include the following information:***
>
> ***(1) A description of the applicant's investigation concerning the presence or absence of federal and state designated species (including endangered species, threatened species, rare species, species proposed for listing, species under review for listing, and species of special interest) that may be located within the area likely to be disturbed by the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.***

AEP retained AECOM to conduct threatened and endangered species review and field survey within areas crossed by the proposed Project. This report will be used to assist AEP Ohio Transco's efforts to avoid impacts to threatened and endangered species potentially present in the study area during construction activities.

2.0 METHODS

The first phase of the survey involved a review of online lists of federal and state species of concern. In addition to the review of available literature, AECOM submitted a request to Ohio Department of Natural Resources (ODNR) Biodiversity Database for GIS records of species of concern that were reported within close proximity to the Project. These GIS records were overlain on the Project GIS maps to identify designated species and other sensitive areas as reported by ODNR in relation to the Project. ODNR reported no records of designated species within 1,000 feet of the Project area. A copy of the letter provided with the Biodiversity Database GIS records is included in Attachment A. AECOM also reviewed the USFWS Ohio County Distribution of ***Federally Listed Threatened, Endangered, Proposed, and Candidate Species, Revised April 2015***, and submitted coordination letters to the U.S. Fish and Wildlife Service (USFWS) and ODNR soliciting comments on the Project. Copies of the response letters provided by ODNR and USFWS are included as Attachment A. Agency-identified species and available species-specific information were reviewed to identify the various habitat types that listed species are known to frequent. This information was used during the field survey to assess the potential for these species of concern in, or near the Project study corridor.

3.0 RESULTS

AECOM field ecologists conducted a designated species habitat survey in conjunction with the stream and wetland field surveys in August 2015. AECOM observed the Project area to predominately consist of agricultural and mowed residential land use with smaller areas of scrub-shrub and forested land uses.

3.1 State Species of Concern

ODNR provided Biodiversity Database GIS records and a corresponding letter response dated January 26, 2015. The data encompassed an approximate 70 square mile area included in multiple potential infrastructure improvements. Multiple records of special status species or habitats were identified within the search area, yet the closest recorded sighting of a sensitive species was the state threatened Barred Owl approximately 3.6 miles away from the project area. A copy of the ODNR response is included in Attachment A.

After receiving the ODNR Biodiversity Database response, AECOM sent a second letter to ODNR soliciting specific comments regarding the Project on April 17, 2015. AECOM received a response from ODNR on May 26, 2015. A copy of the ODNR response is also included in Attachment A. Table 1 lists the species identified by ODNR in the May 26th response letter that could inhabit Harrison County.

TABLE 1
NATURAL HERITAGE DATABASE LISTED SPECIES
WITHIN ONE MILE OF THE PROJECT

Common Name	Scientific Name	State Status
Indiana bat	***Myotis sodalis***	Endangered
black bear	***Ursus americanus***	Endangered
mountain madtom	***Noturus eleutherus***	Threatened
northern madtom	***Noturus stigmosus***	Endangered
clubshell	***Pleurobema clava***	Endangered
eastern hellbender	***Cryptobranchus alleganiensis alleganiensis***	Endangered
eastern spadefoot toad	***Scaphiopus holbrookii***	Endangered
upland sandpiper	***Bartramia longicauda***	Endangered

None of the above species or signs of these species were observed during the field survey.

3.2 Federal Species of Concern

To address the Project's potential to impact federally protected species, AECOM conducted a web based literature review of USFWS Ohio County Distribution of ***Federally Listed Threatened, Endangered,***

Proposed, and Candidate Species, Revised April 2015, to identify what species potentially occur in Harrison County, Ohio. Table 2 lists the two species identified during the USFWS literature review. A copy of the USFWS response is included in Attachment A.

TABLE 2
FEDERALLY LISTED SPECIES THAT COULD INHABIT
HARRISON COUNTY, OHIO*

Common Name	Scientific Name	Federal Status	County
Mammals			
Indiana bat	***Myotis sodalis***	Endangered	Harrison
Northern long-eared bat	***Myotis septentrionalis***	Threatened	Harrison

*Ohio County Distribution of Federally-Listed Threatened, Endangered, Proposed, and Candidate Species, Revised April 2015.
Accessed September 09, 2015: http://www.fws.gov/midwest/endangered/lists/ohio-cty.html

Indiana Bat: The federal government lists this species as endangered in Ohio. Winter Indiana bat hibernacula include caves and mines, while summer habitat typically includes tree species exhibiting exfoliating bark or cavities that can be used for roosting. The 8- to 10-inch diameter size classes of several species of hickory (***Carya*** spp.), oak (***Quercus*** spp.), ash (***Fraxinus*** spp.), birch (***Betula*** spp.), and elm (***Ulmus*** spp.) have been found to be utilized by the Indiana bat. These tree species and many others may be used when dead, if there are adequately sized patches of loosely-adhering bark or open cavities. The structural configuration of forest stands favored for roosting includes a mixture of loose-barked trees with 60 to 80 percent canopy closure and a low density sub-canopy (less than 30 percent between about 6 feet high and the base canopy). The suitability of roosting habitat for foraging or the proximity to suitable foraging habitat is critical to the evaluation of a particular tree stand. An open subcanopy zone, under a moderately dense canopy, is important to allow maneuvering while catching insect prey. Proximity to water is critical, because insect prey density is greater over or near open water. Very little of the Project area is wooded, although trees are present on the edge of the northwest extent of the surveyed property and along the blue line stream at the southern edge of the surveyed property.

Northern Long-Eared Bat: The federal government lists this species as threatened in Harrison County, Ohio. As with the Indiana bat, winter northern long-eared bat hibernacula include caves and mines, while summer habitat typically includes tree species exhibiting exfoliating bark or cavities that can be used for roosting. Northern long-eared bat has also been found, albeit rarely, roosting in structures like barns and sheds.

In a letter dated April 22, 2015, USFWS indicated that due to the project type, size, location, and the proposed implementation of seasonal tree cutting (only clearing between October 1 and March 31) to avoid impacts to Indiana bats and northern long-eared bats, adverse effects to any federally endangered, threatened, proposed or candidate species are not anticipated.

4.0 SUMMARY

AEP retained AECOM to conduct threatened and endangered species review and a field survey of the proposed Project parcel. This report will be used to assist AEP's efforts to avoid impacts to threatened and endangered species potentially present in the study area during construction activities. The field survey was conducted by AECOM field biologists in August 2015. While limited habitat for the Indiana bat and northern long-eared bat were observed during the field surveys, no species of concern or signs of these species were observed. AEP Ohio Transco intends to comply with seasonal tree clearing restrictions to avoid impacts to the Indiana and northern long-eared bats.

5.0 CONCLUSION

Based upon the nature of the Project, review of available current literature, review of federal and state records of species of concern, the field survey, and adherence to seasonal construction restrictions, it is not anticipated that federal or state species of concern will be impacted by the Project as currently planned.

ATTACHMENT A

AGENCY RESPONSES

ATTACHMENT A

AGENCY RESPONSES

Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR JAMES ZEHRINGER, DIRECTOR

Ohio Division of Wildlife
Scott Zody, Chief
2045 Morse Rd., Bldg. G
Columbus, OH 43229-6693
Phone: (614) 265-6300

January 26, 2015

Sarah Bell
AECOM
525 Vine St., Suite 1800
Cincinnati, OH 45202

Dear Ms. Bell,

Per your request, I have e-mailed you a set of shapefiles with our Natural Heritage Program data for the Yager Station project, including a one mile radius, in Harrison, Tuscarawas and Carroll counties, Ohio, and on the Bowerston, Uhrichsville, Deersville and Tippecanoe Quads. This data will not be published or distributed beyond the scope of the project description on the data request form without prior written permission of the Natural Heritage Program.

Records included in the data layer may be for rare and endangered plants and animals, geologic features, high quality plant communities and animal assemblages. Fields included are scientific and common names, state and federal statuses, as well as managed area and date of the most recent observation. State and federal statuses are defined as: E = endangered, T = threatened, P = potentially threatened, SC = species of concern, SI = special interest, FE = federal endangered, FT = federal threatened and A = recently added to inventory, status not yet determined.

In addition to the species given in the data shapefile, there are one or more additional records for a Bald Eagle nest within your project area or the one mile radius. These are shown in the additional eagle nests data layer. Because of the way some Bald Eagle data was submitted to us, we had to create a separate shapefile for some of the most recent nest records. Therefore there may be some overlap of these records with the data layer. Since the Bald Eagle was removed from the state rare species list, the Natural Heritage Program will no longer be maintaining comprehensive Bald Eagle nest data going forward.

In addition to the species given in the data shapefile, there is a record for one or more sensitive species within your project study area. Please be aware that we do not give out specific locations for sensitive species, therefore a generalized location is shown in the sensitive species shapefile.

The managed areas layer includes state, federal and county lands, as well as areas owned by non-profits, museums and other entities. Managed areas are sites under formal protection for their natural resources. Please be aware that this layer may not be complete and we are continually updating it as new information becomes available to us.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. This letter only represents a review of rare species and natural features data within the Ohio Natural Heritage Database. It does not fulfill coordination under the National Environmental Policy Act (NEPA) or the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S. C. 661 et seq.) and does not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,

Debbie Woischke

Debbie Woischke
Ohio Natural Heritage Program

Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR JAMES ZEHRINGER, DIRECTOR

Office of Real Estate
Paul R. Baldridge, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6649
Fax: (614) 267-4764

May 26, 2015

Aaron Geckle
AECOM
525 Vine Street, Suite 1800
Cincinnati, Ohio 45202

Re: 15-319; Yager Station and Associated Electric Transmission Line Interconnection

Project: The proposed project involves the construction of two new electric stations and approximately 27 miles of electric transmission lines.

Location: The proposed project is located in Carroll, Harrison, and Tuscarawas Counties, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Natural Heritage Database: The Natural Heritage Database has the following data at or within a one mile radius of the project area:

Drummond's aster (*Symphyotrichum drummondii*), T
Bald eagle (*Haliaeetus leucocephalus*), FSC
Sora rail (*Porzana carolina*), SC
Great Blue Heron Rookery (breeding animal concentration)
Leesville Lake – Muskingum Watershed Conservancy District

We are unaware of any geologic features, scenic rivers, state wildlife areas, state nature preserves, state or national parks, state or national forests or national wildlife refuges within the project area. The review was performed on the project area you specified in your request as well as an additional one mile radius. Records searched date from 1980.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

Statues are defined as: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; SI = state special interest; A = species recently added to state inventory, status not yet determined; X = presumed extirpated in Ohio; FE = federal endangered, FT = federal threatened, FSC = federal species of concern, FC = federal candidate species.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to wetlands and other water resources be avoided and minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation.

The project is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species. The following species of trees have relatively high value as potential Indiana bat roost trees to include: shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), bitternut hickory (*Carya cordiformis*), black ash (*Fraxinus nigra*), green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), shingle oak (*Quercus imbricaria*), northern red oak (*Quercus rubra*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), sassafras (*Sassafras albidum*), post oak (*Quercus stellata*), and white oak (*Quercus alba*). Indiana bat roost trees consists of trees that include dead and dying trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. However, Indiana bats are also dependent on the forest structure surrounding roost trees. If suitable habitat occurs within the project area, the DOW recommends trees be conserved. If suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, the DOW recommends a net survey be conducted between June 1 and August 15, prior to any cutting. Net surveys should incorporate either nine net nights per square 0.5 kilometer of project area, or four net nights per kilometer for linear projects. If no tree removal is proposed, this project is not likely to impact this species.

The project is within the range the clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.

The project is within the range of the northern madtom (*Noturus stigmosus*), a state endangered fish, and the mountain madtom (*Noturus eleutherus*), a state threatened fish. The DOW recommends no in-water work in perennial streams from April 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed, this project is not likely to impact these species.

The project is within the range of the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federal species of concern. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size to provide suitable habitat, this project is not likely to impact this species.

The project is also within the range of the eastern spadefoot toad (*Scaphiopus holbrookii*), a state endangered species. This species is found in areas of sandy soils that are associated with river valleys. Breeding habitats may include flooded agricultural fields or other water holding depressions. Due to the location, and the type of habitat along the project route, and within the vicinity of the project route, this project is not likely to impact this species.

The project is within the range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program (CRP). If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 to July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the black bear (*Ursus americanus*), a state endangered species. Due to the mobility of this species, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the US Fish & Wildlife Service.

ODNR appreciates the opportunity to provide these comments. Please contact John Kessler at (614) 265-6621 if you have questions about these comments or need additional information.

John Kessler
ODNR Office of Real Estate
2045 Morse Road, Building E-2
Columbus, Ohio 43229-6693
John.Kessler@dnr.state.oh.us

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service
Ecological Services Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / Fax (614) 416-8994

April 22, 2015

AECOM
Attn: Aaron Geckle
525 Vine Street, Suite 1800
Cincinnati, Ohio 45202

TAILS# 03E15000-2015-TA-1014

Re: Yager Station and Associated Electric Transmission Line Interconnection Projects, Carroll, Harrison and Tuscarawas Counties, Ohio

Dear Mr. Geckle,

We have received your recent correspondence regarding potential impacts to federally listed species in the vicinity of the above referenced project. The project involves the construction of two new electric stations with associated electric transmission lines: 2 mile 138kV line between Yager Station and Tappan Distribution Station, 6 mile 138kV line between Yager and Leesville stations, 7 mile 138kV line between Tappan Distribution and Azalea Station, and a rebuild of a current 69kV 13 mile line to a 138 kV 13 mile line between Dennison Station and Desert Road Station. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. We recommend that proposed activities minimize water quality impacts, including fill in streams and wetlands. Best management practices should be utilized to minimize erosion and sedimentation.

FEDERALLY LISTED, PROPOSED, AND CANDIDATE SPECIES COMMENTS: Due to the project type, size, location, and the proposed implementation of seasonal tree cutting (only clearing between October 1 and March 31) to avoid impacts to Indiana bats and northern long-eared bats, we do not anticipate adverse effects to any federally endangered, threatened, proposed or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the Service should be initiated to assess any potential impacts.

MIGRATORY BIRD COMMENTS: The Dennison to Desert Rd. line rebuild project lies within the range of the **bald eagle** (*Haliaeetus leucocephalus*). Bald eagles are protected under the Migratory Bird Treaty Act (16 U.S.C. 703-712; MBTA), and are afforded additional legal protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, BGEPA). BGEPA prohibits, among other things, the killing and disturbance of eagles. To evaluate your project's potential to affect bald eagles, please visit: http://www.fws.gov/midwest/MidwestBird/EaglePermits/baeatake/index.html.

Our records indicate that a bald eagle nest is located along Little Stillwater Creek in Union Township, Tuscarawas County, within approximately 300 feet of the project area. Our database of nest locations may not be complete because new nests are built each year, and nesting pairs sometimes build multiple nests. Therefore, we recommend that the site and surrounding area be evaluated to determine if any additional eagle nests are present and to validate the actual nest location.

In order to avoid take of bald eagles, we recommend that no tree clearing occur within 660 feet of a bald eagle nest or within any woodlot supporting a nest tree. Further we request that work within 660 feet of a nest or within the direct line-of-site of a nest be restricted from January 15 through July 31. This will prevent disturbance of the eagles from the egg-laying period until the young fledge, which encompasses their most vulnerable times. Once site specific eagle nest information is available, we can work with you to determine the appropriate buffer from the nest(s) relative to your proposed activities.

If these recommendations cannot be implemented and take of bald eagles is likely, a bald eagle take permit for this project may be necessary. Further information on eagle take permits can be found at: http://www.fws.gov/midwest/MidwestBird/EaglePermits/index.html.

If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), no tree clearing on any portion of the parcel should occur until consultation under section 7 of the Endangered Species Act, between the Service and the federal action agency, is completed. We recommend that the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence.

If you have questions, or if we may be of further assistance in this matter, please contact Charlie Allen at charles_allen@fws.gov or extension 29 in this office.

Sincerely,

Dan Everson
Field Supervisor

APPENDIX D

AREAS OF ECOLOGICAL CONCERN, WETLAND DELIINATION, AND STREAM ASSESSMENT REPORT

YAGER STATION PROJECT

AREAS OF ECOLOGICAL CONCERN, WETLAND DELINEATION, AND STREAM ASSESSMENT REPORT

Prepared for:

American Electric Power Ohio Transmission Company
700 Morrison Road
Gahanna, Ohio 45230

Prepared by:

AECOM
525 Vine Street, Suite 1800
Cincinnati, Ohio 45202

Project #: 60423281

September 2015

TABLE OF CONTENTS

TABLES

Number

FIGURES
(follow text)

Number

ATTACHMENTS
(follow figure)

Number

1.0 PROJECT DESCRIPTION

This document presents the results of the wetland delineation and stream assessment conducted by AECOM for American Electric Power Ohio Transco's (AEP Ohio Transco) proposed Yager Station Project (Project). The Project is needed to meet the needs of a specific customer. In response to the customer's needs, AEP Ohio Transco is proposing to construct a new 138 kV transmission station on an approximately 26-acre property adjacent to Patterson Road at Yager Road in Monroe Township, Harrison County, Ohio.

As part of the Ohio Power Siting Board (OPSB) Letter of Notification (LON) requirements, AEP Ohio Transco is required to describe the investigation concerning the presence or absence of areas of ecological concern as stated in Ohio Administrative Code (OAC) Rule 4906-15-11-01(E)(2). This rule states:

> ***(E) Environmental data. Describe the environmental impacts of the proposed project. This description shall include the following information:***
>
> ***(2) A description of the applicant's investigation concerning the presence or absence of areas of ecological concern (including national and state forests and parks, floodplains, wetlands, designated or proposed wilderness areas, national and state wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, and wildlife sanctuaries) that may be located within the areas likely to be disturbed by the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.***

AEP Ohio Transco retained AECOM to review areas of ecological concern, as defined above, within the proposed Project vicinity and conduct a field survey of wetlands and streams within the limits of the proposed station. The ecological study area extended beyond the proposed construction limits of the preliminary station pad. This report will be used to assist AEP Ohio Transco's efforts to avoid impacts to areas of ecological concern present in the study area during construction.

2.0 METHODS

2.1 Special Status Ecological Areas

AECOM reviewed maps and GIS data in order to identify national and state forests and parks, designated or proposed wilderness areas, national and state wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, and wildlife sanctuaries in the Project vicinity. GIS data sources included the ODNR Biodiversity Database and federal land and parks layers available from Environmental Systems Research Institute (ESRI). Property ownership within 1,000 feet of the Project was reviewed to identify parcels that may have special status. AECOM also noted land use during the field reconnaissance conducted on August 18, 2015.

Floodplains were evaluated based on the Federal Emergency Management Agency's (FEMA) Flood Map Viewer (https://hazards.fema.gov/wps/portal/mapviewer).

2.2 Wetland Assessment

National Wetland Inventory (NWI) wetlands are areas of potential wetland that have been identified from U.S. Fish and Wildlife Service (USFWS) aerial photo-interpretation and which have typically not been field verified. Forested and heavy scrub/shrub wetlands are often difficult to interpret on NWI maps without a site visit, as foliage effectively hides the visual signature that indicates the presence of standing water and moist soils from an aerial view. In addition, many NWI-mapped wetlands are not verified as wetlands during field surveys. As a result, NWI maps may not show all the wetlands found in a particular area nor do they necessarily provide accurate wetland boundaries. NWI maps are useful for providing indications of potential wetland areas, which are often supported by soil mapping and hydrologic predictions, based upon topographical analysis using USGS topographic maps.

The Project area was reviewed for the presence of wetlands using the procedures outlined in the United States Army Corps of Engineers (USACE) Wetlands Delineation Manual (1987 Manual) (Environmental Laboratory, 1987) in conjunction with the procedures outlined in the 2012 USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Regional Supplement).

The Regional Supplement was released in January 2012 by the USACE to address regional wetland characteristics and improve the accuracy and efficiency of wetland delineation procedures. The 1987 Manual and Regional Supplement define wetlands as areas that have positive evidence of three environmental parameters: hydric soils, wetland hydrology, and hydrophytic vegetation. Wetland boundaries are placed where one or more of these parameters give way to upland characteristics.

AECOM biologists utilized the routine delineation method described in the 1987 Manual and Regional Supplement that consisted of a pedestrian site reconnaissance, including identifying the vegetation communities, soils identification, a geomorphologic assessment of hydrology, and notation of observed disturbance.

The field survey results presented herein apply to the existing and reasonably foreseeable site conditions noted at the time of our assessment. They cannot apply to site changes that AECOM is unaware of and has not had the opportunity to review. Changes in the condition of a property may occur with time due to natural processes or human impacts at the project site or on adjacent properties. Changes in applicable standards may also occur as a result of legislation or the expansion of knowledge over time. Accordingly, the findings of this report may become invalidated, wholly or in part, by changes beyond the control of AECOM.

2.3 Stream and River Crossings

Regulatory activities under the Clean Water Act provide authority for states to issue water quality standards and “designated uses” to all “Waters of the U.S.” upstream to the highest reaches of the tributary streams. In addition, the Clean Water Act (CWA) of 1972 and its 1977 and 1987 amendments require knowledge of the potential fish or biological communities that can be supported in a stream or river, including upstream headwaters. Streams were identified by the presence of a defined bed and

bank, and evidence of an ordinary high water mark (OHWM). Stream assessments were conducted using the methods described in the Ohio EPA's Methods for Assessing Habitat in Flowing Waters: Using Ohio EPA's Qualitative Habitat Evaluation Index (QHEI) (Rankin, 2006) and Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams (HHEI), Version 3 (Davic, 2012).

QHEI: The QHEI method was designed to provide a rapid determination of habitat features that correspond to those physical factors that most affect fish communities and which are generally important to other aquatic life (e.g., macroinvertebrates).

The QHEI method is generally considered appropriate for waterbodies with drainage basins greater than one square mile (mi^2), if natural pools are greater than 15.75 inches (40 cm) deep, or if the water feature is shown as a blue-line waterway on USGS 7.5-minute topographic quadrangle maps. In order to convey general stream habitat quality to the regulated public, the Ohio EPA has assigned narrative ratings to QHEI scores. The ranges vary slightly for headwater (H) streams, i.e., those with a watershed area less than or equal to 20 mi^2 versus large (L) streams, i.e., are those with a watershed area greater than 20 mi^2. The Narrative Rating System includes: Very Poor (<30 for both H and L streams), Poor (30 to 42 H, 30 to 44 L), Fair (43 to 54 H, 45 to 59 L), Good (55 to 69 H, 60 to 74 L) and Excellent (70+ H, 75+ L).

HHEI: Headwater streams are typically considered to be first-order and second-order streams, meaning streams that have no upstream tributaries (or "branches") and those that have only first-order tributaries, respectively. The stream order concept can be problematic when used to define headwater streams because stream-order designations vary depending upon the accuracy and resolution of the stream delineation. Headwater streams are generally not shown on USGS 7.5-minute topographic quadrangles and are sometimes difficult to distinguish on aerial photographs. Nevertheless, headwater streams are now recognized as useful monitoring units due to their abundance, widespread spatial scale, and landscape position (Fritz, et al. 2006). Impacts to headwater streams can have a cascading effect on the downstream water quality and habitat value. The headwater habitat evaluation index (HHEI) is a rapid field assessment method for physical habitat that can be used to appraise the biological potential of most Primary Headwater Habitat (PHWH) streams. The HHEI was developed using many of the same techniques as used for QHEI, but has criteria specifically designed for headwater habitats. To use HHEI, the stream must have a "defined bed and bank, with either continuous or periodically flowing water, with watershed area less than or equal to 1.0 mi^2 (259 ha), and a maximum depth of water pools equal to or less than 15.75 inches (40 cm)" (Davic, 2012).

Headwater streams are scored on the basis of channel substrate composition, bankfull width, and maximum pool depth. Assessments result in a score (0 to 100) that is converted to a specific PHWH stream class. Streams that are scored from 0 to 29.9 are typically grouped into "Class 1 PHWH Streams", 30 to 69.9 are "Class 2 PHWH Streams", and 70 to 100 are "Class 3 PHWH Streams". Technically, a stream can score relatively high, but actually belong in a lower class, and vice-versa. According to the Ohio EPA, if the stream score falls into a class and the scorer feels that based on site observations that score does not reflect the actual stream class, a decision-making flow chart can be used to determine appropriate PHWH stream class using the HHEI protocol (Davic, 2012). Evidence of anthropogenic alterations to the natural channel will result in a "Modified" qualifier for the stream.

Class 1 PHWH Streams are those that have “normally dry channels with little or no aquatic life present” (Davic, 2012). These waterways are usually ephemeral, with water present for short periods of time due to infiltration from snowmelts or rainwater runoff.

Class 2 PHWH Streams are equivalent to "warm-water habitat" streams. This stream class has a "moderately diverse community of warm-water adapted native fauna either present seasonally or on an annual basis" (Davic, 2012). These species communities are composed of vertebrates (fish and salamanders) and/or benthic macroinvertebrates that are considered pioneering, headwater temporary, and/or temperature facultative species.

Class 3 PHWH Streams usually have perennial water flow with cool-cold water adapted native fauna. The community of Class 3 PHWH Streams is comprised of vertebrates (either cold-water adapted species of headwater fish and or obligate aquatic species of salamanders, with larval stages present), and/or a diverse community of benthic cool-water adapted macroinvertebrates present in the stream continuously (on an annual basis).

3.0 RESULTS

3.1 Special Status Ecological Areas

AECOM conducted a review of published resources and agency consultations to identify national or state forests and parks designated or proposed wilderness areas, national and state wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, wildlife sanctuaries and floodplains crossed by and in the immediate vicinity of the Project. No national forests or parks designated or proposed wilderness areas, national wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, or wildlife sanctuaries were identified within 1,000 feet of the proposed Project.

According to the FEMA National Flood Hazard Layer (NFHL) (GIS shapefile), the Project is not located within any 100-year flood zones. The project is located on Panel 39067C0040D (effective May 4, 2009), and is entirely mapped within Flood Zone X, defined as an area with minimal flood hazard. No changes in flood elevations are anticipated as a result of the Project.

3.2 Wetland Assessment

Preliminary Soils Evaluation: According to the ***USDA/NRCS Web Soil Survey*** for Harrison County, Ohio (USDA, 2014), there are three soil map units in the survey area: Coshocton silt loam, 15 to 25 percent slopes (CnD), Glenford silt loam, 6 to 15 percent slopes (GsC), Orrville silt loam, occasionally flooded (Or). According to the NRCS Hydric Soils List of Ohio (NRCS, 2014), two of the soils are identified as hydric soils: Glenford silt loam, 6 to 15 percent slopes (GsC), and Orrville silt loam, occasionally flooded (Or), which reportedly each contain approximately 5% hydric components in poorly drained soils.

National Wetland Inventory Map Review: According to the NWI map of the Bowerston, Ohio quadrangle, the Project area does not include any mapped NWI wetlands.

Wetland Delineation: AECOM did not identify any wetlands within the Project survey boundary.

3.3 Stream and River Crossings

Four streams were identified within the survey area. Three were assessed using the Headwater Habitat Evaluation Index (HHEI) methodology (drainage area less than one square mile (mi^2)) and one was assessed using the Qualitative Habitat Evaluation Index (QHEI) methodology (drainage area greater than one mi^2). Streams within the survey area are summarized in Table 1 and shown on Figure 1. The four streams total 3,151 linear feet within the survey area. None of the streams are expected to be within the Project facility fence line, although Stream 1 is crossed by the proposed permanent access roads to the station. One culvert is expected to be replaced and a second culvert added to facilitate the access roads. AECOM has preliminarily determined that the streams appear to be jurisdictional (i.e., "Waters of the U.S."), as they all appear to be tributaries that flow into or combine with other streams. Color photographs were taken of the streams during the field survey and are provided in Attachment A. Stream forms are included in Attachment B.

TABLE 1
STREAMS IDENTIFIED WITHIN THE SURVEY AREA

Report Name	Waterbody	Flow Regime	Score	Classification (Assessment Method)	Bankfull Width (feet)	Maximum Pool Depth (inches)	Length within Survey Area (feet)
Stream 1	Unnamed tributary to Little Stillwater Creek	Ephemeral	22	Modified Class 1 (HHEI)	1.5	2	671
Stream 2	Unnamed tributary to Little Stillwater Creek	Perennial	43	Fair Warmwater (QHEI)	3.5	20	2,222
Stream 3	Unnamed tributary to Little Stillwater Creek	Ephemeral	29	Modified Class 1 (HHEI)	2.5	1	76
Stream 4	Unnamed tributary to Little Stillwater Creek	Intermittent	22	Modified Class 1 (HHEI)	1	3	182
Total: 4							**3,151**

4.0 PONDS

No ponds were identified within the Project survey area.

5.0 SUMMARY

No national forests or parks, designated or proposed wilderness areas, National or State Wild and Scenic Rivers, wildlife areas, wildlife refuges, wildlife management areas, or wildlife sanctuaries were identified within 1,000 feet of the proposed Project.

The Project is not located within any 100-year flood zones. The project is mapped entirely within Flood Zone X, defined as an area with minimal flood hazard. No changes in flood elevations are anticipated as a result of the Project.

During the field survey, four streams totaling 3,151 linear feet were identified. The mapped streams included flow regimes as follows; two ephemeral, one intermittent and one perennial. None of the streams are expected to be within the Project facility fence line, although Stream 1 is crossed by the proposed permanent access roads to the station. One culvert is expected to be replaced and a second culvert added to facilitate the access roads.

6.0 CONCLUSION

This report will be used to assist AEP Ohio Transco's efforts to avoid special status ecological areas, wetlands, and streams to the extent possible during construction of the Project, thereby minimizing impacts to these features identified within the Project area. Based on the preliminary Project footprint and identified features, no construction activity wetlands is anticipated. Erosion control methods including silt fencing are expected to be used where appropriate to minimize runoff-related impacts to stream channels. Potential stream impacts are expected to be limited to replacement of an existing culvert and installation of a second to facilitate the permanent station access roads. Significant impacts to these "Waters of the U.S." are not anticipated.

7.0 REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRoe. 1979. ***Classification of Wetlands and Deepwater Habitats of the United States.*** Office of Biological Services, U.S. Fish and Wildlife Service, Washington, D.C.

Davic, Robert D. 2002. Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams. Final Version 1.0. Ohio Environmental Protection Agency, Division of Surface Water, Columbus, Ohio.

Environmental Laboratory. 1987. U.S. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station: Vicksburg, Mississippi.

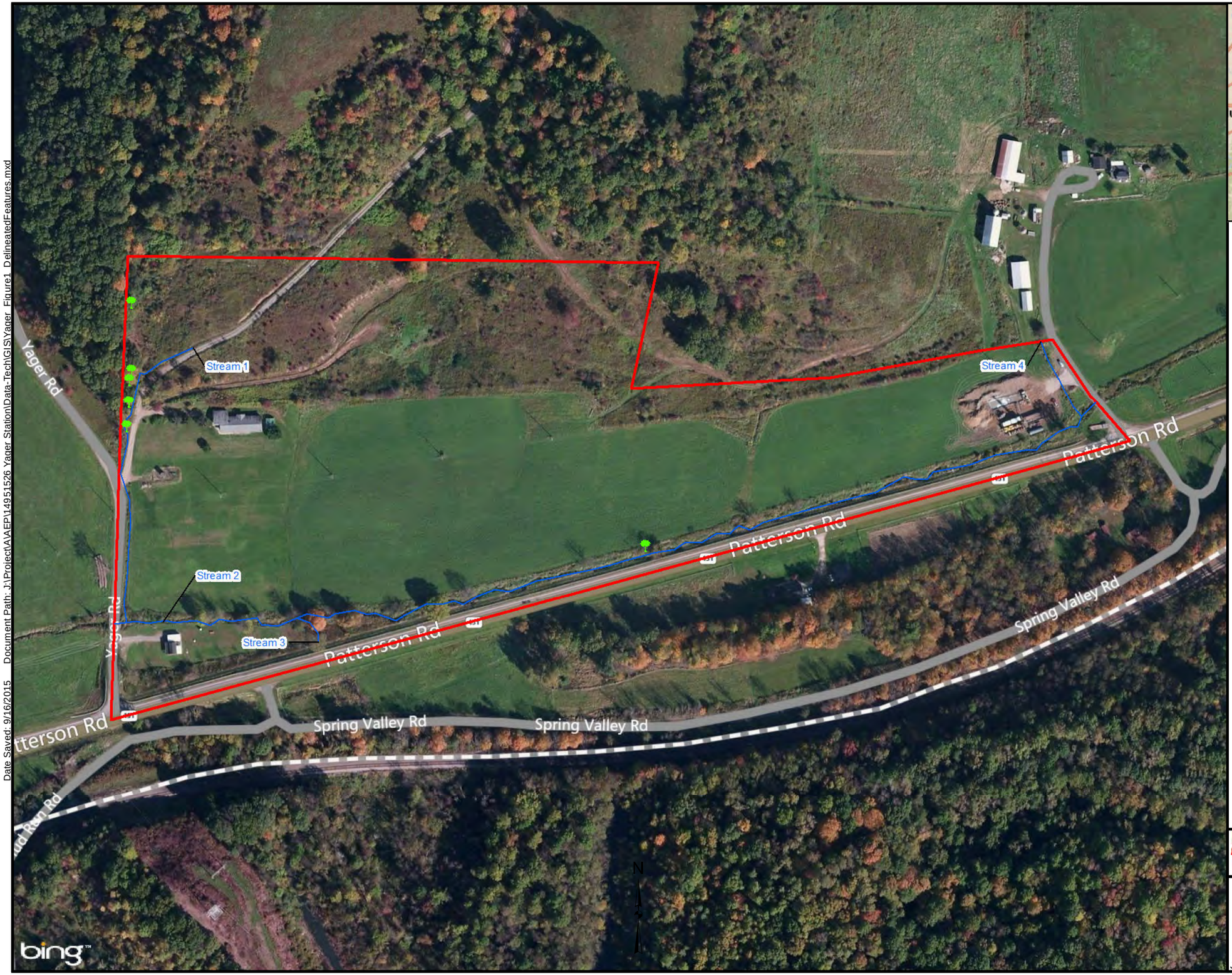
Rankin, Edward T. 2006. Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI). Ohio EPA Ecological Assessment Section, Division of Surface Water, Columbus, Ohio.

U.S. Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0, ed. J. F. Berkowitz, J. S. Wakeley, R. W. Lichvar, C. V. Noble. ERDC/EL TR-12-9. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Department of Agriculture, Natural Resources Conservation Service, 2014. National Hydric Soils List by State. Available online at http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/ Accessed 09/10/15.

U.S. Department of Agriculture, Natural Resources Conservation Service. 2014. Web Soil Survey (GIS Shapefile). http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm Accessed 09/10/15

Date Saved: 9/16/2015 Document Path: J:\Project\AIAEP\14951526 Yager Station\Data-Tech\GIS\Yager_Figure1_DelineatedFeatures.mxd



LEGEND

- Project Survey Area
- Potential Bat Habitat Tree
- Delineated Stream

N

0 200 400

Scale in Feet

AEP OHIO TRANSMISSION COMPANY

Yager Station

FIGURE 1
ECOLOGICAL SURVEY RESULTS

JOB NO. 60423281

AECOM

ATTACHMENT A

PHOTOGRAPHS

PHOTOGRAPHIC RECORD
Streams

Client Name:	Site Location:	Project No.
AEP Ohio Transco	Yager Station Project	60423281

Photo No. 1 **Date:** August 18, 2015 **Description:** Stream 1 Ephemeral Stream Facing Downstream Modified Class 1 (HHEI)	

Photo No. 2 **Date:** August 18, 2015 **Description:** Stream 2 Perennial Stream Facing Upstream Fair Warmwater (QHEI)	

PHOTOGRAPHIC RECORD
Streams

Client Name:	Site Location:	Project No.
AEP Ohio Transco	Yager Station Project	60423281

Photo No. 3 **Date:** August 18, 2015 **Description:** Stream 3 Ephemeral Stream Facing Downstream Modified Class 1 (HHEI)	

Photo No. 4 **Date:** August 18, 2015 **Description:** Stream 4 Intermittent Stream Facing Downstream Modified Class 1 (HHEI)	

ATTACHMENT B

STREAM FORMS

Stream 1

Mod. Class I

HH-BAD-081815-01

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 22

SITE NAME/LOCATION Yager Station / AEP

SITE NUMBER 01 RIVER BASIN _____ DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 142 LAT. 40.403549 LONG. -81.242365 RIVER CODE N/a RIVER MILE N/a

DATE 08.0915 SCORER BMO COMMENTS EPHEMERAL

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☒ RECENT OR NO RECOVERY

Riparian Cut, CHANNELIZED, CULVERTED

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☒	SILT [3 pt]	50
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]	20	☐☐	MUCK [0 pts]	
☐☒	SAND (<2 mm) [6 pts]	30	☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (B) 3 TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☒ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): IN, 2"

Pool Depth Max = 30: 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): Ft. 1.5

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	RIPARIAN WIDTH R	(Per Bank)	FLOODPLAIN QUALITY L	FLOODPLAIN QUALITY R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☒	☒	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS EPHEMERAL

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☒ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

June 20, 2008 Revision

HH BAO 08/05 01

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: _____ Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: — Quantity: —

Photograph Information: 2 PHOTOS

Elevated Turbidity? (Y/N): N Canopy (% open): _____

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N)_____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

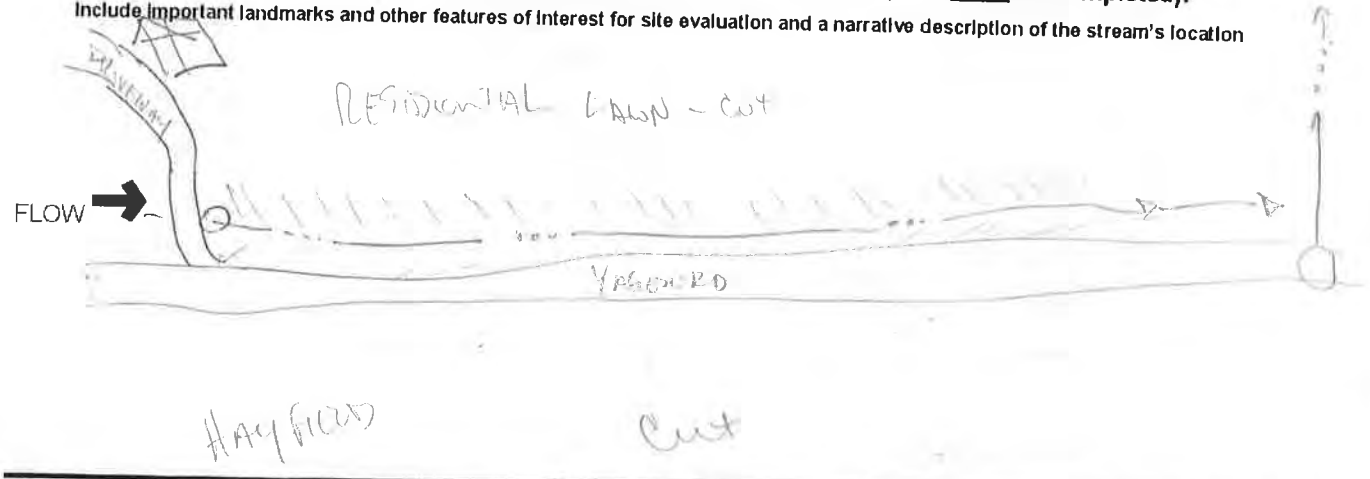
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Mod. Class I

HH-BA008181S-02

Stream 3

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 29

SITE NAME/LOCATION Yager station / AEP

SITE NUMBER 02 RIVER BASIN _____ DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 39 LAT. 40.403174 LONG. -81.241458 RIVER CODE N/a RIVER MILE N/a

DATE 08/18/15 SCORER BAD/BCR COMMENTS Ephemeral stream

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

Formed at outlet of under roadway culvert

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	10
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	5
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☒	GRAVEL (2-64 mm) [9 pts]	25	☐☐	MUCK [0 pts]	
☒☐	SAND (<2 mm) [6 pts]	60	☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 4

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 19

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☒ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH ~~(centimeters)~~ Inches: 1"

Pool Depth Max = 30: 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH ~~(meters)~~ Feet: 1.5'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R	L	R
☐	☐ Wide >10m	☐	☐ Mature Forest, Wetland	☐	☐ Conservation Tillage
☐	☐ Moderate 5-10m	☐	☐ Immature Forest, Shrub or Old Field	☒	☒ Urban or Industrial
☒	☒ Narrow <5m	☒	☒ Residential, Park, New Field	☐	☐ Open Pasture, Row Crop
☐	☐ None	☐	☐ Fenced Pasture	☐	☐ Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box)

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS Appears ephemeral

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☒ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

June 20, 2008 Revision

HH-BA0081815-2

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: _____ Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: UNK Quantity: UNK

Photograph Information: 2

Elevated Turbidity? (Y/N): N Canopy (% open): 30

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N)_____ If not, please explain: _____

Additional comments/description of pollution impacts: Roadway runoff

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

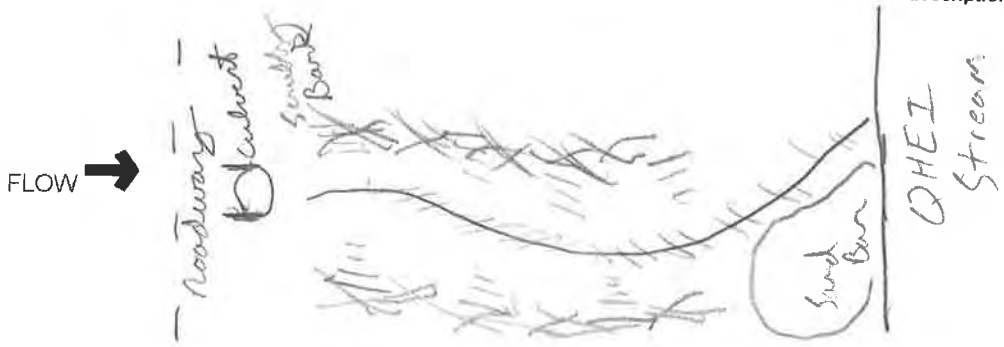
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Mod. Class I

Stream 4

HH-BA0081815-03

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 22

SITE NAME/LOCATION Yager station / AEP

SITE NUMBER 03 RIVER BASIN _____ DRAINAGE AREA (mi²) 0.08

LENGTH OF STREAM REACH (ft) 100ft LAT. 40.404554 LONG. -81.235300 RIVER CODE n/a RIVER MILE n/a

DATE 08/18/15 SCORER BAB/RCR COMMENTS Intermittent

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

Channelized drainage along farm driveway

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☒	SILT [3 pt]	75
☐	BOULDER (>256 mm) [16 pts]		☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐	BEDROCK [16 pt]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]		☐	CLAY or HARDPAN [0 pts]	
☐	GRAVEL (2-64 mm) [9 pts]	5	☐	MUCK [0 pts]	
☒	SAND (<2 mm) [6 pts]	20	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) 9 (B) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☒ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (~~centimeters~~): 1"

Pool Depth Max = 30: 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 1'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☒	☒	None	☒	☒	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS Intermittent

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☒ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

HH-BAD081815-3

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: _____ Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: UNK Quantity: UNK

Photograph Information: 2

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N)____ If not, please explain: _____

Additional comments/description of pollution impacts: pasture and roadway runoff

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

Stream 2

Fair Warmwater

OH-BAO-081815-01

OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 43

Stream & Location: OH-BAO-081815-1, Yager Station (AEP) **RM:** ____ **Date:** 08/18/15

Scorers Full Name & Affiliation: Ben Otto / AECOM BAO, BCR

River Code: ___-___-___ **STORET #:** _____ **Lat./Long.:** (NAD 83 - decimal °) 40.4038 / 81.2372 Office verified location ☐

1] SUBSTRATE
Check *ONLY* Two substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]	____	____	☐ ☐ HARDPAN [4]	____	____
☐ ☐ BOULDER [9]	____	____	☐ ☐ DETRITUS [3]	____	____
☐ ☐ COBBLE [8]	____	10	☐ ☐ MUCK [2]	____	____
☐ ☐ GRAVEL [7]	20	30	☐ ☒ SILT [2]	40	30
☐ ☒ SAND [6]	40	30	☐ ☐ ARTIFICIAL [0]	____	____
☐ ☐ BEDROCK [5]	____	____	(Score natural substrates; ignore sludge from point-sources)		

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Check ONE (Or 2 & average)

ORIGIN
- ☒ LIMESTONE [1]
- ☐ TILLS [1]
- ☐ WETLANDS [0]
- ☐ HARDPAN [0]
- ☐ SANDSTONE [0]
- ☐ RIP/RAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

QUALITY

SILT
- ☒ HEAVY [-2]
- ☐ MODERATE [-1]
- ☐ NORMAL [0]
- ☐ FREE [1]

EMBEDDEDNESS
- ☒ EXTENSIVE [-2]
- ☐ MODERATE [-1]
- ☐ NORMAL [0]
- ☐ NONE [1]

Substrate Maximum 20: 5

Comments

2] INSTREAM COVER
Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

- 1 UNDERCUT BANKS [1]
- 1 OVERHANGING VEGETATION [1]
- ____ SHALLOWS (IN SLOW WATER) [1]
- 1 ROOTMATS [1]
- ____ POOLS > 70cm [2]
- ____ ROOTWADS [1]
- ____ BOULDERS [1]
- ____ OXBOWS, BACKWATERS [1]
- 1 AQUATIC MACROPHYTES [1]
- ____ LOGS OR WOODY DEBRIS [1]

AMOUNT
Check ONE (Or 2 & average)
- ☐ EXTENSIVE >75% [11]
- ☒ MODERATE 25-75% [7]
- ☐ SPARSE 5-<25% [3]
- ☐ NEARLY ABSENT <5% [1]

Cover Maximum 20: 11

Comments

3] CHANNEL MORPHOLOGY
Check ONE in each category (Or 2 & average)

SINUOSITY
- ☐ HIGH [4]
- ☒ MODERATE [3]
- ☐ LOW [2]
- ☐ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ☒ GOOD [5]
- ☐ FAIR [3]
- ☐ POOR [1]

CHANNELIZATION
- ☐ NONE [6]
- ☒ RECOVERED [4]
- ☐ RECOVERING [3]
- ☐ RECENT OR NO RECOVERY [1]

STABILITY
- ☐ HIGH [3]
- ☐ MODERATE [2]
- ☒ LOW [1]

Channel Maximum 20: 13

Comments 3 5 4 1

4] BANK EROSION AND RIPARIAN ZONE
Check ONE in each category for *EACH BANK* (Or 2 per bank & average)

River right looking downstream

EROSION

L	R	
☐	☐	NONE / LITTLE [3]
☒	☒	MODERATE [2]
☐	☐	HEAVY / SEVERE [1]

RIPARIAN WIDTH

L	R	
☐	☐	WIDE > 50m [4]
☐	☐	MODERATE 10-50m [3]
☐	☒	NARROW 5-10m [2]
☒	☐	VERY NARROW < 5m [1]
☐	☐	NONE [0]

FLOOD PLAIN QUALITY

L	R	
☐	☐	FOREST, SWAMP [3]
☐	☐	SHRUB OR OLD FIELD [2]
☐	☒	RESIDENTIAL, PARK, NEW FIELD [1]
☐	☐	FENCED PASTURE [1]
☐	☐	OPEN PASTURE, ROWCROP [0]
☐	☐	CONSERVATION TILLAGE [1]
☒	☐	URBAN OR INDUSTRIAL [0]
☐	☐	MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Riparian Maximum 10: 4

Comments 2 1.5 .5

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH
Check ONE (ONLY!)
- ☐ > 1m [6]
- ☐ 0.7-<1m [4]
- ☐ 0.4-<0.7m [2]
- ☒ 0.2-<0.4m [1]
- ☐ < 0.2m [0]

CHANNEL WIDTH
Check ONE (Or 2 & average)
- ☒ POOL WIDTH > RIFFLE WIDTH [2]
- ☐ POOL WIDTH = RIFFLE WIDTH [1]
- ☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY
Check ALL that apply
- ☐ TORRENTIAL [-1]
- ☐ VERY FAST [1]
- ☐ FAST [1]
- ☒ MODERATE [1]
- ☐ SLOW [1]
- ☐ INTERSTITIAL [-1]
- ☐ INTERMITTENT [-2]
- ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Pool / Current Maximum 12: 4

Comments 1 2 1

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). ☐ NO RIFFLE [metric=0]

RIFFLE DEPTH
- ☐ BEST AREAS > 10cm [2]
- ☒ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ☐ MAXIMUM > 50cm [2]
- ☒ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ☐ STABLE (e.g., Cobble, Boulder) [2]
- ☐ MOD. STABLE (e.g., Large Gravel) [1]
- ☒ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ☐ NONE [2]
- ☐ LOW [1]
- ☒ MODERATE [0]
- ☐ EXTENSIVE [-1]

Riffle / Run Maximum 8: 2

Comments 1 1 0 0

6] GRADIENT
(47 ft/mi)

DRAINAGE AREA
(1.36 mi²)

- ☐ VERY LOW - LOW [2-4]
- ☐ MODERATE [6-10]
- ☐ HIGH - VERY HIGH [10-6]

%POOL: 40 %GLIDE: ____

%RUN: 20 %RIFFLE: 40

Gradient Maximum 10: 4

EPA 4520 06/16/06

A] SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
- ☐ WADE
- ☐ L. LINE
- ☐ OTHER

DISTANCE

- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☐ OTHER

_____ meters

STAGE

1st -sample pass-	2nd
☐ HIGH	☐
☐ UP	☐
☐ NORMAL	☐
☐ LOW	☐
☐ DRY	☐

CLARITY

1st --sample pass--	2nd
☐ < 20 cm	☐
☐ 20-<40 cm	☐
☐ 40-70 cm	☐
☐ > 70 cm/ CTB	☐
☐ SECCHI DEPTH	☐

CANOPY

- ☐ > 85%- OPEN
- ☐ 55%-<85%
- ☐ 30%-<55%
- ☐ 10%-<30%
- ☐ <10%- CLOSED

pass 1st _____ cm

pass 2nd _____ cm

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

QH-BA0081815-1

B] AESTHETICS

- ☐ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☐ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

C] RECREATION

AREA DEPTH

POOL: ☐ >100ft² ☐ >3ft

D] MAINTENANCE

Circle some & *COMMENT*

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

E] ISSUES

WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

- x̄ width – 8.5
- x̄ depth
- max. depth – 16"
- x̄ bankfull width
- bankfull x̄ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio
- *Legacy Tree:*

Stream Drawing: