Construction Notice for the Sadiq Switch – East Wheelersburg 138-kV Transmission Line Rebuild Project

AEP OHIO TRANSMISSION COMPANY

An AEP Company

BOUNDLESS ENERGY™

PUCO Case No. 24-0935-EL-BNR

Submitted to:
The Ohio Power Siting Board
Pursuant to Ohio Administrative Code
Section 4906-6-05

Submitted by:
AEP Ohio Transmission Company, Inc.

October 25, 2024

Construction Notice

Sadiq Switch – East Wheelersburg 138-kV Transmission Line Rebuild Project

4906-6-05

AEP Ohio Transmission Company, Inc. ("AEP Ohio Transco" or the "Company") is providing the following information to the Ohio Power Siting Board (OPSB) in accordance with the accelerated application requirements of Ohio Administrative Code Section 4906-6-05.

4906-6-05(B) General Information

B(1) Project Description

Provide the name of the project and applicant's reference number, names and reference number(s) of resulting circuits, a brief description of the project, and why the project meets the requirements for a letter of notification or construction notice application.

The Company proposes the Sadiq Switch – East Wheelersburg 138 kV Transmission Line Rebuild Project ("Project"), in Porter Township, Scioto County, Ohio. The Project involves the installation of a new three-way phase-over-phase switch (the "Sadiq Switch") along the proposed Sadiq Switch – East Wheelersburg 138 kV Transmission Line, and rebuilding approximately 2 miles of single circuit 138 kV transmission line between the proposed Sadiq Switch and the existing East Wheelersburg Station with steel structures to replace the Company's existing Texas Eastern – East Wheelersburg 138-kV Transmission Line.

The location of the proposed transmission line and the proposed switch structure ("Project Area") is shown in **Exhibit 1** and **Exhibit 2** in **Appendix A**.

The Project meets the requirements for a Construction Notice (CN) because it is within the types of projects defined by Item (2)(a) of 4906-1-01 *Appendix A Application Requirement Matrix For Electric Power Transmission Lines* which states:

> *(2) Adding new circuits on existing structures designed for multiple circuit use, replacing conductors on existing structures with larger or bundled conductors, adding structures to an existing transmission line, or replacing structures with a different type of structure, for a distance of:*
>
> > *(a) Two miles or less.*

The Project has been assigned PUCO Case No. 24-0935-EL-BNR.

B(2) Statement of Need

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

The Project is part of a larger area improvements project to address a baseline thermal criteria issue associated with the Millbrook Park-Franklin Furnace 69-kV Transmission Line, in Scioto County. The Franklin-Wheelersburg 69-kV line is overloaded to 101% for the loss of the Fuller-Argentum (EKPC) 138 kV Line.

To address this, the larger area improvements project will require the following work:

- Install the new non-jurisdictional distribution stepdown Cottrell 138-12 kV Station.
- Construct Cottrell North and South 138-kV Transmission Line Extensions.
- Install structures to connect the South Point-Portsmouth 138-kV Transmission Line to the Cottrell North and South 138-kV Transmission Line Extensions, and one structure on the South Point-Portsmouth 138-kV Transmission line to prevent conductor blowout to the Cottrell North and South 138-kV Transmission Line Extensions.
- Installation of the new 3-way MOAB switch referred to as Sadiq Switch.
- Replace Wheelersburg 69-kV Station with a new non-jurisdictional distribution stepdown Sweetgum 138-12 kV Station.
- Install the new non-jurisdictional stepdown Althea 138-69 kV Station.
- Rebuild ~1.9 mile of 138-kV transmission line from East Wheelersburg Substation to Sadiq Switch.
- Build ~0.2 miles of 138-kV transmission line from Sadiq Switch to Texas Eastern.
- Build ~1.4 miles of 138-kV transmission line from Sadiq Switch to Sweetgum Station, and
- Build ~3.0 miles of new 138-kV line from Sweetgum Station to Althea Station to address baseline thermal overload issues.

In conjunction with the larger area improvements, the associated 11.3 miles of 69-kV transmission line between Millbrook Park Station and Franklin Furnace Switch will be removed, along with Sciotoville 69-kV Station and Wheelersburg Station, which are currently served from the 69-kV transmission line.

Failure to implement the proposed project in the specified period of time will likely result in PJM implementing operational controls which may include preemptive shedding of a significant amount of load served from the area transmission and distribution network in order to alleviate the thermal issues associated with the scenario identified above. Although load shedding is an approved PJM operational procedure to control thermal overloads, load shedding is not acceptable from AEP Ohio's perspective and directly impacts both large commercial and residential customers in the area. The proposed solution for this baseline identified need is necessary for AEP Ohio to continue to provide safe, reliable service to their customers.

The Project was presented at the PJM SRRTEP on January 7, 2015 and January 28, 2021 meetings, and subsequently assigned a PJM # of b2604. This Project was included in a supplement to the Company's 2024 Long Term Forecast Report, and is located on page 63 and 64 (Table FE-T9, Specifications of Planned Transmission Lines), see **Appendix B**.

B(3) Project Location

Provide the location of the project in relation to existing or proposed lines and substations shown on an area system map of sufficient scale and size to show existing and proposed transmission facilities in the project area.

The Project is in Porter Township, Scioto County, Ohio. **Exhibit 1** in **Appendix A** shows the proposed Project on a United States Geological Survey (USGS) topographic quadrangle map in relation to the existing South Point-Portsmouth 138-kV Transmission Line, Texas Eastern – East Wheelersburg 138-kV Transmission Line, East Wheelersburg Substation, Texas Eastern Substation, and the proposed Sadiq Switch.

B(4) Alternatives Considered

Describe the alternatives considered and reasons why the proposed location or route is best suited for the proposed facility, including, but not be limited to, impacts associated with socioeconomic, ecological, construction, or engineering aspects of the project.

The proposed Project requires rebuilding an existing 138-kV transmission line from the East Wheelersburg Station to the proposed Sadiq Switch. The existing Texas Eastern – East Wheelersburg 138-kV Transmission Line cannot be taken out of service to rebuild, therefore, the Project will be required to be rebuilt approximately 50 feet offset to the northwest side of the existing transmission line. The offset was chosen to be on the northwest side of the existing line as there are fewer residences. Only route alternatives that parallel the existing line were considered as the alignment is the most direct path between East Wheelersburg Station and Sadiq Switch, and as there are easements along the existing line that may be supplemented for the Project, rather than obtaining new easements from previously unimpacted property owners. There is also an existing permanent access road adjacent to the proposed switch location, providing access to the switch structure.

The proposed design minimizes disturbances to residences and environmental features by routing as close to the existing line as possible to minimize the utility footprint within the area. Furthermore, the Project will be built adjacent to an existing transmission line corridor and will not impact any known sensitive natural resources, although additional tree clearing will be necessary. Therefore, the proposed Project would result in minimal disturbances relative to other design alternatives and represents the most suitable location and most appropriate solution.

B(5) Public Information Program

Describe its public information program to inform affected property owners and residents of the nature of the project and the proposed timeframe for project construction and restoration activities.

The Company maintains a website (AEPOhio.com/Wheelersburg) on which an electronic copy of this CN is available. An electronic copy of the CN will be served to the public library and each political subdivision affected by this Project.

B(6) Construction Schedule

Provide an anticipated construction schedule and proposed in-service date of the project.

Construction of the Project is planned to start in October 2026, with a proposed in-service date of March 2028.

B(7) Area Map

Provide a map of at least 1:24,000 scale clearly depicting the facility and proposed limits of disturbance with clearly marked streets, roads, and highways, and an aerial image.

Exhibit 1 in **Appendix A** provides the proposed Project area on a map of 1:24,000-scale (1-inch equals 2,000 feet) on the Wheelersburg USGS 7.5-minute topographic map of the Project area. **Exhibit 2** in **Appendix A** shows the Project area on ESRI World Imagery at a scale of 1:6,000-scale (1-inch equals 500 feet). The ESRI World Imagery is dated September 2021.

To visit the Project from Columbus, take US-23 south for approximately 80 miles then head east on State Route 823 in Valley Township. Continue on State Route 823 for 16 miles and turn right onto the Ohio River Scenic Byway. Take the exit towards Wheelersburg and follow Gallia St/Ohio River Road for 3 miles to OH-522-E. The Project area is on the left after 1.5 miles, north of the Mill Road intersection. The approximate coordinates to the Sadiq Switch location is 38.701663, -82.832965.

B(8) Property Agreements

Provide 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.

A list of properties for which the Company will need to obtain easements/options is provided below.

Property Parcel Number	Agreement Type	Easement Agreement/Option Obtained (Yes/No)
174871000	Supplemental Easement	No
174632000	Supplemental Easement	Yes
170309000	Supplemental Easement	Yes
170635000	Supplemental Easement	Yes
170635001	Supplemental Easement	Yes
170164000	Supplemental Easement	Yes
170165000	Supplemental Easement	Yes
170542000	Supplemental Easement	Yes
170344000	Supplemental Easement	Yes
174498000	Supplemental Easement	Yes
170345000	Supplemental Easement	Yes
170071000	Supplemental Easement	Yes
174511000	Supplemental Easement	No

174513000	Supplemental Easement	Yes
174512000	Supplemental Easement	Yes

The form easements in **Appendix C** represents the easement rights the Company would seek if condemnation proceedings were necessary to construct, operate, and maintain these facilities.

B(9) Technical Features

Describe the following information regarding the technical features of the project:

B(9)(a) Operating characteristics, estimated number and types of structures required, and right-of-way and/or land requirements.

The Project is estimated to include the following:

Voltage: 138 kV
Conductors: (3) 795 KCM ACSR (26/7)
Static Wire: (1) OPGW and (1)7#8 Alumoweld on one circuit (only 1 OPGW from Sadiq Switch to structure, 2 and both types from Structure 2 – East Wheelersburg)
Insulators: Polymer
ROW Width: 100 – 150 feet (150 feet ROW width is necessary for blowout clearances for structures 5-8.
Structure Type: (7) H-Frame direct embed structures,
(2) 3-Pole custom structure, and
(2) Deadend monopole structures on pier foundation
Sadiq switch: 105-feet tall steel 3-way switch monopole on pier foundation.

B(9)(b) Electric and Magnetic Fields
No occupied residences or institutions are located within 100 feet of the Project.

B(9)(c) Project Costs

The estimated capital cost of the project.

The cost estimate for the Project, which is comprised of applicable tangible and capital costs, is approximately $7,026,000 million using a Class 4 estimate. Pursuant to the PJM OATT, the costs for this Project will be recovered in the AEP Ohio Transmission Company's FERC formula rate (Attachment H-20 to the PJM OATT) and allocated to the AEP Zone.

B(10) Social and Economic Impacts

The applicant shall describe the social and ecological impacts of the project.

B(10)(a) Provide a brief, general description of land use within the vicinity of the proposed project, including a list of municipalities, townships, and counties affected.

The Project is in Porter Township, Scioto County, Ohio. Land use observed within the Project area includes undeveloped land and low-density residential developments. The Project has no places of worship or airports identified within 1,000 feet of the Project alignment. There are no residences identified within 100 feet of the Project alignment.

B(10)(b) Agricultural Land Information

Provide the acreage and a general description of all agricultural land, and separately all agricultural district land, existing at least sixty days prior to submission of the application within the potential disturbance area of the project.

The Project is to be constructed adjacent to existing ROW, expanding northwest of the existing centerline into woodlots. As the Project exits East Wheelersburg Station and travels south, 2.5 acres of agricultural land will be impacted. The Scioto County Auditor's office was contacted on October 22, 2024 to obtain information about Agricultural District Lands. The Project is within 2.5 acres of agricultural district lands within one parcel.

B(10)(c) Archaeological and Cultural Resources

Provide a description of the applicant's investigation concerning the presence or absence of significant archeological or cultural resources that may be located within the potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.

Phase I Cultural Resource Management Investigations were conducted in November 2021 and reports provided to the Ohio State Historic Preservation Office (SHPO) for consultation. These investigations did not result in the identification of any archaeological deposits or significant architectural resources identified in the Project's area of potential effect. SHPO responded on February 9, 2022 with their concurrence that the Project as proposed will have no effect on historic properties. No further coordination with SHPO is necessary. SHPO coordination letters are provided in **Appendix D.**

B(10)(d) Local, State, and Federal Agency Correspondence

Provide a list of the local, state, and federal governmental agencies known to have requirements that must be met in connection with the construction of the project, and a 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 storm water discharges under General Permit OHC00006. The Company will also coordinate storm water permitting needs with local government agencies, as necessary. The Company will implement and maintain best management practices as outlined in the project-specific Stormwater Pollution Prevention Plan to minimize erosion and sediment to protect surface water quality during storm events.

The Company's consultant conducted a stream and wetland delineation survey within the Project study area and identified two wetlands and 22 streams. No fill is anticipated for the wetlands; therefore, coordination with the U.S. Army Corps of Engineers is not anticipated for this Project. The Ecological Survey Report is provided in **Appendix E**.

As a result of consultation with the Ohio Department of Natural Resources (ODNR), a habitat suitability survey was completed on May 20, 2023, and further mitigation for the green salamander were determined

to be not necessary for the Project per ODNR correspondence dated September 12, 2023. The correspondence letters with the ODNR are provided in **Appendix D**.

There are no other known local, state, or federal requirements that must be met prior to commencement of the Project.

B(10)(e) Threatened, Endangered, and Rare Species

Provide 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 potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.

Coordination letters were sent to U.S. Fish and Wildlife Service (USFWS) and Ohio Department of Natural Resources-Division of Wildlife (ODNR-DOW). USFWS responses were received on December 20, 2021, and ODNR-DOW's response was received on January 14, 2022. Copies of the agencies' correspondence letters are provided in **Appendix D**.

Based on consultation from the USFWS, the Project area lies within range of two federally listed species: Indiana bat (Myotis sodalis) and northern long-eared bat (Myotis septentrionalis). The USFWS recommended avoiding tree removal, wherever possible. However, if clearing of trees ≥3 inches diameter breast height (dbh) cannot be avoided, the USFWS recommend removal of any trees ≥3 inches dbh only occur between October 1 and March 31. Tree clearing is anticipated to occur between October 1 and March 31; however, if seasonal tree cutting cannot be implemented, the Company will coordinate with USFWS.

ODNR stated that the entire state of Ohio is within the range of the Indiana bat, northern long-eared bat, little brown bat, and the tricolored bat. If trees are present within the Project area, and trees must be cut, the Division of Wildlife (DOW) recommends cutting only occur from October 1 to March 31, conserving trees with loose, shaggy bark and/or crevices holes, or cavities as well as trees with diameter at breast height (dbh) ≥ 20 inches if possible. If trees are present within the Project area and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. ODNR also recommended that a desktop habitat assessment, followed by a field assessment if needed, be conducted to determine if there are potential hibernaculum present within 0.25 miles of the Project area. The Company's consultant completed a desktop habitat assessment in accordance with the 2022 Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines. No active or abandoned mines, areas with karst geology or karst features were identified within 0.25-mile buffer of the Project area. In addition, no potential bat hibernacula were observed within the Project area during the field surveys. Tree clearing is anticipated to occur between October 1 – March 31; however, if this is not feasible, then the Company will coordinate with ODNR.

According to the ODNR response letter, the Project is within the range of the following mussel species: the federally endangered clubshell, fanshell, northern riffleshell, pink mucket, purple cat's paw, rayed bean, sheepnose, and snuffbox; state endangered butterfly, ebonyshell, elephant-ear, little spectaclecase, long-solid, monkeyface, Ohio pigtoe, pyramid pigtoe, sharp-ridged pocketbook, wartyback, washboard, and yellow sandshell; and state threatened black sandshell, fawnsfoot, and threehorn wartyback. It is also within range of the eastern hellbender, a state endangered species and a federal species of concern. DOW stated

that due to the location and absence of proposed in-water work in a perennial stream of sufficient size, this Project is not likely to impact these species.

According to the ODNR response letter, the Project is within the range of the following fish species: the state endangered bigeye shiner, gilt darter, goldeye, mountain madtom, northern brook lamprey, northern madtom, popeye shiner, shoal chub, shortnose gar, and shovelnose sturgeon; and state threatened American eel, blue sucker, channel darter, paddlefish, river darter, and Tippecanoe darter. ODNR recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to indigenous aquatic species and their habitat. As no in-water work is proposed in a perennial stream, the Project is not likely to impact these species.

The Project is within range of the following species: timer rattlesnake (state endangered and federal species of concern), eastern spadefoot toad (state endangered), midland mud salamander (state threatened), and Allegheny woodrat (state endangered). DOW stated that due to the location, the type of habitat within the Project area, and the type of work proposed, the Project is not likely to impact these species.

The Project is also within the range of the state endangered green salamander. A habitat suitability survey was completed in May 2023 and coordination with the ODNR determined that suitable habitat is not present within the Project area. Correspondence letters with the ODNR stating that there are no additional requirements are provided in **Appendix D**.

The ODNR response letter also queried the Natural Heritage Database and did not find any records located at or within a one-mile radius of the Project area.

Based on the nature of the proposed project activities and habitat characteristics of the surrounding vicinity, construction impacts to protected species are not anticipated. The Company will coordinate with USFWS and ODNR-DOW regarding additional construction requirements, if required by these agencies.

B(10)(f) Areas of Ecological Concern

Provide 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 potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.

As stated in Section B(10)(e), a copy of the correspondence letters received from the USFWS and ODNR-DOW are provided in **Appendix D**. USFWS indicated no impacts to proposed or designated critical habitats. The ODNR indicated no known unique ecological sites, geologic features, scenic rivers, state wildlife areas, state natural preserves, state or national parks, state or national forests, national wildlife refuges, or other protected natural areas within the Project area. As outlined above in B(10)(e) Threatened, Endangered, and Rare Species, several federal and state listed species were identified to potentially occur within the Project area. Based on the nature of the proposed project activities and habitat characteristics of the surrounding vicinity, construction impacts to protected species are not anticipated.

The Company's consultant prepared an Ecological Survey Report, which is provided in **Appendix E**. The survey of the Project area identified two wetlands and 22 streams. No impacts are anticipated to wetland and streams for this Project.

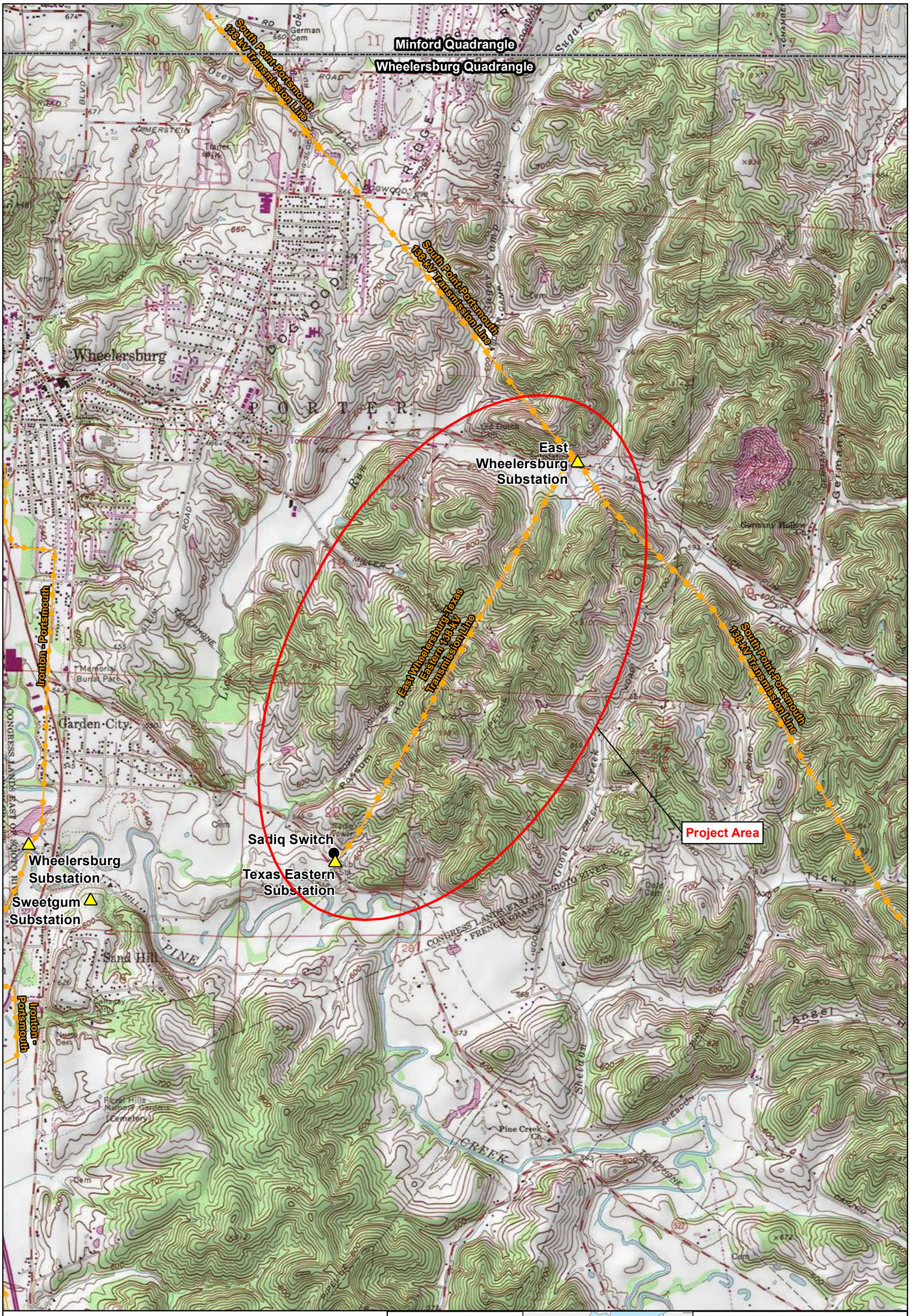
Based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) Map Number 39145C0430E (Effective 4/18/2011), the Project is not within any mapped floodplains.

B(10)(g) Unusual Conditions

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

To the best of the Company's knowledge, no unusual conditions exist that would result in significant environmental, social, health, or safety impacts.

Appendix A Project Maps



Legend

- Substation
- Proposed Switch
- Existing 138-kV Transmission Line
- Existing 69-kV Transmission Line
- Project Area
- USGS 7.5-Minute Quadrangle Boundary

Base Map Source:
ESRI USGS Topographic
(May 2020)

Coordinate System:
State Plane Ohio South
FIPS 3402 (US Feet)
Datum: NAD 1983
Scale: 1:24,000

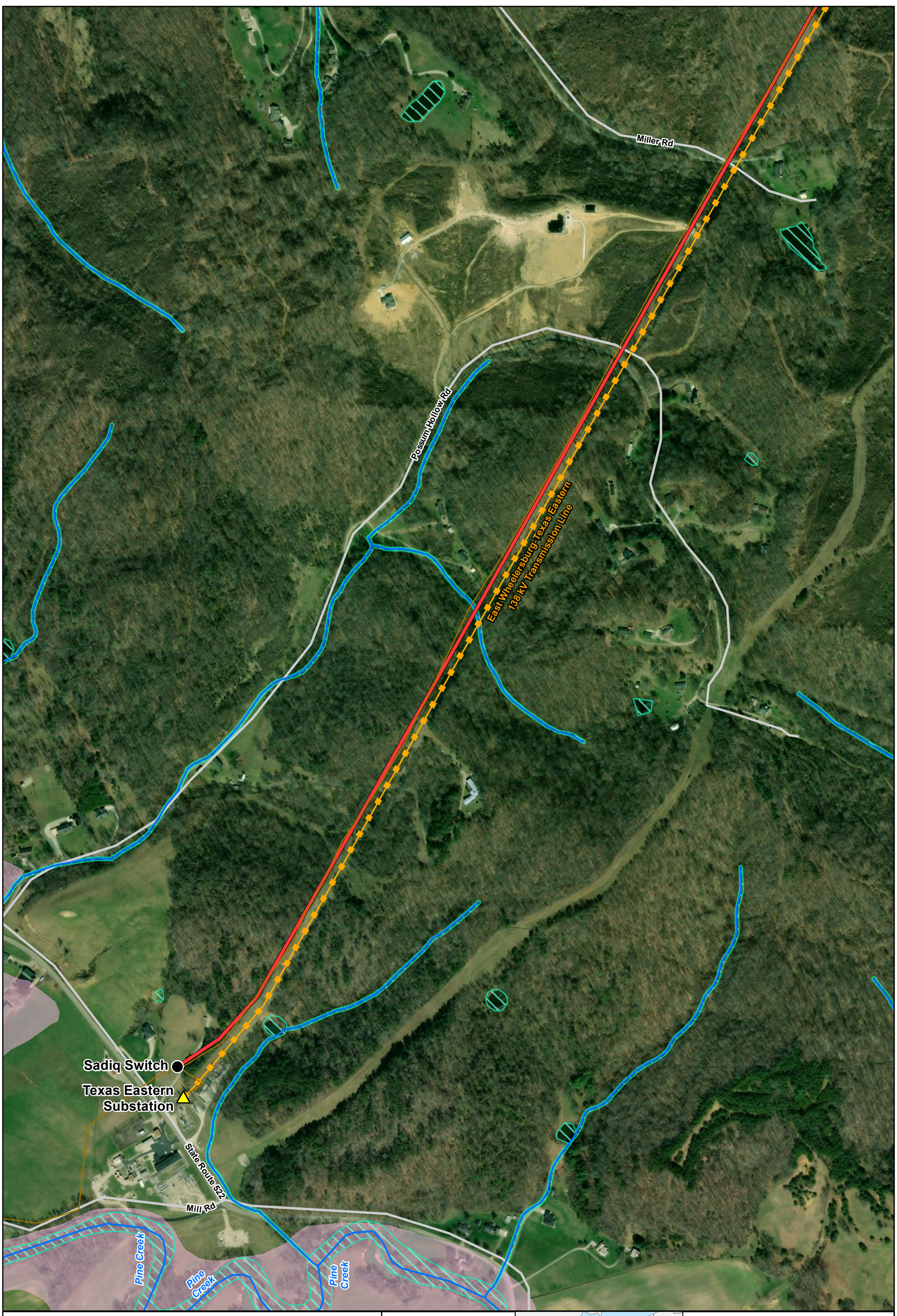
February 10, 2023

Exhibit 1
TOPOGRAPHIC OVERVIEW

AEP OHIO TRANSMISSION COMPANY
An AEP Company
BOUNDLESS ENERGY™

East Wheelersburg-Sadiq Switch
138-kV Transmission Line
Rebuild Project
Scioto County, OH

0 0.25 0.5
Miles



Legend

- Substation
- Proposed Switch
- Proposed Transmission Line
- Existing 138-kV Transmission Line
- Roadway
- NHD Stream
- NWI Wetland
- 100-yr Floodplain
- Floodway

Base Map Source:
ESRI World Imagery
(2023)

Coordinate System:
State Plane Ohio South
FIPS 3402 (US Feet)
Datum: NAD 1983
Scale: 1:6,000

May 13, 2024

Exhibit 2
AERIAL MAP
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AEP OHIO TRANSMISSION COMPANY
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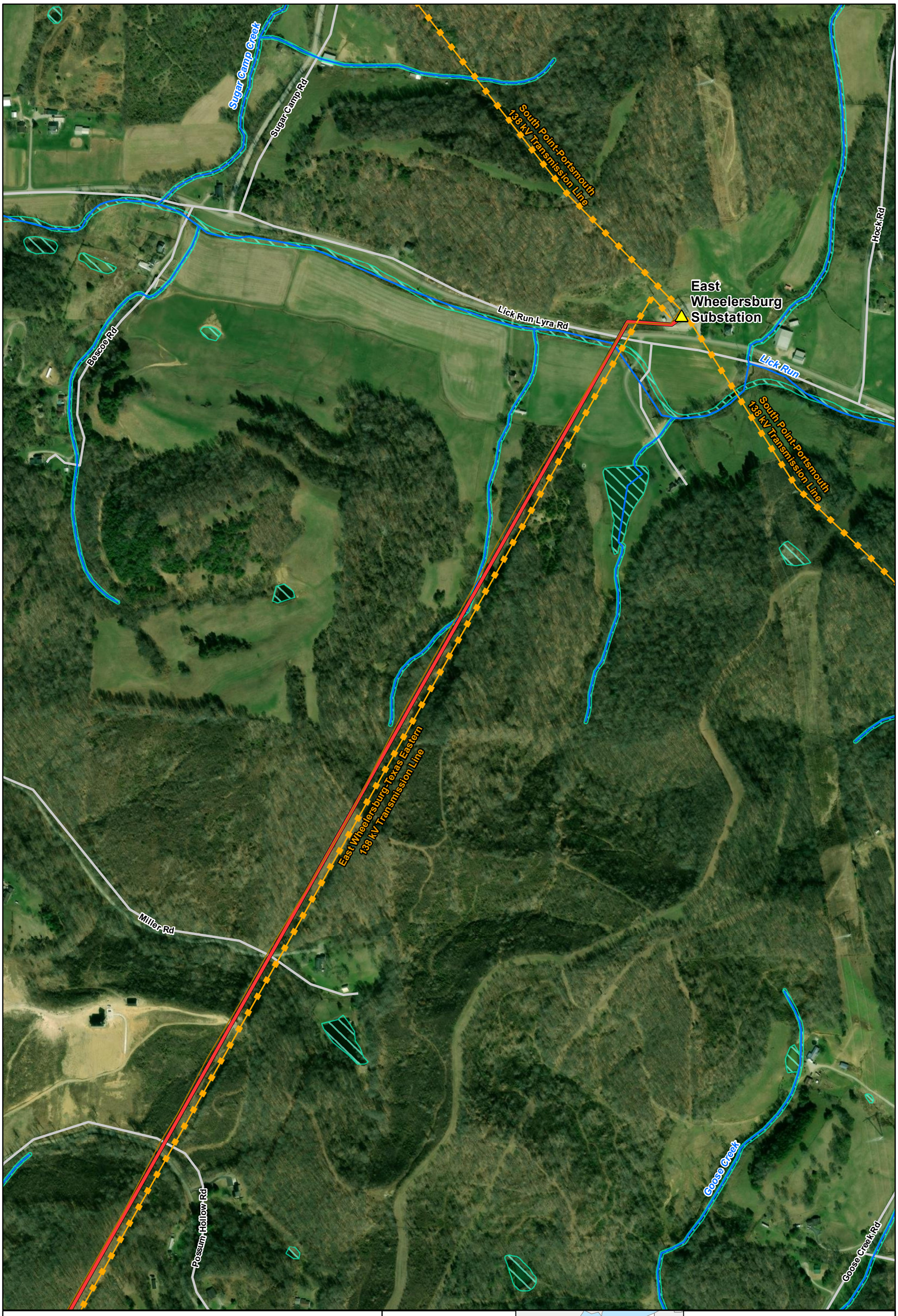
BOUNDLESS ENERGY™

East Wheelersburg-Sadiq Switch
138-kV Transmission Line
Rebuild Project
Scioto County, OH

0 500 1,000
Feet



Legend

- Substation
- Proposed Switch
- Proposed Transmission Line
- Existing 138-kV Transmission Line
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- NHD Stream
- NWI Wetland
- 100-yr Floodplain
- Floodway

Base Map Source:
ESRI World Imagery
(2023)

Coordinate System:
State Plane Ohio South
FIPS 3402 (US Feet)
Datum: NAD 1983
Scale: 1:6,000

May 13, 2024

Exhibit 2
AERIAL MAP
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AEP OHIO TRANSMISSION COMPANY
An AEP Company
BOUNDLESS ENERGY™

East Wheelersburg-Sadiq Switch
138-kV Transmission Line
Rebuild Project
Scioto County, OH

0 500 1,000
Feet

Appendix B Long Term Forecast Report and PJM Solution Submittal

AEP Baseline
Millbrook Park – Franklin Furnace

Process Stage: First Review on 01/7/2015

Criteria: N-1 Thermal
Assumption Reference: AEP Planning Criteria

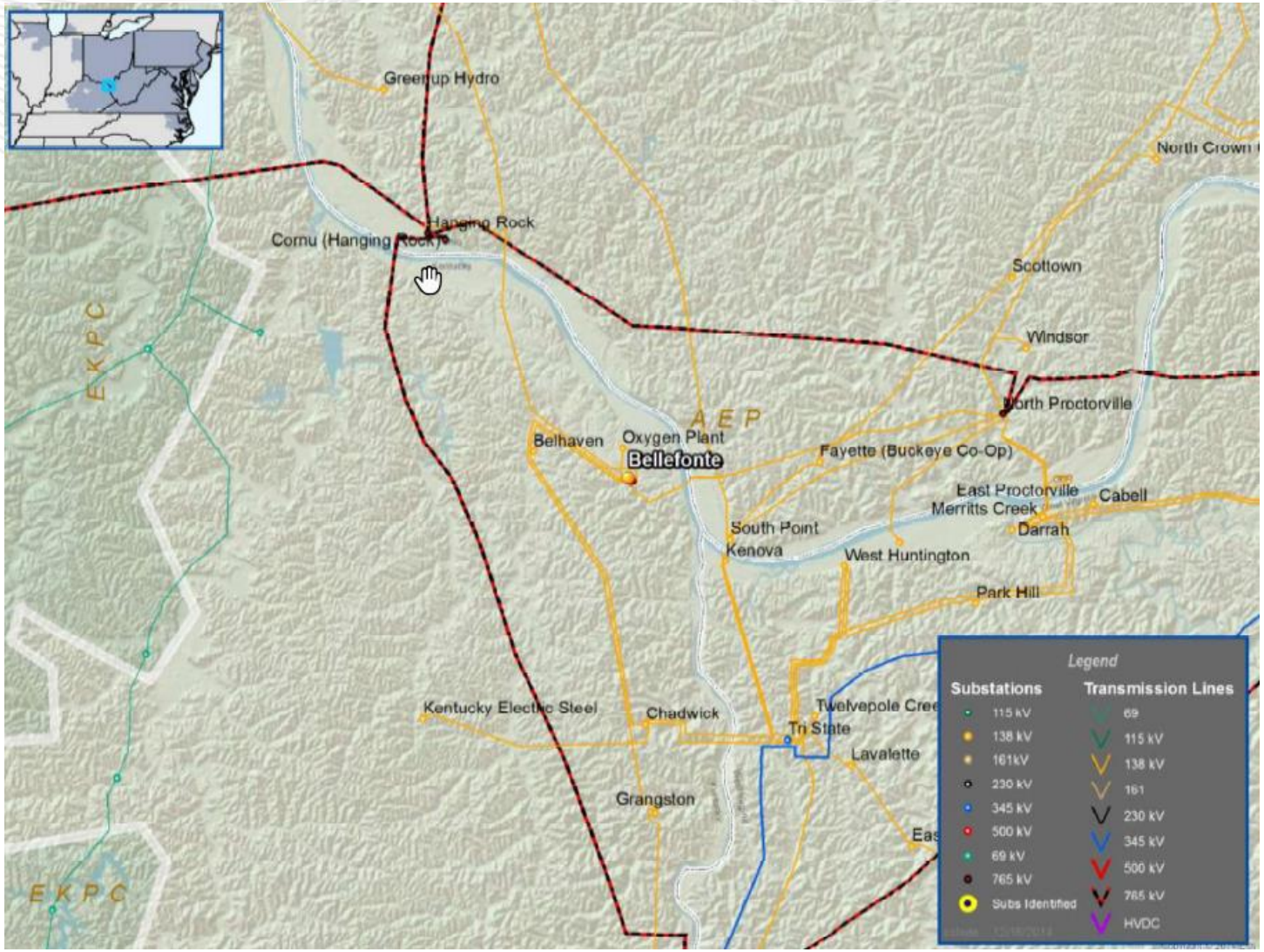
Model Used for Analysis: 2014 RTEP

Proposal Window Exclusion: Immediate Need, Below 200 kV, Station Equipment

Problem Statement:

AEP Criterial Thermal Violation FG #AEP-T53

- The Bellefonte 138/69 kV transformer is overloaded to 102% for the loss of Bellefonte – Hanging Rock 138 kV line.
- The Franklin – Wheelersburg 69 kV line is overloaded to 101% for the loss of the Fuller – Argentum (EKPC) 138 kV line. (Line overloaded due to increased transformer addition at Bellefonte: 99% to 101%)

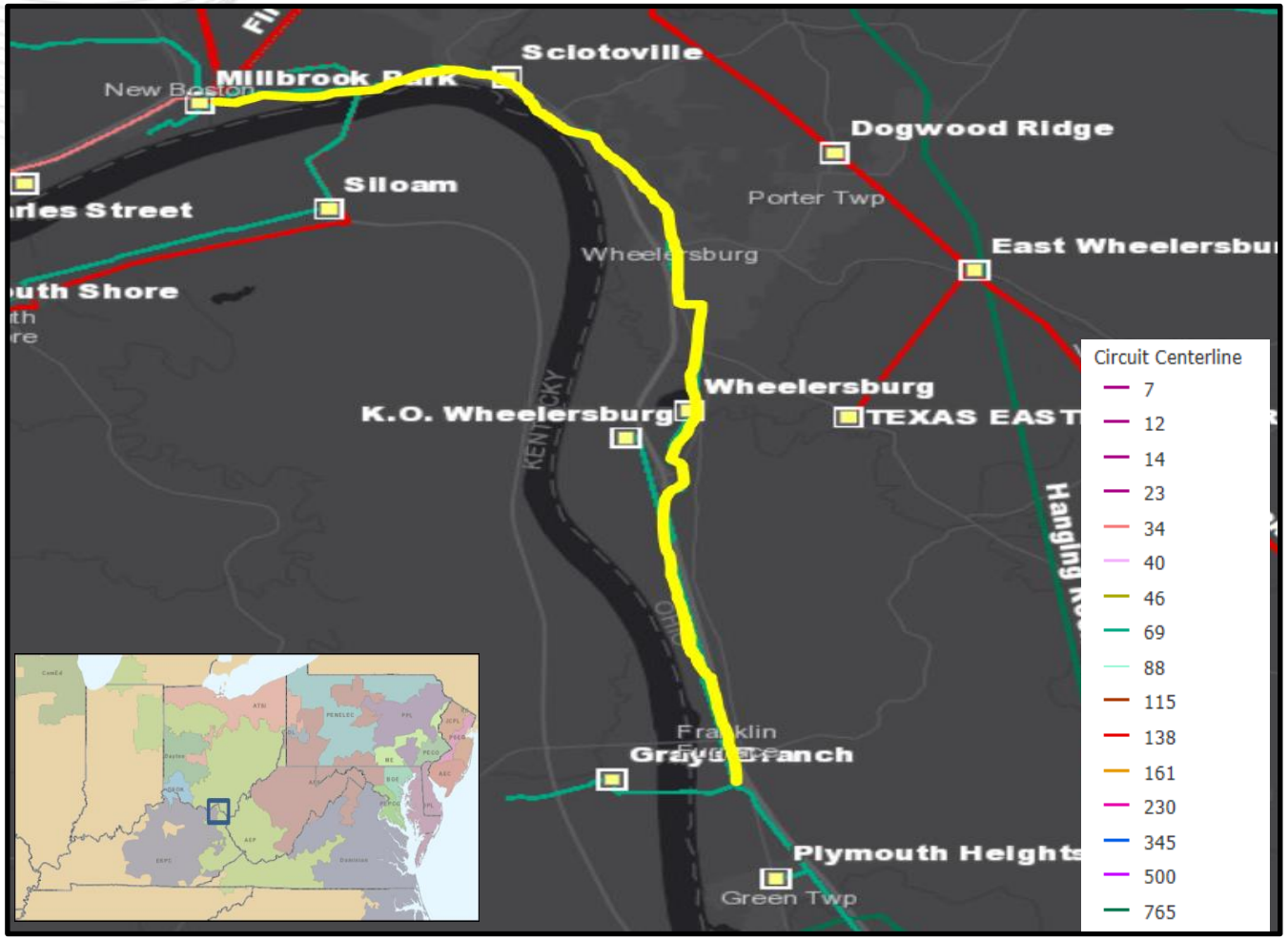


Original Proposed Solution: B2604

- Bellefonte: Install new 138/69-34.5 kV 200 MVA transformer at Bellefonte station. Install circuit switcher and 34.5 breaker on highside and lowside of transformer #5. In-service (estimated $3M).
- ~~Franklin Furnace - Hayport Rd S.S 69kV line: Rebuild 1.73 mile line utilizing 795 ACSR built to 138 kV standards.~~
- ~~Hayport Rd S.S - Wheelersburg 69kV line: Rebuild 2.87 mile line utilizing 795 ACSR built to 138 kV standards~~
- ~~Sciotoville - Wheelersburg 69kV line: Rebuild 4.56 mile line utilizing 795 ACSR built to 138 kV standards~~
- ~~Millbrook Park -Sciotoville 69kV line: Rebuild 2.6 mile line utilizing 795 ACSR built to 138 kV standards~~

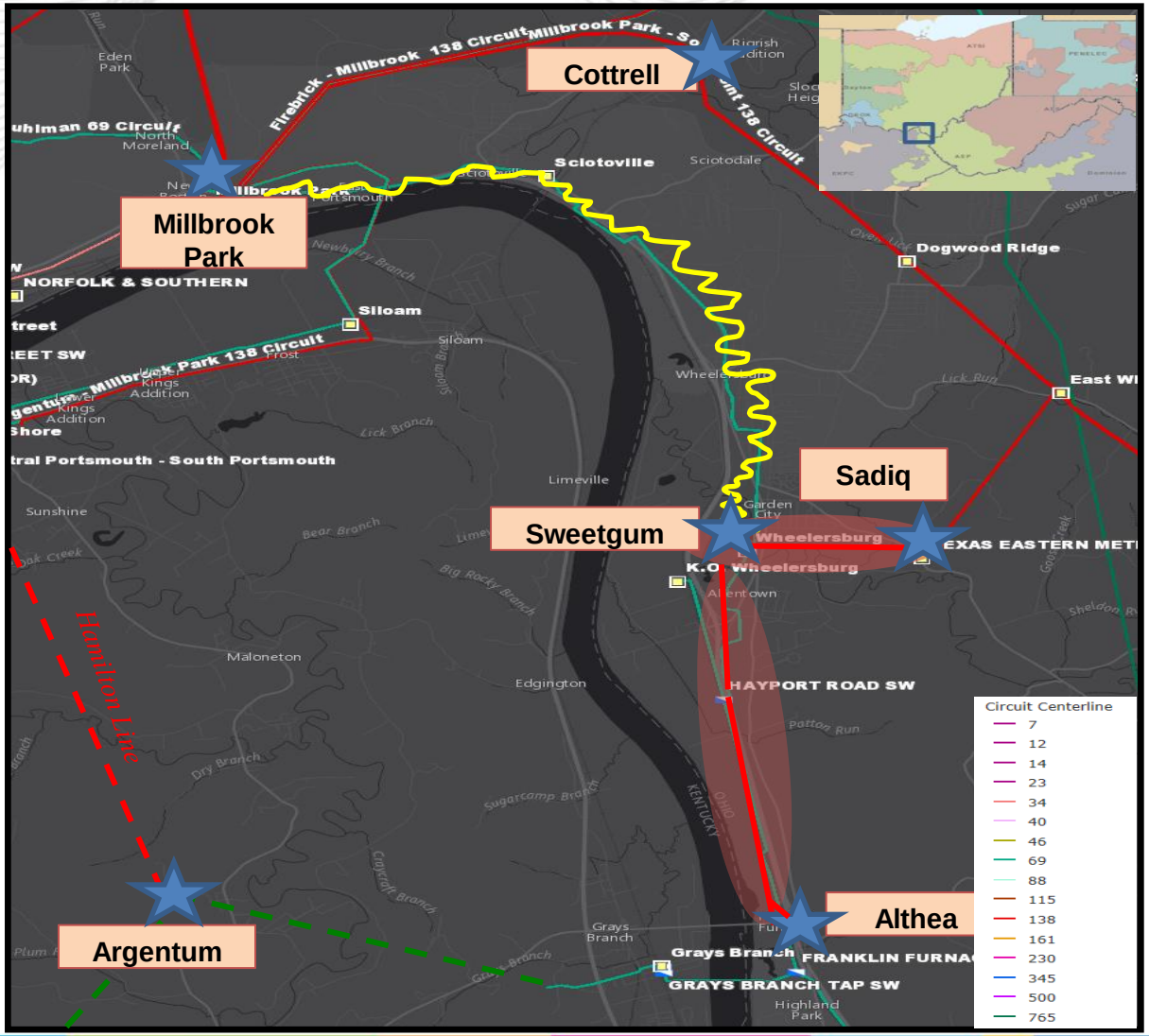
Total Estimated Transmission Cost: $~~31.65M~~ $3M

Through detailed engineering on the original solution, significant siting and ROW encroachment concerns were identified that made the proposed rebuild of the existing 69 kV line between Millbrook and Franklin Furnace infeasible from a constructability perspective. Expanded easements for the line rebuild along the river and through New Boston, Sciotoville, and Wheelersburg are not possible to obtain, at which point AEP started investigating other alternatives.



Proposed Solution:

- Remove ~ 11.32 miles of the 69kV Line between Millbrook Park and Franklin Furnace. **Estimated Cost: $1.13M**
- At Millbrook Park station, add a new 138-69kV transf #2 (90 MVA) w/3000A 40kA breakers on the high and low side. Replace the 600A MOAB Switch and add a 3000A circuit switcher on the high side of transf #1. **Estimated Cost: $3.05M**
- Replace Sciotoville station with a new 138-12kV in-out station (Cottrell) with 2000A line MOABs facing Millbrook Park & East Wheelersburg. **Estimated Cost: $1.4M**
  Note: Cost of Distribution scope of work not included.
- Tie Cottrell switch into the Millbrook Park – East Wheelersburg circuit by constructing 0.50 miles of line using 795 ACSR 26/7 Drake (SE 359 MVA). **Existing Cost: $1.96M**
- Install a new 2000A 3-way POP Switch outside of Texas Eastern substation (Sadiq switch). **Estimated Cost: $1.08M**
- Replace Wheelersburg station with a new 138-12kV in-out station (Sweetgum) with a 3000A 40kA breaker facing Sadiq Switch and a 2000A 138kV MOAB facing Althea. **Estimated Cost: $2.16M**
  Note: Cost of Distribution scope of work not included.
- Build approximately 1.4 miles of new 138kV line using 795 ACSR 26/7 Drake (SE 359 MVA) between the new Sadiq switch and the new Sweetgum station. **Estimated Cost: $3.41M**
- Remove the existing 69 kV Hayport Road Switch. **Estimated Cost: $0.1M**



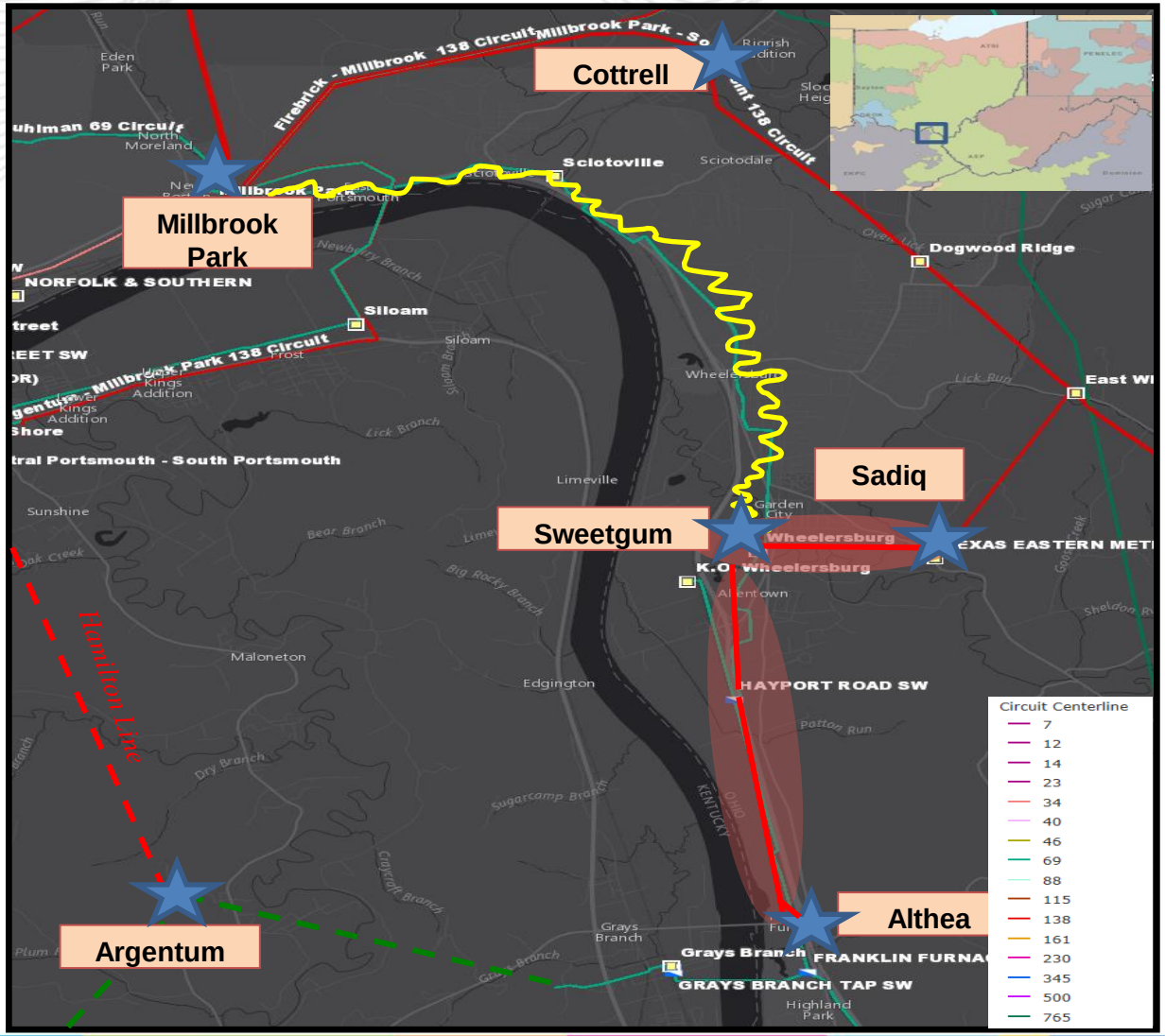
AEP Baseline
Millbrook Park – Franklin Furnace

Proposed Solution Continued:

- Rebuild ~2.3 miles along existing ROW from Sweetgum to the Hayport Rd switch location as 138kV single circuit and rebuild ~2.0 miles from the Hayport Road switch to Althea with double circuit 138kV construction, one side operated at 69 kV to continue service to K.O. Wheelersburg, using 795 ACSR 26/7 Drake (SE 359 MVA). **Estimated Cost: $10.76M**
- Build a new station (Althea) with a 138-69 kV, 90 MVA transformer. The 138kV side will have a single 2000A 40kA circuit breaker and the 69kV side will be a 2000A 40kA three breaker ring bus. **Estimated Cost: $11.07M**
- Remote end work at Hanging Rock, East Wheelersburg, & North Haverhill. **Estimated Cost: $0.06M**

Total Estimated Transmission Cost: $36.18M

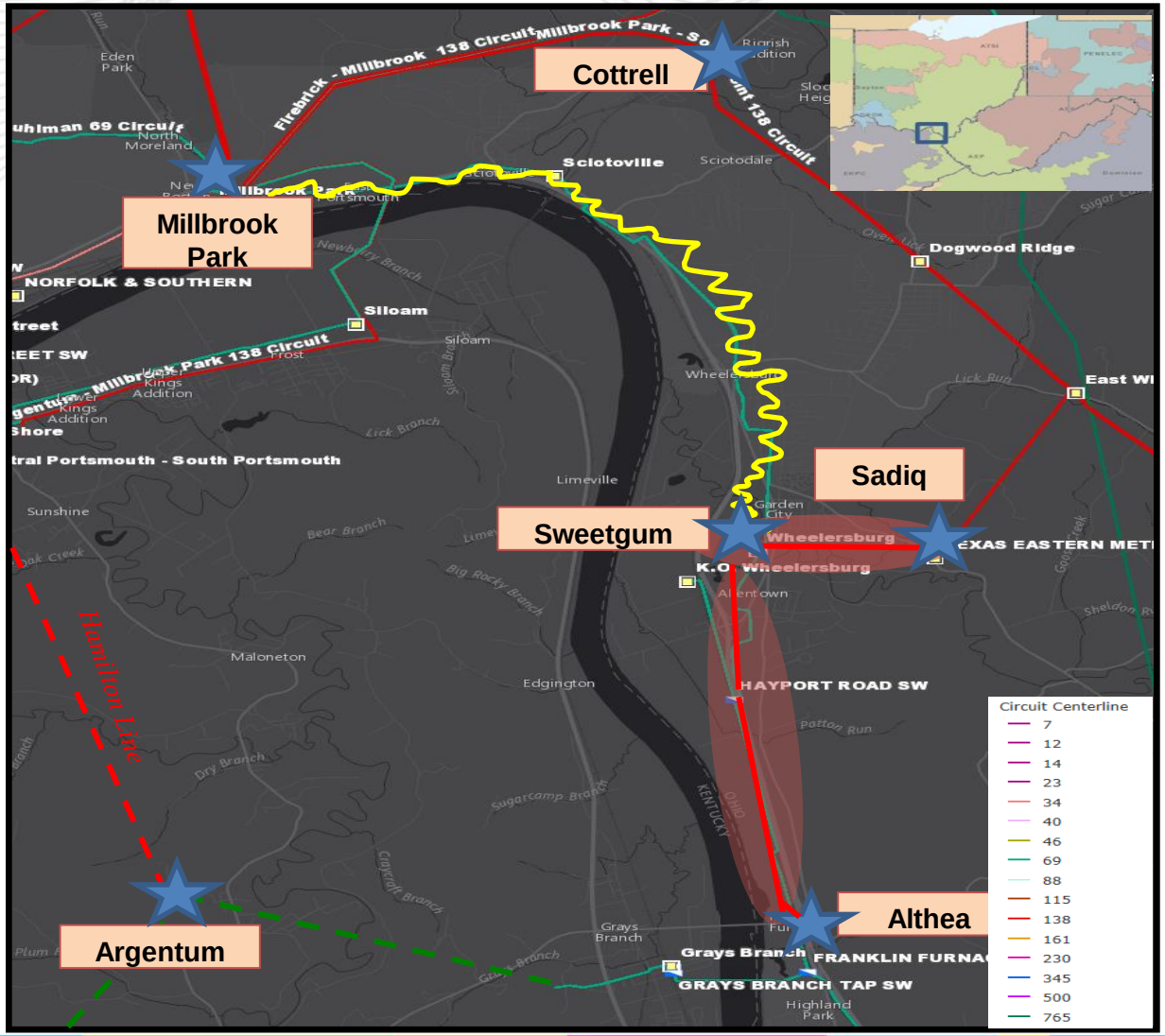
Ancillary Benefits: The new proposal also addresses needs identified under AEP-2018-OH030, including Sciotoville station, Wheelersburg station, and the three terminal 69 kV line. Constructing 1.4 miles of new 138 kV line allows for the retirement of over 11 miles of deteriorating 69 kV line. Sweetgum is proposed as in and out with a breaker to prevent more than three auto-sectionalizing MOABs in series. There is no room at the existing customer-owned Texas Eastern station site to add breakers, so a phase over phase switch is proposed.

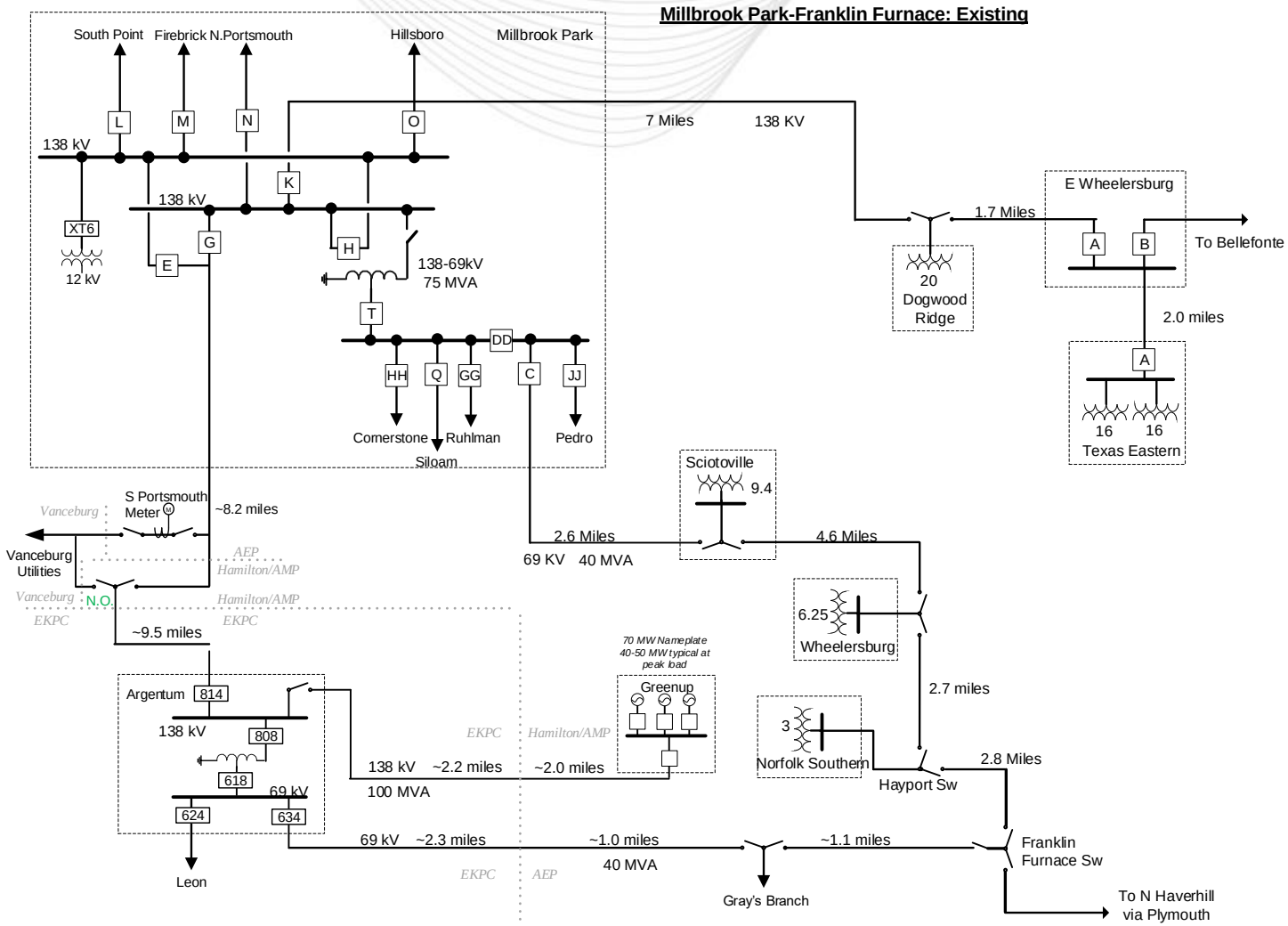


Alternatives:

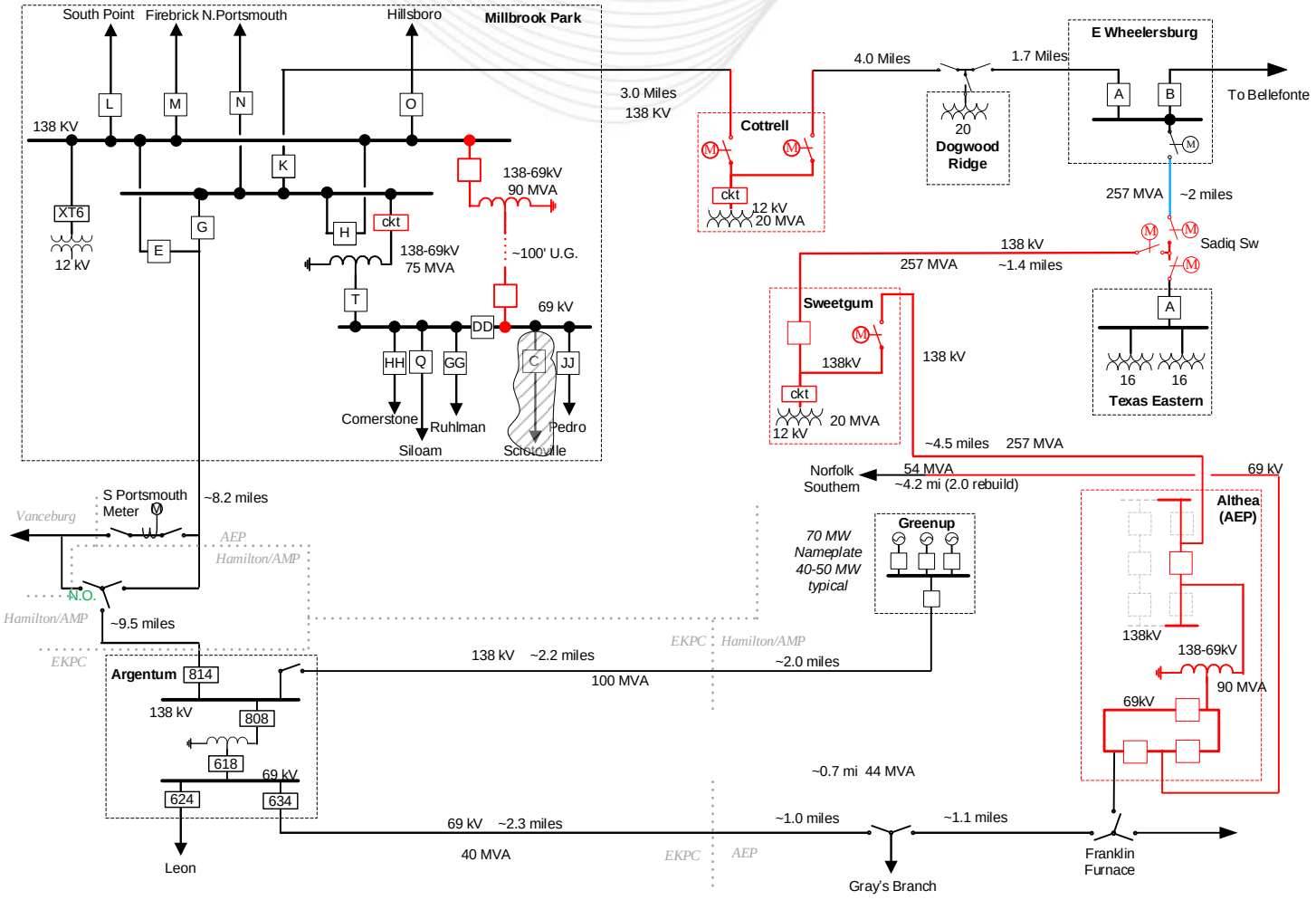
1. A variation of the alternate design was considered to route the 69kV line from Millbrook Park to Wheelersburg across Kentucky. As in the proposed project, Sciotoville would still need to be relocated and there would be a 138kV extension from Wheelersburg to 138kV Texas Eastern. The remaining 69kV line from Wheelersburg to Franklin Furnace would be retired. This option was not chosen because it would leave a weak northern source for North Haverhill which serves several large loads and generation. There are additional ROW risks and costs associated with a 7-mile greenfield line and the two river crossings. **Estimated Cost: $53.7M**

Projected In-Service: 04/15/2025




Millbrook Park-Franklin Furnace: Existing
Existing
South Point
Firebrick
N.Portsmouth
Hillsboro
Millbrook Park
L
M
N
O
138 kV
7 Miles
138 kV
K
138 kV
XT6
12 kV
G
E
H
138-69kV
75 MVA
T
DD
HH
Q
GG
C
JJ
Comerstone
Ruhlman
Siloam
Pedro
20
Dogwood
Ridge
1.7 Miles
E Wheelersburg
A
B
To Bellefonte
2.0 miles
A
16
16
Texas Eastern
Sciotoville
9.4
2.6 Miles
69 KV 40 MVA
4.6 Miles
S Portsmouth
Meter
~8.2 miles
Vanceburg
Vanceburg
Utilities
AEP
Hamilton/AMP
Vanceburg
N.O.
Hamilton/AMP
EKPC
EKPC
~9.5 miles
6.25
Wheelersburg
70 MW Nameplate
40-50 MW typical at
peak load
Greenup
Argentum
814
138 kV
808
618
69 kV
624
634
EKPC
Hamilton/AMP
138 kV ~2.2 miles
100 MVA
~2.0 miles
3
Norfolk Southern
2.7 miles
2.8 Miles
Hayport Sw
69 kV ~2.3 miles
~1.0 miles
40 MVA
~1.1 miles
Franklin
Furnace Sw
EKPC
AEP
Leon
Gray's Branch
To N Haverhill
via Plymouth

Millbrook Park-Franklin Furnace: Phase 1

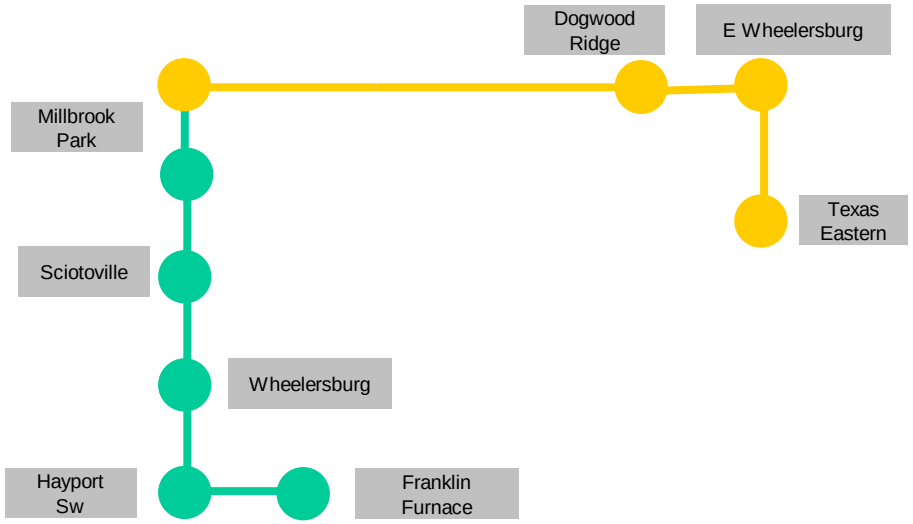


Existing

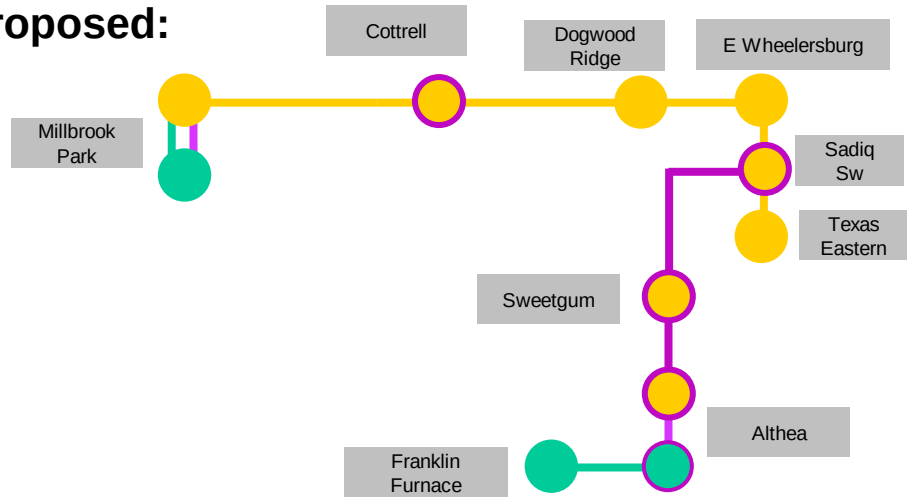
Proposed Baseline

Proposed Supplemental

Existing:



Proposed:



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	

PUCO FORM FE-T9
AEP OHIO TRANSMISSION COMPANY
Specifications of Planned Transmission Lines

3.	RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS	0.19 miles / 100 ft./ 1 circuit
4.	VOLTAGE: DESIGN / OPERATE	138 kV / 138 kV
5.	APPLICATION FOR CERTIFICATE:	2022
6.	CONSTRUCTION:	2023 - 2024
7.	CAPITAL INVESTMENT:	$0.586M
8.	PLANNED SUBSTATION:	Cyprus
9.	SUPPORTING STRUCTURES:	Steel
10.	PARTICIPATION WITH OTHER UTILITIES	N/A
11.	PURPOSE OF THE PLANNED TRANSMISSION LINE	Build double circuit line to customer site
12.	CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION	Unable to provide requested service to customer
13.	MISCELLANEOUS:	
1.	LINE NAME AND NUMBER:	East Wheelersburg - Sadiq SW (s2464 TP2015095)
2.	POINTS OF ORIGIN AND TERMINATION	East Wheelersburg - Sadiq SW INTERMEDIATE STATIONS - N/A
3.	RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS	0.2 miles / 100 ft. / 1 circuit
4.	VOLTAGE: DESIGN / OPERATE	138 kV / 138 kV
5.	APPLICATION FOR CERTIFICATE:	2023
6.	CONSTRUCTION:	2026 - 2027
7.	CAPITAL INVESTMENT:	$2.21M
8.	PLANNED SUBSTATION:	Sweetgum
9.	SUPPORTING STRUCTURES:	Steel
10.	PARTICIPATION WITH OTHER UTILITIES	N/A
11.	PURPOSE OF THE PLANNED TRANSMISSION LINE	To address the identified thermal violations
12.	CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION	Increased risk of equipment failure, reliability, and operational issues
13.	MISCELLANEOUS:	

PUCO FORM FE-T9
AEP OHIO TRANSMISSION COMPANY
Specifications of Planned Transmission Lines

1.	LINE NAME AND NUMBER:	Sadiq SW - Sweetgum (s2464 TP2015095)
2.	POINTS OF ORIGIN AND TERMINATION	Sadiq SW - Sweetgum INTERMEDIATE STATIONS - N/A
3.	RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS	1.4 miles / 100 ft. / 1 circuit
4.	VOLTAGE: DESIGN / OPERATE	138 kV / 138 kV
5.	APPLICATION FOR CERTIFICATE:	2023
6.	CONSTRUCTION:	2026 - 2027
7.	CAPITAL INVESTMENT:	$2.35M
8.	PLANNED SUBSTATION:	Sweetgum
9.	SUPPORTING STRUCTURES:	Steel
10.	PARTICIPATION WITH OTHER UTILITIES	N/A
11.	PURPOSE OF THE PLANNED TRANSMISSION LINE	To address the identified thermal violations
12.	CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION	Increased risk of equipment failure, reliability, and operational issues
13.	MISCELLANEOUS:	
1.	LINE NAME AND NUMBER:	Althea - Sweetgum (s2464 TP2015095)
2.	POINTS OF ORIGIN AND TERMINATION	Althea - Sweetgum INTERMEDIATE STATIONS - N/A
3.	RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS	5.6 miles / 100 ft. / 1 circuit
4.	VOLTAGE: DESIGN / OPERATE	138 kV / 138 kV
5.	APPLICATION FOR CERTIFICATE:	2023
6.	CONSTRUCTION:	2026 - 2027
7.	CAPITAL INVESTMENT:	$7.43M
8.	PLANNED SUBSTATION:	Althea, Sweetgum
9.	SUPPORTING STRUCTURES:	Steel
10.	PARTICIPATION WITH OTHER UTILITIES	N/A
11.	PURPOSE OF THE PLANNED TRANSMISSION LINE	To address the identified thermal violations

PUCO FORM FE-T9
AEP OHIO TRANSMISSION COMPANY
Specifications of Planned Transmission Lines

12.	CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION	Increased risk of equipment failure, reliability, and operational issues
13.	MISCELLANEOUS:	
1.	LINE NAME AND NUMBER:	Cottrell Park - Millbrook Park (s2464 TP2015095)
2.	POINTS OF ORIGIN AND TERMINATION	Cottrell Park - Millbrook Park INTERMEDIATE STATIONS - N/A
3.	RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS	0.25 miles / 100 ft. / 1 circuit
4.	VOLTAGE: DESIGN / OPERATE	138 kV / 138 kV
5.	APPLICATION FOR CERTIFICATE:	2023
6.	CONSTRUCTION:	2026 - 2027
7.	CAPITAL INVESTMENT:	$0.63M
8.	PLANNED SUBSTATION:	Cottrell
9.	SUPPORTING STRUCTURES:	Steel
10.	PARTICIPATION WITH OTHER UTILITIES	N/A
11.	PURPOSE OF THE PLANNED TRANSMISSION LINE	To address the identified thermal violations
12.	CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION	Increased risk of equipment failure, reliability, and operational issues
13.	MISCELLANEOUS:	
1.	LINE NAME AND NUMBER:	Cottrell Park - East Wheelersburg (s2464 TP2015095)
2.	POINTS OF ORIGIN AND TERMINATION	Cottrell Park - East Wheelersburg INTERMEDIATE STATIONS - N/A
3.	RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS	0.25 miles / 100 ft. / 1 circuit
4.	VOLTAGE: DESIGN / OPERATE	138 kV / 138 kV
5.	APPLICATION FOR CERTIFICATE:	2023
6.	CONSTRUCTION:	2026 - 2027
7.	CAPITAL INVESTMENT:	$0.57M
8.	PLANNED SUBSTATION:	Cottrell
9.	SUPPORTING STRUCTURES:	Steel

12	**CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION**	Increased risk of equipment failure, reliability, and operational issues
13	**MISCELLANEOUS:**	
1	**LINE NAME AND NUMBER:**	Hemlock - Bryson (s2434 TP2020091)
2	**POINTS OF ORIGIN AND TERMINATION**	Hemlock - Bryson INTERMEDIATE STATIONS - N/A
3	**RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS**	4.12 miles / 60 ft / 1 circuit
4	**VOLTAGE: DESIGN / OPERATE**	69 kV / 69 kV
5	**APPLICATION FOR CERTIFICATE:**	N/A
6	**CONSTRUCTION:**	2023-2025
7	**CAPITAL INVESTMENT:**	$9.05M
8	**PLANNED SUBSTATION:**	Bryson
9	**SUPPORTING STRUCTURES:**	Steel
10	**PARTICIPATION WITH OTHER UTILITIES**	N/A
11	**PURPOSE OF THE PLANNED TRANSMISSION LINE**	Build single circuit line to customer site
12	**CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION**	Unable to provide requested service to customer
13	**MISCELLANEOUS:**	
1	**LINE NAME AND NUMBER:**	East Wheelersburg - Sadiq SW (b2604 TP2015095)
2	**POINTS OF ORIGIN AND TERMINATION**	East Wheelersburg - Sadiq SW INTERMEDIATE STATIONS - N/A

3	**RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS**	0.2 miles / 100 ft. / 1 circuit
4	**VOLTAGE: DESIGN / OPERATE**	138 kV / 138 kV
5	**APPLICATION FOR CERTIFICATE:**	2024
6	**CONSTRUCTION:**	2026 - 2027
7	**CAPITAL INVESTMENT:**	$2.21M
8	**PLANNED SUBSTATION:**	Sweetgum
9	**SUPPORTING STRUCTURES:**	Steel
10	**PARTICIPATION WITH OTHER UTILITIES**	N/A
11	**PURPOSE OF THE PLANNED TRANSMISSION LINE**	To address the identified thermal violations
12	**CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION**	Increased risk of equipment failure, reliability, and operational issues
13	**MISCELLANEOUS:**	
1	**LINE NAME AND NUMBER:**	Sadiq SW - Sweetgum (b2604 TP2015095)
2	**POINTS OF ORIGIN AND TERMINATION**	Sadiq SW - Sweetgum INTERMEDIATE STATIONS - N/A
3	**RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS**	1.4 miles / 100 ft. / 1 circuit
4	**VOLTAGE: DESIGN / OPERATE**	138 kV / 138 kV
5	**APPLICATION FOR CERTIFICATE:**	2024
6	**CONSTRUCTION:**	2026 - 2027
7	**CAPITAL INVESTMENT:**	$2.35M
8	**PLANNED SUBSTATION:**	Sweetgum

Appendix C Easement Form

Line Name:
Line No.: TLN___:___ **Easement No.:**

SUPPLEMENTAL EASEMENT AND RIGHT OF WAY

On this ___ day of _____, 2024, **Landowner(s),** whose address is landowner tax/mailing address, ("Grantor"), whether one or more persons, owns an interest in a tract of real property that is more particularly described lands of the Grantor, situated in the State of Ohio, _____ County, _____ Township, rest of legal description, in that certain document, dated date signed recorded in type of book, volume number, page number, of the real property records of _____ County, Ohio, and such tract is subject to easements and rights-of-way granted in favor of Ohio Power Company.

Ohio Power Company, a(n) Ohio corporation, a unit of American Electric Power, whose principal business address is 1 Riverside Plaza, Columbus, Ohio 43215, ("AEP") is the current owner and holder of the rights, title, and interest, or a portion thereof, granted in or arising under that certain right of way and easement, dated date signed, and recorded in type of book, volume number, page number of the official records of _____ County, Ohio (the "Original Easement").

NOW, THEREFORE, in consideration of the sum of Ten and NO/100 Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants, conveys and warrants this Supplemental Easement and Right of Way ("Easement") to AEP for electric transmission, distribution, and communication lines and appurtenant equipment and fixtures to supplement the Original Easement insofar as it encumbers such tract of real property owned by Grantor as more particularly described above.

Auditor/Key/Tax Number: parcel number

The location, width, and boundaries of the easement area are hereby revised, modified, and clarified to be as described and depicted on Exhibit "A", attached hereto and made a part hereof ("Easement Area").

The Easement is also supplemented by the addition of the following language:

AEP, its successors and assigns, are granted the right to construct, reconstruct, operate, maintain, alter, inspect and patrol (by ground or air), protect, repair, replace, renew, upgrade, relocate within

the Easement Area, remove and replace poles, towers, and structures, made of wood, metal, concrete or other materials, including crossarms, guys, anchors, anchoring systems, grounding systems, communications facilities, and all other appurtenant equipment and fixtures, and to string conductors, wires and cables. The electric facilities may consist of a variable number of towers, poles, wires, guys, anchors and associated fixtures, including the right to enlarge, and may transmit electricity of any voltage or amperage, together with the right to add to said facilities from time to time, and the right to do anything necessary, useful or convenient for the enjoyment of the Easement Area herein granted, together with the privilege of removing at any time any or all of said facilities erected on the Easement Area.

AEP and its successors and assigns, shall have the right, in AEP's reasonable discretion, to cut down, trim, and otherwise control, using herbicides or tree growth regulators, or other means, and at AEP's option, to remove from the Easement Area any and all trees, overhanging branches, vegetation, brush, or other obstructions. AEP shall also have the right to cut down, trim, remove, and otherwise control trees situated on lands of the Grantor which adjoin the Easement Area, when in the reasonable opinion of AEP those trees may endanger the safety of, or interfere with the construction, operation or maintenance of AEP's facilities or ingress or egress to, from or along the Easement Area.

AEP and its successors and assigns are granted the right of unobstructed ingress and egress, at any and all times, on, over, across, along and upon the Easement Area, and across the adjoining lands of Grantor as may be reasonably necessary to access the Easement Area for the above referenced purposes.

In no event shall Grantor, its heirs, successors, and assigns plant or cultivate any trees or place, construct, install, erect or permit any temporary or permanent building, structure, improvement or obstruction including but not limited to, storage tanks, billboards, signs, sheds, dumpsters, light poles, water impoundments, above ground irrigation systems, swimming pools or wells, or permit any alteration of the ground elevation, over or within the Easement Area. AEP may, at Grantor's cost, remove any structure or obstruction if placed within the Easement Area and may re-grade any alterations of the ground elevation within the Easement Area. AEP shall repair or pay Grantor for actual damages to growing crops, fences, gates, field tile, drainage ways, drives, or lawns caused by AEP in the exercise of the rights herein granted.

The failure of AEP to exercise any of the rights granted herein, including but not limited to the removal of any obstructions from the Easement Area, shall not be deemed to constitute a waiver of the rights granted herein and the removal of any facilities from the Easement Area shall not be deemed to constitute a permanent abandonment or release of the rights granted herein.

Except as modified by this Supplemental Easement and Right of Way, all terms and provisions of the Original Easement and all rights arising in connection with the Original Easement shall remain in full force and effect, and the Original Easement shall keep its priority in title as of the date of its recording. Those provisions and rights are expressly ratified, reaffirmed by and incorporated within this Supplemental Easement and Right of Way. The Original Easement along with this

Supplemental Easement and Right of Way shall for all purposes function as a single instrument, however, to the extent any terms or provisions of the Original Easement conflict with, limit or are inconsistent with any term or provision of the Supplemental Easement and Right of Way, the terms and provisions of this Supplemental Easement and Right of Way shall control. Nothing herein will in any manner vary, change, modify, or restrict the rights and privileges that AEP may have acquired through any instrument other than the Original Easement or by any other means.

The terms and conditions as supplemented by this instrument, are the complete agreement, expressed or implied between the parties hereto and shall inure to the benefit of and be binding on their respective successors, assigns, heirs, executors, administrators, lessees, tenants, licensees, and legal representatives.

This instrument may be executed in counterparts, each of which will be deemed an original, but all of which taken together will constitute one and the same instrument.

Any remaining space on this page intentionally left blank. See next page(s) for signature(s).

IN WITNESS WHEREOF, the Grantor has executed this Easement effective the day, month and year first above written.

GRANTOR

By: _____

State of _____ §

County of _____ §

The foregoing instrument was acknowledged before me this _____ day of _____, 2024, by .

_____
Notary Public
Print Name: _____
My Commission Expires:_____

IN WITNESS WHEREOF, the Grantor has executed this Easement effective the day, month and year first above written.

GRANTOR

State of _____ §

County of _____ §

The foregoing instrument was acknowledged before me this _____ day of _____, 2024, by .

_____
Notary Public
Print Name: _____
My Commission Expires:_____

This instrument prepared by Thomas G. St. Pierre, Associate General Counsel - Real Estate, American Electric Power Service Corporation, 1 Riverside Plaza, Columbus, OH 43215 for and on behalf of Ohio Power Company, a unit of American Electric Power.

When recorded return to: American Electric Power - Transmission Right of Way, 8600 Smiths Mill Road, New Albany, OH 43054.

Appendix D Agency Coordination

Ohio Department of Natural Resources

MIKE DEWINE, GOVERNOR MARY MERTZ, DIRECTOR

Office of Real Estate
John Kessler, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6621
Fax: (614) 267-4764

January 14, 2022

Michelle Kearns
Stantec Consulting Services Inc.
1500 Lake Shore Drive, Suite 100
Columbus, Ohio 43204

Re: 21-1132; AEP Sadiq Switch - E. Wheelersburg Line Rebuild Project

Project: The proposed project involves a centerline rebuild approximately 2 miles in length.

Location: The proposed project is located in Scioto County, 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 no records at or within a one-mile radius of the project area.

A review of the Ohio Natural Heritage Database indicates there are no other records of state endangered or threatened plants or animals within the project area. There are also no records of state potentially threatened plants, special interest or species of concern animals, or any federally listed species. In addition, we are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, state nature preserves, state or national parks, state or national forests, national wildlife refuges, or other protected natural areas 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.

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

The DOW recommends that impacts to streams, 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 entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally threatened species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH $\geq$ 20 if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "*OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING*". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW (contact Erin Hazelton at Erin.hazelton@dnr.ohio.gov).

The DOW also recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the project area. Direction on how to conduct habitat assessments can be found in the current USFWS "*Range-wide Indiana Bat Survey Guidelines*." If a habitat assessment finds that a potential hibernaculum is present within 0.25 miles of the project area, please send this information to Erin Hazelton for project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with the DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

The project is within the range of the following listed mussel species.

Federally Endangered

clubshell (*Pleurobema clava*)	purple cat's paw (*Epioblasma o. obliquata*)
fanshell (*Cyprogenia stegaria*)	rayed bean (*Villosa fabalis*)
northern riffleshell (*Epioblasma torulosa rangiana*)	sheepnose (*Plethobasus cyphyus*)
pink mucket (*Lampsilis orbiculata*)	snuffbox (*Epioblasma triquetra*)

State Endangered

butterfly (*Ellipsaria lineolata*)	Ohio pigtoe (*Pleurobema cordatum*)
ebonyshell (*Fusconaia ebena*)	pyramid pigtoe (*Pleurobema rubrum*)
elephant-ear (*Elliptio crassidens crassidens*)	sharp-ridged pocketbook (*Lampsilis ovate*)
little spectaclecase (*Villosa lienosa*)	wartyback (*Quadrula nodulata*)
long-solid (*Fusconaia maculata maculata*)	washboard (*Megalonaias nervosa*)
monkeyface (*Quadrula metanevra*)	yellow sandshell (*Lampsilis teres*)

State Threatened

black sandshell (*Ligumia recta*)
fawnsfoot (*Truncilla donaciformis*)
threehorn wartyback (*Obliquaria reflexa*)

Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species.

The project is within the range of the following listed fish species.

State Endangered

bigeye shiner (*Notropis boops*)
gilt darter *(Percina evides)*
goldeye (*Hiodon alosoides*)
mountain madtom (*Noturus eleutherus*)
northern brook lamprey (*Ichthyomyzon fossor*)
northern madtom (*Noturus stigmosus*)
popeye shiner (*Notropis ariommus*)
shoal chub (*Macrhybopsis hyostoma*)
shortnose gar (*Lepisosteus platostomus*)
shovelnose sturgeon (*Scaphirhynchus-platorynchus*)

State Threatened

American eel (*Anguilla rostrata*)
blue sucker (*Cycleptus elongatus*)
channel darter (*Percina copelandi*)
paddlefish (*Polyodon spathula*)
river darter (*Percina shumardi*)
Tippecanoe darter (*Etheostoma tippecanoe*)

The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact these or other aquatic species.

The project is within the range of the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federal species of concern. This long-lived, entirely aquatic salamander inhabits perennial streams with large flat rocks. In-water work in hellbender streams can reduce availability of large cover rocks and can destroy hellbender nests and/or kill adults and juveniles. The contribution of additional sediment to hellbender streams can smother large cover rocks and gravel/cobble substrate (used by juveniles), making them unsuitable for refuge and nesting. Projects that contribute to altered flow regimes (e.g., by increasing areas of impervious surfaces or modifying the floodplain) can also adversely affect hellbender habitat. 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 within the range of the timber rattlesnake (*Crotalus horridus horridus*), a state endangered species, and a federal species of concern. The timber rattlesnake is a woodland species. In addition to using wooded areas, the timber rattlesnake also utilizes sunlit gaps in the canopy for basking and deep rock crevices known as den sites for overwintering. Due to the location, the type of habitat within the project area, and the type of work proposed, 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, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the green salamander (*Aneides aeneus*), a state endangered amphibian. The DOW recommends that an approved herpetologist conducts a habitat suitability survey to determine if suitable habitat is present within the project area. If suitable habitat is determined to be present; the DOW recommends that a presence/absence survey be conducted, or an avoidance/minimization plan be developed and implemented by the approved herpetologist.

The project is within the range of the midland mud salamander (*Pseudotriton montanus diastictus*), a state threatened species. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the Allegheny woodrat (*Neotoma magister*), a state endangered species. The Allegheny woodrat utilizes rocky outcrops such as cliffs and caves in forested areas. To avoid impacts to this species, impacts to cliffs and rocky outcrops should be avoided. In addition, a buffer of 100 feet above and 200 feet below cliffs and rocky outcrops should be maintained. Due to the location, the type of habitat within the project area, and the type of work proposed, 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.

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.

http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community%20Contact%20List_8_16.pdf

ODNR appreciates the opportunity to provide these comments. Please contact Mike Pettegrew at mike.pettegrew@dnr.ohio.gov if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator (Acting)

From:	Ohio, FW3
To:	Kearns, Michelle
Cc:	nathan.reardon@dnr.state.oh.us; Parsons, Kate; Teitt, Matthew; Grant S Stuller
Subject:	Sadiq Switch to East Wheelersburg, 138 kV Transmission Line Rebuild Project, Scioto County, Ohio
Date:	Monday, December 20, 2021 10:59:55 AM
Attachments:	image.png image.png

TAILS# 03E15000-2022-TA-0488

Dear Ms. Kearns,

The U.S Fish and Wildlife Service (Service) has received your recent correspondence requesting information about the subject proposal. We offer the following comments and recommendations to assist you in minimizing and avoiding adverse impacts to threatened and endangered species pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq), as amended (ESA).

Federally Threatened and Endangered Species: The endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*) occur throughout the State of Ohio. The Indiana bat and northern long-eared bat may be found wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and breed that may also include adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, woodlots, fallow fields, and pastures. Roost trees for both species include live and standing dead trees ≥3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities. These roost trees may be located in forested habitats as well as linear features such as fencerows, riparian forests, and other wooded corridors. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves, rock crevices and abandoned mines.

Seasonal Tree Clearing for Federally Listed Bat Species: Should the proposed project site contain trees ≥3 inches dbh, we recommend avoiding tree removal wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, we recommend removal of any trees ≥3 inches dbh only occur between October 1 and March 31. Seasonal clearing is recommended to avoid adverse effects to Indiana bats and northern long-eared bats. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see http://www.fws.gov/midwest/endangered/mammals/nleb/index.html), incidental take of Indiana bats is still prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.
If implementation of this seasonal tree cutting recommendation is not possible, a summer presence/absence survey may be conducted for Indiana bats. If Indiana bats are not detected during the survey, then tree clearing may occur at any time of the year. Surveys must be

conducted by an approved surveyor and be designed and conducted in coordination with the Ohio Field Office. Surveyors must have a valid federal permit. Please note that in Ohio summer mist net surveys may only be conducted between June 1 and August 15.

Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), then no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend 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. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing project impacts to all wetland habitats (e.g., forests, streams, vernal pools) to the maximum extent possible in order to benefit water quality and fish and wildlife habitat. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the U.S. Army Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. Disturbed areas should be mulched and revegetated with native plant species. In addition, prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or 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, coordination with the Service should be initiated to assess any potential impacts.

Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed project to affect state listed species and/or state lands. Contact Mike Pettegrew, Acting Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.state.oh.us.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,

Patrice Ashfield
Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW
Kate Parsons, ODNR-DOW

In reply, refer to
2022-SCI-53601

February 9, 2022

Mr. Ryan J. Weller
Weller & Associates, Inc.
1395 West Fifth Avenue
Columbus, Ohio 43212

RE: Sadiq Switch-East Wheelersburg 138kV Transmission Line Rebuild Project in Porter Township, Scioto County, Ohio

Dear Mr. Weller:

This letter is in response to the correspondence received January 12, 2022 regarding the proposed Sadiq Switch-East Wheelersburg 138kV Transmission Line Rebuild Project in Porter Township, Scioto County, Ohio. We appreciate the opportunity to comment on this project. The comments of the Ohio State Historic Preservation Office (SHPO) are made pursuant to Section 149.53 of the Ohio Revised Code and the Ohio Power Siting Board rules for siting this project (OAC 4906-5). The comments of the Ohio SHPO are also submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. 306108 [36 CFR 800]).

The following comments pertain to the *Phase I Archaeological Survey for the 3.2 km (2.0 mi) Sadiq Switch-East Wheelersburg 138kV Transmission Line Rebuild Project in Porter Township, Scioto County, Ohio* by Ryan J. Weller (Weller & Associates, Inc. 2022).

A literature review, visual inspection, surface collection, and shovel test unit excavation was completed as part of the investigations. No previously identified archaeological sites are located within the project area and no new archaeological sites were identified during survey. Our office agrees no additional archeological investigation is needed.

The following comments pertain to the *History/Architecture Investigations for the Investigations for the .2 km (2.0 mi) Sadiq Switch-East Wheelersburg 138kV Transmission Line Rebuild Project in Porter Township, Scioto County, Ohio* by Austin White (Weller & Associates, Inc. 2022).

A literature review and field survey were completed as part of the investigations. A total of three (3) properties 50 years of age or older were identified within the Area of Potential Effects (APE) during the field survey. It is Weller's recommendation that none of these properties are eligible for listing in the National Register of Historic Places (NRHP). Our office agrees with Weller's recommendations regarding eligibility. No further architectural survey is recommended.

Based on the information provided, we agree that the project as proposed will have no effect on historic properties. No further coordination with this office is necessary, unless the project changes or unless new or additional historic properties are discovered during implementation of this project. In such a situation, this office should be contacted. If you have any questions, please contact me at (614) 298-2022, or by e-mail at khorrocks@ohiohistory.org, or Joy Williams at jwilliams@ohiohistory.org. Thank you for your cooperation.

Sincerely,

Krista Horrocks, Project Reviews Manager
Resource Protection and Review

RPR Serial No: 1091619-1091620

Michelle Kearns
Stantec Consulting Services, Inc.
1500 Lake Shore Drive, Suite 100
Columbus, Ohio 43204

Report on a Green Salamander (*Aneides aeneus*) Habitat Assessment at the Sadiq Switch-East Wheelersburg 138 kV Transmission Line Rebuild Project in Scioto County, Ohio.

Stantec Project No. 193708590
ODNR Project No. 21-1132

May 20, 2023

The Habitat Assessment for the Green Salamander along the Sadiq Switch–East Wheelersburg 138 kV Transmission Line Rebuild Project in Scioto County, Ohio is complete. Visits to four potential Eastern Spadefoot breeding sites were conducted on May 19, 2023. They include….

- Area of Interest 1 38.72009° N, -82.81903° W
- Area of Interest 2 38.71498° N, -82.82253° W
- Area of Interest 3 38.71396° N, -82.82322° W
- Area of Interest 4 38.70609° N, -82.82882° W

None of these sites had the cliffs or outcrops Green Salamanders inhabit. I recommend no further consideration regarding the Green Salamander along the Sadiq Switch-East Wheelersburg 138 kV Transmission Line Rebuild Project in Scioto County, Ohio.

A copy of this summary and the final report should be forwarded to Nathan Reardon, ODNR's Compliance Coordinator (Nathan.Reardon@dnr.state.oh.us).

If there are questions regarding the report, I will be pleased to address them.

Jeffrey G. Davis

ODNR Approved Herpetologist
ohiofrogs@gmail.com
513-470-8748

From: Nathan.Reardon@dnr.ohio.gov
To: Kearns, Michelle
Cc: Ann.Schweitzer@dnr.ohio.gov; Mike.Pettegrew@dnr.ohio.gov; Shannon T Hemmerly
Subject: [EXTERNAL] RE: AEP Sadiq - E. Wheelersburg Green Salamander Habitat Assessment Report
Date: Tuesday, September 12, 2023 8:39:12 AM
Attachments: image004.png
image001.png

Hello Michelle,

Thank you for providing Mr. Davis's habitat assessment report. The DOW concurs with the assessment that suitable habitat is not present. No further action is warranted.

Thank you,
Nathan

Nathan Reardon
Compliance Coordinator
ODNR Division of Wildlife
2045 Morse Road
Columbus, OH 43229
Phone: 614-265-6741
Email: nathan.reardon@dnr.ohio.gov

From: Pettegrew, Mike <Mike.Pettegrew@dnr.ohio.gov>
Sent: Friday, September 8, 2023 3:34 PM
To: Reardon, Nathan <Nathan.Reardon@dnr.ohio.gov>
Cc: Schweitzer, Ann <Ann.Schweitzer@dnr.ohio.gov>
Subject: FW: AEP Sadiq - E. Wheelersburg Green Salamander Habitat Assessment Report

Nate

Can you review and provide concurrence (or comments if applicable). Thanks and have a good weekend.

Mike Pettegrew
Environmental Services Administrator
Ohio Department of Natural Resources, Office of Real Estate & Land Management
2045 Morse Road, Building E-2
Columbus, Ohio 43229
Office: (614) 265-6387
mike.pettegrew@dnr.ohio.gov
https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/real-estate/environmental-review/

From: Kearns, Michelle <Michelle.Kearns@stantec.com>
Sent: Friday, September 8, 2023 2:56 PM
To: Pettegrew, Mike <Mike.Pettegrew@dnr.ohio.gov>
Cc: Shannon T Hemmerly <sthemmerly@aep.com>
Subject: AEP Sadiq - E. Wheelersburg Green Salamander Habitat Assessment Report

Hello Mr. Pettegrew,

On behalf of American Electric Power (AEP) and as requested in the attached Ohio Department of Natural Resources (ODNR) Environmental Review request response letter for the Sadiq – E. Wheelersburg Line Rebuild Project (ODNR Project No. 21-1132). ODNR-approved herpetologist Jeff Davis completed habitat assessment field surveys for potential green salamander (*Aneides aeneus*; state-listed endangered) habitat within these project area. Attached is the green salamander habitat assessment report prepared by Mr. Davis.

Four potential breeding sites were visited on May 19, 2023, but none of the sites had cliffs or outcrops that green salamanders inhabit. No further consideration regarding the green salamander along the Sadiq – E. Wheelersburg Line Rebuild Project area. Therefore, we are requesting your concurrence that green salamander presence/absence surveys will not be warranted/required for the project prior to initiation of tree clearing and construction activities.

Thanks in advance for your assistance!

Michelle

Michelle Kearns
PWS
Senior Environmental Scientist

Direct: (614) 643-4412
Mobile: (614) 256-3462
Fax: (614) 486-4387

Appendix E Ecological Survey Report

Sadiq Switch – East Wheelersburg 138 kV Line Rebuild Project
Scioto County, Ohio

Ecological Survey Report

Prepared for:

AEP Ohio Transmission Company, Inc.
8600 Smiths Mill Road
New Albany, OH 43054

Prepared by:

Stantec Consulting Services Inc.
1500 Lake Shore Drive, Suite 100
Columbus, OH 43204

October 28, 2022

Sign-off Sheet

This document entitled Sadiq Switch – East Wheelersburg 138 kV Line Rebuild Project Ecological Survey Report was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of AEP Ohio Transmission Company, Inc. (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by 

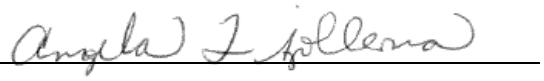
(signature)

Tyler Gillette

Reviewed by 

(signature)

Michelle Kearns

Reviewed by 

(signature)

Angela Sjollema

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1.0 INTRODUCTION

AEP Ohio Transmission Company, Inc. (AEP) is proposing to remove deteriorating structures along the existing 138 kilovolt (kV) electric transmission line between Sadiq Switch and the East Wheelersburg Station in Scioto County, Ohio. The Sadiq Switch – East Wheelersburg 138 kV Line Rebuild Project (the Project) is located southeast of Garden City and extends northeast to east of Wheelersburg in Porter Township, Scioto County, Ohio. The Project will include a 138 kV centerline rebuild and associated access roads within AEP right-of-way (ROW; Figure 1, Appendix B). An approximate 46.7-acre study area for the proposed line rebuild and access roads was surveyed for wetlands, waterbodies, open water features, upland drainage features, and potential threatened, endangered, and rare species habitat by Stantec Consulting Services Inc. (Stantec) biologists on February 28, March 1, March 8-10, and September 1-2, 2022 (Figure 2, Appendix B). The approximate locations of features located up to 50 feet outside of the Project area were also recorded during the field surveys, where landowner access was permitted. However, no data forms were collected on features that did not extend into the Project area. These features are shown on the Figure 2 maps in Appendix B as "approximate" wetlands, streams (waterways), open waters, and upland drainage features.

2.0 METHODS

2.1 WETLAND DELINEATION

Prior to completing the field surveys, a desktop review of the Project area was conducted using U.S. Geological Survey (USGS) topographic maps, National Wetlands Inventory (NWI) maps, U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey data, and aerial imagery mapping. Stantec completed a wetland delineation study in accordance with the *Corps of Engineers Wetlands Delineation Manual* (USACE Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (Version 2.0; USACE 2012). Wetland categories were classified using the Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 (Mack 2001).

2.2 STREAM DELINEATION

Streams that demonstrated a continuously defined channel (bed and bank), ordinary high water mark (OHWM), and the disturbance of terrestrial vegetation were delineated within the Project area, per the protocols outlined in the USACE's Guidance on Ordinary High Water Mark Identification (Regulatory Guidance Letter, No. 05-05; USACE 2005). Delineated streams were classified as ephemeral, intermittent, or perennial per definitions in the Federal Register/Vol. 67, No. 10 (USACE 2002) and determined as potential Waters of the U.S (WOTUS) in reference to the current guidance per interpretation of WOTUS that is consistent with the pre-2015 regulatory regime (40 CFR 230.3(s)) (USEPA 2022). Functional assessment of streams within the Project area was based on completion of the Ohio Environmental Protection Agency's (OEPA) Headwater Habitat Evaluation Index (HHEI; OEPA 2020) and/or Qualitative Habitat Evaluation Index (QHEI; OEPA 2006). The centerline and/or the OHWM locations of each waterway were identified and surveyed using a handheld sub-meter accuracy global positioning system (GPS) unit and mapped with geographic information system (GIS) software. Additionally, the locations of upland drainage features (which lacked a continuously defined bed and bank/OHWM) identified within the Project area were also recorded with a sub-meter accuracy GPS unit during the field surveys.

2.3 RARE SPECIES

Prior to conducting the field surveys, Stantec contacted the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS) for information regarding rare, threatened, or endangered species and their habitats of concern within the vicinity of the Project area (Appendix E – Agency Correspondence). To assess potential impacts to rare, threatened, or endangered species, Stantec scientists conducted a pedestrian reconnaissance of the Project area, collected information on existing habitats within the Project area, and assessed the potential for these habitats to be used by these species.

3.0 RESULTS

3.1 TERRESTRIAL HABITAT

Stantec completed field surveys within the Project area on February 28, March 1, March 8-10, and September 1-2, 2022, and, for potentially suitable habitats for threatened and endangered species. Figure 3 (Appendix B) shows the land cover, vegetation communities, and any identified rare, threatened, or endangered species habitats observed within the Project area during the habitat assessment surveys. Representative photographs of the vegetation communities/habitats identified within the Project area are included in Appendix E-4 of this report (photo locations are shown on Figure 3 in Appendix B). Information regarding the vegetation communities/habitats identified within the Project area is provided in Table 1.

Table 1. Vegetation Communities and Land Cover Found within the Sadiq Switch – East Wheelersburg 138 kV Line Rebuild Project, Scioto County, Ohio

Vegetation Communities and Land Cover Types within the Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
Early Successional Forest	Moderate to Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa, and structures). Dominant species included red maple (*Acer rubrum*), box elder (*Acer negundo*), raspberry sp. (*Rubus* sp.), Scotch pine (*Pinus sylvestris*), Japanese honeysuckle (*Lonicera japonica*), multiflora rose (*Rosa multiflora*), American beech (*Fagus grandifolia*), broom sedge (*Andropogon virginicus*), Canadian goldenrod (*Solidago canadensis*), honey locust (*Gleditsia triacanthos*), eastern white pine (*Pinus strobus*), redtop (*Tridens flavus*), sugar maple (*Acer saccharum*), American elm (*Ulmus americana*), black cherry (*Prunus serotina*), northern red oak (*Quercus rubra*), shagbark hickory (*Carya ovata*), tulip poplar (*Liriodendron tulipifera*), American sycamore (*Platanus occidentalis*), poison ivy (*Toxicodendron radicans*), common hackberry (*Celtis occidentalis*), and eastern cottonwood (*Populus deltoides*).	No	19.10

Vegetation Communities and Land Cover Types within the Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
Second Growth Deciduous Forest	Intermediate disturbance (dominated by plants that typify a stable phase of a native community that persists under some disturbance). Dominant species included tulip poplar, black cherry, box elder, raspberry sp., multiflora rose, sugar maple, American elm, northern red oak, and white oak (*Quercus alba*).	No	6.69
Pasture	Moderate to Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa, and structures). Dominant plant species included broom sedge, calico aster (*Symphyotrichum lateriflorum*), multiflora rose, raspberry sp., deer-tongue rosette grass (*Dichanthelium clandestinum*), nodding onion (*Allium cernuum*), Canadian goldenrod, red fescue (*Festuca rubra*), soft rush (*Juncus effusus*), Kentucky bluegrass (*Poa pratensis*), and American beech.	No	4.50
Old Field	Moderate to Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa, and structures). Dominant plant species included broom sedge, calico aster, multiflora rose, raspberry sp., deer-tongue rosette grass, nodding onion, Canadian goldenrod, red fescue, soft rush, Kentucky bluegrass, and American beech.	No	4.36
Maintained ROW	Extreme Disturbance/ Ruderal Community (dominated by opportunistic invaders or native highly tolerant taxa). Dominant plant species included broom sedge, calico aster, multiflora rose, raspberry sp., deer-tongue rosette grass, nodding onion, Canada goldenrod, red fescue, soft rush, Kentucky bluegrass, and American beech.	No	6.73
Agricultural Field	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa). Dominant plant species	No	1.83

Vegetation Communities and Land Cover Types within the Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
	included corn (*Zea mays*) and winter wheat (*Triticum aestivum*).		
Existing Roadway	Extreme Disturbance/ Ruderal Community (free of vegetation or dominated by opportunistic invaders, planted non-native species, and native highly tolerant taxa).	No	0.76
Clear Cut	Moderate to Extreme Disturbance/ Ruderal Community (free of vegetation and/or dominated by opportunistic invaders, planted nonnative species, and native highly tolerant taxa).	No	1.47
Maintained Lawn	Extreme Disturbance/ Ruderal Community (free of vegetation or dominated by opportunistic invaders, planted non-native species, and native highly tolerant taxa). Dominant plant species included broom sedge, calico aster, multiflora rose, raspberry sp., deer-tongue rosette grass, nodding onion, Canada goldenrod, red fescue, soft rush, Kentucky bluegrass, and American beech.	No	0.65
Industrial Land	Extreme Disturbance/ Ruderal Community (free of vegetation or dominated by opportunistic invaders, planted non-native species, and native highly tolerant taxa).	No	0.60
Palustrine Emergent Wetland (PEM)	Intermediate disturbance (dominated by plants that typify a stable phase of a native community that persists under some disturbance). Dominant plant species included dark green bulrush (*Scirpus atrovirens*), sensitive fern (*Onoclea sensibilis*), woolgrass (*Scirpus cyperinus)*, calico aster, deer-tongue rosette grass, and soft rush.	No	0.03
		TOTAL	**46.72**

3.2 WETLANDS

Desktop analysis determined that the Project area contains five NWI features. Field surveys conducted on February 28, March 1, March 8-10, and September 1-2, 2022 determined that all five NWI features contained streams.

Stantec identified two wetlands within the Project area. Figure 2 (Appendix B) shows the location of the wetlands identified by Stantec within the Project area. Representative wetland photographs are included in Appendix D-1 of this report (photo locations are shown on Figure 2, Appendix B). Completed wetland determination and ORAM data forms are included in Appendix C. Information regarding the wetland resources within the Project area and proposed impacts is summarized in Table 2 and Appendix A.

Table 2. Summary of Wetland Resources Found within the Sadiq Switch – East Wheelersburg 138 kV Line Rebuild Project, Scioto County, Ohio

Wetland ID	Location			Isolated?[2]	Habitat Type[3,4]	Delineated Area (acre)	ORAM[5]		Nearest Proposed Structure Number	Existing Structure Number in Wetland	Proposed Structure Number in Wetland	Structure Installation Method	Proposed Impacts	
	Latitude	Longitude	Photo Location[1]				Score	Category					Temporary Matting Area (acre)	Permanent Impact Area (acre)
Wetland 1	38.71388	-82.82332	9	No	PEM	0.01	21	1	6	None	N/A	N/A	TBD	TBD
Wetland 2	38.71950	-82.81935	15	No	PEM	0.02	28	1	4	None	N/A	N/A	TBD	TBD
					Total:	**0.03**						**Total:**	**TBD**	**TBD**

[1] Appendix B - Figure 2 and Appendix D – Photo log D-1
[2] Pending USACE jurisdictional review
[3] Habitat type based on Cowardin et al. (1979).
[4] PEM = Palustrine Emergent Wetland
[5] ORAM Score and Category are based on the Ohio Rapid Assessment Method for Wetland v. 5.0 (Mack 2001).

Table 3. Summary of NWI Disposition Found within the Sadiq Switch – East Wheelersburg 138 kV Line Rebuild Project Area, Scioto County, Ohio

NWI Code	NWI Description	Figure 2 Page Number	Related Field Inventoried Resource	Comments
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded	2, 3	Stream 3	Stream 3 was delineated as an intermittent stream channel.
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded	3	Stream 4A	Stream 4A was delineated as an intermittent stream channel.
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded	5	Stream 10	Stream 10 was delineated as an intermittent stream channel.
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded	7	Stream 13A	Stream 13A was delineated as an intermittent stream channel.
R2UBH	Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded	7, 8	Stream 13	Stream 13 was delineated as a perennial stream channel.

3.3 STREAMS

Stantec completed field surveys within the Project area on February 28, March 1, March 8-10, and September 1-2. 2022, for waterbodies (streams). Stantec identified 22 streams including one perennial stream, 14 intermittent streams and seven ephemeral streams within the Project area. Information regarding the streams within the Project area and proposed impacts is summarized in Table 4 and Appendix A. Figure 2 (Appendix B) shows the locations of the streams identified by Stantec within the Project area. Representative photographs of the streams are included in Appendix D-1 of this report (photo locations are shown on Figure 2, Appendix B). Completed HHEI and QHEI data forms are included in Appendix C.

3.4 OPEN WATERS

No open waters (i.e., ponds, lakes) were delineated within the Project area during the field surveys completed from February 28, March 1, March 8-10, and September 1-2, 2022.

Table 4. Summary of Stream Resources Found within the Sadiq Switch – East Wheelersburg 138 kV Line Rebuild Project Area, Scioto County, Ohio

Stream ID	Location			Stream Type[2]	Stream Name	Delineation Length (feet)	Bankfull width (feet)	OHWM width[3] (feet)	Field Evaluation			Ohio EPA 401 Eligibility	Stream Crossing	Proposed Impacts	
	Latitude	Longitude	Photo Location[1]						Method[4]	Score	Category/Rating/ OAC Designation			Fill type	Length LF
Stream 1	38.705335	-82.829257	1	Ephemeral	UNT to Lick Run	65	3	3	HHEI	20	Class I PHW	Possibly Eligible	TBD	TBD	TBD
Stream 2	38.705393	-82.829378	2	Intermittent	UNT to Lick Run	243	6	2	HHEI	70	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 2A	38.705245	-82.829799	2A	Ephemeral	UNT to Lick Run	17	3	1.5	HHEI	26	Class I PHW	Possibly Eligible	TBD	TBD	TBD
Stream 2B	38.705882	-82.829376	2B	Ephemeral	UNT to Lick Run	5	2.5	1	HHEI	15	Modified Class I PHW	Possibly Eligible	TBD	TBD	TBD
Stream 3	38.708323	-82.827333	3	Intermittent	UNT to Lick Run	289	8	5	HHEI	75	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 3A	38.708521	-82.827456	3A	Intermittent	UNT to Lick Run	51	3	3	HHEI	56	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 4	38.708746	-82.827034	4	Intermittent	UNT to Lick Run	287	3	2	HHEI	51	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 4A	38.709815	-82.829155	4A	Intermittent	UNT to Lick Run	13	6	3	HHEI	54	Modified Class II PHWH	Possibly Eligible	TBD	TBD	TBD
Stream 5	38.708853	-82.826641	5	Ephemeral	UNT to Lick Run	9	1.5	1.5	HHEI	29	Class I PHW	Possibly Eligible	TBD	TBD	TBD
Stream 6	38.712394	-82.824399	6	Intermittent	UNT to Lick Run	161	3	1	HHEI	47	Class II PHW	Possibly Eligible	TBD	TBD	TBD
Stream 6A	38.712910	-82.827721	6A	Ephemeral	UNT to Lick Run	20	3	1	HHEI	23	Modified Class I PHW	Possibly Eligible	TBD	TBD	TBD
Stream 7	38.712446	-82.824367	7	Intermittent	UNT to Lick Run	162	4	2	HHEI	66	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 8	38.715422	-82.82223	10	Intermittent	UNT to Lick Run	151	1	1	HHEI	39	Modified Class II PHW	Possibly Eligible	TBD	TBD	TBD
Stream 9	38.715560	-82.822185	11	Ephemeral	UNT to Lick Run	240	1	1	HHEI	39	Modified Class II PHW	Possibly Eligible	TBD	TBD	TBD
Stream 9A	38.716013	-82.822023	11A	Intermittent	UNT to Lick Run	472	5	3	HHEI	57	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 10	38.720075	-82.819111	13, 17A	Intermittent	UNT to Lick Run	634	3	3	HHEI	35	Class II PHW	Possibly Eligible	TBD	TBD	TBD
Stream 11	38.718381	-82.820009	12	Intermittent	UNT to Lick Run	58	5	3	HHEI	69	Class III PHWH	Possibly Eligible	TBD	TBD	TBD
Stream 12	38.721534	-82.818071	17	Intermittent	UNT to Lick Run	142	5	1	HHEI	59	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 12A	38.723113	-82.824947	17B	Ephemeral	UNT to Lick Run	52	2	2	HHEI	37	Class II PHW	Possibly Eligible	TBD	TBD	TBD
Stream 13	38.724864	-82.815453	18, 18A, 18C	Perennial	Lick Run	190	15	8	QHEI	70	Excellent	Possibly Eligible	TBD	TBD	TBD
Stream 13A	38.726335	-82.824255	18B	Intermittent	UNT to Lick Run	307	4	2	HHEI	64	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 14	38.725011	-82.815283	19	Intermittent	UNT to Lick Run	130	3	1	HHEI	25	Modified Class I PHW	Possibly Eligible	TBD	TBD	TBD
Total Delineated Length Within Project Area						**3,698**						**Total Proposed Impacts**			**N/A**

[1] Appendix B – Figure 2 and Appendix D – Photo log D-2
[2] Stream Classification is based on Federal Register/Vol. 67, No. 10 (USACE 2002)
[3] OHWM = Ordinary High Water Mark
[4] HHEI = Headwater Habitat Evaluation Index; QHEI = Qualitative Habitat Evaluation Index

3.5 RARE, THREATENED, OR ENDANGERED SPECIES HABITAT

Table 5. Summary of Potential Federal and Ohio State-Listed Species Found within the Sadiq Switch – East Wheelersburg 138 kV Line Rebuild Project Area, Scioto County, Ohio

Common/Scientific Names	*State Listed Status	*Federally Listed Status	Typical Habitat	Habitat Observed	Agency Comment** (Appendix F)	Potential Impacts and Avoidance Dates
Indiana bat/ *Myotis sodalis*	E	E	The Indiana bat is likely distributed over the entire State of Ohio, though not uniformly. This species generally forages in openings and edge habitats within upland and floodplain forest, but they also forage over old fields and pastures (Brack et al. 2010). Natural roost structures include trees (live or dead) with exfoliating bark, and exposure to solar radiation. Other important factors for roost trees include relative location to other trees, a permanent water source and foraging areas. Dead trees are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007, USFWS 2022). Roosts have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes. Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).	No potentially suitable winter hibernacula were observed within the Project area. However, suitable summer foraging and roosting habitat was observed within the Project area.	**ODNR** - This Project lies within the range of the Indiana bat. Therefore, ODNR DOW recommends that habitat be conserved wherever possible. If suitable habitat occurs within the Project area and trees need to be cut, the ODNR DOW recommends cutting occur between October 1 and March 31. If trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 – August 15, prior to any cutting. In addition, the DOW recommends a desktop habitat assessment, followed by a field assessment if needed, to determine if there are potential hibernacula present within the Project area. **USFWS** - If the proposed Project area contains trees ≥3 inches dbh, the USFWS recommends that trees be saved wherever possible. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, USFWS recommends that removal of any trees ≥3 inches dbh only occur between October 1 and March 31. Seasonal clearing is recommended to avoid adverse effects to Indiana bats.	Potential suitable summer foraging and roosting habitat was observed in the Project area. AEP will determine if any summer tree clearing is necessary in areas containing suitable habitat and will proceed in accordance with agency requirements. **Avoidance Dates: April 1 through September 30**
Northern Long-eared Bat/ *Myotis septentrionalis*	E	T	The northern long-eared bat is found throughout Ohio. This species generally forages in forested habitat and openings in forested habitat and utilizes cracks, cavities, and loose bark within live and dead trees, as well as buildings as roosting habitat (Brack et al. 2010; USFWS 2020). The species utilizes caves and abandoned mines as winter hibernacula. Various sized caves are used providing they have a constant temperature, high humidity, and little to no air current (Brack et al. 2010).	No potentially suitable winter hibernacula were observed within the Project area. However, suitable summer foraging and roosting habitat was observed within the Project area.	**ODNR** - This Project lies within the range of the northern long-eared bat. Therefore, ODNR DOW recommends that habitat be conserved wherever possible. If suitable habitat occurs within the Project area and trees need to be cut, the ODNR DOW recommends cutting occur between October 1 and March 31. If trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 – August 15, prior to any cutting. In addition, the DOW recommends a desktop habitat assessment, followed by a field assessment if needed to determine if there are potential hibernacula present within the Project area. **USFWS** - If the proposed Project area contains trees ≥3 inches dbh, the USFWS recommends that trees be saved wherever possible. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, USFWS recommends that removal of any trees ≥3 inches dbh only occur between October 1 and March 31. Seasonal tree clearing is recommended to avoid adverse effects to the northern long-eared bat. Incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule.	Potential suitable summer foraging and roosting habitat was observed in the Project area. AEP will determine if any summer tree clearing is necessary in areas containing suitable habitat and will proceed in accordance with agency requirements. **Avoidance Dates: April 1 through September 30**

Common/Scientific Names	*State Listed Status	*Federally Listed Status	Typical Habitat	Habitat Observed	Agency Comment** (Appendix F)	Potential Impacts and Avoidance Dates
Little Brown Bat/ *Myotis lucifugus*	E	N/A	This bat uses a wide range of habitats and man-made structures for roosting, including buildings and attics. Less frequently, they use hollows of trees. Winter hibernation sites typically consist of caves, tunnels, abandoned mines. Foraging habitat for this species generally occurs over water, along the edges of lakes and stream or in woodlands near waterbodies (NatureServe 2022).	No potentially suitable winter hibernacula were observed within the Project area. However, suitable summer foraging and roosting habitat was observed within the Project area.	**ODNR** - This Project lies within the range of the little brown bat. Therefore, ODNR DOW recommends that habitat be conserved wherever possible. If suitable habitat occurs within the Project area and trees need to be cut, the ODNR DOW recommends cutting occur between October 1 and March 31. If trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 – August 15, prior to any cutting. In addition, the DOW recommends a desktop habitat assessment, followed by a field assessment if needed, to determine if there are potential hibernacula present within the Project area. **USFWS** - No comments received.	Potential suitable summer foraging and roosting habitat was observed in the Project area. AEP will determine if any summer tree clearing is necessary in areas containing suitable habitat and will proceed in accordance with agency requirements. **Avoidance Dates: April 1 through September 30**
Tricolored Bat/ *Perimyotis subflavus*	E	N/A	This species is found throughout Ohio and is associated with forested landscapes, foraging near trees and along waterways. Maternity and summer roosts usually occur in dead or live tree foliage, or in the south, in clumps of Spanish moss. Maternity colonies may also use tree cavities or man-made structures, such as buildings or bridges. Caves, mines, and rock crevices may be used as night roosts between foraging (NatureServe 2022).	No potentially suitable winter hibernacula were observed within the Project area. However, suitable summer foraging and roosting habitat was observed within the Project area.	**ODNR** - This Project lies within the range of the tricolored bat. Therefore, ODNR DOW recommends that habitat be conserved wherever possible. If suitable habitat occurs within the Project area and trees need to be cut, the ODNR DOW recommends cutting occur between October 1 and March 31. If trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 – August 15, prior to any cutting. In addition, the DOW recommends a desktop habitat assessment, followed by a field assessment if needed, to determine if there are potential hibernacula present within the Project area. **USFWS** - No comments received.	Potential suitable summer foraging and roosting habitat was observed in the Project area. AEP will determine if any summer tree clearing is necessary in areas containing suitable habitat and will proceed in accordance with agency requirements. **Avoidance Dates: April 1 through September 30**
Clubshell/ *Pleurobema clava*	E	E	This is a species of small to medium-sized rivers and streams; generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle, and cannot tolerate mud or slackwater conditions. Despite the type locality of Lake Erie, this is a species of small to medium sized rivers and streams (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - Due to the Project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designed critical habitat.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Fanshell/ *Cyprogenia stegaria*	E	E	Medium to large streams and rivers with moderate to strong current in coarse sand and gravel and depth ranging from shallow to deep (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS -** Due to the Project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designed critical habitat.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Northern Riffleshell/ *Epioblasma torulosa rangiana*	E	E	This species inhabits riffles in small to large streams with swift current and a substrate of firmly packed fine gravel and sand. Preferred habitat is swiftly moving water. The high oxygen concentrations in swift streams may be necessary for survival. It is a species of riffle areas of smaller streams,	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.

Common/Scientific Names	*State Listed Status	*Federally Listed Status	Typical Habitat	Habitat Observed	Agency Comment** (Appendix F)	Potential Impacts and Avoidance Dates
			and as such has fared better than larger river species (NatureServe 2022).		**USFWS -** Due to the Project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designed critical habitat.	
Pink Mucket/ *Lampsilis orbiculata*	E	E	Found in waters with strong currents, rocky or boulder substrates, with depths up to about 1 meter, but is also found in deeper waters with slower currents and sand and gravel substrates (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS -** Due to the Project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designed critical habitat.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Purple Cat's Paw/ *Epioblasma obliquata obliquata*	E	E	Found in Lake Erie tributaries, Ohio River tributaries, and headwater and small inland streams (ODNR Division of Wildlife 2020b).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS -** Due to the Project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designed critical habitat.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Rayed Bean/ *Villosa fabalis*	E	E	Habitat includes gravel or sandy substrate, especially in areas of thick roots of aquatic plants, increase substrate stability (NatureServe 2022, Parmalee and Bogan 1998). Rayed bean can be associated with shoal or riffle areas, and in shallow, wave-washed areas of glacial lakes. It is generally found in smaller, headwater creeks, but sometimes in larger rivers and open-water bodies. It can occur in shallow riffles or in lakes with water depths up to four feet. It has been found in riffles, generally in vegetation, and deeply buried in sand and gravel bound together by roots (Parmalee and Bogan 1998).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS -** Due to the Project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designed critical habitat.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Sheepnose/ *Plethobasus cyphyus*	E	E	Usually found in large rivers in current on mud, sand, or gravel bottoms at depth of 1-2 meters or more (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS -** Due to the Project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designed critical habitat.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Snuffbox/ *Epioblasma triquetra*	E	E	Occurs in medium-sized streams to large rivers generally on mud, rocky, gravel, or sand substrates in flowing water. Often deeply buried in substrate and overlooked by collectors (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS -** Due to the Project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designed critical habitat.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.

Common/Scientific Names	*State Listed Status	*Federally Listed Status	Typical Habitat	Habitat Observed	Agency Comment** (Appendix F)	Potential Impacts and Avoidance Dates
Butterfly/ *Ellipsaria lineolata*	E	N/A	This mussel prefers stable substrate containing rock, gravel and sand in swift currents of large rivers (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Ebonyshell/ *Fusconaia ebena*	E	N/A	Inhabits large rivers and prefers swift water and stable sand or gravel shoals. Coarse sand and gravel substrates provide the most suitable habitat. It can occur at depths of 10-15 feet with current associated (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Elephant-ear/ *Elliptio crassidens crassidens*	E	N/A	An inhabitant of channels in large creeks to rivers with moderate to swift currents, primarily on sand and limestone or rock substrates (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Little Spectaclecase/ *Villosa lienosa*	E	N/A	Typically inhabits small creeks to medium-sized rivers, usually along the banks in slower currents (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Long-solid/ *Fusconaia maculata maculata*	E	N/A	This mussel is found in the gravel substrates of shoals and riffles of large rivers, as well as impounded areas (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Monkeyface/ *Quadrula metanevra*	E	N/A	This is a species of medium to large rivers typically found in runs with a substrate or mixed sand or gravel (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Ohio Pigtoe/ *Pleurobema cordatum*	E	N/A	This mussel prefers strong currents of large rivers with substrates of sand and gravel, though is somewhat tolerant of lentic systems (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.

Common/Scientific Names	*State Listed Status	*Federally Listed Status	Typical Habitat	Habitat Observed	Agency Comment** (Appendix F)	Potential Impacts and Avoidance Dates
Pyramid Pigtoe/ *Pleurobema rubrum*	E	N/A	This mussel is a riffle and shoal species that prefers the swift currents of coarse gravel, sand, and mud substrates within medium to large rivers (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Sharp-ridged Pocketbook/ *Lampsilis ovata*	E	N/A	Very generalized in habitat preference, adapting well to both impoundment situations as well as free-flowing, shallow rivers. Usually found in moderate to strong current, it can survive in standing water. The most suitable substrate consists of a mixture of gravel and coarse sand mixed with some silt or mud (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Wartyback/ *Quadrula nodulata*	E	N/A	This species can occur in medium to large rivers at depths of up to 15-18 feet on a sand and mud substrate (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Washboard/ *Megalonaias nervosa*	E	N/A	This species is typically a large river species, living in the main channel and in some of the overbank areas of reservoirs, but in some instances, it may also become established in medium-sized and even small rivers. It is found in areas with a slow current with muddy to coarse gravel substrates (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Yellow Sandshell/ *Lampsilis teres*	E	N/A	Occurs in medium-sized creeks to large rivers, often in slower current areas of stream borders having sand as primary substrate as well as mud gravel and silt (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Fawnsfoot/ *Truncilla donaciformis*	T	N/A	This species occurs in both large and medium-sized rivers at normal depths varying from less than three feet up to 15 to 18 feet in big rivers such as the Tennessee. A substrate of either sand or mud is suitable and although it is typically found in moderate current, it can adapt to a lake or embayment environment lacking current (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Black Sandshell/ *Ligumia recta*	T	N/A	Typically found in medium-sized to large rivers in locations with strong current and substrates of coarse sand and gravel with cobbles in water depths from several inches to six feet or more (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.

Common/Scientific Names	*State Listed Status	*Federally Listed Status	Typical Habitat	Habitat Observed	Agency Comment** (Appendix F)	Potential Impacts and Avoidance Dates
Threehorn Wartyback/ *Obliquaria reflexa*	T	N/A	This species is typical of the large rivers where there is moderately strong current and a stable substrate composed of gravel, sand, and mud (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Bigeye Shiner/ *Notropis boops*	E	N/A	Flowing pools of moderately clear creeks and small to medium rivers with large permanent pools over bottom of clear sand, gravel, or rock. Often at stream margin in beds of emergent vegetation (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species and their habitat. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30**.
Gilt Darter/ *Percina evides*	E	N/A	This species prefers clear, small to medium rivers with clean, silt-free bottoms and permanently strong flow. This species is usually found in moderate to fast, deep riffles and pools, over gravel, rubble, and small boulders (NatureServe 2022)	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30.**
Goldeye/ *Hiodon alosoides*	E	N/A	Habitat includes quiet turbid water of medium to large lowland rivers, small lakes, ponds, fringe wetlands and muddy shallows of larger lakes. Occurs in shallow firm-bottomed sites in river pools or backwaters or over gravel shoals in tributary streams (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30.**
Mountain Madtom/ *Noturus eleutherus*	E	N/A	Habitat includes deep, swift riffles in large rivers. They prefer cobble and boulder substrates (ODNR Division of Wildlife 2020).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30.**
Northern Brook Lamprey/ *Ichthyomyzon fossor*	E	N/A	Adult lampreys are found in clear brooks with fast flowing water and sand or gravel bottoms. Juveniles are found in slow moving water buried in soft substrate in medium to large streams (ODNR Division of Wildlife 2020).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.

Common/Scientific Names	*State Listed Status	*Federally Listed Status	Typical Habitat	Habitat Observed	Agency Comment** (Appendix F)	Potential Impacts and Avoidance Dates
						Avoidance Dates: March 15 through June 30.
Shovelnose Sturgeon/ *Scaphirhynchus platorynchus*	E	N/A	Habitat includes large rivers with sand and gravel substrates and fast current (ODNR Division of Wildlife 2020).	No suitable habitat was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	No suitable habitat was observed within the Project area. In addition, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30.**
Northern Madtom/ *Noturus stigmosus*	E	N/A	Habitat includes deep, swift riffles of large rivers with substrates of cobble and boulders (ODNR Division of Wildlife 2020).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	No suitable habitat was observed within the Project area. In addition, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30.**
Popeye Shiner/ *Notropis ariommus*	E	N/A	Habitat includes warm, relatively clear flowing waters of large creeks and small to medium rivers; these shiners are closely associated with gravel substrate; typically they occur in runs, backwaters near appreciable current, and the head of pools (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30.**
Shoal Chub/ *Macrhybopsis hyostoma*	E	N/A	This species is usually found in large, low gradient rivers over broad, shallow, fast riffles over firm gravel, though it is often in fast water over shifting sand. Typically in waters with high turbidity and dissolved solids (NatureServe 2022).	No suitable habitat was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	No suitable habitat was observed within the Project area. In addition, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30.**
Shortnose Gar/ *Lepisosteus platostomus*	E	N/A	Habitat includes large weedy lakes and reservoirs, backwaters and quiet pools of medium to large rivers, stagnant ponds, sloughs, canals, brackish waters of coastal inlets, occasionally coastal marine waters; often near vegetation or close to submerged or overhanging objects by day. Young tend to occupy shallows, larger individuals in deeper water. Spawning occurs over weed beds of shallow waters in rivers, usually in grass and weeds in shoal water in lakes; or near stone piles of railroad bridges, in nests of smallmouth bass, or over gravel bars (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30.**

Common/Scientific Names	*State Listed Status	*Federally Listed Status	Typical Habitat	Habitat Observed	Agency Comment** (Appendix F)	Potential Impacts and Avoidance Dates
American Eel/ *Anguilla rostrata*	T	N/A	The American eel may be found at times in any perennial stream in Ohio and in Lake Erie. They appear most often in moderate or large rivers with continuous flow and moderately clear water. While in fresh water, eels are secretive and hide in deep pools around cover, sometimes burying themselves during the day and coming out to feed at night, preferably on fish or crayfish (ODNR Division of Wildlife 2020).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30.**
Blue Sucker/ *Cycleptus elongatus*	T	N/A	Habitat includes the largest rivers and lower portions of major tributaries. Usually occurs in channels and flowing pools with moderate current (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30.**
Channel Darter/ *Percina copelandi*	T	N/A	Habitat includes warm, low and moderate gradient rivers and large creeks in areas of moderate current. This darter usually is found over sand and gravel substrates; it prefers clear water and silt-free bottoms (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30**.
Paddlefish/ *Polydon spathula*	T	N/A	Habitat includes slow-flowing water of large and medium-sized rivers, river-margin lakes, channels, oxbows, backwaters, impoundments with access to spawning areas. This fish prefers depths greater than 1.5 m; it seeks deeper water in late fall and winter. Individuals may congregate near human-made structures that create eddies and reduce current velocity (NatureServe 2022).	No suitable habitat was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	No suitable habitat was observed within the Project area. In addition, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30.**
River Darter/ *Percina shumardi*	T	N/A	Large rivers and lower portions of tributaries; deep chutes and riffles where current is swift and bottom is coarse gravel or rock (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30.**

Common/Scientific Names	*State Listed Status	*Federally Listed Status	Typical Habitat	Habitat Observed	Agency Comment** (Appendix F)	Potential Impacts and Avoidance Dates
Tippecanoe Darter/ *Etheostoma tippecanoe*	T	N/A	This fish prefers medium to large streams in the Ohio River drainage system and are found in riffles of moderate current with substrate of gravel or cobble sized rocks (ODNR Division of Wildlife 2020).	Potentially suitable habitat (perennial stream) was observed within the Project area.	**ODNR** - The Project is within the range of this species. DOW recommends no in-water work in perennial streams from March 15 – June 30 to reduce impacts to this species. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species. **USFWS** - No comments received.	Potentially suitable habitat (perennial stream) was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated. **Avoidance Dates: March 15 through June 30.**
Eastern Hellbender/ *Cryptobranchus alleganiensis alleganiensis*	E	SC	Found in mostly unglaciated Ohio and prefer large, swift flowing streams where they hide under larger rocks (ODNR Division of Wildlife 2020).	No suitable habitat was observed within the Project area.	**ODNR –** The Project is within the range of the eastern hellbender. 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. **USFWS** - No comments received.	No suitable habitat was observed within the Project area. In addition, no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts to this species are anticipated.
Timber Rattlesnake/ *Crotalus horridus horridus*	E	SC	In the central Midwest, optimum habitat is a high, dry ridge with oak-hickory forest interspersed with open areas. Hibernacula are typically located in a rocky area where underground crevices provide retreats for overwintering, such as a fissure in a ledge, a crevice between ledge and ground, and fallen rock associated or unassociated with cliffs (NatureServe 2022).	No suitable habitat was observed within the Project area.	**ODNR** - The Project is within range of the timber rattlesnake. Due to the location, the type of habitat within the Project area, and the type of work proposed, this Project is not likely to impact this species. **USFWS** - No comments received.	No suitable habitat was observed within the Project area. In addition, due to the location and habitat within the Project area, this Project is not likely to impact this species.
Eastern Spadefoot/ *Scaphiopus holbrookii*	E	N/A	Eastern spadefoots occur in areas of sandy, gravelly, or soft, light soils in wooded or unwooded terrain. On land, they range up to at least several hundred meters from breeding sites. When inactive, they remain burrowed in the ground. Eggs and larvae develop in temporary pools formed by heavy rains. Breeding sites include temporary pools and areas flooded by heavy rains (NatureServe 2022).	No suitable habitat was observed within the Project area.	**ODNR** - The Project is within range of the eastern spadefoot toad. Due to the location, the type of habitat within the Project area, and the type of work proposed, this Project is not likely to impact this species. **USFWS** - No comments received.	No suitable habitat was observed within the Project area. In addition, due to the location and habitat within the Project area, this Project is not likely to impact this species.
Green Salamander / *Aneides aeneus*	E	N/A	Green salamanders prefer damp, but not wet, crevices in shaded rock outcrops and ledges. They are also found beneath loose bark and in cracks of standing or fallen trees (NatureServe 2022).	No suitable habitat was observed within the Project area.	**ODNR -** The Project is within range of the green salamander. The DOW recommends an approved herpetologist conducts a habitat suitability survey to determine if suitable habitat is present within the project area. If suitable habitat is determined to be present, the DOW recommends that a presence/absence survey be conducted. **USFWS** - No comments received.	**The DOW recommends an approved herpetologist conducts a habitat suitability survey to determine if suitable habitat is present within the project area. If suitable habitat is determined to be present, the DOW recommends that a presence/absence survey be conducted.**
Midland Mud Salamander/*Pseudotriton montanus diastictus*	T	N/A	Muddy springs, slow floodplain streams, and swamps along slow streams; backwater ponds and marshes created by beaver activity (NatureServe 2022).	No suitable habitat was observed within the Project area.	**ODNR** - The Project is within the range of the midland mud salamander. Due to the location, the type of habitat within the Project area, and the type of work proposed, this Project is not likely to impact this species. **USFWS** - No comments received.	No suitable habitat was observed within the Project area. In addition, due to the location and habitat within the Project area, this Project is not likely to impact this species.

Results
October 28, 2022

Common/Scientific Names	*State Listed Status	*Federally Listed Status	Typical Habitat	Habitat Observed	Agency Comment** (Appendix F)	Potential Impacts and Avoidance Dates
Allegheny Woodrat/ *Neotoma magister*	E	N/A	Typical habitat is rocky cliffs and talus slopes. These woordrats make midden mounds and stick piles among rocks, but secluded nest sites generally are not within stick houses (NatureServe 2022).	No suitable habitat was observed within the Project area.	**ODNR** - The Project is within the range of the Allegheny woodrat. However, due to the location, the type of habitat within the Project area, and the type of work proposed, this Project is not likely to impact this species. **USFWS** - No comments received.	No suitable habitat was observed within the Project area. In addition, due to the location and habitat within the Project area, this Project is not likely to impact this species.

*Status key: E=Endangered; T=Threatened; PT=Potentially Threatened; SC=Species of Concern

**The information is based on the literature review response information from ODNR and USFWS and is study area/project specific.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Stantec conducted a wetland and waterbodies delineation and a preliminary habitat assessment for threatened and endangered species within the Project area on February 28, March 1, March 8-10, and September 1-2, 2022. During the field surveys, two PEM wetlands totaling approximately 0.03 acre, respectively were delineated within the Project area. One perennial stream totaling approximately 190 linear feet, 14 intermittent streams totaling approximately 3,042 linear feet, and seven ephemeral streams totaling 466 linear feet were delineated within the Project area. No open water features were delineated within the Project area. One USGS-named stream (Stream 13, Lick Run) was identified within the Project area.

The information provided by Stantec regarding wetland and stream boundaries is based on an analysis of the wetland and upland conditions present within the Project area at the time of the field work. The delineations were performed by experienced and qualified professionals using regulatory agency-accepted practices and sound professional judgment.

An ODNR Ohio Natural Heritage Program data request and environmental review request letter was sent to the ODNR Office of Real Estate on December 15, 2021. The ODNR Office of Real Estate response letter dated January 14, 2022, stated that the entire state of Ohio is within the range of the Indiana bat, northern long-eared bat, little brown bat, and the tricolored bat. If trees are present within the Project area, and trees must be cut. The Division of Wildlife (DOW) recommends cutting only occur from October 1 – March 31, conserving trees with loose, shaggy bark and/or crevices holes, or cavities as well as trees with diameter at breast height (dbh) ≥ 20 inches if possible. The DOW also recommends that a desktop habitat assessment, followed by a field assessment if needed, is conducted to determine if there are potential hibernaculum(a) present within 0.25 mile of the Project area. Stantec completed a habitat desktop assessment in accordance with the *2022 Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines* (USFWS 2022) utilizing available ODNR websites, including data on known abandoned or active mines (ODNR 2022a) and locations of known or suspected karst geology (ODNR 2022b). The desktop assessment did not identify any abandoned underground mines or known karst features within 0.25 mile of the Project area and no potential hibernacula were observed during field surveys. Further surveys may be required to determine is any potential hibernacula areas would be affected by the Project. In addition, potentially suitable summer foraging and roosting habitat was observed in the Project area. AEP will determine if any summer tree clearing is necessary in areas containing suitable foraging and roosting habitat and will proceed in accordance with agency requirements.

According to the ODNR response letter, the Project is within the range of the federally-listed endangered purple cat's paw, sheepnose, clubshell, rayed bean, pink mucket, snuffbox, fanshell, northern riffleshell, the state-listed endangered butterfly, ebonyshell, elephant-ear, little spectaclecase, long-solid, monkeyface, Ohio pigtoe, pyramid pigtoe, sharp-ridged pocketbook, wartyback, washboard, yellow sandshell, and the state-listed threatened fawnsfoot, black

sandshell, and threehorn wartyback. According to the ODNR response letter, due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact these species. Potentially suitable habitat is present within the Project (perennial stream); however, no in-water work is proposed by AEP.

According to the ODNR response letter, the Project is within the range of the state-listed endangered bigeye shiner, gilt darter, goldeye, mountain madtom, northern brook lamprey, northern madtom, popeye shiner, shoal chub, shortnose gar, and shovelnose sturgeon, and the state-listed threatened American eel, blue sucker, channel darter, paddlefish, river darter and Tippecanoe darter. The ODNR DOW recommends no in-water work in perennial streams from March 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat. However, if no in-water work proposed in a perennial stream, this Project is not likely to impact these species. Potentially suitable habitat is present within the Project site (perennial stream); however, not in-water work is proposed by AEP.

According to the ODNR response letter, the Project is within the range of the state-listed endangered the eastern hellbender. 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 ODNR response also stated that the Project is within the range of the state-listed endangered and federal species of concern timber rattlesnake. Due to the location, the type of habitat within the Project area, and the type of work proposed, this Project is not likely to impact this species.

The Project is also within the range of the state-listed endangered eastern spadefoot toad. Due to the location, the type of habitat within the Project area, and the type of work proposed, this Project is not likely to impact this species.

This Project is within the range of the state-listed endangered green salamander. The DOW recommends that an approved herpetologist conducts a habitat suitability survey to determine if suitable habitat exists within the Project area. If suitable habitat is determined to be present, DOW recommends that a presence/absence survey be conducted, or avoidance/minimization plan be developed and implemented by an approved herpetologist.

The Project is also within the range of the state-listed threatened midland mud salamander. However, DOW stated due to the location, the type of habitat within the Project area, and the type of work proposed, the Project is not likely to impact this species.

The Project is also within the range of the state-listed endangered Allegheny woodrat. However, DOW stated due to the location, the type of habitat within the Project area, and the type of work proposed, the Project is not likely to impact this species.

A technical assistance request letter was also submitted to the USFWS on December 15, 2021. The USFWS response letter dated December 20, 2021, recommends that the proposed Project avoid and minimize impacts to all wetland habitats to the maximum extent possible and natural buffers around streams and wetlands should be preserved to enhance beneficial functions.

According to the USFWS response letter, the entire state of Ohio is within the range of the Indiana bat and the northern long-eared bat. Therefore, USFWS recommends that trees ≥ 3 inches dbh be saved wherever possible and any tree removal that is unavoidable should only occur between October 1 and March 31. Following the tree clearing recommendation should ensure that any effects to Indiana bats and northern long-eared bats are insignificant and discountable. If any caves or abandoned mines may be disturbed, further coordination with USFWS is recommended. Potentially suitable summer foraging and roosting habitat was observed in the Project area. AEP will determine if any tree clearing is necessary in areas containing suitable roosting habitat and will proceed in accordance with agency requirements.

The USFWS stated that they do not anticipate adverse effects to any other federally endangered, threatened, proposed or candidate species due to the Project type, size, and location (Appendix E).

5.0 REFERENCES

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Appendix A STREAM AND WETLAND IMPACT TABLES

Table 2. Summary of Wetland Resources Found within the Sadiq Switch – East Wheelersburg 138 kV Line Rebuild Project, Scioto County, Ohio

Wetland ID	Location			Isolated?[2]	Habitat Type[3,4]	Delineated Area (acre)	ORAM[5]		Nearest Proposed Structure Number	Existing Structure Number in Wetland	Proposed Structure Number in Wetland	Structure Installation Method	Proposed Impacts	
	Latitude	Longitude	Photo Location[1]				Score	Category					Temporary Matting Area (acre)	Permanent Impact Area (acre)
Wetland 1	38.71388	-82.82332	9	No	PEM	0.01	21	1	6	None	N/A	N/A	TBD	TBD
Wetland 2	38.71950	-82.81935	15	No	PEM	0.02	28	1	4	None	N/A	N/A	TBD	TBD
					Total:	**0.03**						**Total:**	**TBD**	**TBD**

[1] Appendix B - Figure 2 and Appendix D – Photo log D-1
[2] Pending USACE jurisdictional review
[3] Habitat type based on Cowardin et al. (1979).
[4] PEM = Palustrine Emergent Wetland
[5] ORAM Score and Category are based on the Ohio Rapid Assessment Method for Wetland v. 5.0 (Mack 2001).

Table 3. Summary of NWI Disposition Found within the Sadiq Switch – East Wheelersburg 138 kV Line Rebuild Project Area, Scioto County, Ohio

NWI Code	NWI Description	Figure 2 Page Number	Related Field Inventoried Resource	Comments
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded	2, 3	Stream 3	Stream 3 was delineated as an intermittent stream channel.
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded	3	Stream 4A	Stream 4A was delineated as an intermittent stream channel.
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded	5	Stream 10	Stream 10 was delineated as an intermittent stream channel.
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded	7	Stream 13A	Stream 13A was delineated as an intermittent stream channel.
R2UBH	Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded	7, 8	Stream 13	Stream 13 was delineated as a perennial stream channel.

Table 4. Summary of Stream Resources Found within the Sadiq Switch – East Wheelersburg 138 kV Line Rebuild Project Area, Scioto County, Ohio

Stream ID	Location			Stream Type[2]	Stream Name	Delineation Length (feet)	Bankfull width (feet)	OHWM width[3] (feet)	Field Evaluation			Ohio EPA 401 Eligibility	Stream Crossing	Proposed Impacts	
	Latitude	Longitude	Photo Location[1]						Method[4]	Score	Category/Rating/ OAC Designation			Fill type	Length LF
Stream 1	38.705335	-82.829257	1	Ephemeral	UNT to Lick Run	65	3	3	HHEI	20	Class I PHW	Possibly Eligible	TBD	TBD	TBD
Stream 2	38.705393	-82.829378	2	Intermittent	UNT to Lick Run	243	6	2	HHEI	70	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 2A	38.705245	-82.829799	2A	Ephemeral	UNT to Lick Run	17	3	1.5	HHEI	26	Class I PHW	Possibly Eligible	TBD	TBD	TBD
Stream 2B	38.705882	-82.829376	2B	Ephemeral	UNT to Lick Run	5	2.5	1	HHEI	15	Modified Class I PHW	Possibly Eligible	TBD	TBD	TBD
Stream 3	38.708323	-82.827333	3	Intermittent	UNT to Lick Run	289	8	5	HHEI	75	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 3A	38.708521	-82.827456	3A	Intermittent	UNT to Lick Run	51	3	3	HHEI	56	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 4	38.708746	-82.827034	4	Intermittent	UNT to Lick Run	287	3	2	HHEI	51	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 4A	38.709815	-82.829155	4A	Intermittent	UNT to Lick Run	13	6	3	HHEI	54	Modified Class II PHWH	Possibly Eligible	TBD	TBD	TBD
Stream 5	38.708853	-82.826641	5	Ephemeral	UNT to Lick Run	9	1.5	1.5	HHEI	29	Class I PHW	Possibly Eligible	TBD	TBD	TBD
Stream 6	38.712394	-82.824399	6	Intermittent	UNT to Lick Run	161	3	1	HHEI	47	Class II PHW	Possibly Eligible	TBD	TBD	TBD
Stream 6A	38.712910	-82.827721	6A	Ephemeral	UNT to Lick Run	20	3	1	HHEI	23	Modified Class I PHW	Possibly Eligible	TBD	TBD	TBD
Stream 7	38.712446	-82.824367	7	Intermittent	UNT to Lick Run	162	4	2	HHEI	66	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 8	38.715422	-82.82223	10	Intermittent	UNT to Lick Run	151	1	1	HHEI	39	Modified Class II PHW	Possibly Eligible	TBD	TBD	TBD
Stream 9	38.715560	-82.822185	11	Ephemeral	UNT to Lick Run	240	1	1	HHEI	39	Modified Class II PHW	Possibly Eligible	TBD	TBD	TBD
Stream 9A	38.716013	-82.822023	11A	Intermittent	UNT to Lick Run	472	5	3	HHEI	57	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 10	38.720075	-82.819111	13, 17A	Intermittent	UNT to Lick Run	634	3	3	HHEI	35	Class II PHW	Possibly Eligible	TBD	TBD	TBD
Stream 11	38.718381	-82.820009	12	Intermittent	UNT to Lick Run	58	5	3	HHEI	69	Class III PHWH	Possibly Eligible	TBD	TBD	TBD
Stream 12	38.721534	-82.818071	17	Intermittent	UNT to Lick Run	142	5	1	HHEI	59	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 12A	38.723113	-82.824947	17B	Ephemeral	UNT to Lick Run	52	2	2	HHEI	37	Class II PHW	Possibly Eligible	TBD	TBD	TBD
Stream 13	38.724864	-82.815453	18, 18A, 18C	Perennial	Lick Run	190	15	8	QHEI	70	Excellent	Possibly Eligible	TBD	TBD	TBD
Stream 13A	38.726335	-82.824255	18B	Intermittent	UNT to Lick Run	307	4	2	HHEI	64	Class III PHW	Possibly Eligible	TBD	TBD	TBD
Stream 14	38.725011	-82.815283	19	Intermittent	UNT to Lick Run	130	3	1	HHEI	25	Modified Class I PHW	Possibly Eligible	TBD	TBD	TBD
Total Delineated Length Within Project Area						**3,698**						**Total Proposed Impacts**		**N/A**	

[1] Appendix B – Figure 2 and Appendix D – Photo log D-2
[2] Stream Classification is based on Federal Register/Vol. 67, No. 10 (USACE 2002)
[3] OHWM = Ordinary High Water Mark
[4] HHEI = Headwater Habitat Evaluation Index; QHEI = Qualitative Habitat Evaluation Index

Appendix B FIGURES

B.1 PROJECT LOCATION MAP

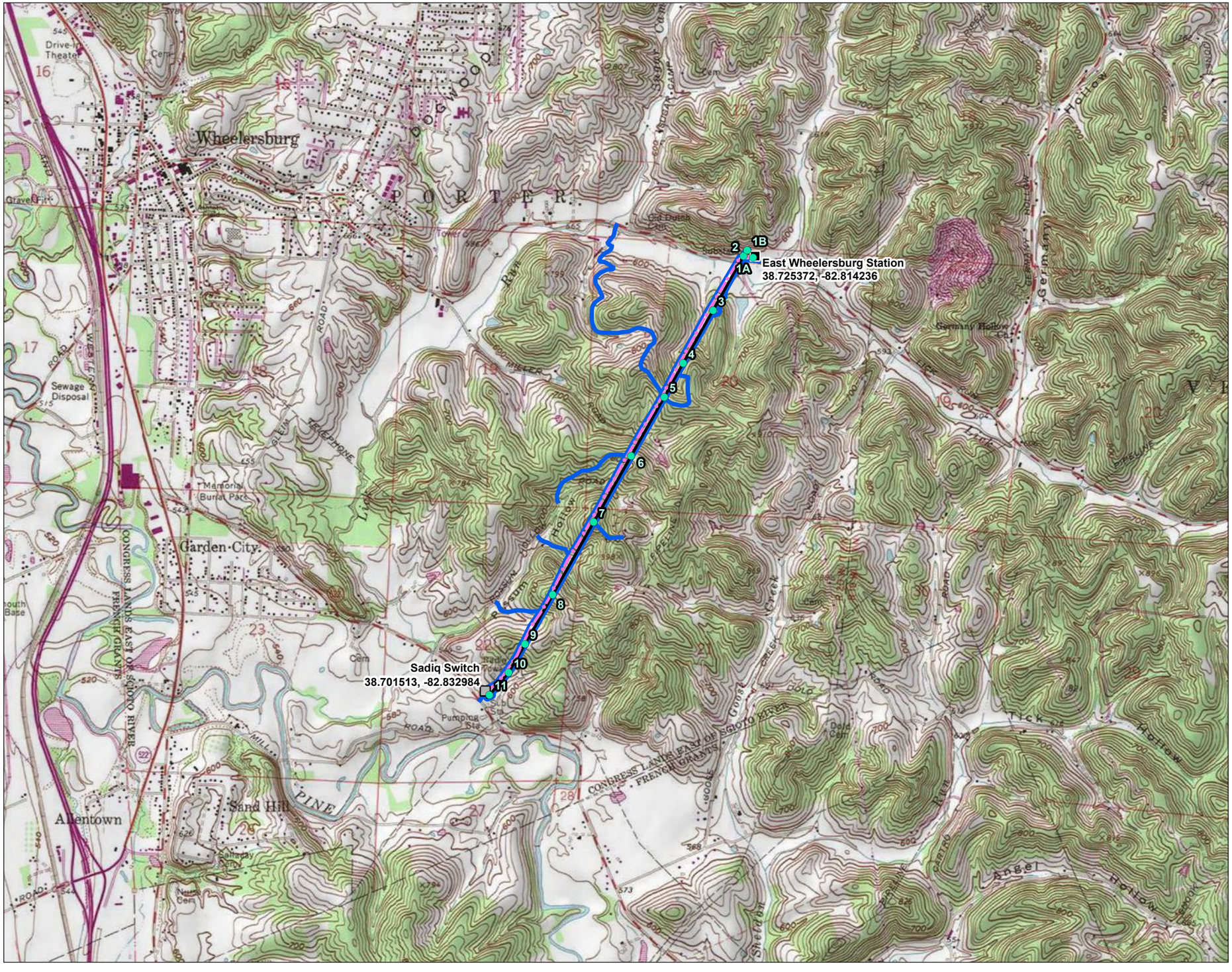


Figure No.

1

Title

Project Location Map

Client/Project 193708590

AEP Ohio Transmission Company, Inc.
Sadiq Switch-East Wheelersburg
138 kV Line Rebuild Project

Project Location
Scioto County, Ohio

Prepared by JLH on 2021-11-15
TR by MK on 2022-10-17
IR by AS on 2022-10-18

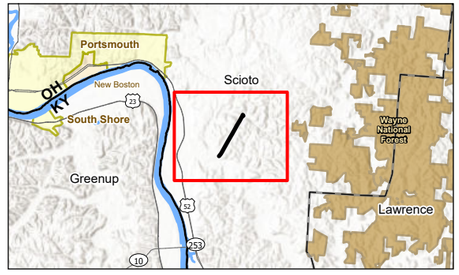
N

0 1,000 2,000 Feet

(At original document size of 11x17)
1:24,000

Legend

- AEP Substation
- AEP Switch
- Existing Structure to be Removed
- Existing Transmission Line
- Proposed Transmission Line
- Project Area
- Wayne National Forest



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, NADS
3. Background: USGS 7.5' Topographic Quadrangles - Wheelersburg, OH/KY (1985)

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B.2 WETLAND AND WATERBODY DELINEATION MAP

Figure No.
2

Title
Wetland and Waterbody Delineation Map

Client/Project 193708590
AEP Ohio Transmission Company, Inc.
Sadiq Switch-East Wheelersburg
138 kV Line Rebuild Project

Project Location
Scioto County, Ohio

Prepared by JLH on 2021-10-21
TR by MK on 2022-10-17
IR by AS on 2022-10-18

N

0 100 200 Feet
(At original document size of 11x17)
1:2,400

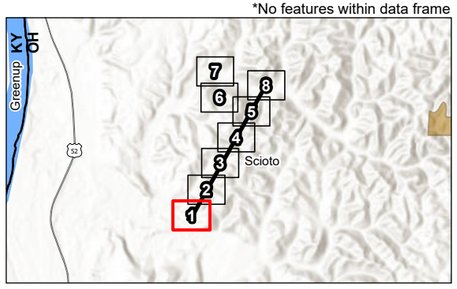
Legend

- AEP Substation
- AEP Switch
- Existing Structure to be Removed
- Existing Transmission Line
- Proposed Transmission Line
- Project Area
- Culvert
- Storm Drain
- Wetland Determination Sample Point
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Photo Location
- Field Delineated Waterway Line
- Approximate Waterway
- Field Delineated Waterway Area
- Approximate Open Water
- Approximate Wetland Line
- Field Delineated Emergent Wetland
- National Wetlands Inventory Feature

FEMA Flood Hazard Area

- 100-year Floodplain
- Floodway*

*No features within data frame



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, USFWS, FEMA, NADS
3. Orthophotography: 2019 NAIP

Stantec

Figure No.

2

Title

Wetland and Waterbody Delineation Map

Client/Project 193708590

AEP Ohio Transmission Company, Inc.
Sadiq Switch-East Wheelersburg
138 kV Line Rebuild Project

Project Location
Scioto County, Ohio

Prepared by JLH on 2021-10-21
TR by MK on 2022-10-17
IR by AS on 2022-10-18

N

0 100 200 Feet
(At original document size of 11x17)
1:2,400

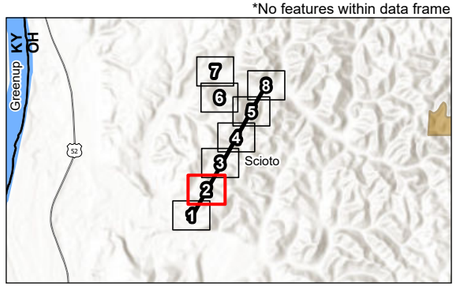
Legend

- AEP Substation
- AEP Switch
- Existing Structure to be Removed
- Existing Transmission Line
- Proposed Transmission Line
- Project Area
- Culvert
- Storm Drain
- Wetland Determination Sample Point
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Photo Location
- Field Delineated Waterway Line
- Approximate Waterway
- Field Delineated Waterway Area
- Approximate Open Water
- Approximate Wetland Line
- Field Delineated Emergent Wetland
- National Wetlands Inventory Feature

FEMA Flood Hazard Area

- 100-year Floodplain
- Floodway*

*No features within data frame



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, USFWS, FEMA, NADS
3. Orthophotography: 2019 NAIP

Stantec

Figure No.

2

Title

Wetland and Waterbody Delineation Map

Client/Project 193708590

AEP Ohio Transmission Company, Inc.
Sadiq Switch-East Wheelersburg
138 kV Line Rebuild Project

Project Location
Scioto County, Ohio

Prepared by JLH on 2021-10-21
TR by MK on 2022-10-17
IR by AS on 2022-10-18

N

0 100 200 Feet
(At original document size of 11x17)
1:2,400

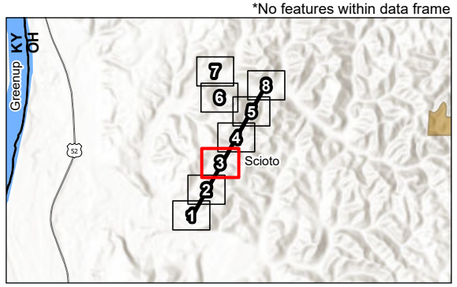
Legend

- AEP Substation
- AEP Switch
- Existing Structure to be Removed
- Existing Transmission Line
- Proposed Transmission Line
- Project Area
- Culvert
- Storm Drain
- Wetland Determination Sample Point
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Photo Location
- Field Delineated Waterway Line
- Approximate Waterway
- Field Delineated Waterway Area
- Approximate Open Water
- Approximate Wetland Line
- Field Delineated Emergent Wetland
- National Wetlands Inventory Feature

FEMA Flood Hazard Area

- 100-year Floodplain
- Floodway*

*No features within data frame



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, USFWS, FEMA, NADS
3. Orthophotography: 2019 NAIP

Stantec

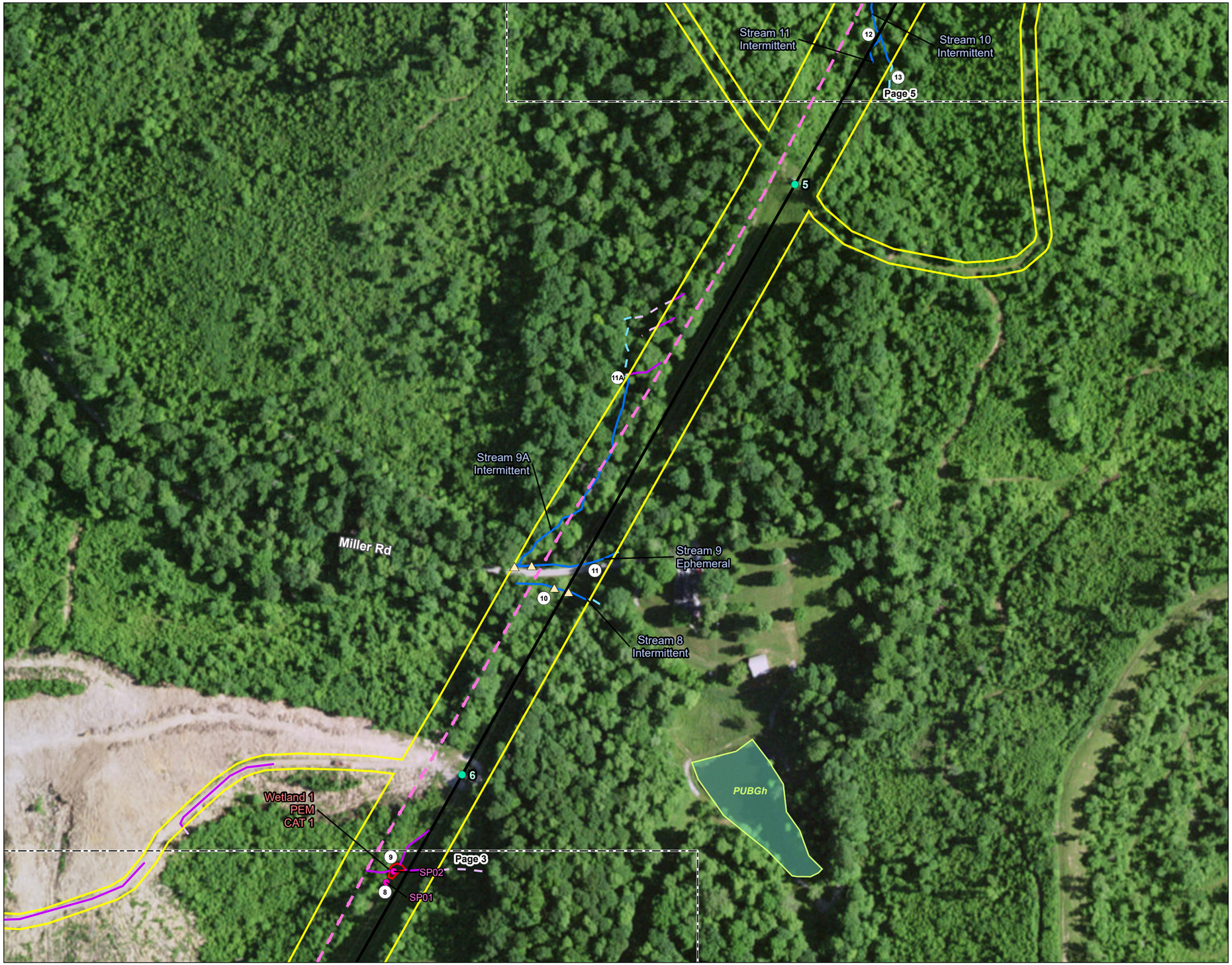


Figure No.
2

Title
Wetland and Waterbody Delineation Map

Client/Project
AEP Ohio Transmission Company, Inc.
Sadiq Switch-East Wheelersburg
138 kV Line Rebuild Project
193708590

Project Location
Scioto County, Ohio

Prepared by JLH on 2021-10-21
TR by MK on 2022-10-17
IR by AS on 2022-10-18

N

0 100 200 Feet
(At original document size of 11x17)
1:2,400

Legend

- AEP Substation
- AEP Switch
- Existing Structure to be Removed
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- Project Area
- Culvert
- Storm Drain
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- Upland Drainage Feature
- Approximate Upland Drainage Feature
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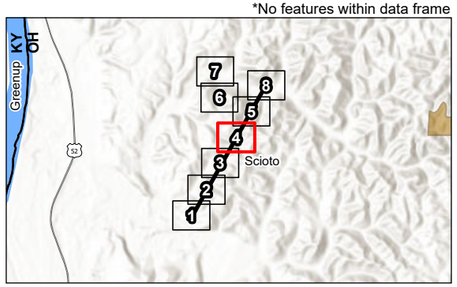
- Approximate Open Water
- Approximate Wetland Line
- Field Delineated Emergent Wetland
- National Wetlands Inventory Feature

FEMA Flood Hazard Area
- 100-year Floodplain
- Floodway*

*No features within data frame



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, USFWS, FEMA, NADS
3. Orthophotography: 2019 NAIP

Stantec

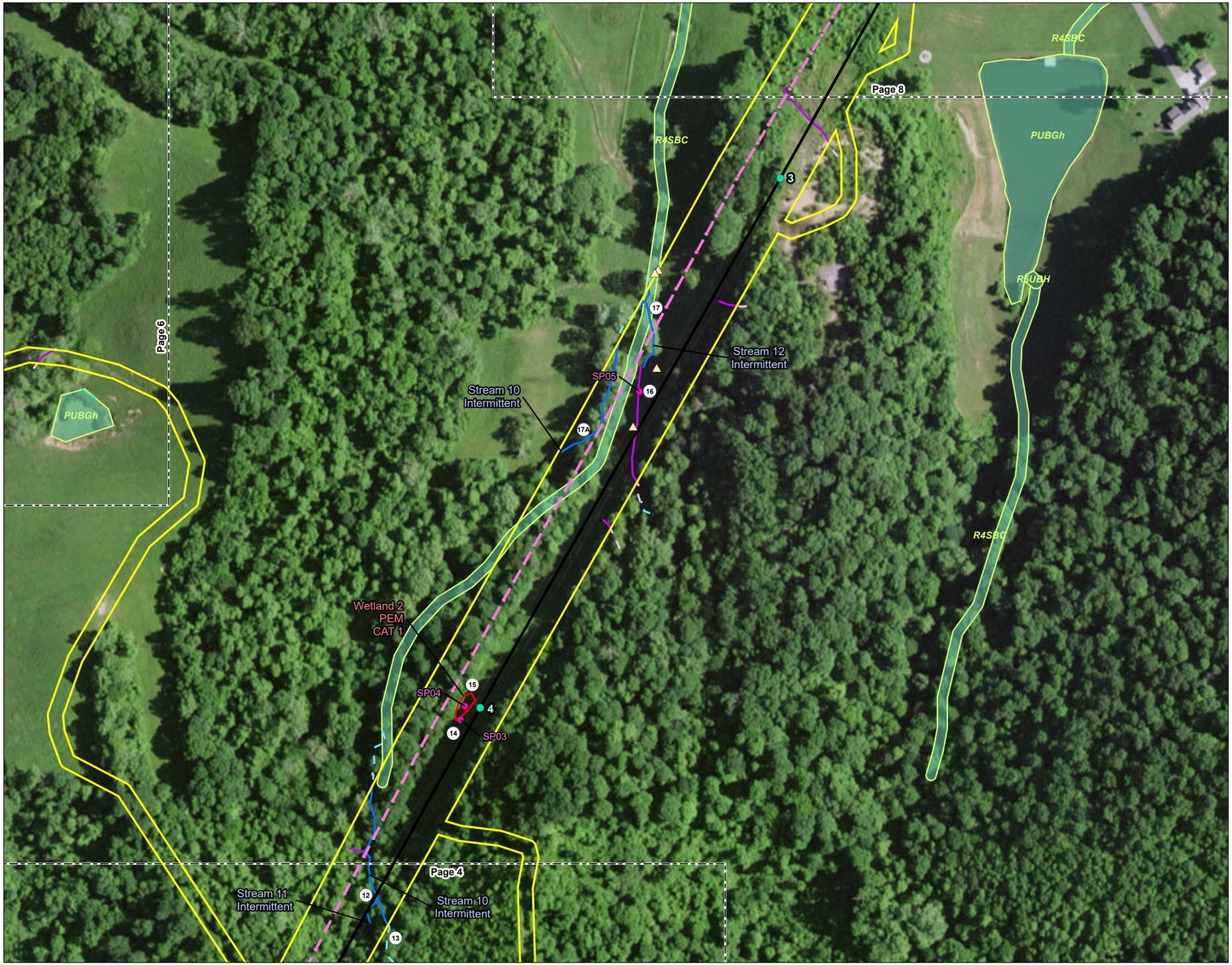


Figure No.

2

Title

Wetland and Waterbody Delineation Map

Client/Project 193708590

AEP Ohio Transmission Company, Inc.
Sadiq Switch-East Wheelersburg
138 kV Line Rebuild Project

Project Location
Scioto County, Ohio

Prepared by JLH on 2021-10-21
TR by MK on 2022-10-17
IR by AS on 2022-10-18

N

0 100 200 Feet
(At original document size of 11x17)
1:2,400

Legend

- AEP Substation
- AEP Switch
- Existing Structure to be Removed
- Existing Transmission Line
- Proposed Transmission Line
- Project Area
- Culvert
- Storm Drain
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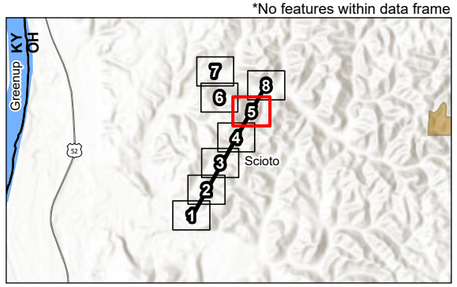
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Photo Location
- Field Delineated Waterway Line
- Approximate Waterway
- Field Delineated Waterway Area
- Approximate Open Water
- Approximate Wetland Line
- Field Delineated Emergent Wetland
- National Wetlands Inventory Feature

FEMA Flood Hazard Area

- 100-year Floodplain
- Floodway*

*No features within data frame



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, USFWS, FEMA, NADS
3. Orthophotography: 2019 NAIP

Stantec

Figure No.
2

Title
Wetland and Waterbody Delineation Map

Client/Project 193708590
AEP Ohio Transmission Company, Inc.
Sadiq Switch-East Wheelersburg
138 kV Line Rebuild Project

Project Location
Scioto County, Ohio

Prepared by JLH on 2021-10-21
TR by MK on 2022-10-17
IR by AS on 2022-10-18

N

0 100 200 Feet
(At original document size of 11x17)
1:2,400

Legend

- AEP Substation
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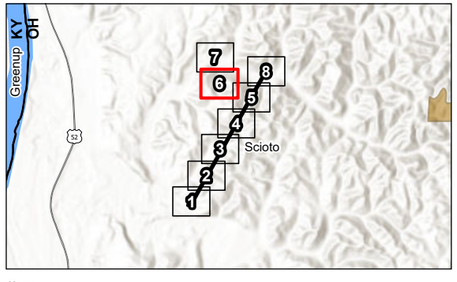
- National Wetlands Inventory Feature

FEMA Flood Hazard Area
- 100-year Floodplain
- Floodway*

*No features within data frame



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, USFWS, FEMA, NADS
3. Orthophotography: 2019 NAIP

Stantec

Figure No.

2

Title

Wetland and Waterbody Delineation Map

Client/Project 193708590

AEP Ohio Transmission Company, Inc.
Sadiq Switch-East Wheelersburg
138 kV Line Rebuild Project

Project Location
Scioto County, Ohio

Prepared by JLH on 2021-10-21
TR by MK on 2022-10-17
IR by AS on 2022-10-18

N

0 100 200 Feet
(At original document size of 11x17)
1:2,400

Legend

- AEP Substation
- AEP Switch
- Existing Structure to be Removed
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- Culvert
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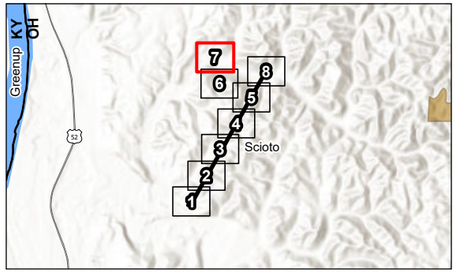
- Field Delineated Waterway Area
- Approximate Open Water
- Approximate Wetland Line
- Field Delineated Emergent Wetland
- National Wetlands Inventory Feature

FEMA Flood Hazard Area

- 100-year Floodplain
- Floodway*

*No features within data frame



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, USFWS, FEMA, NADS
3. Orthophotography: 2019 NAIP

Stantec

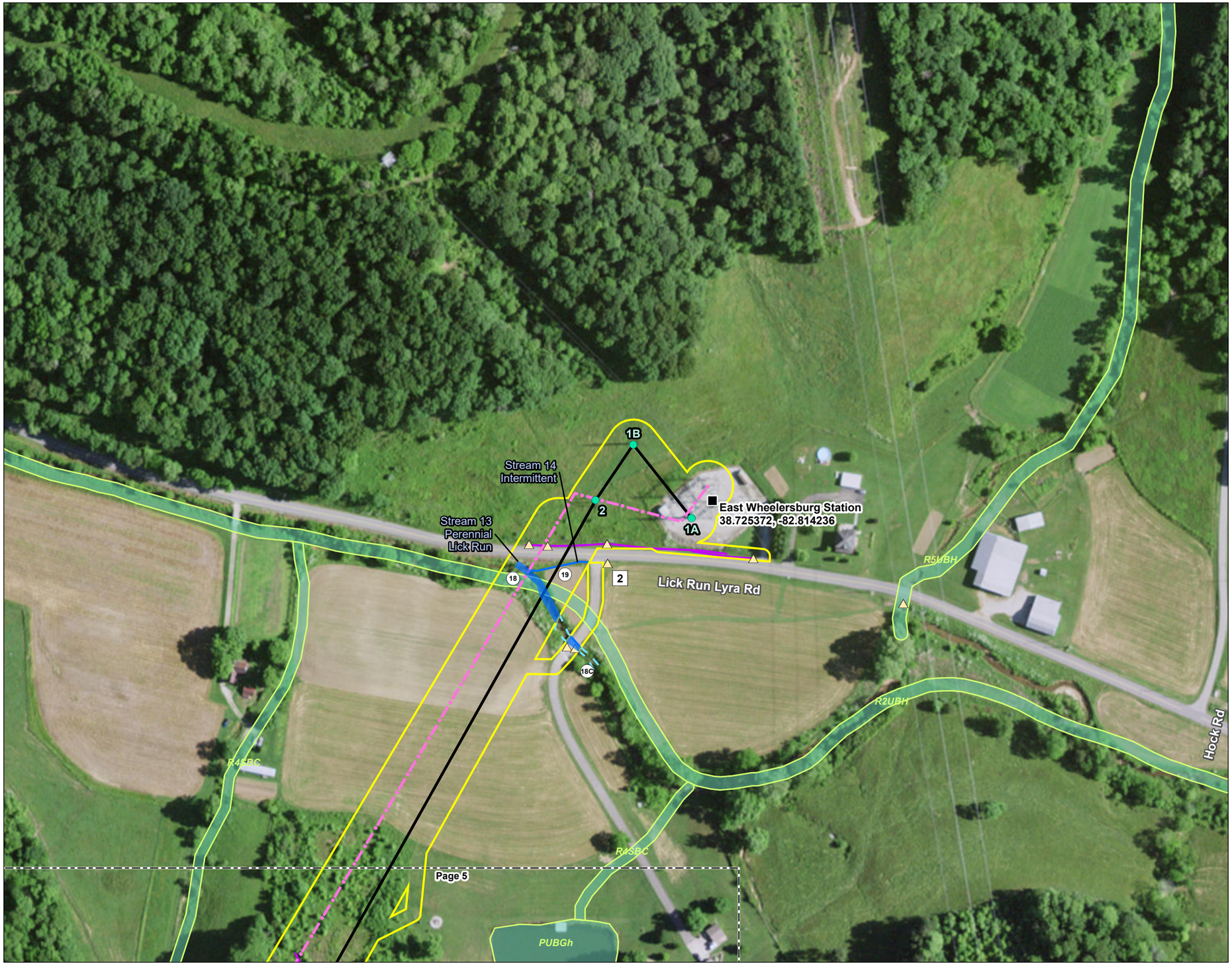


Figure No.

2

Title

Wetland and Waterbody Delineation Map

Client/Project 193708590

AEP Ohio Transmission Company, Inc.
Sadiq Switch-East Wheelersburg
138 kV Line Rebuild Project

Project Location
Scioto County, Ohio

Prepared by JLH on 2021-10-21
TR by MK on 2022-10-17
IR by AS on 2022-10-18

N

0 100 200 Feet
(At original document size of 11x17)
1:2,400

Legend

- AEP Substation
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- Approximate Upland Drainage Feature
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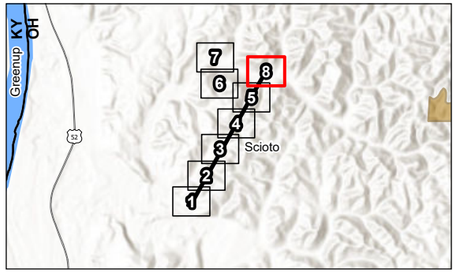
- Approximate Waterway
- Field Delineated Waterway Area
- Approximate Open Water
- Approximate Wetland Line
- Field Delineated Emergent Wetland
- National Wetlands Inventory Feature

FEMA Flood Hazard Area

- 100-year Floodplain
- Floodway*

*No features within data frame



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, USFWS, FEMA, NADS
3. Orthophotography: 2019 NAIP

Stantec

B.3 HABITAT ASSESSMENT MAP

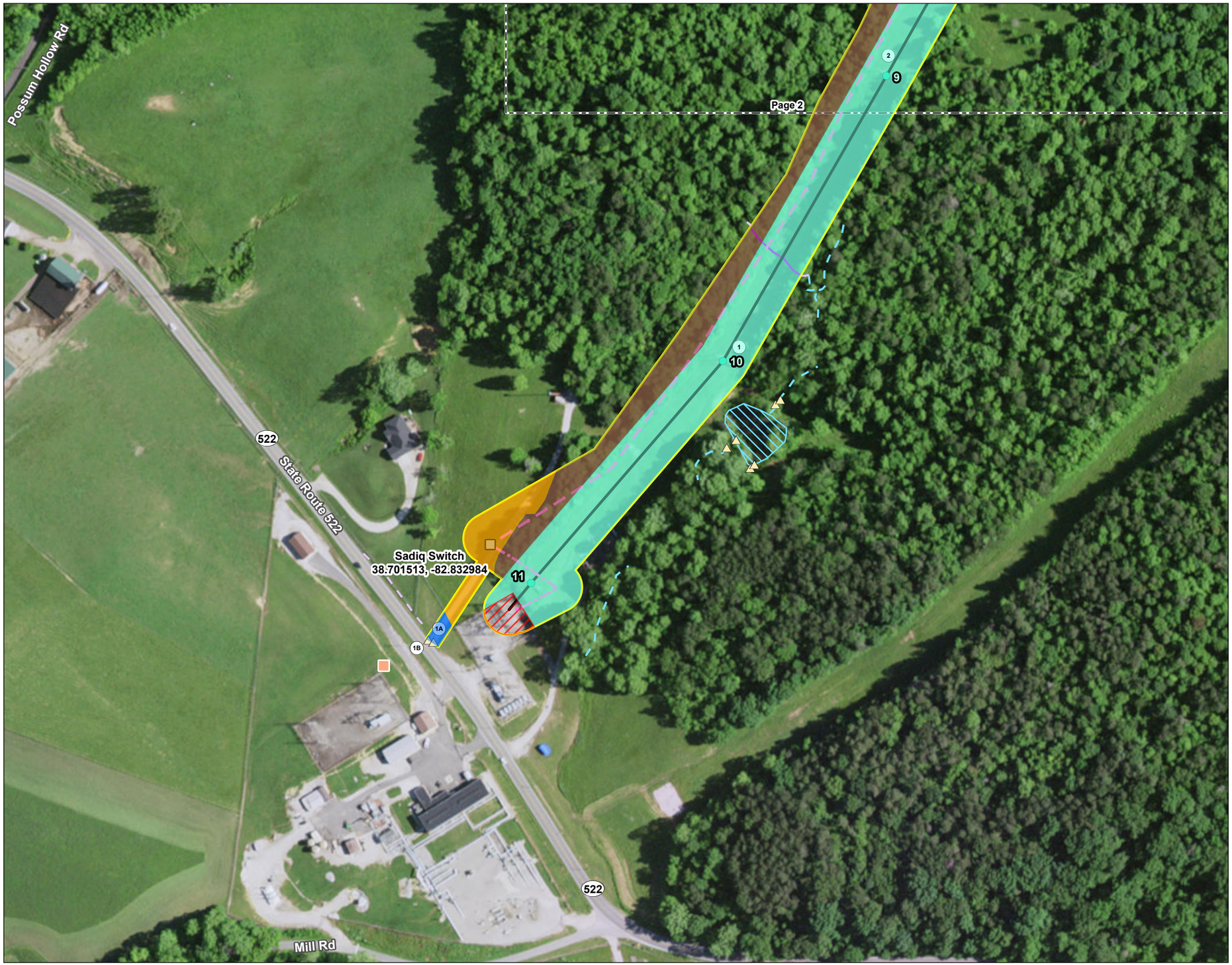


Figure No.
3

Title
Habitat Assessment Map

Client/Project
193708590
AEP Ohio Transmission Company, Inc.
Sadiq Switch-East Wheelersburg
138 kV Line Rebuild Project

Project Location
Scioto County, Ohio

Prepared by RA on 2022-03-24
TR by MK on 2022-10-17
IR by AS on 2022-10-18

N

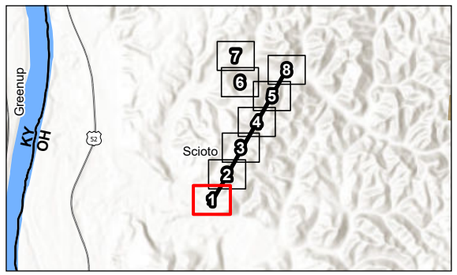
0 100 200 Feet
(At original document size of 11x17)
1:2,400

Legend

- AEP Substation
- AEP Switch
- Existing Structure to be Removed
- Existing Transmission Line
- Proposed Transmission Line
- Project Area
- Photo Location
- Culvert
- Storm Drain
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Approximate Open Water
- Approximate Wetland Line
- Field Delineated Emergent Wetland

Habitat Area

- Maintained ROW
- Maintained Lawn
- Early Successional Forest
- Second Growth Deciduous Forest
- Old Field
- Pasture
- Agricultural Field
- Clear Cut
- Existing Roadway
- Industrial



Notes
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2. Data Sources: Stantec, AEP, USGS, NADS, OGRIP
3. Orthophotography: 2019 NAIP

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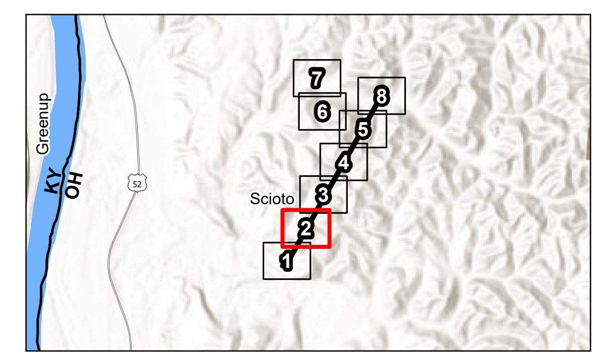

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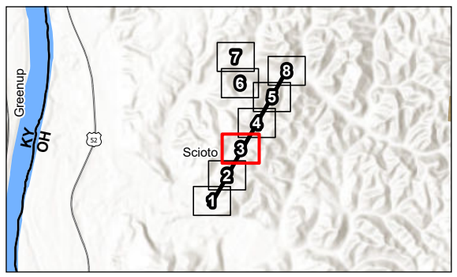

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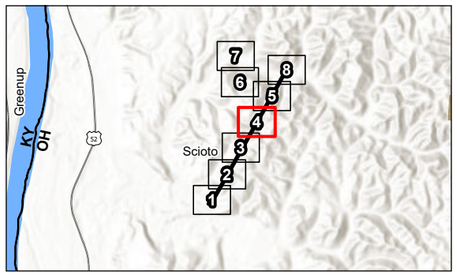

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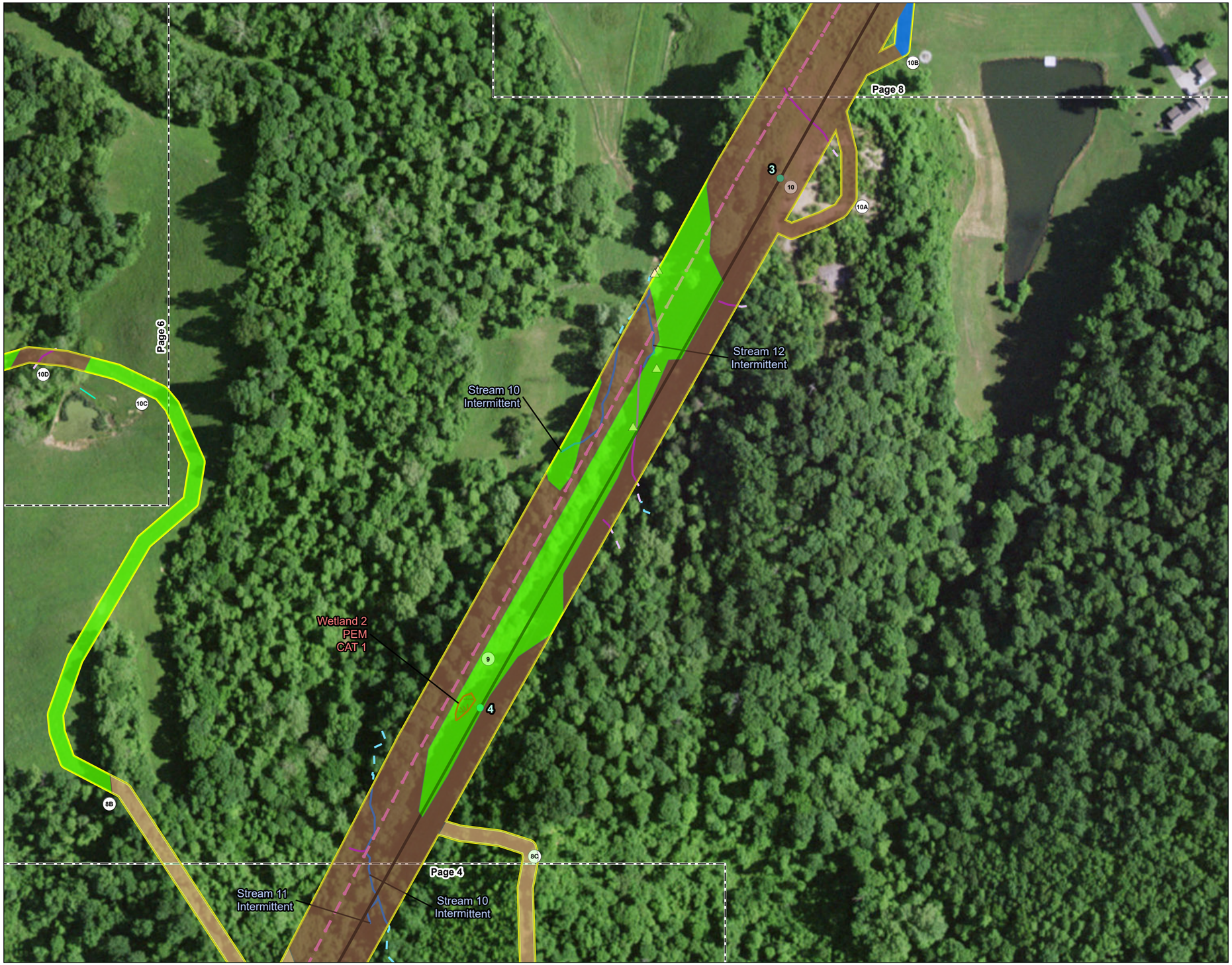

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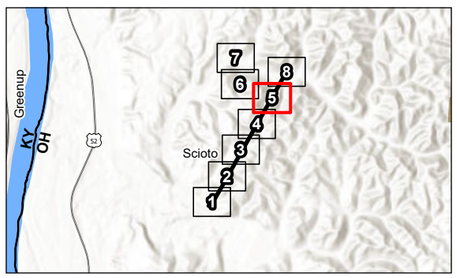

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Sadiq Switch-East Wheelersburg
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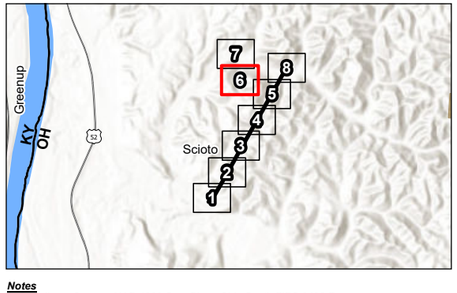

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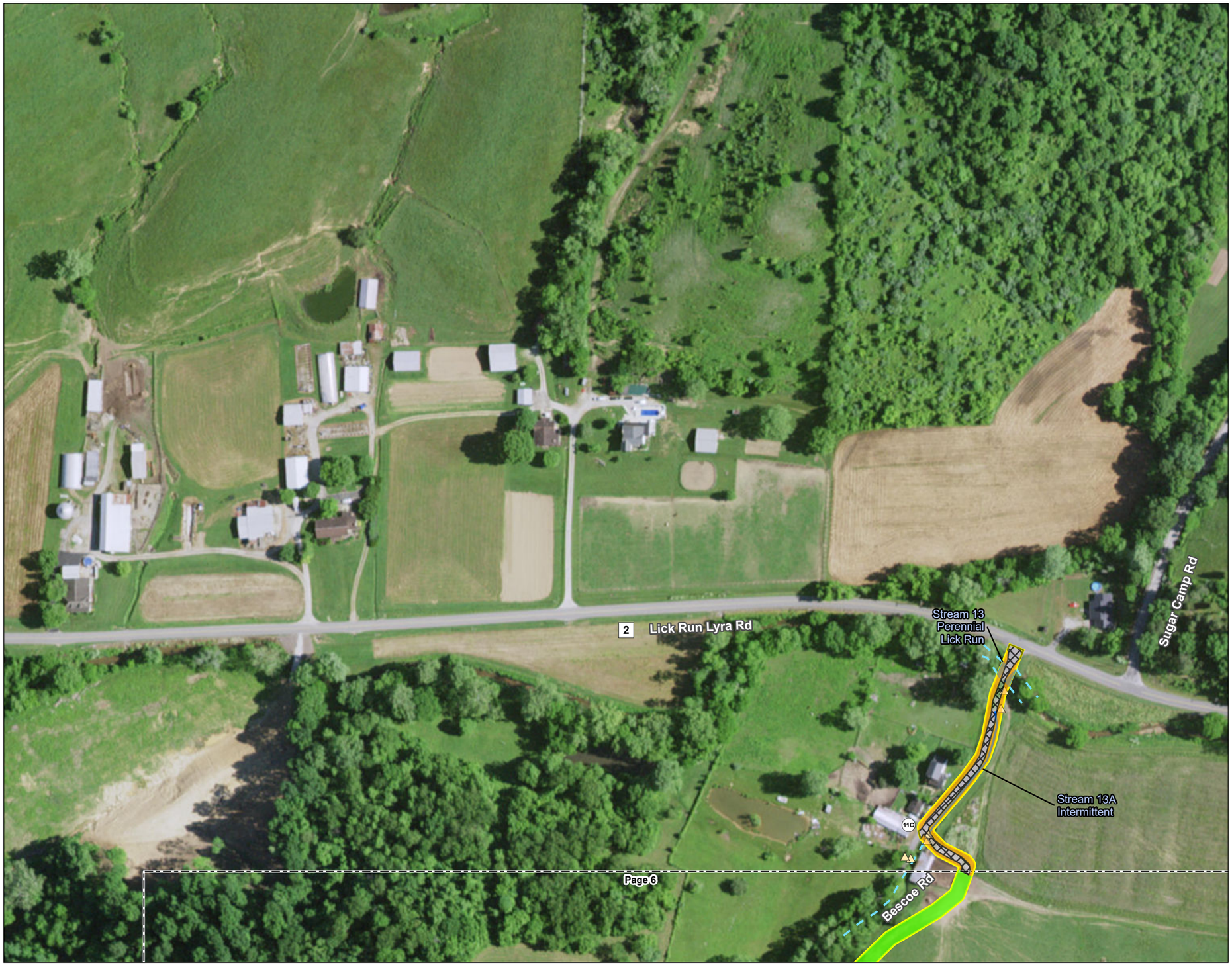

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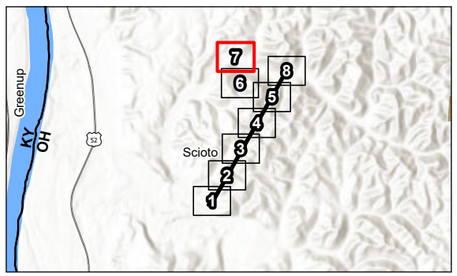

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3. Orthophotography: 2019 NAIP

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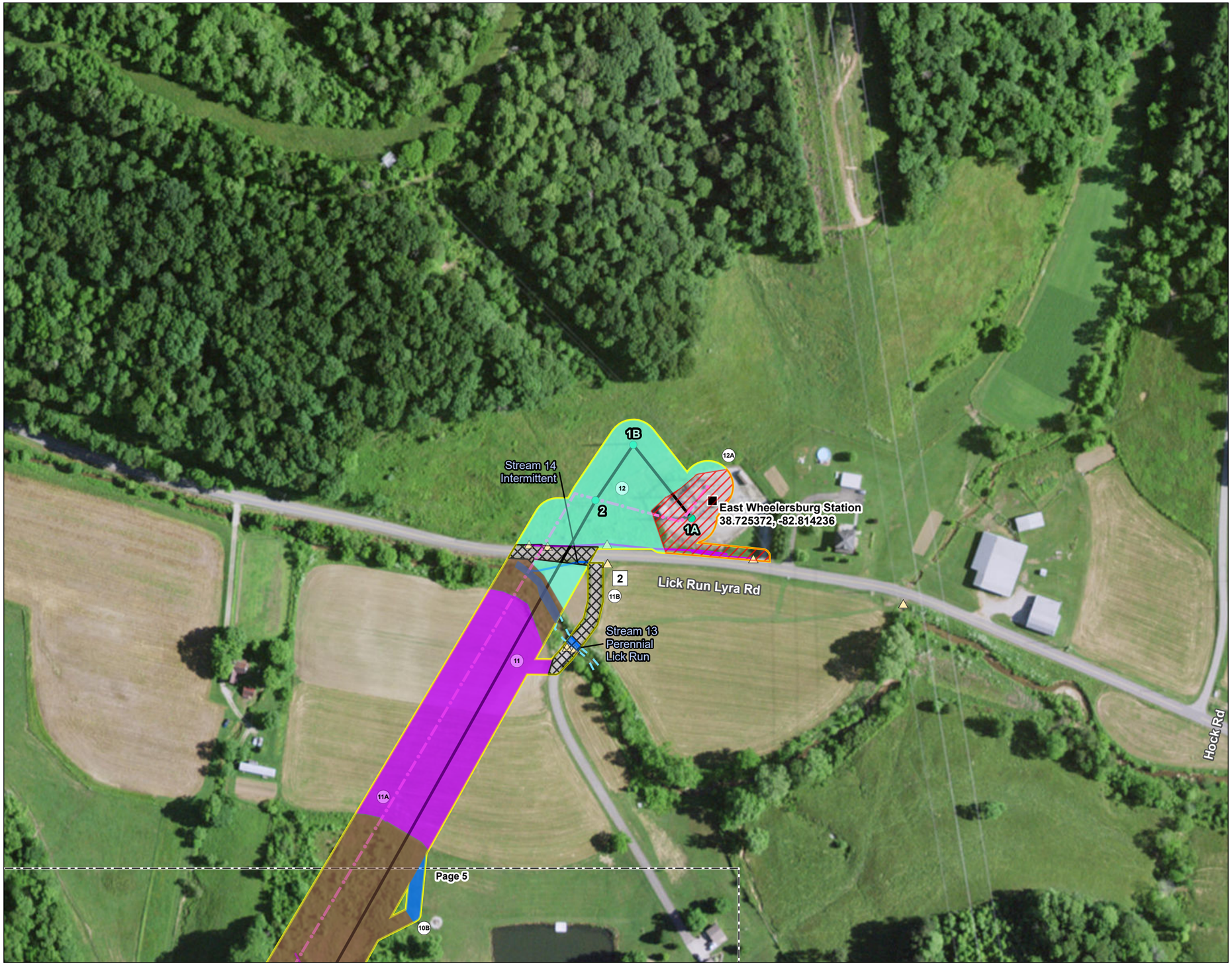

Figure No.

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Habitat Assessment Map

Client/Project 193708590

AEP Ohio Transmission Company, Inc.
Sadiq Switch-East Wheelersburg
138 kV Line Rebuild Project

Project Location
Scioto County, Ohio

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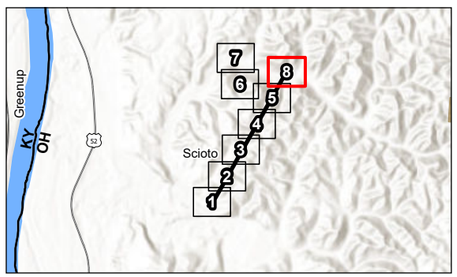


Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, NADS, OGRIP
3. Orthophotography: 2019 NAIP

Stantec

B.4 BAT HIBERNACULA DESKTOP STUDY MAP

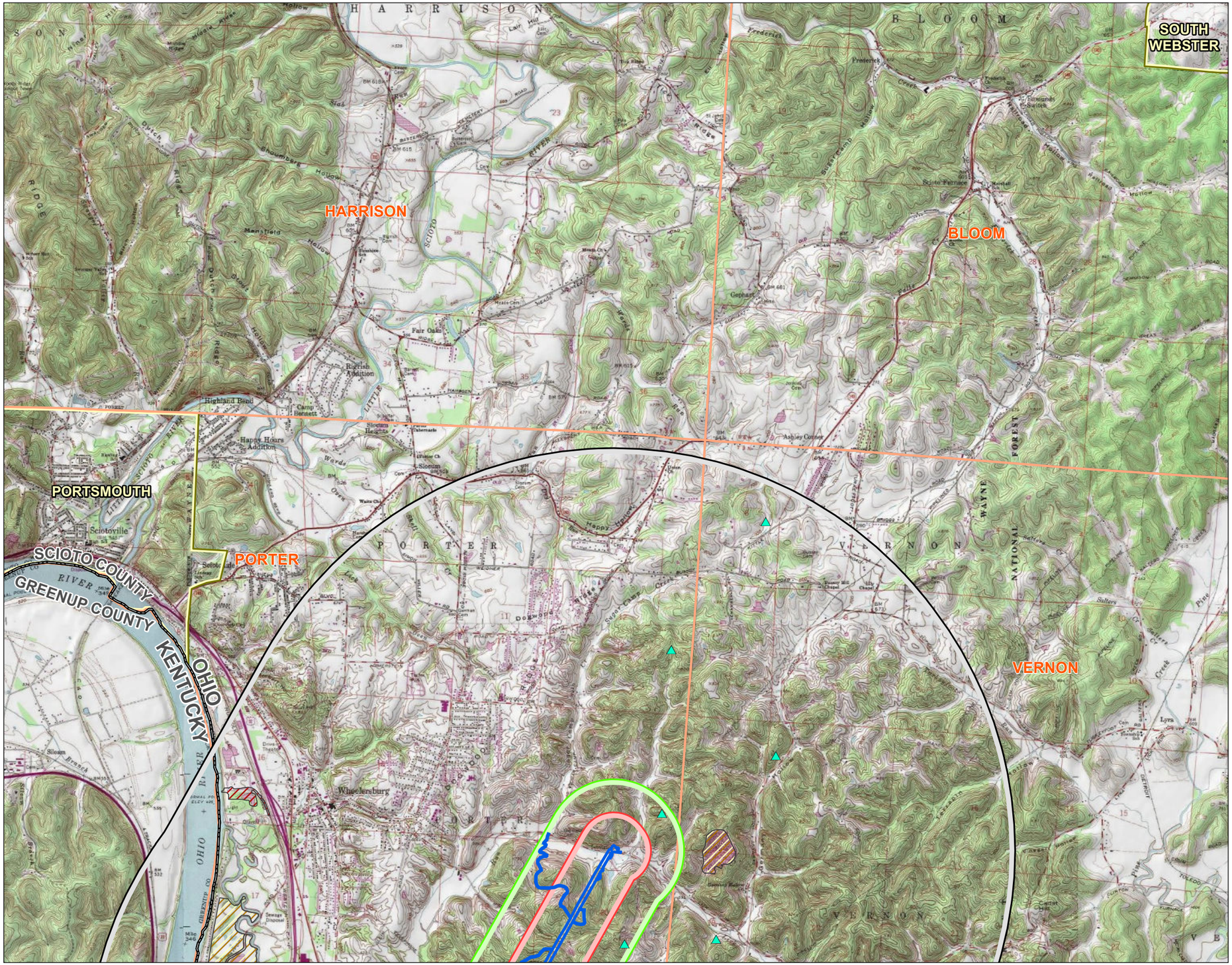


Figure No.

4

Title

Bat Hibernacula Desktop Study Map

Client/Project 193708590

AEP Ohio Transmission Company, Inc.
Sadiq Switch-East Wheelersburg
138 kV Line Rebuild Project

Project Location
Franklin County, Ohio

Prepared by RA on 2022-03-08
TR by MK on 2022-10-17
IR by AS on 2022-10-18

N

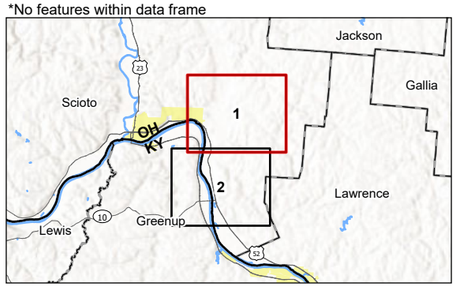
0 2,000 4,000 Feet

(At original document size of 11x17)
1:48,000

Legend

- Project Area
- 0.25-Mile Project Area Buffer
- 0.5-Mile Project Area Buffer
- 3-Mile Project Area Buffer
- Karst Feature*
- Area of Karst Geology*
- Abandoned Underground Mine
- Inactive Mine*
- Active Surface Mine*
- Abandoned Surface Mine Area*
- Abandoned Underground Mine Area
- Inactive Surface Mine Area
- Active Surface Mine Area
- Surface Mine Area (Unknown Status)*

*No features within data frame



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, ODNR, NADS
3. Background: USGS 7.5' Topographic Quadrangles - Wheelersburg, OH/KY (1985)

Stantec

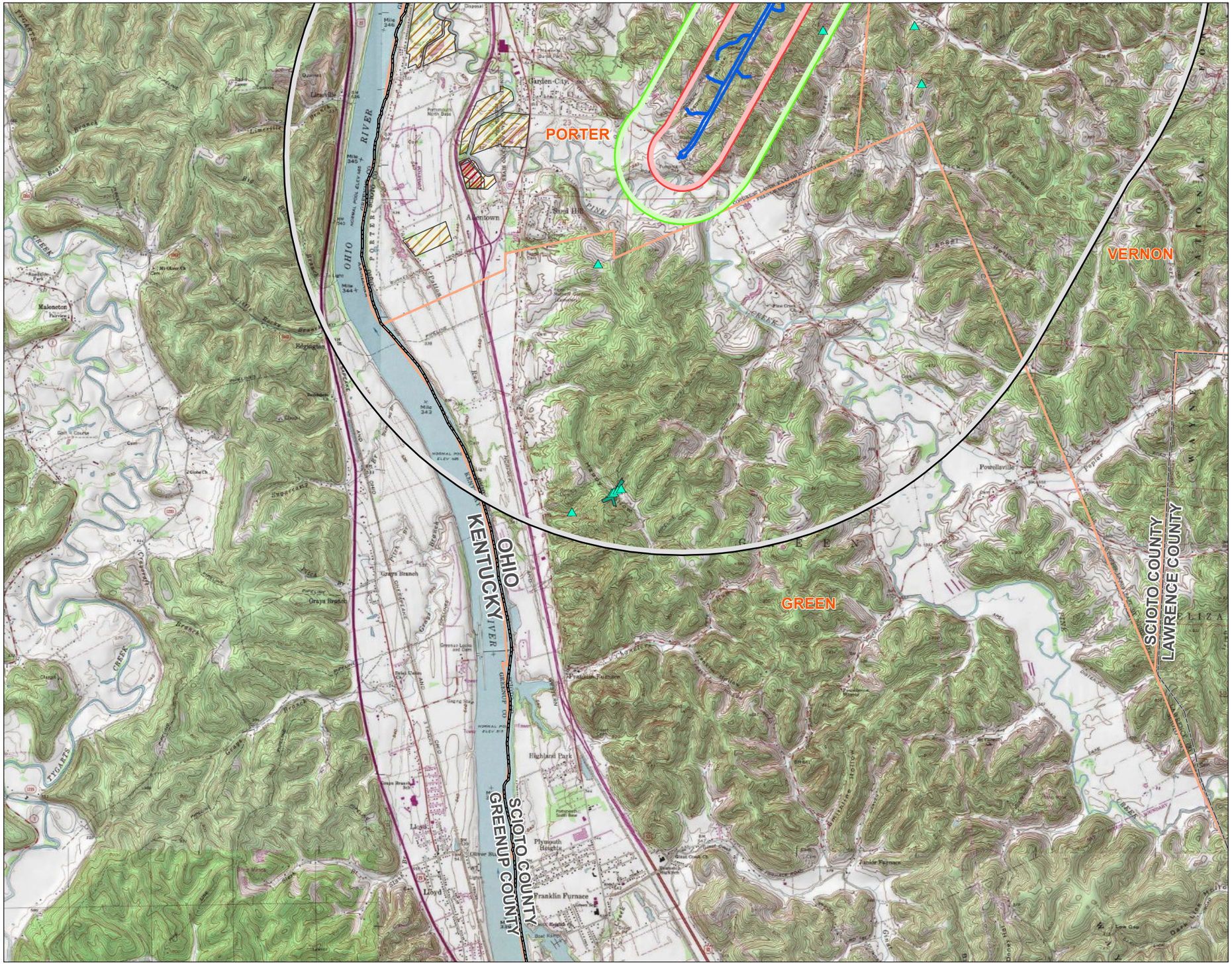


Figure No.
4

Title
Bat Hibernacula Desktop Study Map

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Sadiq Switch-East Wheelersburg
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193708590

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Franklin County, Ohio

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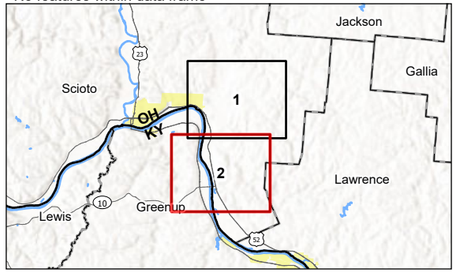

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Stantec

Appendix C FIELD COLLECTED DATA FORMS

C.1 WETLAND DETERMINATION FORMS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Sadiq Switch-East Wheelersburg 138 kV Line Rebuild City/County: Scioto County Sampling Date: 03/10/2022

Applicant/Owner: AEP State: Ohi Sampling Point: SP01

Investigator(s): T. Gillette and S. Heitzenrater Section, Township, Range: S20 T2N R20W

Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope %: 10

Subregion (LRR or MLRA): Lat: 38.713815 Long: -82.823392 Datum: WGS84

Soil Map Unit Name: Shelocta-Wharton-Latham association, steep NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID: Wetland 1

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present	Yes ____	No X	Depth (inches): ____
Water Table Present	Yes ____	No X	Depth (inches): ____
Saturation Present (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP01

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Acer rubrum	20	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	20 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Rosa multiflora	50	Yes	FACU
2. Dichanthelium clandestinum	30	Yes	FAC
3. Andropogon virginicus	20	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1. Lonicera japonica	30	Yes	FACU
2.			
3.			
4.			
	30 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	50	x 3 =	150
FACU species	100	x 4 =	400
UPL species	0	x 5 =	0
Column Totals:	150 (A)		550 (B)
Prevalence Index = B/A =			3.67

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-21	10YR 6/6	80	10YR 5/6	20	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 146, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Sadiq Switch-East Wheelersburg 138 kV Line Rebuild City/County: Scioto County Sampling Date: 03/10/2022

Applicant/Owner: AEP State: Ohio Sampling Point: SP02

Investigator(s): T Gillette and S. Heitzenrater Section, Township, Range: S20 T2N R20W

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 5

Subregion (LRR or MLRA): Lat: 38.713874 Long: -82.82334 Datum: WGS84

Soil Map Unit Name: Shelocta-Wharton-Latham association, steep NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X No ____	If yes, optional Wetland Site ID: Wetland 1

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present	Yes X	No ____	Depth (inches): 1
Water Table Present	Yes X	No ____	Depth (inches): 0
Saturation Present (includes capillary fringe)	Yes X	No ____	Depth (inches): 21

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP02

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Scirpus atrovirens	40	Yes	OBL
2. Onoclea sensibilis	30	Yes	FACW
3. Scirpus cyperinus	10	No	FACW
4. Symphyotrichum lateriflorum	10	No	FACW
5. Dichanthelium clandestinum	10	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)
Prevalence Index = B/A =	

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5Y 4/1	50	10YR 5/6	30	C	M	Clay Loam	
0-8	10YR 6/4	20						
8-21	2.5Y 4/1	90	10YR 5/6	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 146, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Sadiq Switch-East Wheelersburg 138 kV Line Rebuild City/County: Scioto County Sampling Date: 02/28/2022

Applicant/Owner: AEP State: Ohi Sampling Point: SP03

Investigator(s): T Gillette and S Heitzenrater Section, Township, Range: S20 T2N R20W

Landform (hillside, terrace, etc.): Shoulder Local relief (concave, convex, none): Concave Slope %: 5

Subregion (LRR or MLRA): Lat: 38.719423 Long: -82.819386 Datum: WGS84

Soil Map Unit Name: Shelocta-Steinsburg association, very steep NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID: Wetland 2

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present	Yes ____	No X	Depth (inches): ____
Water Table Present	Yes ____	No X	Depth (inches): ____
Saturation Present (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP03

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Andropogon virginicus	30	Yes	FACU
2. Symphyotrichum lateriflorum	20	Yes	FACW
3. Dichanthelium clandestinum	10	No	FAC
4. Achillea millefolium	5	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	10	x 3 =	30
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals:	65 (A)		210 (B)
Prevalence Index = B/A =			3.23

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)
35% open ground

SOIL

Sampling Point: SP03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 4/3	90	10YR 5/6	10	C	M	Clay Loam	
7-21	10YR 5/6	90	10YR 4/6	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 146, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Sadiq Switch-East Wheelersburg 138 kV Line Rebuild City/County: Scioto County Sampling Date: 02/28/2022

Applicant/Owner: AEP State: Ohi Sampling Point: SP04

Investigator(s): T Gillette and S Heitzenrater Section, Township, Range: S20 T2N R20W

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 0

Subregion (LRR or MLRA): Lat: 38.719498 Long: -82.819356 Datum: WGS84

Soil Map Unit Name: Shelocta-Steinsburg association, very steep NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X No ____	If yes, optional Wetland Site ID: Wetland 2

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present	Yes X	No ____	Depth (inches): 1
Water Table Present	Yes X	No ____	Depth (inches): 7
Saturation Present (includes capillary fringe)	Yes X	No ____	Depth (inches): 21

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP04

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Juncus effusus	40	Yes	FACW
2. Symphyotrichum lateriflorum	20	Yes	FACW
3. Scirpus atrovirens	10	No	OBL
4. Dichanthelium clandestinum	5	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)
Prevalence Index = B/A =		

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Bare Ground 25%

SOIL

Sampling Point: SP04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-21	10YR 3/1	70	10YR 5/6	30	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 146, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Sadiq Switch-East Wheelersburg 138 kV Line Rebuild City/County: Scioto County Sampling Date: 02/28/2022

Applicant/Owner: AEP State: Ohi Sampling Point: SP05

Investigator(s): Tyler Gillette and Samantha Heitzenrater Section, Township, Range: S20 T2N R20W

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 5

Subregion (LRR or MLRA): Lat: 38.721225 Long: -82.818145 Datum: WGS84

Soil Map Unit Name: Shelocta-Steinsburg association, very steep NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID: N/A

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present	Yes X	No ____	Depth (inches): 1
Water Table Present	Yes X	No ____	Depth (inches): 1
Saturation Present (includes capillary fringe)	Yes X	No ____	Depth (inches): 14

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: SP05

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	60	Yes	FACU
2. Rubus allegheniensis	30	Yes	FACU
3. Juncus effusus	10	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column Totals:	100 (A)		380 (B)
Prevalence Index = B/A =			3.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 4/2	80	10YR 5/6	20	C	M	Sandy Loam	
14-21	10YR 4/2	100		0			Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 146, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** X **No** ___

Remarks:

C.2 ORAM FORMS

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

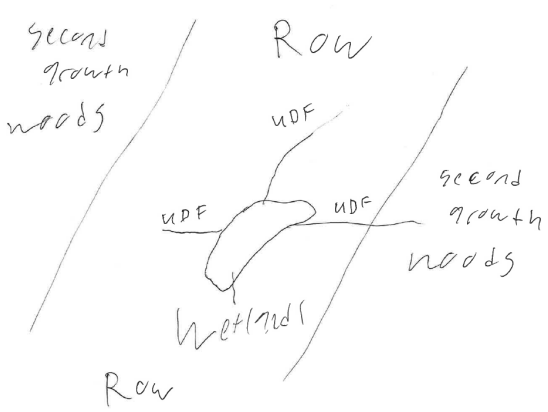
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	Tyler Gillette
Date:	03/10/2022
Affiliation:	Stantec Consulting Services Inc.
Address:	1500 Lake Shore Drive Suite 100, Columbus Ohio 43204
Phone Number:	614-371-2614
e-mail address:	tyler.gillette@stantec.com
Name of Wetland:	Wetland 1
Vegetation Communit(ies):	Emergent (PEM)
HGM Class(es):	Depression

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

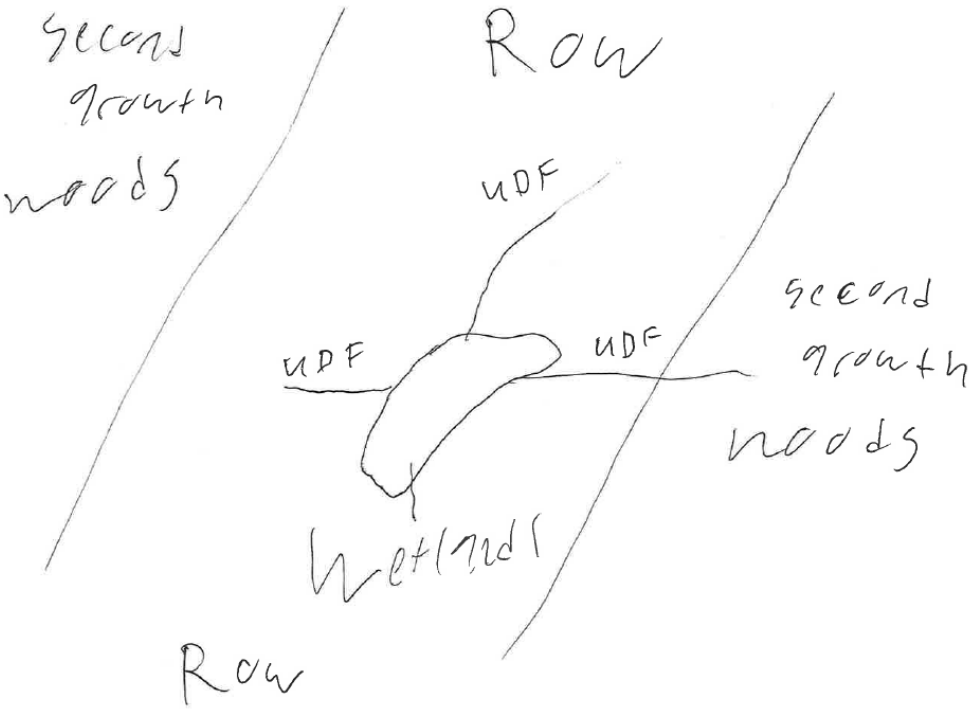


Lat/Long or UTM Coordinate	
USGS Quad Name Wheelersburg	
County Scioto	
Township Porter	
Section and Subsection S20 T2N R20W	
Hydrologic Unit Code 050901030205	
Site Visit 03/102022	
National Wetland Inventory Map No	
Ohio Wetland Inventory Map No	
Soil Survey Scioto County Soil Survey	
Delineation report/map Wetland and Waterbody Delineation Report	

Name of Wetland: Wetland 1

Wetland Size (acres, hectares): 0.01

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

Final score : 21 **Category:** 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

Sadiq Switch-East Wheelersburg Tyler Gillette 03/10/2022

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	☒	☐
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	☒	☐
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	☒	☐
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	☒	☐
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	☐	☒
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	☐	☒

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

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#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 2	NO ☒ Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES ☐ Wetland is a Category 3 wetland. Go to Question 3	NO ☒ Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES ☐ Wetland is a Category 3 wetland Go to Question 4	NO ☒ Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES ☐ Wetland is a Category 3 wetland Go to Question 5	NO ☒ Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES ☐ Wetland is a Category 1 wetland Go to Question 6	NO ☒ Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 7	NO ☒ Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 8a	NO ☒ Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES ☐ Wetland is a Category 3 wetland. Go to Question 8b	NO ☒ Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES ☐ Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO ☒ Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES ☐ Go to Question 9b	NO ☒ Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES ☐ Go to Question 9d	NO ☐ Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES ☐ Wetland is a Category 3 wetland Go to Question 10	NO ☐ Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES ☐ Wetland is a Category 3 wetland. Go to Question 11	NO ☒ Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES ☐ Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO ☒ Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Sadiq Switch-East Wheelersburg	**Rater(s):** Tyler Gillette	**Date:** 03/10/2022

Metric 1. Wetland Area (size).

0	0
max 6 pts.	subtotal

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [x] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

11	11
max 14 pts.	subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [x] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [x] LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

4	15
max 30 pts.	subtotal

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [ ] Recovered (7)
- [ ] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [x] other ROW

Metric 4. Habitat Alteration and Development.

4	19
max 20 pts.	subtotal

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [ ] Recovered (3)
- [ ] Recovering (2)
- [x] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [x] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [ ] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [ ] grazing
- [x] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

19
subtotal this page

last revised 1 February 2001 jjm

Site: Sadiq Switch-East Wheelersburg	**Rater(s):** Tyler Gillette	**Date:** 03/10/2022

19
subtotal first page

0 max 10 pts. | 19 subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

2 max 20 pts. | 21 subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [1] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [✓] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [✓] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

21

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

Sadiq Switch-East Wheelersburg | Tyler Gillette | 03/10/2022

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	NO	If yes, Category 3.
	Question 4. Significant bird habitat	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	NO	If yes, Category 1.
	Question 6. Bogs	NO	If yes, Category 3.
	Question 7. Fens	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	11	
	Metric 3. Hydrology	4	
	Metric 4. Habitat	4	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	2	
	TOTAL SCORE	21	Category based on score breakpoints Category 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES ☐ Wetland is categorized as a Category 3 wetland	NO ☒	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES ☐ Wetland should be evaluated for possible Category 3 status	NO ☒	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES ☐ Wetland is categorized as a Category 1 wetland	NO ☒	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES ☒ Wetland is assigned to the appropriate category based on the scoring range	NO ☐	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES ☐ Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO ☒	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES ☐ Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO ☒ Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3
Category 1	☒	☐	☐

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

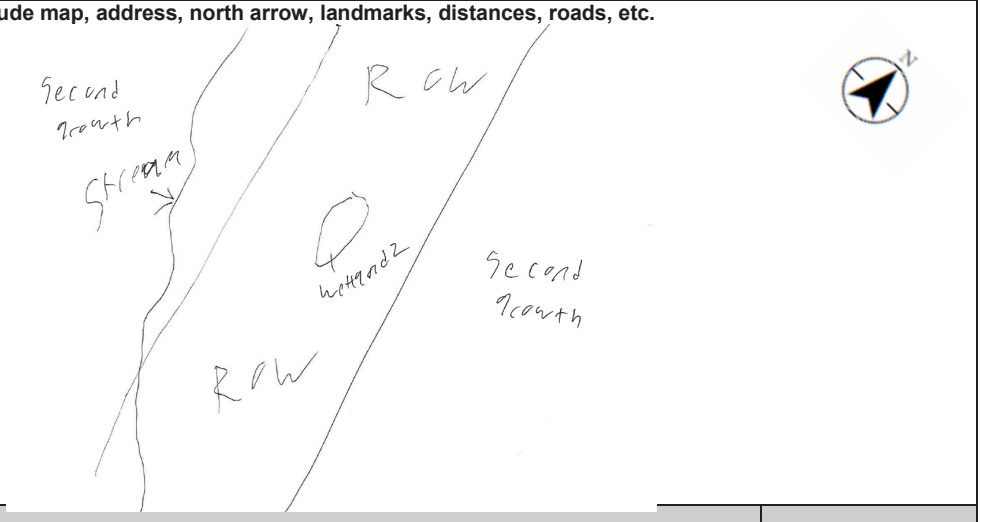
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	Tyler Gillette
Date:	02/28/2022
Affiliation:	Stantec Consulting Services Inc.
Address:	1500 Lake Shore Drive Suite 100, Columbus Ohio 43204
Phone Number:	614-371-2614
e-mail address:	tyler.gillette@stantec.com
Name of Wetland:	Wetland 2
Vegetation Communit(ies):	Emergent (PEM)
HGM Class(es):	Depression

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

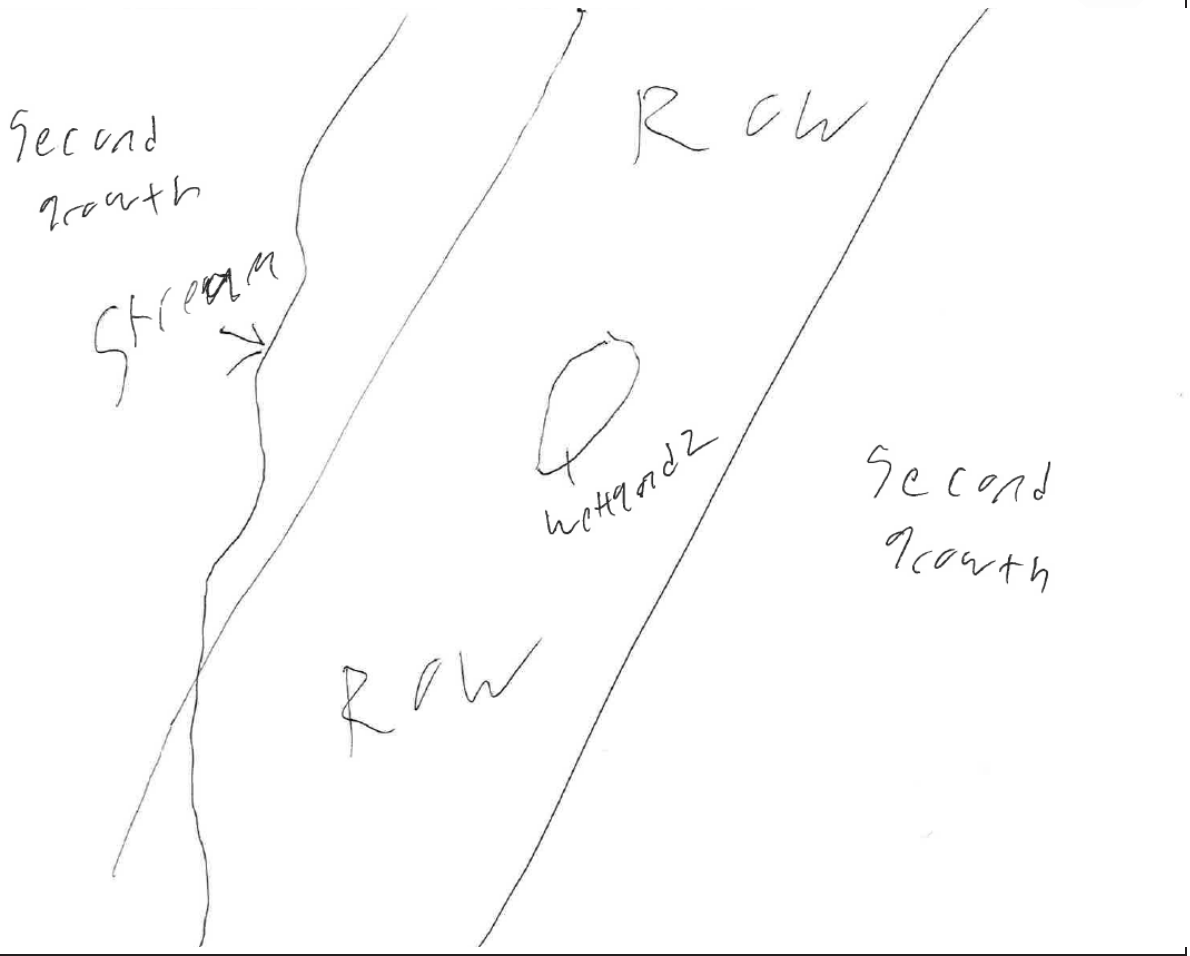


Lat/Long or UTM Coordinate	
USGS Quad Name: Wheelersburg	
County: Scioto	
Township: Porter	
Section and Subsection: S20 T2N R20W	
Hydrologic Unit Code: 050901030205	
Site Visit: 02/28/2022	
National Wetland Inventory Map: No	
Ohio Wetland Inventory Map: No	
Soil Survey: Scioto County Soil Survey	
Delineation report/map: Wetland and Waterbody Delineation Report	

Name of Wetland: Wetland 2

Wetland Size (acres, hectares): 0,02

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

Final score : 28 **Category:** 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

Sadiq Switch-East Wheelersburg Tyler Gillette 02/28/2022

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

Sadiq Switch-East Wheelersburg Tyler Gillette 02/28/2022

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 2	NO ☒ Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES ☐ Wetland is a Category 3 wetland. Go to Question 3	NO ☒ Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES ☐ Wetland is a Category 3 wetland Go to Question 4	NO ☒ Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES ☐ Wetland is a Category 3 wetland Go to Question 5	NO ☒ Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES ☐ Wetland is a Category 1 wetland Go to Question 6	NO ☒ Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 7	NO ☒ Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 8a	NO ☒ Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES ☐ Wetland is a Category 3 wetland. Go to Question 8b	NO ☒ Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES ☐ Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO ☒ Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES ☐ Go to Question 9b	NO ☒ Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES ☐ Go to Question 9d	NO ☐ Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES ☐ Wetland is a Category 3 wetland Go to Question 10	NO ☐ Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES ☐ Wetland is a Category 3 wetland. Go to Question 11	NO ☒ Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES ☐ Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO ☒ Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Sadiq Switch-East Wheelersburg	**Rater(s):** Tyler Gillette	**Date:** 02/28/2022

Metric 1. Wetland Area (size).

max 6 pts.	subtotal
0	0

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [x] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

max 14 pts.	subtotal
7	7

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [x] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

max 30 pts.	subtotal
15	22

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [x] None or none apparent (12)
- [ ] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

Metric 4. Habitat Alteration and Development.

max 20 pts.	subtotal
3	25

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [ ] Recovered (3)
- [ ] Recovering (2)
- [x] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [x] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [ ] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [x] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

25

subtotal this page

last revised 1 February 2001 jjm

Site: Sadiq Switch-East Wheelersburg	**Rater(s):** Tyler Gillette	**Date:** 02/28/2022

25
subtotal first page

0 (max 10 pts.) | 25 (subtotal)

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

3 (max 20 pts.) | 28 (subtotal)

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [1] Emergent
- [0] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [✓] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [✓] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [ ] Vegetated hummucks/tussucks
- [ ] Coarse woody debris >15cm (6in)
- [ ] Standing dead >25cm (10in) dbh
- [ ] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

28

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

Sadiq Switch-East Wheelersburg | Tyler Gillette | 02/28/2022

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	NO	If yes, Category 3.
	Question 4. Significant bird habitat	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	NO	If yes, Category 1.
	Question 6. Bogs	NO	If yes, Category 3.
	Question 7. Fens	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	7	
	Metric 3. Hydrology	15	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	3	
	TOTAL SCORE	28	Category based on score breakpoints Category 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES ☐ Wetland is categorized as a Category 3 wetland	NO ☒	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES ☐ Wetland should be evaluated for possible Category 3 status	NO ☒	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES ☐ Wetland is categorized as a Category 1 wetland	NO ☒	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES ☒ Wetland is assigned to the appropriate category based on the scoring range	NO ☐	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES ☐ Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO ☒	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES ☐ Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO ☒ Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3
Category 1	☒	☐	☐

End of Ohio Rapid Assessment Method for Wetlands.

C.3 HHEI FORMS

Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **20**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 1 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 65 LAT 38.705335 LONG -82.829257 RIVER MILE _____

DATE 3/01/2022 SCORER T.Gillette COMMENTS ephemeral

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☑☐	SILT **[3 pt]**	50%
☐☐	BOULDER (>256 mm) **[16 pts]**	0%	☐☑	LEAF PACK/WOODY DEBRIS **[3 pts]**	40%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☐	COBBLE (65-256 mm) **[12 pts]**	5%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☐☐	GRAVEL (2-64 mm) **[9 pts]**	5%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 10%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 4

HHEI Metric Points

Substrate Max = 40

10

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☑	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 4

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

COMMENTS TOB W- 3 ft D- 1ft OHWM W- 3ft D- 1 ft **AVERAGE BANKFULL WIDTH (meters)** .91

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	
☐	☑	Wide >10m
☐	☐	Moderate 5-10m
☑	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.4 mi

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 2/25/22 Quantity: 0.19"

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 70

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 11.2 Dissolved Oxygen (mg/l) _____ pH (S.U.) 6.3 Conductivity (umhos/cm) 70

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

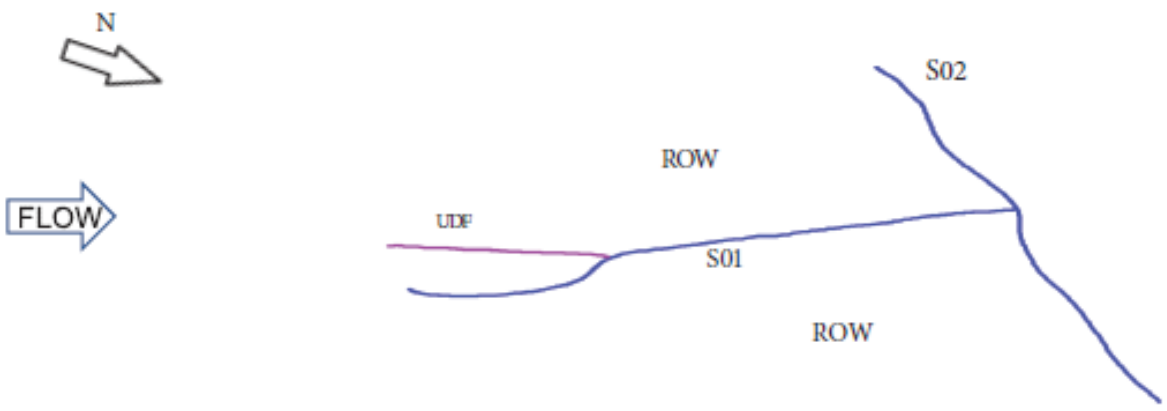
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **70**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 2 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 200 LAT 38.705393 LONG -82.829378 RIVER MILE _____

DATE 3/1/2022 SCORER T.Gillette COMMENTS intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☐	SILT **[3 pt]**	25%
☐☐	BOULDER (>256 mm) **[16 pts]**	5%	☐☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	0%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☑	COBBLE (65-256 mm) **[12 pts]**	30%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☑☐	GRAVEL (2-64 mm) **[9 pts]**	40%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 35%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 21 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 4

HHEI Metric Points

Substrate Max = 40

25

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☑	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 13

Pool Depth Max = 30

25

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

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

COMMENTS TOB W- 6 ft. D- 2 ft OHWM W- 2 ft D- 3 in **AVERAGE BANKFULL WIDTH (meters)** 2

Bankfull Width Max=30

20

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	
☐	☑	Wide >10m
☑	☐	Moderate 5-10m
☐	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.37

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 2/25/22 Quantity: 0.19"

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 60

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 9.1 Dissolved Oxygen (mg/l) _____ pH (S.U.) 6.4 Conductivity (umhos/cm) 330

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

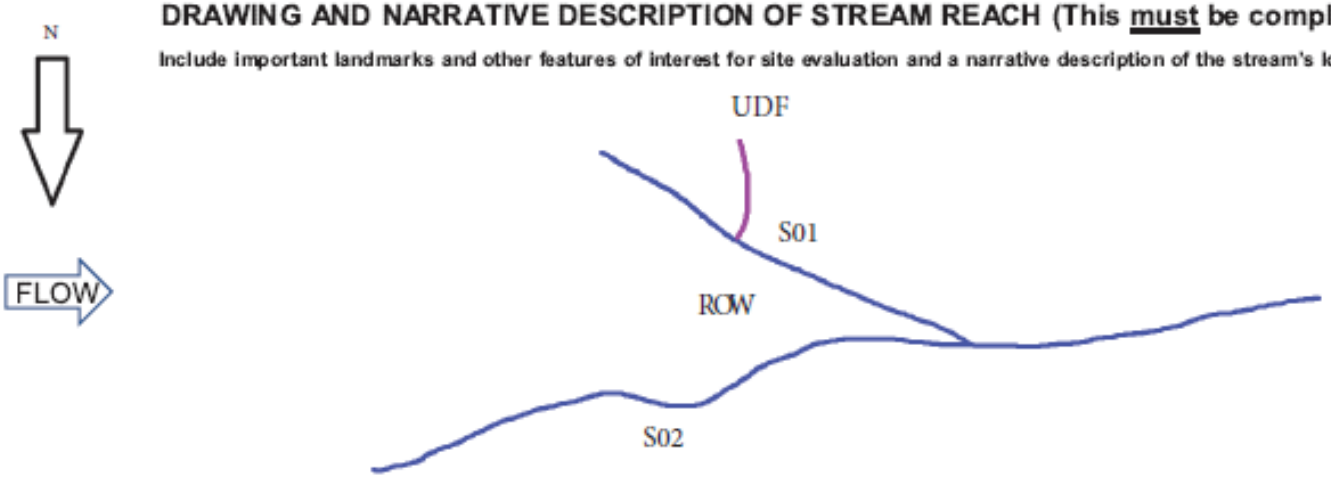
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **26**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 2A RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 17 LAT 38.705245 LONG -82.829799 RIVER MILE _____

DATE 3/8/2022 SCORER T. Gillette COMMENTS ephemeral

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☑	SILT **[3 pt]**	20%
☐☐	BOULDER (>256 mm) **[16 pts]**	0%	☐☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☐	COBBLE (65-256 mm) **[12 pts]**	0%	☐☐	CLAY or HARDPAN **[0 pt]**	10%
☑☐	GRAVEL (2-64 mm) **[9 pts]**	60%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 12 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 4

HHEI Metric Points

Substrate Max = 40

16

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☑	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5+

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

COMMENTS TOB W- 3 ft D- 2 ft OHWM W- 1.5' D- 6" **AVERAGE BANKFULL WIDTH (meters)** .3

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	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☑	☑	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☐	2.0	☐	3.0
☑	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.37

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 2/25/22 Quantity: 0.19"

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 40

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 8.9 Dissolved Oxygen (mg/l) _____ pH (S.U.) 6.5 Conductivity (umhos/cm) 110

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

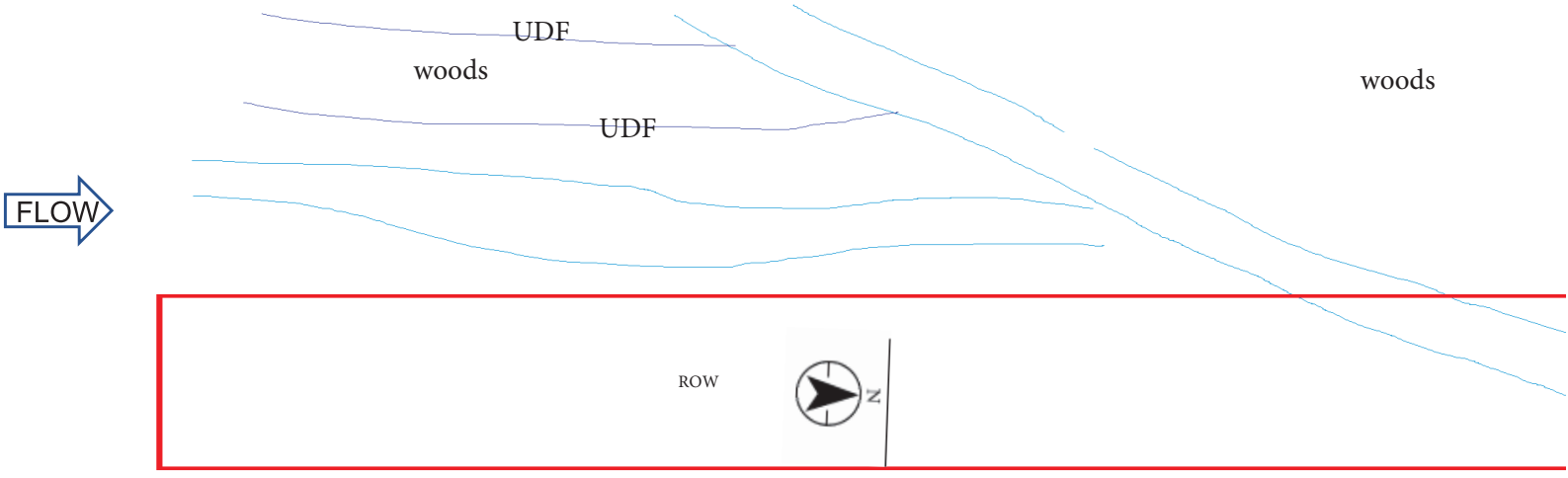
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **15**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 2B RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 5 LAT 38.705882 LONG -82.829376 RIVER MILE _____

DATE 9/01/2022 SCORER A.Kwolek COMMENTS ephemeral

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☑☐	SILT **[3 pt]**	60%
☐☐	BOULDER (>256 mm) **[16 pts]**	0%	☐☑	LEAF PACK/WOODY DEBRIS **[3 pts]**	20%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☐	COBBLE (65-256 mm) **[12 pts]**	0%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☐☐	GRAVEL (2-64 mm) **[9 pts]**	10%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	10%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 4

HHEI Metric Points

Substrate Max = 40

10

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☑	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30

0

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

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

COMMENTS TOB W- 2.5 ft D- 1 ft OHWM W- 1' D-0.25' **AVERAGE BANKFULL WIDTH (meters)** .7

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	
☑	☑	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☐	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☑	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.41

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/30/22 Quantity: 0.39"

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 10

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

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

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

No water in channel to collect field measurements

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

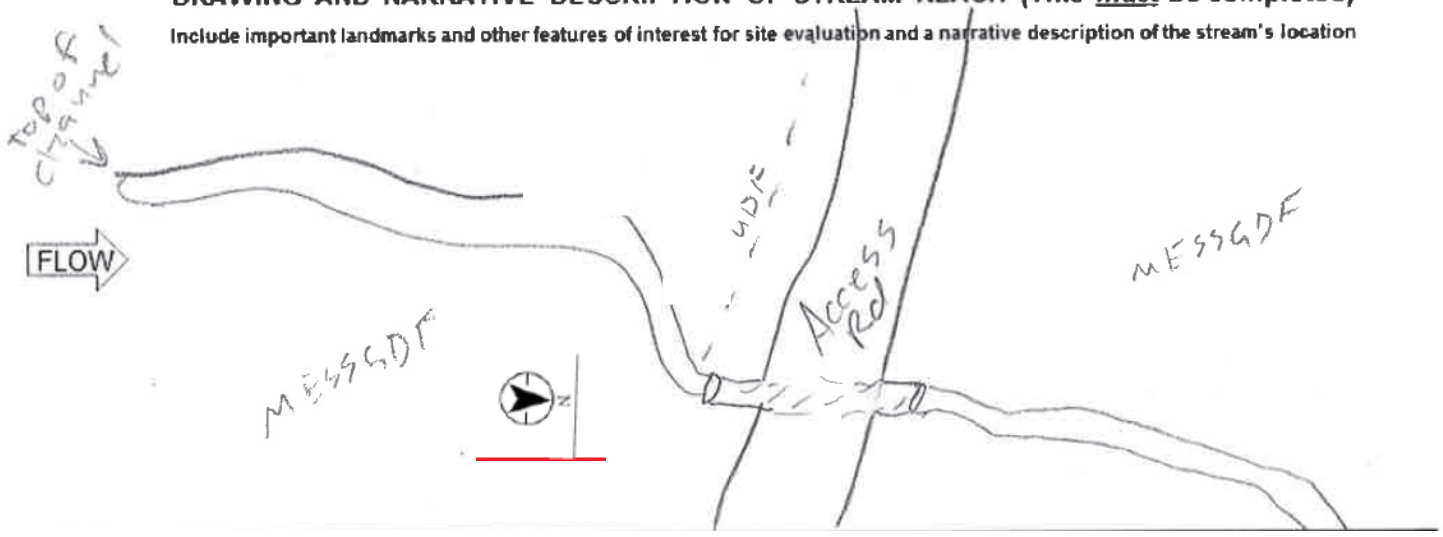
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **75**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 3 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 200 LAT 38.708323 LONG -82.827333 RIVER MILE _____

DATE 3/1/2022 SCORER T.Gillette COMMENTS Intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☐	SILT **[3 pt]**	0%
☐☐	BOULDER (>256 mm) **[16 pts]**	20%	☐☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	0%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☑	COBBLE (65-256 mm) **[12 pts]**	30%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☑☐	GRAVEL (2-64 mm) **[9 pts]**	40%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	10%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 50%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 21 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 4

HHEI Metric Points

Substrate Max = 40

25

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☑	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 25

Pool Depth Max = 30

30

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

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

COMMENTS TOB W-8 ft D-2 ft OHWM W- 5ft D- 10 in **AVERAGE BANKFULL WIDTH (meters)** 2

Bankfull Width Max=30

20

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	
☑	☑	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☑	☑	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☑	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.58

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 2/25/22 Quantity: 0.19"

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 10

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 11.1 Dissolved Oxygen (mg/l) _____ pH (S.U.) 6 Conductivity (umhos/cm) 120

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

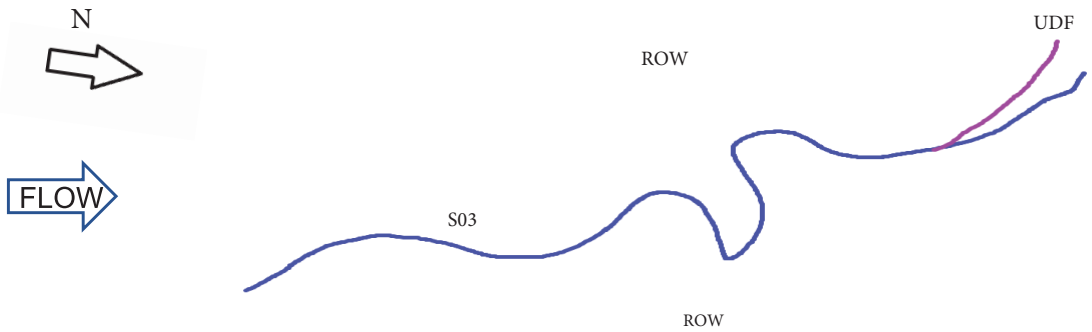
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **56**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 3A RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 51 LAT 38.708521 LONG -82.827456 RIVER MILE _____

DATE 3/1/2022 SCORER T.Gillette COMMENTS intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☐	SILT **[3 pt]**	0%
☐☐	BOULDER (>256 mm) **[16 pts]**	5%	☐☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☑	COBBLE (65-256 mm) **[12 pts]**	20%	☐☐	CLAY or HARDPAN **[0 pt]**	10%
☑☐	GRAVEL (2-64 mm) **[9 pts]**	55%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 25%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 21 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 5

HHEI Metric Points

Substrate Max = 40

26

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☑	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 13

Pool Depth Max = 30

25

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

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

COMMENTS TOB W- 3 ft D- 5 inch; OHWM W- 3 ft D-5 inche **AVERAGE BANKFULL WIDTH (meters)** .91

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	
☑	☑	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☑	☑	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.58

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 2/25/22 Quantity: 0.19"

Photo-documentation Notes: upstream, downstream, substrate

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

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 12.5 Dissolved Oxygen (mg/l) _____ pH (S.U.) 6.3 Conductivity (umhos/cm) 130

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

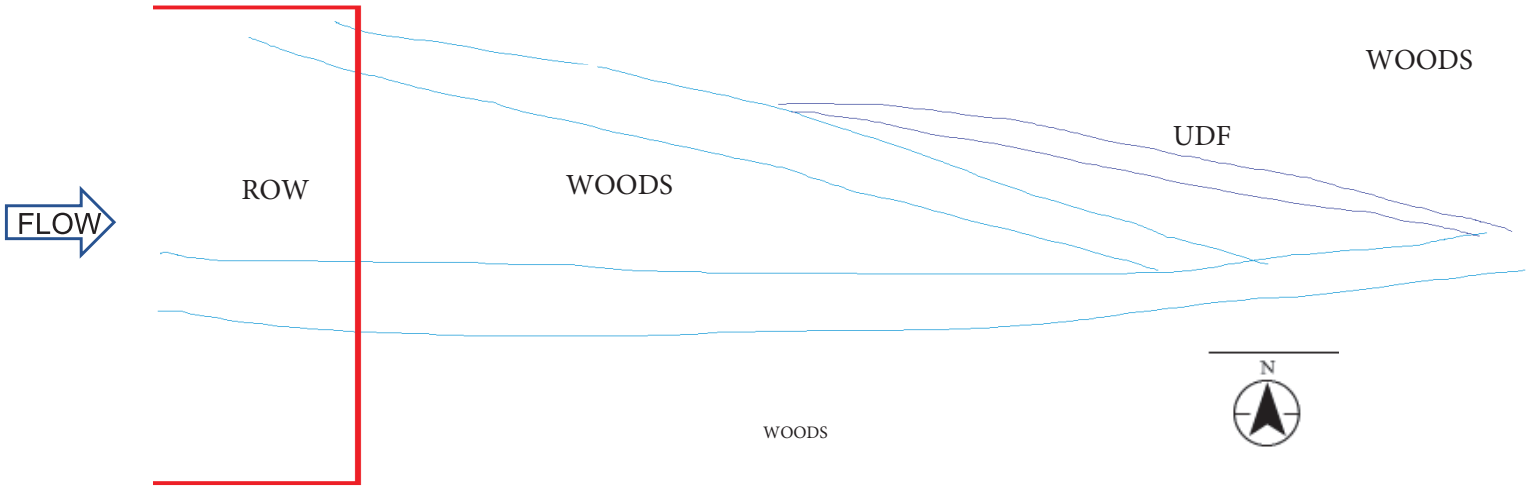
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **51**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 4 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 200 LAT 38.708746 LONG -82.827034 RIVER MILE _____

DATE 3/1/2022 SCORER T.Gillette COMMENTS intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐ ☑	SILT **[3 pt]**	30%
☐ ☐	BOULDER (>256 mm) **[16 pts]**	0%	☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	0%
☐ ☐	BEDROCK **[16 pts]**	0%	☐ ☐	FINE DETRITUS **[3 pts]**	0%
☐ ☐	COBBLE (65-256 mm) **[12 pts]**	10%	☐ ☐	CLAY or HARDPAN **[0 pt]**	10%
☑ ☐	GRAVEL (2-64 mm) **[9 pts]**	50%	☐ ☐	MUCK **[0 pts]**	0%
☐ ☐	SAND (<2 mm) **[6 pts]**	0%	☐ ☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 10%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 12 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 4

HHEI Metric Points

Substrate Max = 40

16

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☑	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 25

Pool Depth Max = 30

30

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

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

COMMENTS TOB W- 3ft D- 5 in OHWM W- 2 ft D-3 in **AVERAGE BANKFULL WIDTH (meters)** .91

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	
☑	☑	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☑	☑	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑ Stream Flowing ☐ Moist Channel, isolated pools, no flow (intermittent)

☐ Subsurface flow with isolated pools (interstitial) ☐ Dry channel, no water (ephemeral)

COMMENTS _____

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

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☑ 1.5	☐ 2.5	☐ >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)

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: Lick Run Distance from Evaluated Stream 0.60

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 2/25/22 Quantity: 0.19

Photo-documentation Notes: upstream, downstream, substrate

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

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 9.0 Dissolved Oxygen (mg/l) _____ pH (S.U.) 6.0 Conductivity (umhos/cm) 250

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

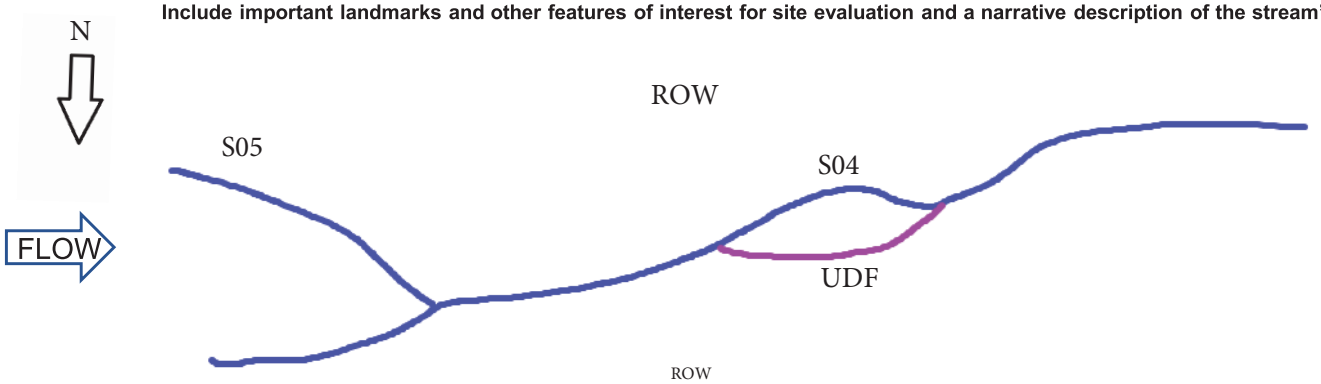
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **54**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 4A RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 13 LAT 38.709815 LONG -82.829155 RIVER MILE _____

DATE 9/1/2022 SCORER A.Kwolek COMMENTS intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☑	SILT **[3 pt]**	10%
☐☐	BOULDER (>256 mm) **[16 pts]**	0%	☐☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	0%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☐	COBBLE (65-256 mm) **[12 pts]**	5%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☐☑	GRAVEL (2-64 mm) **[9 pts]**	20%	☐☐	MUCK **[0 pts]**	0%
☑☐	SAND (<2 mm) **[6 pts]**	65%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 5%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 15 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 4

HHEI Metric Points **Substrate Max = 40** **19** **A + B**

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☑	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 8

Pool Depth Max = 30 **15**

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

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

COMMENTS TOB W- 6' D- 2' OHWM W- 3' D-1' **AVERAGE BANKFULL WIDTH (meters)** 2

Bankfull Width Max=30 **20**

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	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☑	☑	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☑	☑	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.56

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/30/22 Quantity: 0.39"

Photo-documentation Notes: upstream, downstream, substrate

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

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 21.2 Dissolved Oxygen (mg/l) _____ pH (S.U.) 7.9 Conductivity (umhos/cm) N/A

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) Y Species observed (if known): Green Frog

Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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

Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **29**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 5 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 9 LAT 38.708853 LONG -82.826641 RIVER MILE _____

DATE 3/1/2022 SCORER T.Gillette COMMENTS ephemeral

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☑☐	SILT **[3 pt]**	40%
☐☐	BOULDER (>256 mm) **[16 pts]**	0%	☐☑	LEAF PACK/WOODY DEBRIS **[3 pts]**	40%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☐	COBBLE (65-256 mm) **[12 pts]**	0%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☐☐	GRAVEL (2-64 mm) **[9 pts]**	20%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points

Substrate Max = 40

9

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☑	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7

Pool Depth Max = 30

15

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

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

COMMENTS TOB W- 1.5 ft D- 3 in OHWM W-1.5 ft D- 3 in **AVERAGE BANKFULL WIDTH (meters)** 0.5

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	
☑	☑	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☑	☑	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.60

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 2/25/22 Quantity: 0.19"

Photo-documentation Notes: upstream, downstream, substrate

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

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 11.8 Dissolved Oxygen (mg/l) _____ pH (S.U.) 6.4 Conductivity (umhos/cm) 330

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

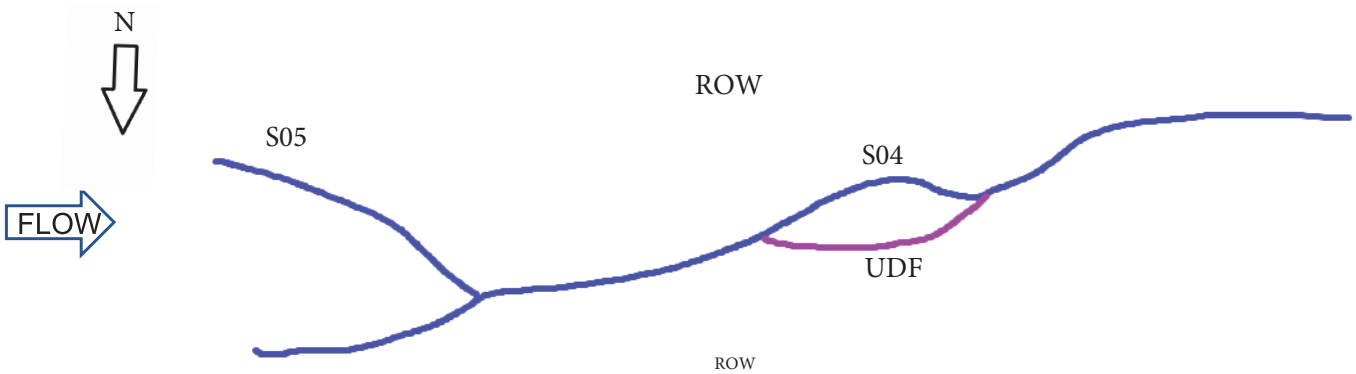
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **47**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 6 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 161 LAT 38.712394 LONG -82.824399 RIVER MILE _____

DATE 3/10/2022 SCORER T.Gillette COMMENTS Intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☐	SILT **[3 pt]**	0%
☐☐	BOULDER (>256 mm) **[16 pts]**	10%	☐☑	LEAF PACK/WOODY DEBRIS **[3 pts]**	20%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☐	COBBLE (65-256 mm) **[12 pts]**	10%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☑☐	GRAVEL (2-64 mm) **[9 pts]**	50%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	10%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 20%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 12 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 5

HHEI Metric Points

Substrate Max = 40

17

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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 **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 11

Pool Depth Max = 30

25

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 TOB W- 3 ft D- 1 ft OHWM W- 1 ft D- 4 in **AVERAGE BANKFULL WIDTH (meters)** .71

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	
☑	☐	Wide >10m
☐	☐	Moderate 5-10m
☐	☑	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	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 _____

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

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☑ 0.5	☐ 1.5	☐ 2.5	☐ >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)

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: Lick Run Distance from Evaluated Stream 0.87

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 3/9/22 Quantity: 0.29".

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 90

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 8.9 Dissolved Oxygen (mg/l) _____ pH (S.U.) 6.9 Conductivity (umhos/cm) 270

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

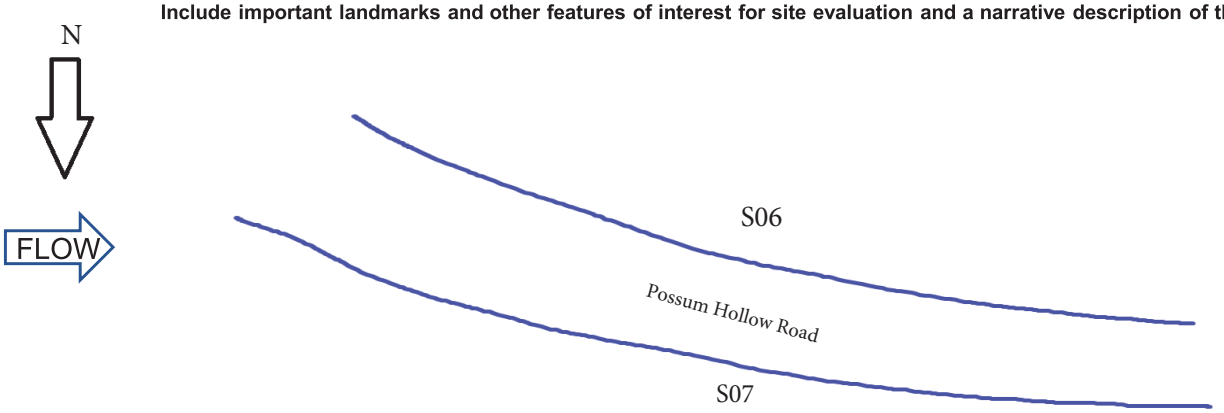
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **23**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 6A RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 20 LAT 38.712910 LONG -82.827721 RIVER MILE _____

DATE 9/1/2022 SCORER A. Kwolek COMMENTS ephemeral

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☑ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**	0%	☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	0%
☐ ☐	BEDROCK **[16 pts]**	0%	☐ ☐	FINE DETRITUS **[3 pts]**	0%
☐ ☐	COBBLE (65-256 mm) **[12 pts]**	5%	☐ ☐	CLAY or HARDPAN **[0 pt]**	0%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**	5%	☐ ☐	MUCK **[0 pts]**	0%
☐ ☑	SAND (<2 mm) **[6 pts]**	10%	☐ ☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 5%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 9 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 4

HHEI Metric Points

Substrate Max = 40

13

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☑	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 3

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

COMMENTS TOB W- 3 ft D- 1 ft OHWM W- 1 ft D- 4 in **AVERAGE BANKFULL WIDTH (meters)** 2.8

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	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☑	☑	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☐	Stream Flowing	☑	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS ephemeral

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

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.77

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/30/22 Quantity: 0.39".

Photo-documentation Notes: upstream, downstream, substrate

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

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (umhos/cm) N/A

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

No enough water in channel for field measurements

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

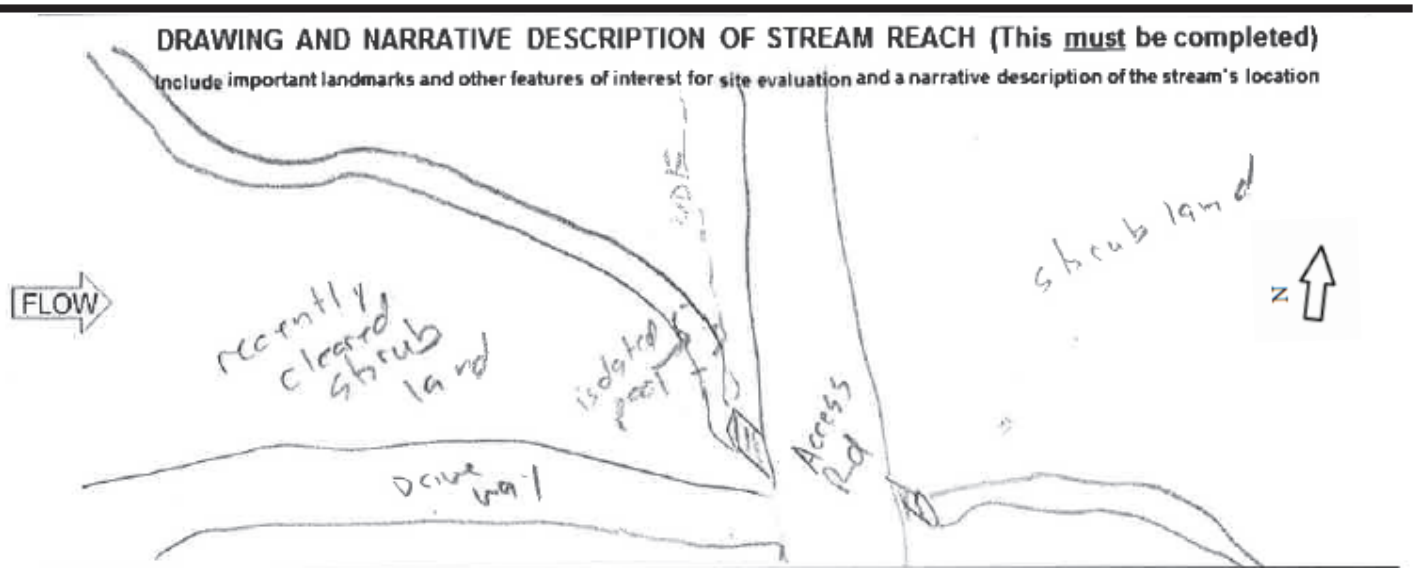
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **66**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 7 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 162 LAT 38.712446 LONG -82.824367 RIVER MILE _____

DATE 3/10/2022 SCORER T.Gillette COMMENTS intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☐	SILT **[3 pt]**	10%
☐☐	BOULDER (>256 mm) **[16 pts]**	10%	☐☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☑	COBBLE (65-256 mm) **[12 pts]**	20%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☑☐	GRAVEL (2-64 mm) **[9 pts]**	50%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 30%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 21 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 5

HHEI Metric Points

Substrate Max = 40

26

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☑	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 20

Pool Depth Max = 30

25

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

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

COMMENTS TOB W- 4 ft D- 1' OHWM W- 2 ft D- 8 in **AVERAGE BANKFULL WIDTH (meters)** 1.2

Bankfull Width Max=30

15

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	
☐	☑	Wide >10m
☐	☐	Moderate 5-10m
☑	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☐	2.0	☐	3.0
☑	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.87

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 3/9/22 Quantity: 0.29".

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 90

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 8.2 Dissolved Oxygen (mg/l) _____ pH (S.U.) 7.2 Conductivity (umhos/cm) 140

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

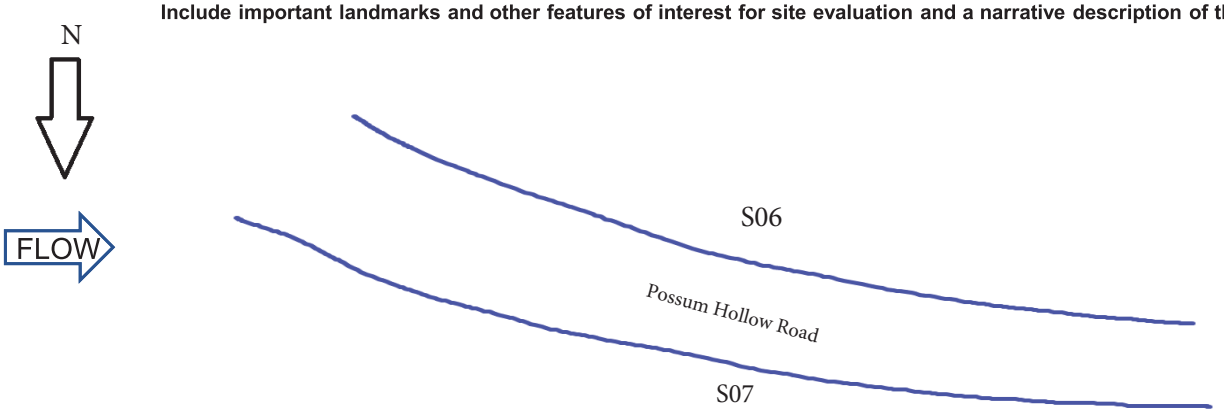
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **39**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 8 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 151 LAT 38.715422 LONG -82.82223 RIVER MILE _____

DATE 3/9/22 SCORER T.Gillette COMMENTS intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☑☐	SILT **[3 pt]**	50%
☐☐	BOULDER (>256 mm) **[16 pts]**	0%	☐☑	LEAF PACK/WOODY DEBRIS **[3 pts]**	40%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☐	COBBLE (65-256 mm) **[12 pts]**	0%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☐☐	GRAVEL (2-64 mm) **[9 pts]**	10%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points

Substrate Max = 40

9

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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 **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 20

Pool Depth Max = 30

25

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 TOB W-1' D-8" OHWM W- 1' D-8" **AVERAGE BANKFULL WIDTH (meters)** .3

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	
☐	☑	Wide >10m
☐	☐	Moderate 5-10m
☑	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☑	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	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 _____

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

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☑ 0.5	☐ 1.5	☐ 2.5	☐ >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)

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: Lick Run Distance from Evaluated Stream 0.78

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 3/9/2022 Quantity: 0.29".

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 40

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 8.5 Dissolved Oxygen (mg/l) _____ pH (S.U.) 6.3 Conductivity (umhos/cm) 80

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

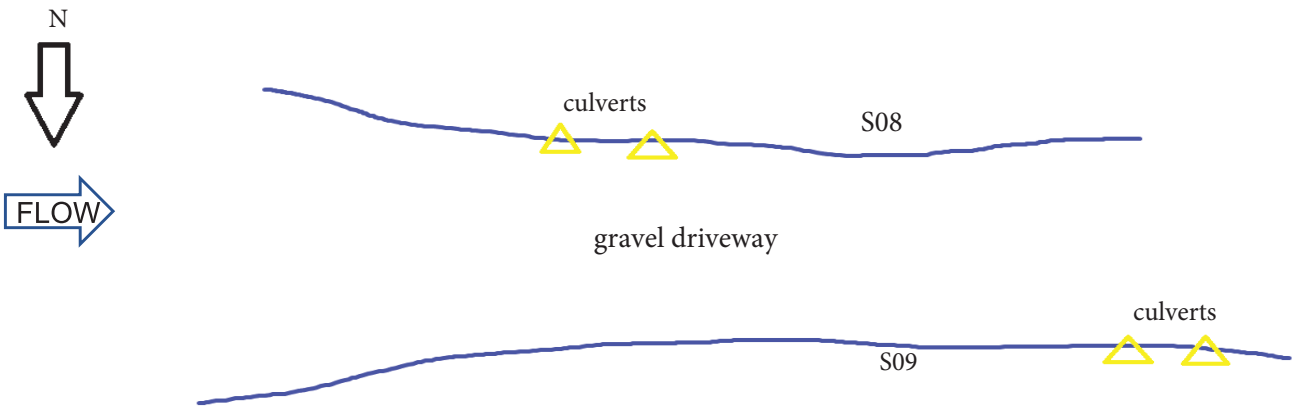
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **39**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 9 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 200 LAT 38.715560 LONG -82.822185 RIVER MILE _____

DATE 3/9/22 SCORER T.Gillette COMMENTS ephemeral

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]	0%	☑☐	SILT [3 pt]	50%
☐☐	BOULDER (>256 mm) [16 pts]	0%	☐☑	LEAF PACK/WOODY DEBRIS [3 pts]	40%
☐☐	BEDROCK [16 pts]	0%	☐☐	FINE DETRITUS [3 pts]	0%
☐☐	COBBLE (65-256 mm) [12 pts]	0%	☐☐	CLAY or HARDPAN [0 pt]	0%
☐☐	GRAVEL (2-64 mm) [9 pts]	10%	☐☐	MUCK [0 pts]	0%
☐☐	SAND (<2 mm) [6 pts]	0%	☐☐	ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points

Substrate Max = 40

9

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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 **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 20

Pool Depth Max = 30

25

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 TOB W-1' D-8" OHWM W- 1' D- 8" **AVERAGE BANKFULL WIDTH (meters)** .30

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	
☐	☑	Wide >10m
☐	☐	Moderate 5-10m
☑	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☑	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	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 _____

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

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☑ 0.5	☐ 1.5	☐ 2.5	☐ >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)

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: Lick Run Distance from Evaluated Stream 0.77

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 3/9/2022 Quantity: 0.29".

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 40

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 9.0 Dissolved Oxygen (mg/l) _____ pH (S.U.) 6.0 Conductivity (umhos/cm) 140

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

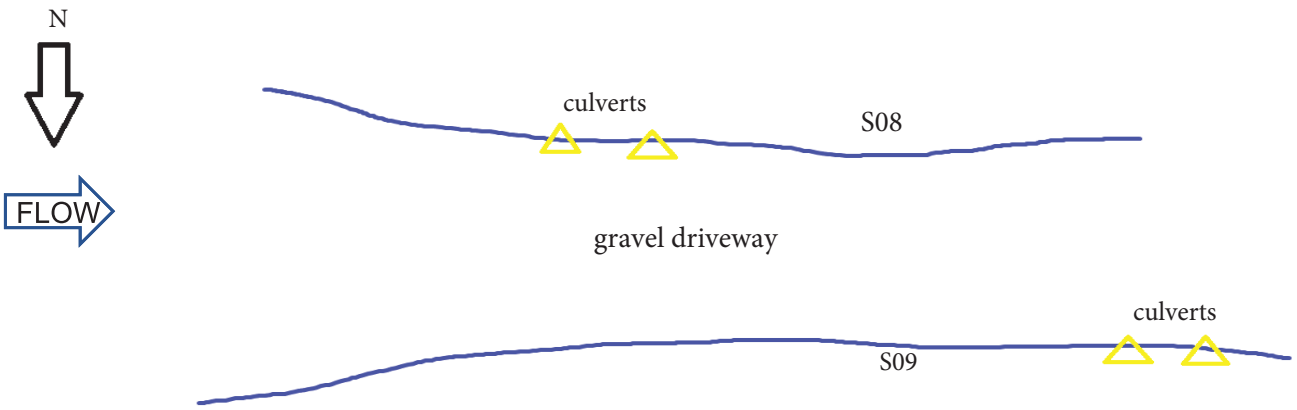
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **57**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 9A RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 200 LAT 38.716013 LONG -82.822023 RIVER MILE _____

DATE 3/9/22 SCORER T.Gillette COMMENTS intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☐	SILT **[3 pt]**	0%
☐☐	BOULDER (>256 mm) **[16 pts]**	0%	☐☑	LEAF PACK/WOODY DEBRIS **[3 pts]**	20%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☐	COBBLE (65-256 mm) **[12 pts]**	10%	☐☐	CLAY or HARDPAN **[0 pt]**	20%
☑☐	GRAVEL (2-64 mm) **[9 pts]**	40%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	10%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 10%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 12 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 5

HHEI Metric Points

Substrate Max = 40

17

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 31

Pool Depth Max = 30

20

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

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

COMMENTS TOB W-5' D-2' OHWM W- 3' D- 3" **AVERAGE BANKFULL WIDTH (meters)** 1.5

Bankfull Width Max=30

20

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	
☑	☑	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☑	☑	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑ Stream Flowing ☐ Moist Channel, isolated pools, no flow (intermittent)

☐ Subsurface flow with isolated pools (interstitial) ☐ Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☑	2.0	☐	3.0
☑	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.78

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/9/2022 Quantity: 0.29".

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 40

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 10.4 Dissolved Oxygen (mg/l) _____ pH (S.U.) 5.8 Conductivity (umhos/cm) 140

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

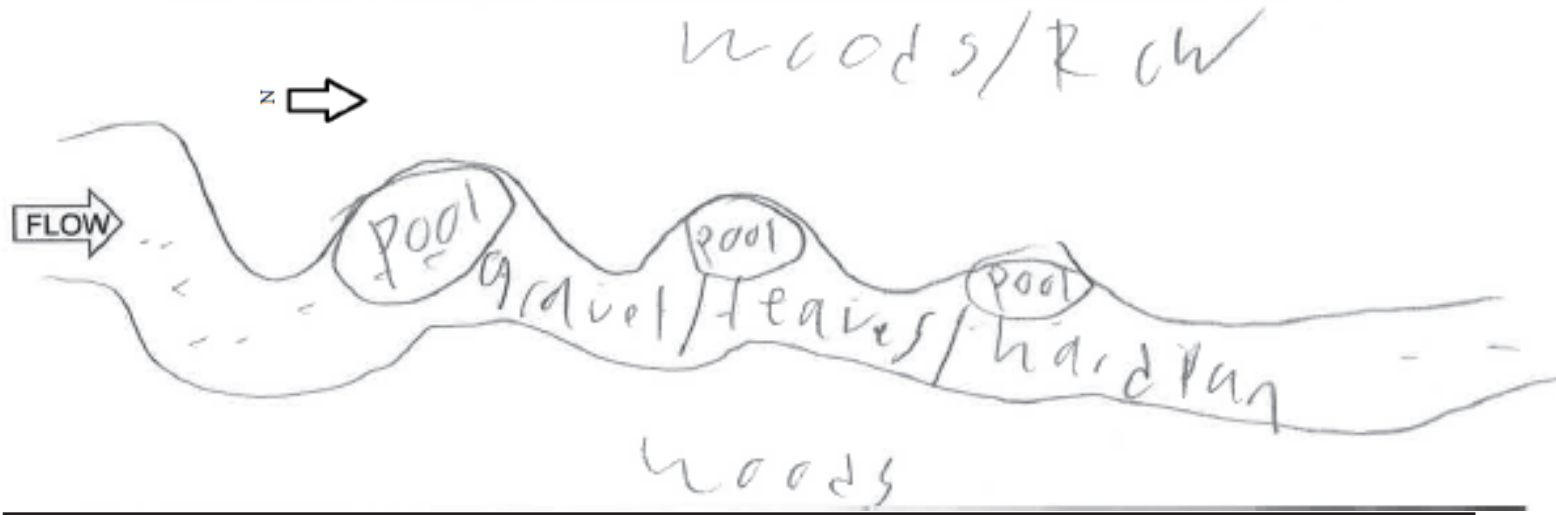
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **64**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 10 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 200 LAT 38.720075 LONG -82.819111 RIVER MILE _____

DATE 2/28/2022 SCORER T. Gillette COMMENTS intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☐	SILT **[3 pt]**	20%
☐☐	BOULDER (>256 mm) **[16 pts]**	0%	☐☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	0%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☑	COBBLE (65-256 mm) **[12 pts]**	30%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☑☐	GRAVEL (2-64 mm) **[9 pts]**	50%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 30%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 21 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points

Substrate Max = 40

24

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 31

Pool Depth Max = 30

20

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

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

COMMENTS TOB W- 8 ft D- 5 ft OHWM W-2 ft D- 3" **AVERAGE BANKFULL WIDTH (meters)** 2.4

Bankfull Width Max=30

20

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	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☑	☑	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☑	☑	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.27

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 2/25/22 Quantity: 0.19"

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 60

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 8.6 Dissolved Oxygen (mg/l) _____ pH (S.U.) 5.6 Conductivity (umhos/cm) 80

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

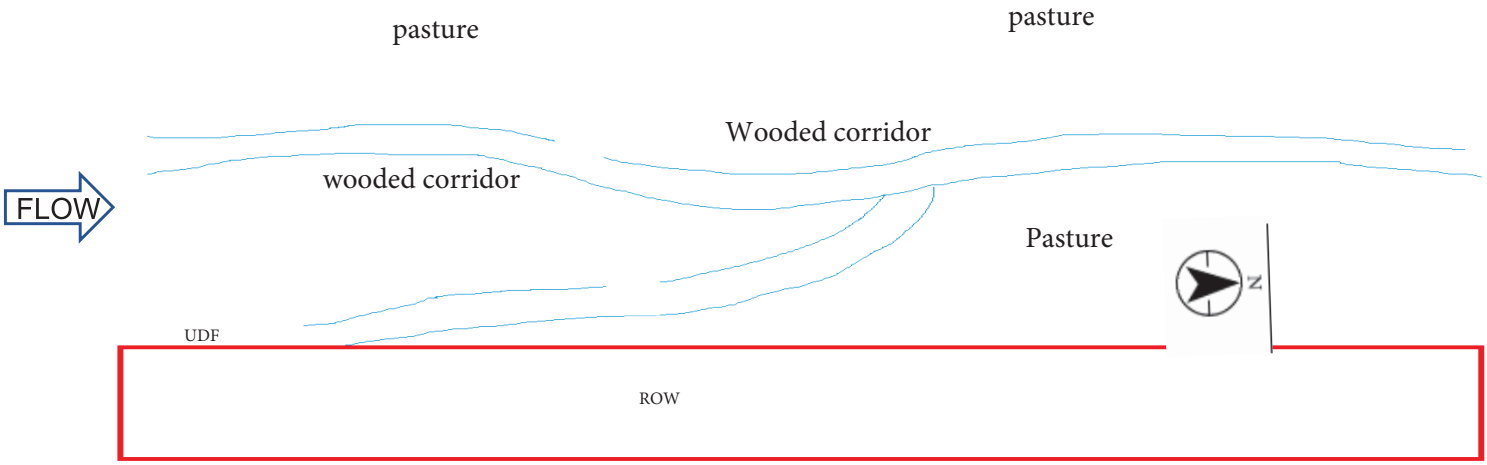
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **69**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 11 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 58 LAT 38.718381 LONG -82.820009 RIVER MILE _____

DATE 2/28/2022 SCORER T. Gillette COMMENTS intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☐	SILT **[3 pt]**	10%
☐☐	BOULDER (>256 mm) **[16 pts]**	0%	☐☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	0%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☑	COBBLE (65-256 mm) **[12 pts]**	30%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☑☐	GRAVEL (2-64 mm) **[9 pts]**	60%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 30%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 21 **TOTAL NUMBER OF SUBSTRATE TYPES: (B)** 3

HHEI Metric Points

Substrate Max = 40

24

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☑	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 15

Pool Depth Max = 30

25

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

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

COMMENTS TOB W- 5 ft D- 1 ft OHWM W- 3 ft D- 2 in **AVERAGE BANKFULL WIDTH (meters)** 1.5

Bankfull Width Max=30

20

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	
☑	☑	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☑	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.47

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 2/25/22 Quantity: 0.19"

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 20

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 7.7 Dissolved Oxygen (mg/l) _____ pH (S.U.) 5.7 Conductivity (umhos/cm) 100

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

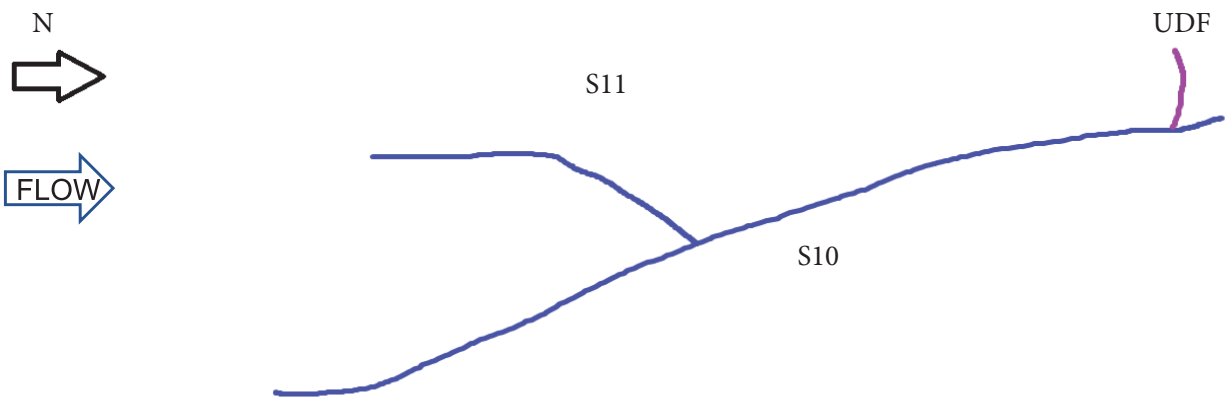
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **59**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 12 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 142 LAT 38.721534 LONG -82.818071 RIVER MILE _____

DATE 2/28/2022 SCORER T.Gillette COMMENTS intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☐	SILT **[3 pt]**	20%
☐☐	BOULDER (>256 mm) **[16 pts]**	0%	☐☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	0%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☑	COBBLE (65-256 mm) **[12 pts]**	30%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☑☐	GRAVEL (2-64 mm) **[9 pts]**	50%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 30%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 21 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points

Substrate Max = 40

24

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☑	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30

15

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

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

COMMENTS TOB W-5 ft D- 7 ft OHWM W- 1 ft D- 2" **AVERAGE BANKFULL WIDTH (meters)** 1.6

Bankfull Width Max=30

20

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	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☑	☑	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☑	☑	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☐	2.0	☐	3.0
☑	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.26 mi

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 2/25/22 Quantity: 0.19"

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 60

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 9.4 Dissolved Oxygen (mg/l) _____ pH (S.U.) 5.6 Conductivity (umhos/cm) 90

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

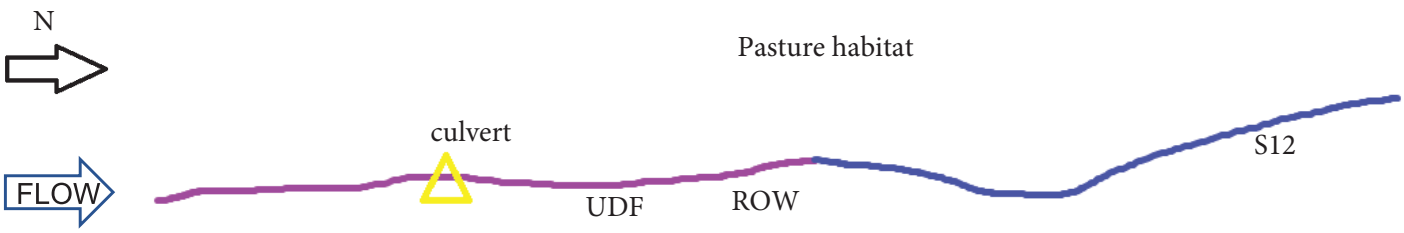
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **37**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream12A RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 52 LAT 38.723113 LONG -82.824947 RIVER MILE _____

DATE 9/2/2022 SCORER T. Gillette COMMENTS ephemeral

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☐	SILT **[3 pt]**	0%
☐☑	BOULDER (>256 mm) **[16 pts]**	30%	☐☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☑☐	COBBLE (65-256 mm) **[12 pts]**	40%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☐☐	GRAVEL (2-64 mm) **[9 pts]**	20%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 70%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 28 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 4

HHEI Metric Points

Substrate Max = 40

32

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☑	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30

0

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

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

COMMENTS TOB W- 2ft D- 5 ft OHWM W-2 ft D- 3" **AVERAGE BANKFULL WIDTH (meters)** 0.6

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	
☑	☑	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☐	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☑	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.27

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/30/22 Quantity: 0.39"

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 40

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

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

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

No water in channel for field measurements

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

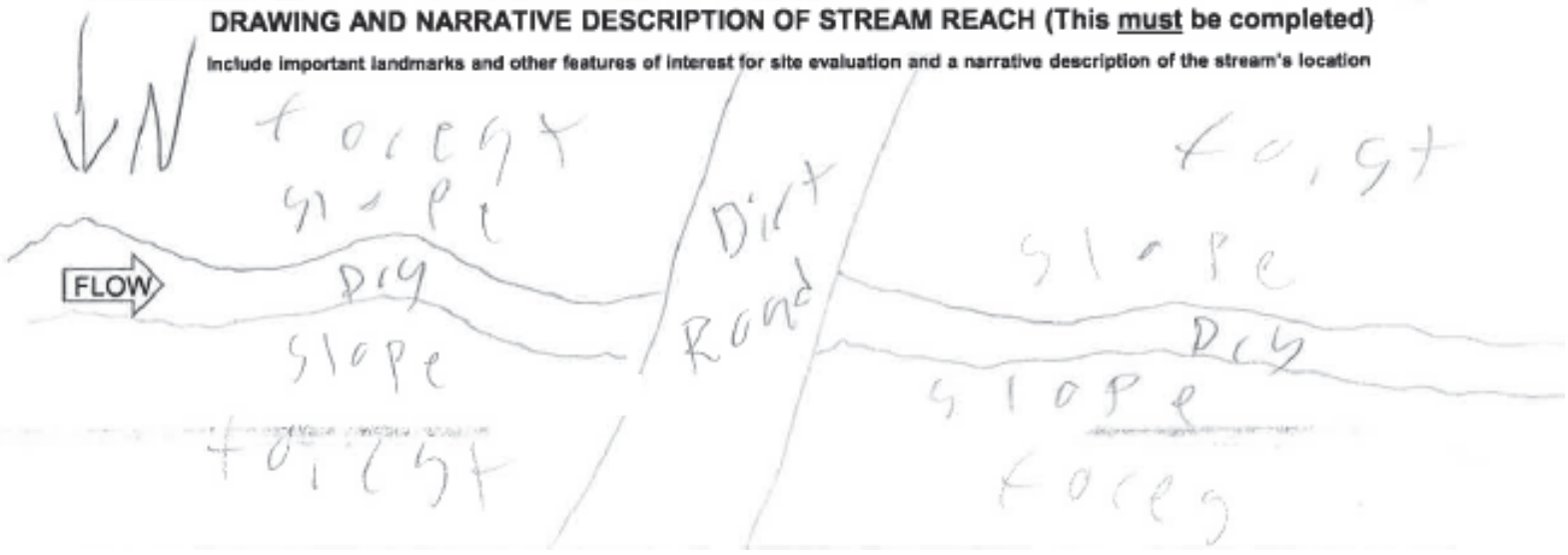
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **64**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream13A RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 200 LAT 38.726335 LONG -82.824255 RIVER MILE _____

DATE 9/2/2022 SCORER T. Gillette COMMENTS intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☐	SILT **[3 pt]**	0%
☐☐	BOULDER (>256 mm) **[16 pts]**	5%	☐☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	0%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☑☐	COBBLE (65-256 mm) **[12 pts]**	60%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☐☑	GRAVEL (2-64 mm) **[9 pts]**	35%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 65%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 21 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points

Substrate Max = 40

24

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☑	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 13

Pool Depth Max = 30

25

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

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

COMMENTS TOB W- 4 ft D- 6" OHWM W-2 ft D- 5" **AVERAGE BANKFULL WIDTH (meters)** 1.2

Bankfull Width Max=30

15

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	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☐	☑	Narrow <5m
☑	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.27

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30/22 Quantity: 0.39".

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 60

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 21.3 Dissolved Oxygen (mg/l) _____ pH (S.U.) 7 Conductivity (umhos/cm) 270

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

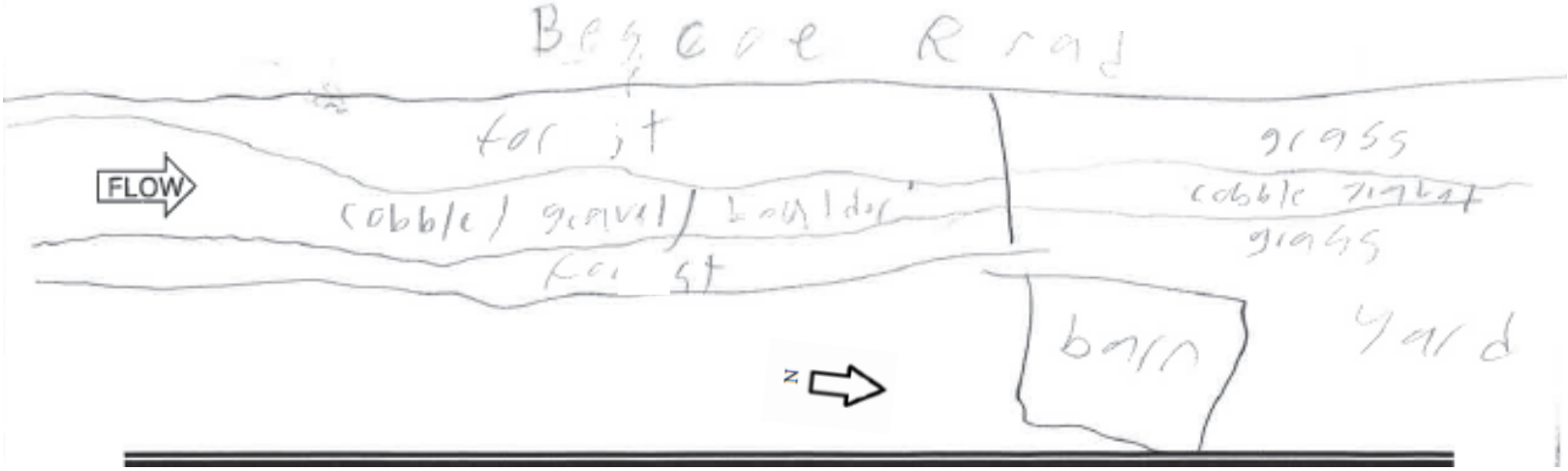
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **41**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream13A RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 200 LAT 38.726335 LONG -82.824255 RIVER MILE _____

DATE 9/2/2022 SCORER T. Gillette COMMENTS intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☐☐	SILT **[3 pt]**	0%
☐☐	BOULDER (>256 mm) **[16 pts]**	5%	☐☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	0%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☑☐	COBBLE (65-256 mm) **[12 pts]**	60%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☐☑	GRAVEL (2-64 mm) **[9 pts]**	35%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 65%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 21 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points

Substrate Max = 40

24

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☑	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 13

Pool Depth Max = 30

25

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

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

COMMENTS TOB W- 4 ft D- 6" OHWM W-2 ft D- 5" **AVERAGE BANKFULL WIDTH (meters)** 1

Bankfull Width Max=30

15

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	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☐	☑	Narrow <5m
☑	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.27

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30/22 Quantity: 0.39".

Photo-documentation Notes: upstream, downstream, substrate

Elevated Turbidity? (Y/N): N Canopy (% open): 60

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 21.3 Dissolved Oxygen (mg/l) _____ pH (S.U.) 7 Conductivity (umhos/cm) 270

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

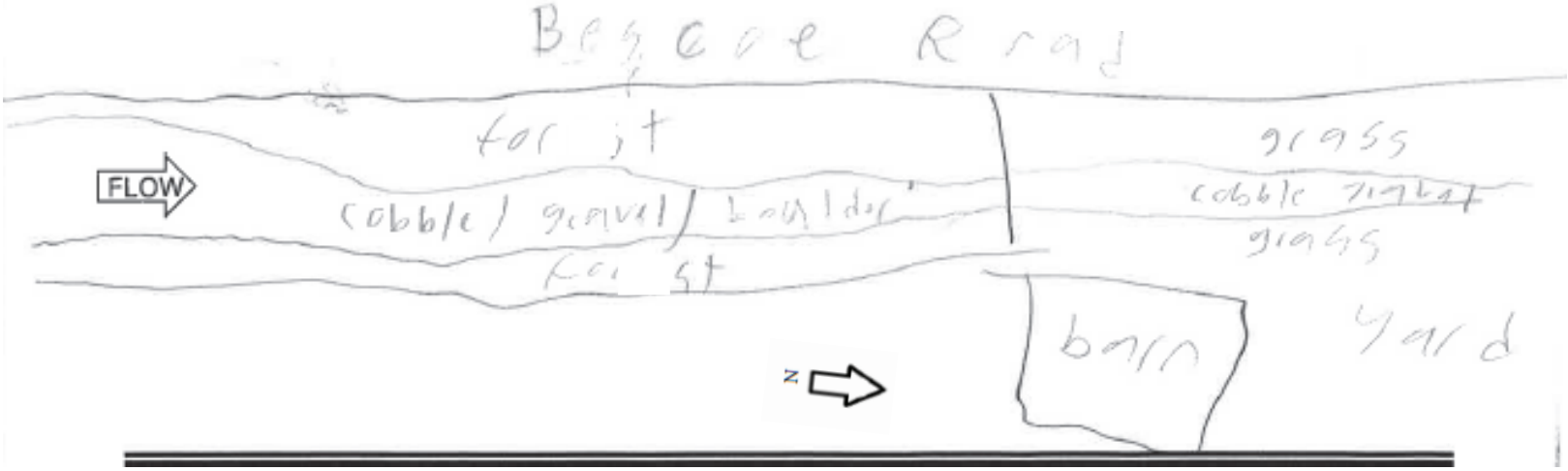
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **25**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 14 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 130 LAT 38.725011 LONG -82.815283 RIVER MILE _____

DATE 2/28/2022 SCORER T. Gillette COMMENTS Intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☑☐	SILT **[3 pt]**	60%
☐☐	BOULDER (>256 mm) **[16 pts]**	0%	☐☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10%
☐☐	BEDROCK **[16 pts]**	0%	☐☐	FINE DETRITUS **[3 pts]**	0%
☐☐	COBBLE (65-256 mm) **[12 pts]**	0%	☐☐	CLAY or HARDPAN **[0 pt]**	0%
☐☑	GRAVEL (2-64 mm) **[9 pts]**	30%	☐☐	MUCK **[0 pts]**	0%
☐☐	SAND (<2 mm) **[6 pts]**	0%	☐☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 12 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points

Substrate Max = 40

15

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☑	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 4

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

COMMENTS TOB W- 3 ft D- 1 ft OHWM W-1 ft D- 1.5" **AVERAGE BANKFULL WIDTH (meters)** 0.9

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	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☑	☑	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☑	☑	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☑	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.1 mi

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 2/25/22 Quantity: 0.19"

Photo-documentation Notes: upstream, downstream, substrate

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

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 10.1 Dissolved Oxygen (mg/l) _____ pH (S.U.) 5.5 Conductivity (umhos/cm) 280

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

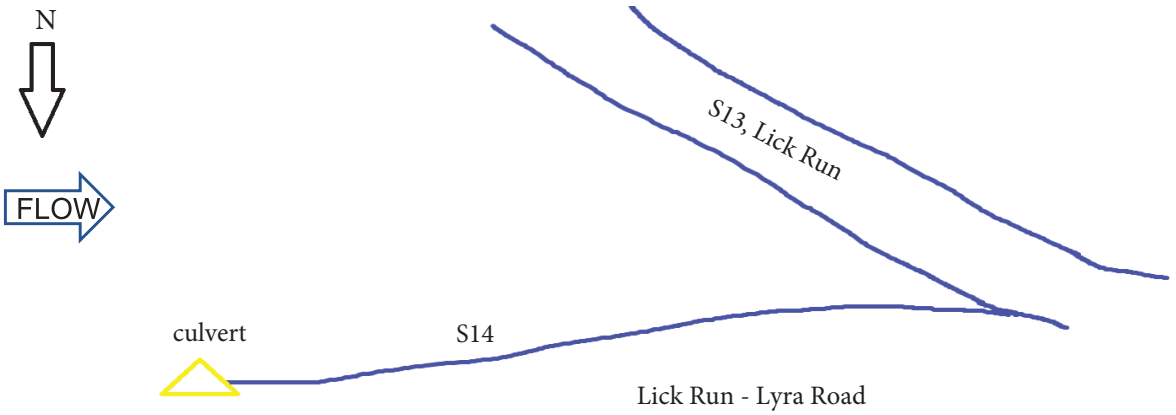
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



Headwater Habitat Evaluation Index Field Form

Ohio Environmental Protection Agency

HHEI Score (sum of metrics 1+2+3) **25**

SITE NAME/LOCATION AEP Sadiq Switch - E. Wheelersburg 138kV Line Rebuild Project

SITE NUMBER Stream 14 RIVER BASIN _____ RIVER CODE _____ DRAINAGE AREA (mi²) <1

LENGTH OF STREAM REACH (ft) 130 LAT 38.725011 LONG -82.815283 RIVER MILE _____

DATE 2/28/2022 SCORER T. Gillette COMMENTS Intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

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

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). 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]**	0%	☑ ☐	SILT **[3 pt]**	60%
☐ ☐	BOULDER (>256 mm) **[16 pts]**	0%	☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10%
☐ ☐	BEDROCK **[16 pts]**	0%	☐ ☐	FINE DETRITUS **[3 pts]**	0%
☐ ☐	COBBLE (65-256 mm) **[12 pts]**	0%	☐ ☐	CLAY or HARDPAN **[0 pt]**	0%
☐ ☑	GRAVEL (2-64 mm) **[9 pts]**	30%	☐ ☐	MUCK **[0 pts]**	0%
☐ ☐	SAND (<2 mm) **[6 pts]**	0%	☐ ☐	ARTIFICIAL **[3 pts]**	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 12 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points

Substrate Max = 40

15

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* 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]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☑	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 4

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

COMMENTS TOB W- 3 ft D- 1 ft OHWM W-1 ft D- 1.5" **AVERAGE BANKFULL WIDTH (meters)** 0.9

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	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☑	☑	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☑	☑	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☑	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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)

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: Lick Run Distance from Evaluated Stream 0.1 mi

☐ 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: Wheelersburg, OH/KY NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Scioto Township/City: Wheelersburg

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 2/25/22 Quantity: 0.19"

Photo-documentation Notes: upstream, downstream, substrate

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

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) 10.1 Dissolved Oxygen (mg/l) _____ pH (S.U.) 5.5 Conductivity (umhos/cm) 280

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

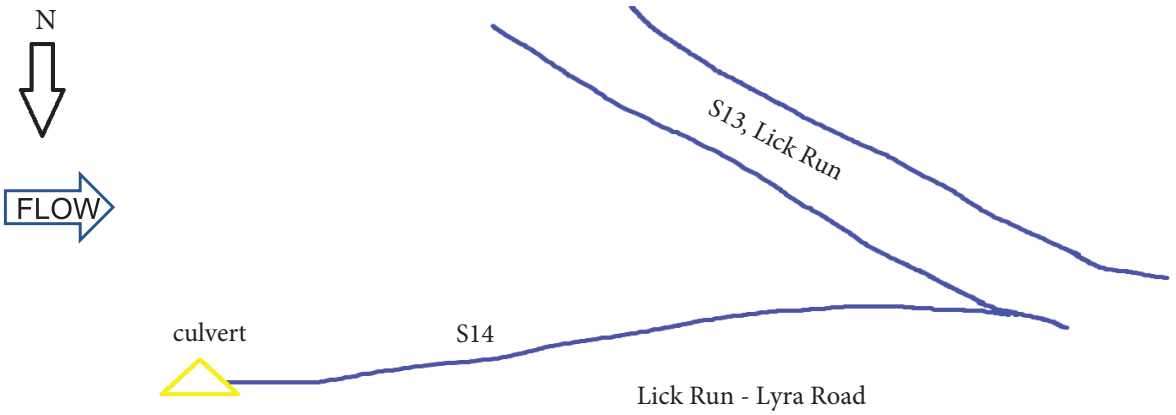
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

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



C.4 QHEI FORM

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 70

Stream & Location: Stream 13 - Lick Run **RM:** _ _ _._ **Date:** 2 / 28 / 22

AEP Sadiq Switch - E. Wheelersburg **Scorers Full Name & Affiliation:** Tyler Gillette / Stantec

River Code: _ _ _ - _ _ _ - _ _ _ **STORET #:** _ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal °) 38 . 724573 / 82 . 815212 **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]	5	5	☐ ☐ HARDPAN [4]		
☐ ☐ BOULDER [9]	20	20	☐ ☐ DETRITUS [3]		
☑ ☐ COBBLE [8]	35	35	☐ ☐ MUCK [2]		
☐ ☑ GRAVEL [7]	30	30	☐ ☐ SILT [2]		
☐ ☐ SAND [6]	10	10	☐ ☐ 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	SILT / EMBEDDEDNESS	QUALITY
☐ LIMESTONE [1]		☐ HEAVY [-2]
☑ TILLS [1]		☐ MODERATE [-1]
☐ WETLANDS [0]		☐ NORMAL [0]
☐ HARDPAN [0]		☑ FREE [1]
☐ SANDSTONE [0]		☐ EXTENSIVE [-2]
☐ RIP/RAP [0]		☐ MODERATE [-1]
☐ LACUSTURINE [0]		☑ NORMAL [0]
☐ SHALE [-1]		☐ NONE [1]
☐ COAL FINES [-2]		

Comments

Substrate 19 *Maximum 20*

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.

0	UNDERCUT BANKS [1]	2	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
2	OVERHANGING VEGETATION [1]	0	ROOTWADS [1]	0	AQUATIC MACROPHYTES [1]
0	SHALLOWS (IN SLOW WATER) [1]	2	BOULDERS [1]	0	LOGS OR WOODY DEBRIS [1]
0	ROOTMATS [1]				

AMOUNT (Check ONE (*Or 2 & average*))

☐ EXTENSIVE >75% [11]
☑ MODERATE 25-75% [7]
☐ SPARSE 5-<25% [3]
☐ NEARLY ABSENT <5% [1]

Comments

Cover 11 *Maximum 20*

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☑ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☑ GOOD [5]	☐ RECOVERED [4]	☑ MODERATE [2]
☑ LOW [2]	☐ FAIR [3]	☐ RECOVERING [3]	☐ LOW [1]
☐ NONE [1]	☐ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel 15 *Maximum 20*

4] BANK EROSION AND RIPARIAN ZONE

Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

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

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

L	R	FLOOD PLAIN QUALITY
☐	☐	FOREST, SWAMP [3]
☐	☐	SHRUB OR OLD FIELD [2]
☑	☑	RESIDENTIAL, PARK, NEW FIELD [1]
☐	☐	FENCED PASTURE [1]
☐	☐	OPEN PASTURE, ROWCROP [0]

L	R	
☐	☐	CONSERVATION TILLAGE [1]
☐	☐	URBAN OR INDUSTRIAL [0]
☐	☐	MINING / CONSTRUCTION [0]

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

Comments

Riparian 4 *Maximum 10*

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)

Comments

Pool / Current 8 *Maximum 12*

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	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
☑ BEST AREAS > 10cm [2]	☑ MAXIMUM > 50cm [2]	☑ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☐ BEST AREAS 5-10cm [1]	☐ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☑ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0]
			☐ EXTENSIVE [-1]

Comments

Riffle / Run 7 *Maximum 8*

6] GRADIENT

(8 ft/mi)

DRAINAGE AREA
(5.76 mi²)

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

%POOL: 60 %GLIDE: 0
%RUN: 10 %RIFFLE: 30

Gradient 6 *Maximum 10*

A] SAMPLED REACH

Check ALL that apply

METHOD

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

STAGE

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

DISTANCE

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

_____ meters

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

1st pass _____ cm

2nd _____ cm

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

PH. 5.7

Conductivity 150

Temp. 7.6

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

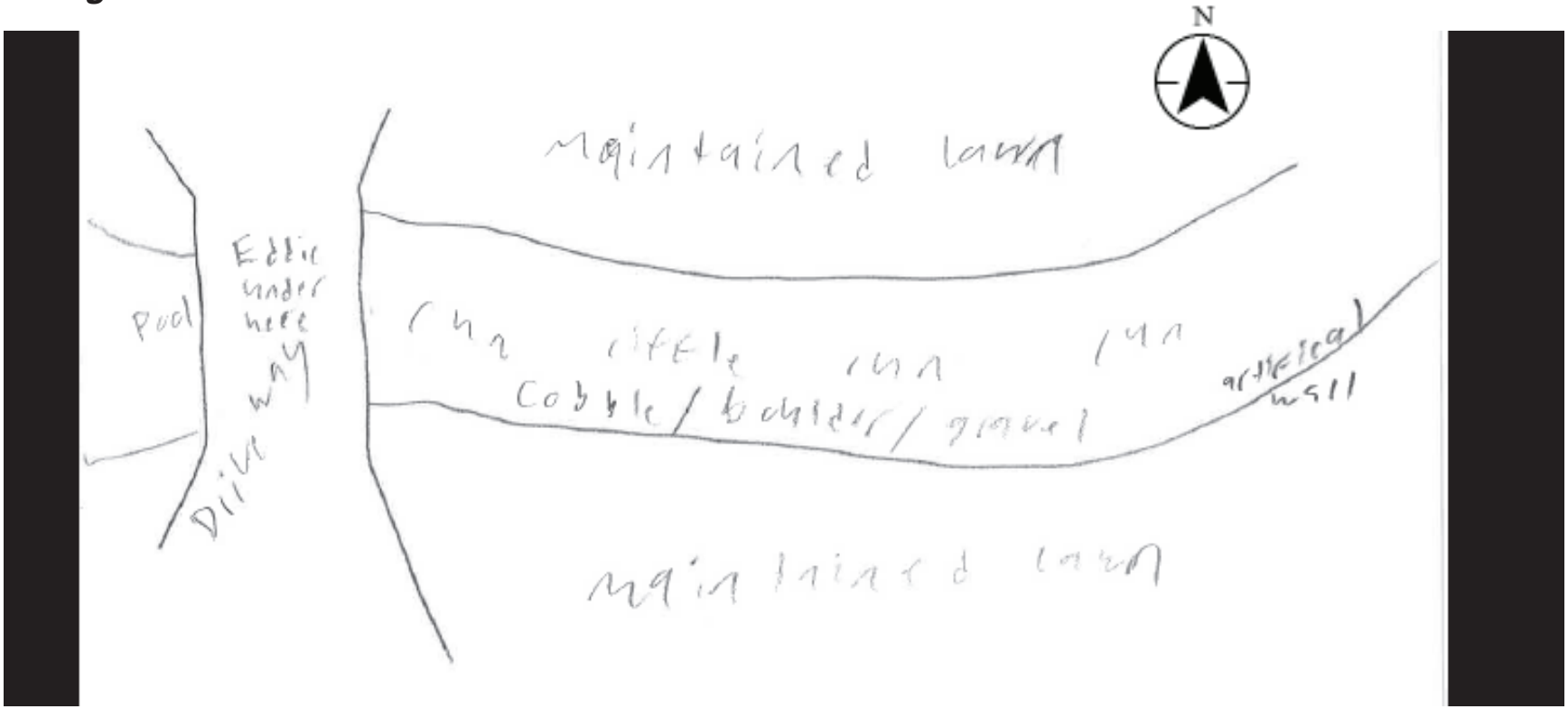
F] MEASUREMENTS

x̄ width	8
x̄ depth	1.5
max. depth	
x̄ bankfull width	16
bankfull x̄ depth	♂
W/D ratio	
bankfull max. depth	
floodprone x^2 width	
entrench. ratio	

Legacy Tree:

Stream Drawing:

Flow



Appendix D REPRESENTATIVE PHOTOGRAPHS

D.1 WETLAND AND WATERBODY PHOTOGRAPHS

Photo Location 1. View of Stream 1 (ephemeral). Photograph taken facing upstream, east.

Photo Location 1. View of Stream 1 (ephemeral). Photograph taken facing downstream, northwest.

Photo Location 1. View of Stream 1 (ephemeral), typical substrates.

Photo Location 2. View of Stream 2 (intermittent). Photograph taken facing upstream, east.

Photo Location 2. View of Stream 2 (intermittent). Photograph taken facing downstream, west.

Photo Location 2. View of Stream 2 (intermittent), typical substrates.

Photo Location 2A. View of Stream 2A (ephemeral). Photograph taken facing upstream, east.

Photo Location 2A. View of Stream 2A (ephemeral). Photograph taken facing downstream, west.

Photo Location 2A. View of Stream 2A (ephemeral), typical substrates.

Photo Location 2B. View of Stream 2B (ephemeral). Photograph taken facing upstream, north.

Photo Location 2B. View of Stream 2B (ephemeral). Photograph taken facing downstream, southwest.

Photo Location 2B. View of Stream 2B (ephemeral), typical substrates.

Photo Location 3. View of Stream 3 (intermittent). Photograph taken facing upstream, southeast.

Photo Location 3. View of Stream 3 (intermittent). Photograph taken facing downstream, northwest.

Photo Location 3. View of Stream 3 (intermittent), typical substrates.

Photo Location 3A. View of Stream 3A (intermittent). Photograph taken facing upstream, south.

Photo Location 3A. View of Stream 3A (intermittent). Photograph taken facing downstream, north.

Photo Location 3A. View of Stream 3A (intermittent), typical substrates.

Photo Location 4. View of Stream 4 (intermittent). Photograph taken facing upstream, southeast.

Photo Location 4. View of Stream 4 (intermittent). Photograph taken facing downstream, northwest.

Photo Location 4. View of Stream 4 (intermittent), typical substrates.

Photo Location 4A. View of Stream 4A (intermittent). Photograph taken facing upstream, northeast.

Photo Location 4A. View of Stream 4A (intermittent). Photograph taken facing downstream, southwest.

Photo Location 4A. View of Stream 4A (intermittent), typical substrates.

Photo Location 5. View of Stream 5 (ephemeral). Photograph taken facing upstream, northeast.

Photo Location 5. View of Stream 5 (ephemeral). Photograph taken facing downstream, southwest.

Photo Location 5. View of Stream 5 (ephemeral), typical substrates.

Photo Location 6. View of Stream 6 (intermittent). Photograph taken facing upstream, southeast.

Photo Location 6. View of Stream 6 (intermittent). Photograph taken facing downstream, northwest.

Photo Location 6. View of Stream 6 (intermittent), typical substrates.

Photo Location 6A. View of Stream 6A (ephemeral). Photograph taken facing upstream, north.

Photo Location 6A. View of Stream 6A (ephemeral). Photograph taken facing downstream, southwest.

Photo Location 6A. View of Stream 6A (ephemeral), typical substrates.

Photo Location 7. View of Stream 7 (intermittent). Photograph taken facing upstream, southwest.

Photo Location 7. View of Stream 7 (intermittent). Photograph taken facing downstream, northeast.

Photo Location 7. View of Stream 7 (intermittent), typical substrates.

Photo Location 8. View of wetland determination sample point (SP01; upland). Photograph taken facing north.

Photo Location 8. View of wetland determination sample point (SP01; upland), soil profile.

Photo Location 9. View of wetland determination sample point (SP02; PEM). Photograph taken facing east.

Photo Location 9. View of wetland determination sample point (SP02; PEM), soil profile.

Photo Location 9. View of Wetland 1. Photograph taken facing north.

Photo Location 9. View of Wetland 1. Photograph taken facing east.

Photo Location 9. View of Wetland 1. Photograph taken facing south.

Photo Location 9. View of Wetland 1. Photograph taken facing west.

Photo Location 10. View of Stream 8 (intermittent). Photograph taken facing upstream, east.

Photo Location 10. View of Stream 8 (intermittent). Photograph taken facing downstream, west.

Photo Location 10. View of Stream 8 (intermittent), typical substrates.

Photo Location 11. View of Stream 9 (ephemeral). Photograph taken facing upstream, east.

Photo Location 11. View of Stream 9 (ephemeral). Photograph taken facing downstream, west.

Photo Location 11. View of Stream 9 (ephemeral), typical substrates.

Photo Location 11A. View of Stream 9A (ephemeral). Photograph taken facing upstream, northeast.

Photo Location 11A. View of Stream 9A (ephemeral). Photograph taken facing downstream, south.

Photo Location 11A. View of Stream 9A (ephemeral), typical substrates.

Photo Location 12. View of Stream 10 (intermittent). Photograph taken facing upstream, southwest.

Photo Location 12. View of Stream 10 (intermittent). Photograph taken facing downstream, northeast.

Photo Location 12. View of Stream 10 (intermittent), typical substrates.

Photo Location 13. View of Stream 11 (intermittent). Photograph taken facing upstream, southwest.

Photo Location 13. View of Stream 11 (intermittent). Photograph taken facing downstream, northeast.

Photo Location 13. View of Stream 11 (intermittent), typical substrates.

Photo Location 14. View of wetland determination sample point (SP03; upland). Photograph taken facing southwest.

Photo Location 14. View of wetland determination sample point (SP03; upland), soil profile.

Photo Location 15. View of wetland determination sample point (SP04; PEM). Photograph taken facing southeast.

Photo Location 15. View of wetland determination sample point (SP04; PEM), soil profile.

Photo Location 15. View of Wetland 2. Photograph taken facing north.

Photo Location 15. View of Wetland 2. Photograph taken facing east.

Photo Location 15. View of Wetland 2. Photograph taken facing south.

Photo Location 15. View of Wetland 2. Photograph taken facing west.

Photo Location 16. View of wetland determination sample point (SP05; upland). Photograph taken facing north.

Photo Location 16. View of wetland determination sample point (SP05; upland), soil profile.

Photo Location 17. View of Stream 12 (intermittent). Photograph taken facing upstream, southwest.

Photo Location 17. View of Stream 12 (intermittent). Photograph taken facing downstream, northeast.

Photo Location 17. View of Stream 12 (intermittent), typical substrates.

Photo Location 17A. View of Stream 10 (intermittent). Photograph taken facing upstream, northeast.

Photo Location 17A.View of Stream 10 (intermittent). Photograph taken facing downstream, southwest.

Photo Location 17A. View of Stream 10 (intermittent), typical substrates.

Photo Location 17B. View of Stream 12A (ephemeral). Photograph taken facing upstream, east.

Photo Location 17B. View of Stream 12A (ephemeral). Photograph taken facing downstream, west.

Photo Location 17B. View of Stream 12A (ephemeral), typical substrates.

Photo Location 18. View of Stream 13 (perennial; Lick Run). Photograph taken facing upstream, southeast.

Photo Location 18. View of Stream 13 (perennial; Lick Run). Photograph taken facing downstream, west.

Photo Location 18. View of Stream 13 (perennial; Lick Run), typical substrates.

Photo Location 18A. View of Stream 13 (perennial; Lick Run). Photograph taken facing upstream, east.

Photo Location 18A. View of Stream 13 (perennial; Lick Run). Photograph taken facing downstream, west.

Photo Location 18A. View of Stream 13 (perennial; Lick Run), typical substrates.

Photo Location 18B. View of Stream 13A (intermittent). Photograph taken facing upstream, northeast.

Photo Location 18B. View of Stream 13A (intermittent). Photograph taken facing downstream, southwest.

Photo Location 18B. View of Stream 13A (intermittent), typical substrates.

Photo Location 18C. View of Stream 13 (perennial; Lick Run). Photograph taken facing upstream, north.

Photo Location 18C. View of Stream 13 (perennial; Lick Run). Photograph taken facing downstream, south.

Photo Location 18C. View of Stream 13 (perennial; Lick Run), typical substrates.

Photo Location 19. View of Stream 14 (intermittent). Photograph taken facing upstream, east.

Photo Location 19. View of Stream 14 (intermittent). Photograph taken facing downstream, west.

Photo Location 18. View of Stream 14 (intermittent), typical substrates.

Representative Photographs
October 28, 2022

D.2 HABITAT PHOTOGRAPHS

Photo Location 1A. View of gravel driveway in maintained lawn. Photograph taken facing north.

Photo Location 1B. View of typical culvert. Photograph taken facing south.

Photo Location 1. View of maintained ROW habitat. Photograph taken facing north.

Photo Location 1. View of maintained ROW habitat. Photograph taken facing south.

Photo Location 2. View of maintained ROW habitat. Photograph taken facing north.

Photo Location 2. View of maintained ROW habitat. Photograph taken facing south.

Photo Location 3. View of typical upland drainage feature (UDF). Photograph taken facing east.

Photo Location 3. View of typical UDF. Photograph taken facing west.

Photo Location 3A. View of existing gravel road in early successional forest habitat (right and left). Photograph taken facing east.

Photo Location 3B. View of maintained lawn. Photograph taken facing south.

Photo Location 4. View of early successional forest habitat. Photograph taken facing north.

Photo Location 4. View of early successional forest habitat. Photograph taken facing west.

Photo Location 5. View of second growth deciduous forest habitat. Photograph taken facing east.

Photo Location 5. View of early successional forest habitat. Photograph taken facing west.

Photo Location 6. View of maintained ROW (foreground) and second growth deciduous forest (right) habitats. Photograph taken facing east

Photo Location 6. View of maintained ROW (right) and second growth deciduous forest (left) habitats. Photograph taken facing north.

Photo Location 6A. View of clear cut area. Photograph taken facing north.

Photo Location 6B. View of second growth deciduous forest habitat. Photograph taken facing southeast.

Photo Location 6C. View of existing gravel road in maintained lawn. Photograph taken facing west.

Photo Location 7. View of old field (foreground) and early successional forest (background) habitats. Photograph taken facing south.

Photo Location 7. View of old field habitat (left) and clear-cut area (background). Photograph taken facing west.

Photo Location 7A. View of clear-cut area (center and right). Photograph taken facing west.

Photo Location 7B. View of clear-cut area and typical UDF. Photograph taken facing northeast.

Photo Location 8. View of old field habitat. Photograph taken facing east.

Photo Location 8. View of old field habitat. Photograph taken facing south.

Photo Location 8A. View of second growth deciduous forest. Photograph taken facing east.

Photo Location 8B. View of second growth deciduous forest. Photograph taken facing southeast.

Photo Location 8C. View of second growth deciduous forest. Photograph taken facing northwest.

Photo Location 9. View of pasture habitat. Photograph taken facing south.

Photo Location 9. View of pasture habitat. Photograph taken facing east.

Photo Location 10. View of early successional forest habitat. Photograph taken facing northeast.

Photo Location 10. View of early successional forest habitat. Photograph taken facing southwest.

Photo Location 10A. View of early successional forest habitat. Photograph taken facing south.

Photo Location 10B. View of maintained lawn. Photograph taken facing north.

Photo Location 10C. View of pasture habitat. Photograph taken facing south.

Photo Location 10D. View of unimproved road in early successional forest habitat. Photograph taken facing northwest.

Photo Location 10E. View of unimproved road in pasture habitat. Photograph taken facing east.

Photo Location 10F. View of unimproved road in second growth deciduous forest habitat. Photograph taken facing north.

Photo Location 10G. View of pasture habitat. Photograph taken facing south.

Photo Location 10H. View of pasture habitat. Photograph taken facing south

Photo Location 11. View of agricultural field habitat. Photograph taken facing north.

Photo Location 11. View of agricultural field habitat. Photograph taken facing south.

Photo Location 11A. View of agricultural field habitat. Photograph taken facing north.

Photo Location 11B. View of existing roadway. Photograph taken facing south.

Photo Location 11C. View of existing roadway and old field habitat (right). Photograph taken facing north.

Photo Location 12. View of maintained ROW habitat. Photograph taken facing southwest.

Photo Location 12. View of maintained ROW habitat and industrial land. Photograph taken facing southeast.

Photo Location 12A. View of industrial land habitat. Photograph taken facing northwest.

Agency Correspondence
October 28, 2022

Appendix E AGENCY CORRESPONDENCE

Ohio Department of Natural Resources

MIKE DEWINE, GOVERNOR MARY MERTZ, DIRECTOR

Office of Real Estate
John Kessler, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6621
Fax: (614) 267-4764

January 14, 2022

Michelle Kearns
Stantec Consulting Services Inc.
1500 Lake Shore Drive, Suite 100
Columbus, Ohio 43204

Re: 21-1132; AEP Sadiq Switch - E. Wheelersburg Line Rebuild Project

Project: The proposed project involves a centerline rebuild approximately 2 miles in length.

Location: The proposed project is located in Scioto County, 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 no records at or within a one-mile radius of the project area.

A review of the Ohio Natural Heritage Database indicates there are no other records of state endangered or threatened plants or animals within the project area. There are also no records of state potentially threatened plants, special interest or species of concern animals, or any federally listed species. In addition, we are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, state nature preserves, state or national parks, state or national forests, national wildlife refuges, or other protected natural areas 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.

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

The DOW recommends that impacts to streams, 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 entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally threatened species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH $\geq$ 20 if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "*OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING*". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW (contact Erin Hazelton at Erin.hazelton@dnr.ohio.gov).

The DOW also recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the project area. Direction on how to conduct habitat assessments can be found in the current USFWS "*Range-wide Indiana Bat Survey Guidelines*." If a habitat assessment finds that a potential hibernaculum is present within 0.25 miles of the project area, please send this information to Erin Hazelton for project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with the DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

The project is within the range of the following listed mussel species.

Federally Endangered

clubshell (*Pleurobema clava*)	purple cat's paw (*Epioblasma o. obliquata*)
fanshell (*Cyprogenia stegaria*)	rayed bean (*Villosa fabalis*)
northern riffleshell (*Epioblasma torulosa rangiana*)	sheepnose (*Plethobasus cyphyus*)
pink mucket (*Lampsilis orbiculata*)	snuffbox (*Epioblasma triquetra*)

State Endangered

butterfly (*Ellipsaria lineolata*)	Ohio pigtoe (*Pleurobema cordatum*)
ebonyshell (*Fusconaia ebena*)	pyramid pigtoe (*Pleurobema rubrum*)
elephant-ear (*Elliptio crassidens crassidens*)	sharp-ridged pocketbook (*Lampsilis ovate*)
little spectaclecase (*Villosa lienosa*)	wartyback (*Quadrula nodulata*)
long-solid (*Fusconaia maculata maculata*)	washboard (*Megalonaias nervosa*)
monkeyface (*Quadrula metanevra*)	yellow sandshell (*Lampsilis teres*)

State Threatened

black sandshell (*Ligumia recta*)
fawnsfoot (*Truncilla donaciformis*)
threehorn wartyback (*Obliquaria reflexa*)

Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species.

The project is within the range of the following listed fish species.

State Endangered

bigeye shiner (*Notropis boops*)
gilt darter *(Percina evides)*
goldeye (*Hiodon alosoides*)
mountain madtom (*Noturus eleutherus*)
northern brook lamprey (*Ichthyomyzon fossor*)
northern madtom (*Noturus stigmosus*)
popeye shiner (*Notropis ariommus*)
shoal chub (*Macrhybopsis hyostoma*)
shortnose gar (*Lepisosteus platostomus*)
shovelnose sturgeon (*Scaphirhynchus-platorynchus*)

State Threatened

American eel (*Anguilla rostrata*)
blue sucker (*Cycleptus elongatus*)
channel darter (*Percina copelandi*)
paddlefish (*Polyodon spathula*)
river darter (*Percina shumardi*)
Tippecanoe darter (*Etheostoma tippecanoe*)

The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact these or other aquatic species.

The project is within the range of the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federal species of concern. This long-lived, entirely aquatic salamander inhabits perennial streams with large flat rocks. In-water work in hellbender streams can reduce availability of large cover rocks and can destroy hellbender nests and/or kill adults and juveniles. The contribution of additional sediment to hellbender streams can smother large cover rocks and gravel/cobble substrate (used by juveniles), making them unsuitable for refuge and nesting. Projects that contribute to altered flow regimes (e.g., by increasing areas of impervious surfaces or modifying the floodplain) can also adversely affect hellbender habitat. 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 within the range of the timber rattlesnake (*Crotalus horridus horridus*), a state endangered species, and a federal species of concern. The timber rattlesnake is a woodland species. In addition to using wooded areas, the timber rattlesnake also utilizes sunlit gaps in the canopy for basking and deep rock crevices known as den sites for overwintering. Due to the location, the type of habitat within the project area, and the type of work proposed, 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, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the green salamander (*Aneides aeneus*), a state endangered amphibian. The DOW recommends that an approved herpetologist conducts a habitat suitability survey to determine if suitable habitat is present within the project area. If suitable habitat is determined to be present; the DOW recommends that a presence/absence survey be conducted, or an avoidance/minimization plan be developed and implemented by the approved herpetologist.

The project is within the range of the midland mud salamander (*Pseudotriton montanus diastictus*), a state threatened species. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the Allegheny woodrat (*Neotoma magister*), a state endangered species. The Allegheny woodrat utilizes rocky outcrops such as cliffs and caves in forested areas. To avoid impacts to this species, impacts to cliffs and rocky outcrops should be avoided. In addition, a buffer of 100 feet above and 200 feet below cliffs and rocky outcrops should be maintained. Due to the location, the type of habitat within the project area, and the type of work proposed, 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.

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.

http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community%20Contact%20List_8_16.pdf

ODNR appreciates the opportunity to provide these comments. Please contact Mike Pettegrew at mike.pettegrew@dnr.ohio.gov if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator (Acting)

From:	Ohio, FW3
To:	Kearns, Michelle
Cc:	nathan.reardon@dnr.state.oh.us; Parsons, Kate; Teitt, Matthew; Grant S Stuller
Subject:	Sadiq Switch to East Wheelersburg, 138 kV Transmission Line Rebuild Project, Scioto County, Ohio
Date:	Monday, December 20, 2021 10:59:55 AM
Attachments:	image.png image.png

TAILS# 03E15000-2022-TA-0488

Dear Ms. Kearns,

The U.S Fish and Wildlife Service (Service) has received your recent correspondence requesting information about the subject proposal. We offer the following comments and recommendations to assist you in minimizing and avoiding adverse impacts to threatened and endangered species pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq), as amended (ESA).

Federally Threatened and Endangered Species: The endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*) occur throughout the State of Ohio. The Indiana bat and northern long-eared bat may be found wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and breed that may also include adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, woodlots, fallow fields, and pastures. Roost trees for both species include live and standing dead trees ≥3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities. These roost trees may be located in forested habitats as well as linear features such as fencerows, riparian forests, and other wooded corridors. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves, rock crevices and abandoned mines.

Seasonal Tree Clearing for Federally Listed Bat Species: Should the proposed project site contain trees ≥3 inches dbh, we recommend avoiding tree removal wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, we recommend removal of any trees ≥3 inches dbh only occur between October 1 and March 31. Seasonal clearing is recommended to avoid adverse effects to Indiana bats and northern long-eared bats. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see http://www.fws.gov/midwest/endangered/mammals/nleb/index.html), incidental take of Indiana bats is still prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.
If implementation of this seasonal tree cutting recommendation is not possible, a summer presence/absence survey may be conducted for Indiana bats. If Indiana bats are not detected during the survey, then tree clearing may occur at any time of the year. Surveys must be

conducted by an approved surveyor and be designed and conducted in coordination with the Ohio Field Office. Surveyors must have a valid federal permit. Please note that in Ohio summer mist net surveys may only be conducted between June 1 and August 15.

Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), then no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend 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. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing project impacts to all wetland habitats (e.g., forests, streams, vernal pools) to the maximum extent possible in order to benefit water quality and fish and wildlife habitat. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the U.S. Army Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. Disturbed areas should be mulched and revegetated with native plant species. In addition, prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or 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, coordination with the Service should be initiated to assess any potential impacts.

Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed project to affect state listed species and/or state lands. Contact Mike Pettegrew, Acting Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.state.oh.us.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,

Patrice Ashfield
Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW
Kate Parsons, ODNR-DOW