Construction Notice Kammer – Dumont 765 kV Transmission Line Raise Project

BOUNDLESS ENERGY℠

PUCO Case No. 23-0538-EL-BNR

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

Submitted by:
Ohio Power Company

June 9, 2023

Construction Notice

Ohio Power Company
Kammer – Dumont 765 kV Transmission Line Raise

4906-6-05

Ohio Power Company (the "Company") provides the following information to the Ohio Power Siting Board ("OPSB") pursuant to Ohio Administrative Code Section 4906-6-05.

4906-6-05(B) General Information

B(1) Project Description

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 Construction Notice.

The Company proposes to construct the Kammer – Dumont 765 kV Transmission Line Raise Project (the "Project") in Liberty Township, Union County, Ohio, which includes the installation of one steel lattice tower on a concrete pier foundation along the existing centerline. The purpose of the Project is to provide clearance for a new 345 kV transmission line interconnection (approved in Case No. 21-1003-EL-BLN) between the Cadence Solar facility (OPSB Case Number 20-1677-EL-BGN), an Independent Power Producer (IPP), and Marysville Station. The IPP's 345 kV transmission line will cross under the Kammer – Dumont 765 kV transmission line, which must be raised to meet safety and electrical clearance requirements.

The Project will be within the existing right-of-way (ROW) of the existing 765 kV transmission line. No new ROW is necessary for the Project.

The Company will also construct two spans of 345 kV transmission line from Marysville Station to just outside the existing station fence, in order to interconnect the IPP. This short 345 kV transmission line will be filed with OPSB separately. The location of the proposed structure to be added (the "Project Area") is shown on Figure 1 and Figure 2 in Appendix A.

The Project meets the requirements for a CN because it is within the types of projects defined by item (2) (a) of Ohio Administrative Code Section 4906-1-01 Appendix A of the Application Requirement Matrix For Electric Power Transmission Lines:

> *(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. 23-0538-EL-BNR.

B(2) Statement of Need

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

As part of the AD2-093 IPP connection facility, the Company will install two 345 kV spans out of Marysville Substation towards the generating facility's station to act as the point of interconnection. The interconnection facility is a 175 MW (105 MW Capacity) solar generating facility in Union County, Ohio. The IPP will construct a 345 kV transmission line to the point of interconnection. This 345 kV transmission line will cross under the Kammer – Dumont 765 kV transmission line, which must be raised to meet safety and electrical clearance requirements.

Failure to move forward with the proposed Project will result in the Company's inability to serve the customer's generation request, thereby jeopardizing the customer's required in-service date per the FERC approved Interconnection Service Agreement (175 MW nameplate capability).

This PJM Network Upgrade Project (N7372) is related to the Company's obligation to connect the developer (AD2-093) per the PJM IPP Tariff. The Project is related to the Marysville – Union County Solar (IPP) 345 kV interconnection, which is listed in the 2023 Company LTFR document, page 187 (Form FE-T9, Planned Transmission Lines), see Appendix B.

B(3) Project Location

The applicant shall 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 location of the Project in relation to existing transmission lines and solar generation facility is shown in Figure 1 of Appendix A.

B(4) Alternatives Considered

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

The Project adds one steel lattice tower to an existing 765 kV electric transmission line to allow an IPP's 345 kV electric transmission line to cross beneath. Based on the IPP's approved 345 kV transmission line, the proposed location of the 765 kV line raise is the most suitable location for the Project. Other alternatives would require additional or more costly structures or relocating the IPP's approved alignment. The proposed Project is not anticipated to impact wetlands, streams, or any known cultural resource areas eligible for the National Register of Historic Places (NRHP). Therefore, this alternative represents the most

suitable location and is the most appropriate solution for meeting the Company and specific customer's needs in the area.

B(5) Public Information Program

The applicant shall describe its public information program to inform affected property owners and tenants of the nature of the project and the proposed timeframe for project construction and restoration activities.

The Company maintains a website (http//aeptransmission.com/ohio/) on which an electronic copy of this CN is available. An electronic copy of the CN will be served to the public library in each political subdivision affected by this Project. The Company also retains land agents who will discuss Project timelines, construction and restoration activities with affected owners and tenants.

B(6) Construction Schedule

The applicant shall provide an anticipated construction schedule and proposed in-service date of the project.

Construction of the Project is planned to begin in September 2023, and the anticipated in-service date will be February 2024.

B(7) Area Map

The applicant shall provide a map of at least 1:24,000 scale clearly depicting the facility with clearly marked streets, roads, and highways, and an aerial image.

Figure 1 in Appendix A provides the proposed Project area on a map of 1:24,000-scale (1 inch equals 2,000 feet), showing the Project on the United States Geological Survey (USGS) 7.5-minute topographic map of the Peoria, Ohio quadrangle. Figure 2 in Appendix A shows the Project Area on recent aerial photography, dated 2020, as provided by ESRI World Imagery at a scale of 1:6,000 scale (1 inch equals 500 feet).

To visit the Project site from Columbus, Ohio, take I-70 West to Exit 93 and head north on I-270. After 9 miles at Exit 17B, take the ramp for U.S. 33/OH-161 West toward Marysville. Take U.S. 33 17 miles to Exit 92 onto OH-31 North toward Kenton/Marion. Go 4.6 miles and turn left onto Wheeler Green Road/County Highway 205. After 2 miles, turn right onto Reed Road/County Highway 198 and continue for approximately 1.6 miles. Turn left onto OH-347 West and continue for approximately 0.7 miles. Before turning right onto Patrick-Brush Run Road. The Project is to the west along the right-of-way at the approximate address 20330 OH-347, Raymond, OH 43067 (latitude 40.337129, and longitude -83.441091).

B(8) Property Agreements

The applicant shall 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.

The proposed Project is located on Parcel Number 2200110130000. The Project is located within the existing ROW. No additional property easements, options, or land use agreements are necessary to construct the Project.

B(9) Technical Features

The applicant shall 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.

Line Asset Name:	Kammer – Dumont 765kV
Ownership:	Ohio Power Company
Voltage:	765 kV
Conductors:	(3) 4-bundle 954 kcm ACSR 45/7 (Rail) (existing)
Static Wire:	(2) 7 No. 8 Alumoweld (existing)
Insulators:	Glass/Ceramic
ROW Width:	200 feet
Structure Type:	(1) Lattice Tower Deadend, Drilled Pier Foundations

B(9)(b) Electric and Magnetic Fields

For electric power transmission lines that are within one hundred feet of an occupied residence or institution, the production of electric and magnetic fields during the operation of the proposed electric power transmission line.

No occupied residences or institutions are located within 100 feet of the Project.

B(9)(c) Project Cost

The estimated capital cost of the project.

The capital cost estimate for the proposed Project, which is comprised of applicable tangible and capital costs, is approximately $3,200,000 using a Class 4 estimate. However, the Project is reimbursable through the PJM process and the IPP is responsible for all costs associated with the line raise.

B(10) Social and Ecological Impacts

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

B(10)(a) Land Use Characteristics

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

An aerial photograph of the Project vicinity is provided as Figure 2 in Appendix A. The Project is located in Liberty Township, Union County, Ohio. Land use in the Project Area consists of existing electric transmission line right-of-way and agricultural fields. No tree clearing is anticipated for the Project.

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 will add one steel lattice tower within the existing ROW, which is comprised of an agricultural field currently used for row crops. Permanent impacts to the agricultural land will be limited to the footprint of the new steel lattice tower. The Union County Auditor indicated that the Project parcel is not registered as Agricultural District Land on May 24, 2023.

B(10)(c) Archaeological and Cultural Resources

Provide a description of the applicant's investigation concerning the presence or absence of significant archaeological 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.

The Company's consultant completed a Phase I Cultural Resource Management Investigation of the Project Area. No resources that are eligible for the NRHP were identified. No further investigation was considered to be necessary by the consultant. The Ohio Historic Preservation Office ("SHPO") agreed that the Project will not impact any cultural resources eligible for listing on the NRHP and no additional coordination is necessary prior to construction. A copy of the March 13, 2023 concurrence letter from SHPO is provided in Appendix C.

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.

Ground disturbance for the Project will be under one acre. The Company will have a soil and erosion plan for its portion of the Project in order to maintain best management practices to minimize erosion control sediment to protect surface water quality during storm events.

Per field reviews on January 5, 2023, one palustrine emergent (PEM) wetland totaling approximately 0.05 acres and one ephemeral stream totaling approximately 65 linear feet in length were identified in the survey corridor. Neither of these features are expected to be within work areas of the Project (see Appendix C). Therefore, the Project will not require a Clean Water Act Section 404 Permit from the U.S. Army Corps of Engineers or a Section 401 Water Quality Certification from the OEPA.

The FEMA Flood Insurance Rate Map was reviewed to identify any floodplains/flood hazard areas that have been mapped within the Project Area (specifically, map number **39159C0250D**). Based on this mapping, no mapped FEMA floodplains are located in the Project Area. Therefore, no floodplain permit will be required for this Project.

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

As part of the ecological study completed for the Project, a coordination letter was submitted to the USFWS Ohio Ecological Services Field Office seeking technical assistance on the Project for potential impacts to threatened or endangered species. The December 16, 2022, response letter from the USFWS (see Appendix C) indicated all projects in the State of Ohio lie within range of the federally endangered Indiana bat and the federally threatened northern long-eared bat. In Ohio, presence of these species is assumed wherever suitable habitat occurs unless a presence/absence survey has been performed to document probable absence. The USFWS response letter states that, should the Project site contain trees ≥3 inches diameter at breast height (dbh), the USFWS recommends trees be saved whenever possible. If any caves or abandoned mines may be disturbed, further coordination is requested. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, the USFWS recommends that removal of trees ≥3 inches dbh only occur between October 1 and March 31 in order to avoid adverse effects to these species. If

implementation of seasonal tree clearing is not possible, the USFWS recommends summer presence/absence surveys be conducted between June 1 and August 15. Additionally, the USFWS states 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. Based on current USFWS Ohio Field Office guidance, a desktop evaluation of potential hibernaculum was conducted in the Project area. No hibernaculum or caves were located in the Project area. No tree clearing is anticipated as part of the Project.

A coordination letter was submitted to the Ohio Department of Natural Resources ("ODNR") Division of Wildlife ("DOW") Ohio Natural Heritage Program ("ONHP") and the ODNR - Office of Real Estate on June 20, 2022, seeking an environmental review of the proposed Project for potential impacts on state-listed and federally-listed threatened or endangered species. Correspondence from ODNR's DOW/OHNP and the ODNR – Office of Real Estate was received on January 10, 2023 (see Appendix C).

According to the ODNR-DOW, the Project is within the vicinity of records for the Indiana bat, a state and federally endangered species; northern long-eared bat, a state-endangered and federally threatened species; little brown bat, a state-endangered species; and the tricolored bat, a state endangered species. No winter hibernacula were observed within 0.25 mile of the Project area based on the site reconnaissance and review of documented mines and karst features. No tree clearing is anticipated for the Project. Therefore, no additional coordination with ODNR is anticipated.

According to ODNR-DOW, the Project is within the range of seven endangered or threatened mussel species. Due to location and no in-water work, ODNR-DOW indicated that the Project is not likely to impact these species.

In addition, the ODNR lists the project in the range of the northern harrier a state endangered bird. The northern harrier nests in large marshes and grasslands and hunts over grasslands. The nesting period is between April 15 and July 31. No potential habitat for this species was observed in the Project area. No impact on this species is anticipated.

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.

No unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, state nature preserves, state or national parks, state or national forests, or other protected natural areas were identified within the Project Area.

FEMA Flood Insurance Rate Maps were consulted to identify any floodplains/flood hazard areas that have been mapped in the Project Area (specifically, map number **39159C0250D**). Based on these maps, no mapped FEMA floodplains are located in the Project area.

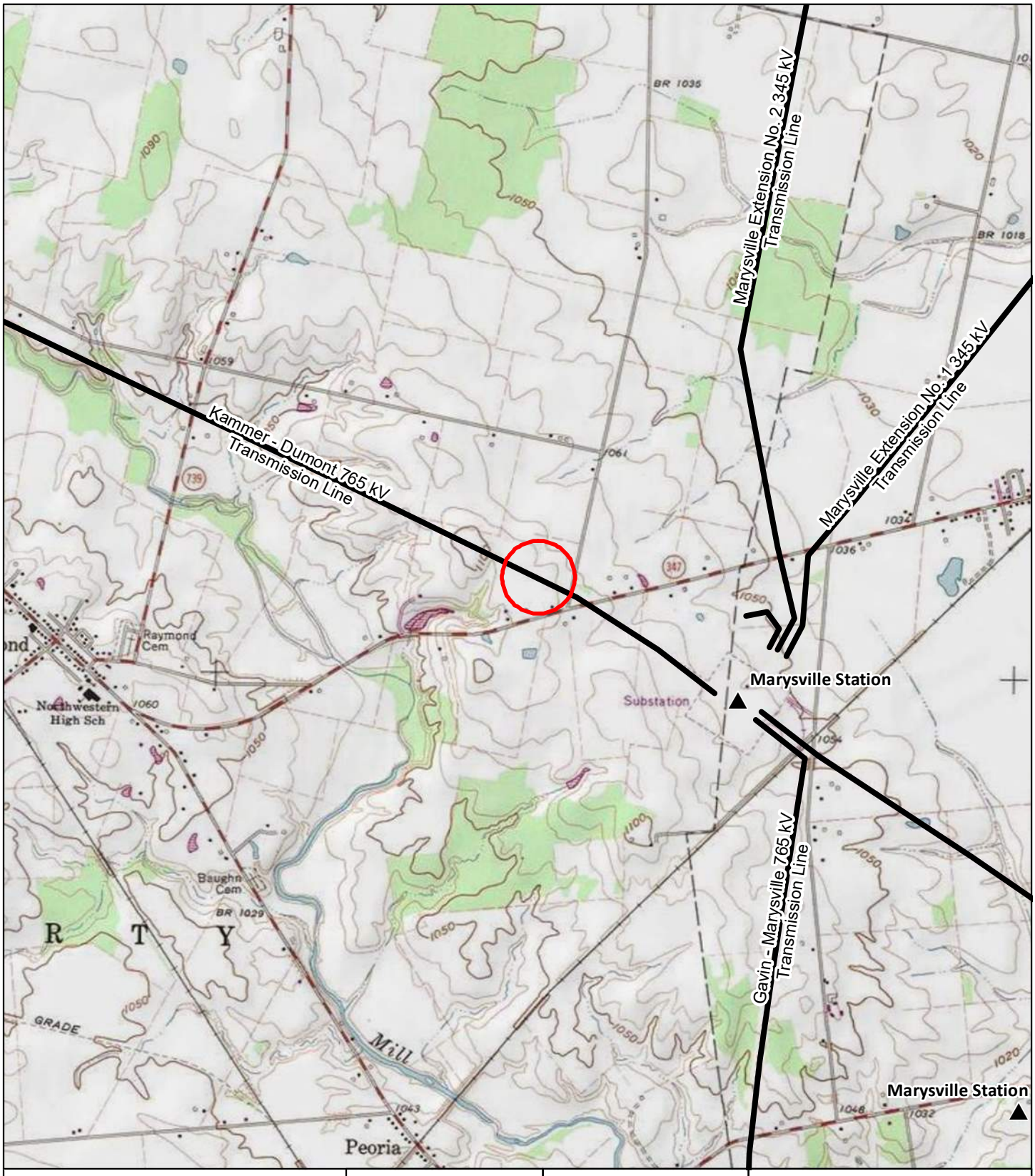
Wetland and stream delineation field surveys were completed within the Project area by the Company's consultant on January 5, 2023. One palustrine emergent (PEM) wetland totaling approximately 0.05 acres and one ephemeral stream totaling approximately 65 linear feet in length were identified in the survey corridor. Neither of these features are expected to be within work areas of the Project (see Figure 2 of the 2020 report in Appendix C).

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



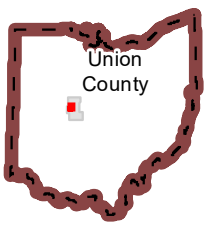
Legend:
- Project Area
- Existing Station
- Existing Transmission Line

Data Sources: AEP, USGS 7.5' Topographic Quadrangle (Peoria, Ohio)

Ohio State Plane North NAD 1983

May 18, 2023

PROJECT LOCATION



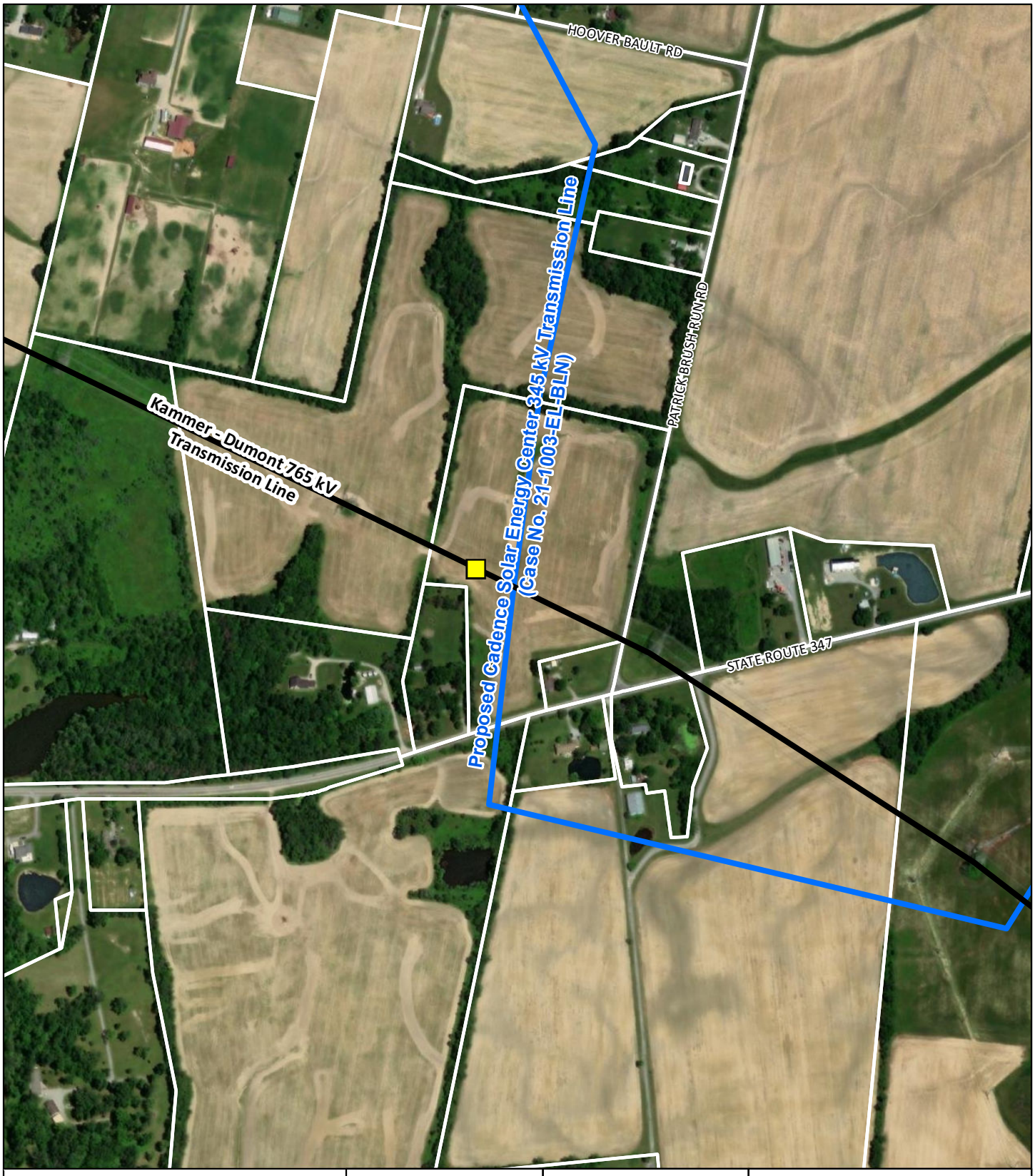
UNION COUNTY, OHIO

FIGURE 1
TOPOGRAPHIC OVERVIEW

Kammer – Dumont 765kV Transmission Line Raise Project

0 1,000 2,000 3,000

Feet



Legend:

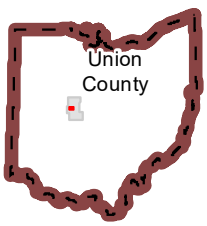
- Proposed 765 kV Line Raise Structure
- Proposed Transmission Line (Case No. 21-1003-EL-BLN)
- Existing Transmission Line
- Parcel Boundary

Data Sources: AEP, ESRI World Imagery, 2022

Ohio State Plane North
NAD 1983

June 08, 2023

PROJECT LOCATION



UNION COUNTY, OHIO

FIGURE 2
PROJECT AERIAL MAP

Kammer – Dumont 765kV Transmission Line Raise Project

0 250 500 750

Feet

Appendix B LTFR Page

1	**LINE NAME AND NUMBER:**	Marysville – Union County Solar (IPP) 345kV (AD2-092, AD2-093, & AD2-096 TP2020178)
2	**POINTS OF ORIGIN AND TERMINATION**	Marysville – Union County Solar (IPP) INTERMEDIATE STATIONS - N/A
3	**RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS**	0.15 mi / 150 ft / 1 circuit
4	**VOLTAGE: DESIGN / OPERATE**	345 kV /345 kV
5	**APPLICATION FOR CERTIFICATE:**	2023
6	**CONSTRUCTION:**	2023
7	**CAPITAL INVESTMENT:**	$1.43 mi (reimbursable)
8	**PLANNED SUBSTATION:**	N/A
9	**SUPPORTING STRUCTURES:**	Steel
10	**PARTICIPATION WITH OTHER UTILITIES**	N/A
11	**PURPOSE OF THE PLANNED TRANSMISSION LINE**	Connect and serve new generation customer
12	**CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION**	Generation deliverability limitation
13	**MISCELLANEOUS:**	

Appendix C Agency Coordination

In reply, refer to
2023-UNI-57122

March 13, 2023

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

RE: Marysville-Union County Solar Gen Tie Line Project, Liberty and Taylor Townships, Union County, Ohio

Dear Mr. Weller:

This letter is in response to the correspondence received February 14, 2023 regarding the proposed Marysville-Union County Solar Gen Tie Line Project, Liberty and Taylor Townships, Union 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 Cultural Resource Management Investigations for the 17 ha (41.9 ac) Marysville-Union County Solar Gen Tie Line Project in Liberty and Taylor Townships, Union County, Ohio* by Ryan J. Weller and Scott McIntosh (Weller & Associates, Inc., 2023).

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

A literature review and field survey were completed as part of the investigations. A total of fifteen (15) properties fifty years of age or older and one cemetery were identified within the Area of Potential Effects (APE). One (1) property, 20860 Hoover-Bault Road, has been demolished. Weller recommends none of these properties are eligible for listing in the National Register of Historic Places (NRHP). Our office agrees with Weller's recommendations of eligibility on the properties (the eligibility of Raymond-Newton Cemetery [OGSID 11986] remains unknown). We agree that there will be no effect on historic resources as a result of the project.

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: 1096919

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 10, 2023

Daniel Godec
Stantec Consulting Services Inc.
11687 Lebanon Road
Cincinnati, OH 45241

Re: 22-1237; Marysville-Union County Solar Generation Tie Line Project

Project: The proposed project involves facilitating the interconnection of the Cadence Solar generating facility and storage facility into AEP's existing Marysville 345 kV Station facility.

Location: The proposed project is located in Taylor and Liberty Townships, Union 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: A review of the Ohio Natural Heritage Database indicates there are no records of state or federally listed plants or animals within one mile of the specified project area. 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.

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 ≥ 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 Eileen Wyza at Eileen.Wyza@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 & NORTHERN LONG-EARED 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 Eileen Wyza 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
snuffbox (*Epioblasma triquetra*)
clubshell (*Pleurobema clava*)
Northern riffleshell (*Epioblasma torulosa rangiana*)
rayed bean (*Villosa fabalis*)

Federally Threatened
rabbitsfoot (*Quadrula cylindrica cylindrica*)

State Endangered
elephant-ear (*Elliptio crassidens crassidens*)

State Threatened
pondhorn (*Uniomerus tetralasmus*)

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

The project is within the range of the northern harrier (*Circus hudsonis*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this habitat will not be impacted, the 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.

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

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / FAX (614) 416-8994

December 16, 2022

Project Code: 2023-0021802

Reference: Marysville-Union County Solar Generation Tie Line project

Dear Mr./Ms,

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 https://ecos.fws.gov/ecp/species/9045), 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.

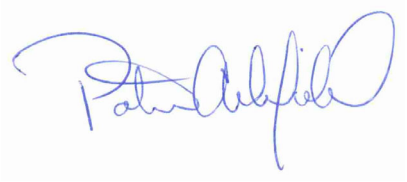
Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing 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
Eileen Wyza, ODNR-DOW

Appendix D Ecological Survey Report

Marysville-Union County Solar Generation Tie Line Project

Ecological Survey Report

Prepared for:

MYR Energy Services, Inc.
55 East Monroe Street
Chicago, IL 60603

Prepared by:

Stantec Consulting Services Inc.
10200 Alliance Road, Suite 300
Cincinnati, OH 45242

January 24, 2023

Sign-off Sheet

This document entitled Marysville-Union County Solar Generation Tie Line Project Ecological Survey Report was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of MYR Energy Services, Inc. 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 

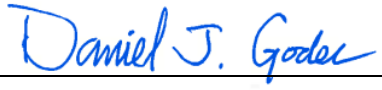
(signature)

Cyrus Chastain

Reviewed by 

(signature)

Aaron Kwolek

Approved by 

(signature)

Daniel Godec

Table of Contents

1.0 INTRODUCTION

AEP Ohio Transmission Company, Inc. (AEP) and MYR Energy Services, Inc. are proposing construction activities associated with the Marysville-Union County Solar Generation Tie Line Project. The Project includes the installation of new electric transmission structures near the existing AEP Marysville Station facility, as well as north of State Route 347 near the Marysville Station facility in order to tie into/interconnect with the planned Independent Power Producer (IPP) Union Solar Project. The portion of the Project located south of State Route 347 was previously surveyed for ecological resources by Stantec Consulting Services Inc. (Stantec) under contract with AEP as part of the Marysville Station Expansion Project in 2017 and 2020. The portion of the Project which was not previously surveyed by Stantec (hereafter referred to as the Project area) begins northeast of the intersection of State Route 347 and Patrick-Brush Run Road and extends northwest approximately 0.25 miles in Liberty Township, Union County, Ohio (Figure 1, Appendix A). The Project area was surveyed for wetlands, waterbodies, open water features, and potential threatened, endangered, and rare species habitat by Stantec biologists on January 5, 2023. 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. The approximate locations of these features are shown on the Figure 2 maps in Appendix A 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 mapping, National Wetlands Inventory (NWI) maps, U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey data, and aerial imagery mapping. No NWI-mapped features are located within the Project area. Stantec completed a wetland delineation study in accordance with the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* (USACE 2010). 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). 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 of each waterway and/or the OHWM of each waterway was 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 ponds/open water features and 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 B – Agency Correspondence). To assess potential impacts to rare, threatened, or endangered species, Stantec scientists conducted a pedestrian reconnaissance of the proposed Project area, collected information on existing habitats within the Project area, and assessed the potential for these habitats to be used by federally listed or state-listed species that have the potential to occur within Union County.

3.0 RESULTS

3.1 TERRESTRIAL HABITAT

Stantec completed field surveys on January 5, 2023, for threatened and endangered species or their habitats. Figure 3 (Appendix A) shows the vegetation communities/habitats identified within the Project area and the locations of any identified rare, threatened, or endangered species habitat observed within the Project area during the time of the habitat assessment surveys. Representative photographs of the vegetation communities/habitats and land cover types identified within the Project area are included in Appendix C of this report (photo locations are shown on Figure 3, Appendix A). Information regarding the vegetation communities/habitats/land cover types identified within the Project area is provided in Table 1.

Table 1. Vegetation Communities and Land Cover Types Found within the Marysville-Union County Solar Generation Tie Line Project Area, Union 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
Agricultural Land	Extreme Disturbance/Ruderal Community dominated by planted row crop species such as corn (*Zea mays*), soybean (*Glycine max*), and common wheat (*Triticum aestivum*).	No	9.51
Old Field	Extreme Disturbance/Ruderal Community dominated by opportunistic invaders and/or native highly tolerant taxa. Common plant species included velvetleaf (*Abutilon theophrasti*), Canada goldenrod (*Solidago canadensis*), Allegheny blackberry (*Rubus allegheniensis*), Japanese bristlegrass (*Setaria faberi*), Indianhemp (*Apocynum cannabinum*), white avens (*Geum canadense*), and Fuller's teasel (*Dipsacus fullonum*).	No	0.51
Residential Lawn	Extreme Disturbance/Ruderal Community dominated by opportunistic invaders and/or native highly tolerant taxa. Common plant species included common plantain (*Plantago major*), Kentucky bluegrass (*Poa pratensis*), perennial ryegrass (*Lolium perenne*), white clover (*Trifolium repens*), and common dandelion (*Taraxacum officinale*).	No	0.32
Existing Roadway	Extreme Disturbance/existing gravel or paved road without vegetation.	No	0.14

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
Mixed Early Successional/ Second Grown Deciduous Forest	Moderate Disturbance/Natural Community (dominated by native woody and herbaceous species and/or opportunistic invaders). Common plant species included common hackberry (*Celtis occidentalis)*, American sycamore (*Platanus occidentalis*), bitternut hickory (*Carya cordiformis*), Allegheny blackberry, American elm (*Ulmus americana*), northern red oak (*Quercus rubra*), black walnut (*Juglans nigra*), and eastern redcedar (*Juniperus virginiana*)	No	0.66
Palustrine Emergent Wetland	Moderate Disturbance/Natural Community (dominated by native herbaceous species and/or opportunistic invaders). Common plant species included butterweed (*Packera glabellla*), redroot amaranth (*Amaranthus retroflexus*), cursed buttercup (*Ranunculus scleratus*), and purple deadnettle (*Lamium purpureum*).	No	0.05
		TOTAL	**11.19**

3.2 WETLANDS

One palustrine emergent wetland was delineated within the Project area during the field surveys completed on January 5, 2023. Table 2 provides information about the wetland delineated within the Project area. Two additional wetland determination sample points were evaluated within the Project area in the locations most likely to meet the criteria to be considered a wetland. Representative photographs of the wetland and wetland determination sample points are included in Appendix C of this report (photo locations are shown on Figure 2, Appendix A). The completed ORAM and wetland determination data forms are included in Appendix D.

Table 2. Summary of Wetland Resources Found within the Marysville-Union County Solar Generation Tie Line Project Area, Union County, Ohio

Wetland ID	Location			Isolated?[2]	Habitat Type[3,4]	Delineated Area within Project 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	40.3367	-83.4399	7	Yes	PEM	0.05	14	1	N/A	N/A	N/A	N/A	TBD	TBD
					TOTAL:	**0.05**						**TOTAL:**	**TBD**	**TBD**

[1] Appendix B - Figure 2 and Appendix D – Wetland and Waterbody Delineation Photographs
[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).

3.3 STREAMS

One ephemeral stream was identified in the Project area during Stantec's January 5, 2023 site visit. Figure 2 (Appendix A) shows the location of the stream identified by Stantec within the Project area. Representative photographs of the stream are included in Appendix C of this report (photo locations are shown on Figure 2, Appendix A). A completed HHEI data form for the identified stream is included in Appendix D. Information regarding the identified stream is provided in Table 3.

Table 3. Summary of Stream Resources Found within the Marysville-Union County Solar Generation Tie Line Project Area, Union County, Ohio

Stream ID	Location		Stream Type	Stream Name[1]	Delineated Length (feet)	Bankfull Width (feet)	OHWM Width (feet)	Field Evaluation			Ohio EPA 401 Eligibility	Stream Crossing?	Proposed Impacts	
	Latitude	Longitude						Method	Score[2,3]	Category/ Rating/ OAC Use Designation[2,3,4]			Fill Type	Area (acre)
Stream 1	40.337532	-83.443837	Ephemeral	UNT to Mill Creek	65	2	1.5	HHEI	15	Class I Primary Headwater	Eligible	TBD[5]	TBD[5]	TBD[5]
				TOTAL:	**65**								**TOTAL:**	**0**

[1]UNT = Unnamed Tributary
[2]Based on the designated use evaluation presented in the Field Methods for Evaluating Primary Headwater Habitat Streams in Ohio, Version 4.0 (OEPA 2020).
[3]Based on the designated use evaluation presented in the Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (OEPA 2006).
[4]Based on Ohio Administrative Code (OAC) 3745-1-16.
[5]TBD – To be determined. Impact information is unknown at this time.

3.4 OPEN WATERS

No open waters were identified within the Project area during Stantec's January 5, 2023 site visit.

3.5 RARE, THREATENED, OR ENDANGERED SPECIES HABITAT

Table 4. Summary of Potential Federally Listed and Ohio State-Listed Species within the Marysville-Union County Solar Generation Tie Line Project Area, Union County, Ohio

Common Name/ Scientific Name	State Listed Status[1,2]	Federally Listed Status[1,3]	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
Mammals						
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 2022b). 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).	Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. No potential roost trees or potential hibernacula were observed within the Project area.	**ODNR** – This Project lies within the range of the Indiana bat. Therefore, if suitable habitat occurs within the Project area and trees need to be cut, the ODNR recommends cutting only occur between October 1 and March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with dbh ≥ 20 inches if possible. If trees are present within the project area, and trees must be cut during the summer months, the ODNR recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. If state listed bats are documented, ODNR recommends cutting only occur from October 1 through March 31. In addition, the ODNR recommends a desktop habitat assessment, followed by field a field assessment if needed, is conducted to determine if there are potential hibernacula present within the Project area. If a habitat assessment finds that a potential hibernaculum is present within the Project area or 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 ODNR recommends a 0.25-mile tree cutting and subsurface disturbance buffer be established around the potential hibernaculum entrance. However, limited summer or winter tree cutting may be acceptable after consultation with the ODNR. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this Project is not likely to impact this species. **USFWS** – The Indiana bat occurs throughout the State of Ohio. The Indiana bat may be found	Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. A desktop bat hibernacula habitat assessment was completed by Stantec and no potential bat hibernacula were identified within the Project area or its vicinity (Figure 4; Appendix A). No potential hibernacula were observed within the Project area. **Avoidance Dates:** April 1 – September 30

Common Name/ Scientific Name	State Listed Status[1,2]	Federally Listed Status[1,3]	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
					wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. 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. If implementation of this seasonal tree cutting recommendation is not possible, a summer presence/absence survey may be conducted between June 1 and August 15 for Indiana bats. If Indiana bats are not detected during the survey, then tree clearing may occur at any time of the year.	
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).	Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. No potential hibernacula were observed within the Project area.	**ODNR** – This Project lies within the range of the northern long-eared bat. Therefore, if suitable habitat occurs within the Project area and trees need to be cut, the ODNR recommends cutting only occur between October 1 and March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with dbh ≥ 20 inches if possible. If trees are present within the project area, and trees must be cut during the summer months, the ODNR recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. If state listed bats are documented, ODNR recommends cutting only occur from October 1 through March 31. In addition, the ODNR recommends a desktop habitat assessment, followed by field a field assessment if needed, is conducted to determine if there are potential hibernacula present within the Project area. If a habitat assessment finds that a potential hibernaculum is present within the Project area or within 0.25 miles of the Project	Potentially suitable foraging habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. A desktop bat hibernacula habitat assessment was completed by Stantec and no potential bat hibernacula were identified within the Project area or its vicinity (Figure 4; Appendix A). No potential hibernacula were observed within the Project area. **Avoidance Dates:** April 1 – September 30

Common Name/ Scientific Name	State Listed Status[1,2]	Federally Listed Status[1,3]	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
					area, please send this information to Erin Hazelton for project recommendations. If a potential or known hibernaculum is found, the ODNR recommends a 0.25-mile tree cutting and subsurface disturbance buffer be established around the potential hibernaculum entrance. However, limited summer or winter tree cutting may be acceptable after consultation with the ODNR. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this Project is not likely to impact this species. **USFWS** – If no caves or abandoned mines may be disturbed and tree removal is unavoidable, seasonal tree cutting (clearing of trees ≥3 inches diameter at breast height between October 1 and March 31) is recommended. Incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule.	
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).	Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. No potential hibernacula were observed within the Project area.	**ODNR** - This Project lies within the range of the little brown bat. Therefore, if suitable habitat occurs within the Project area and trees need to be cut, the ODNR recommends cutting only occur between October 1 and March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with dbh ≥ 20 inches if possible. If trees are present within the project area, and trees must be cut during the summer months, the ODNR recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. If state listed bats are documented, ODNR recommends cutting only occur from October 1 through March 31. In addition, the ODNR recommends a desktop habitat assessment, followed by field a field assessment if needed, is conducted to determine if there are potential hibernacula present within the Project area. If a habitat assessment finds that a potential hibernaculum is present within the Project area or 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 ODNR recommends a 0.25-mile tree cutting and	Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. A desktop bat hibernacula habitat assessment was completed by Stantec and no potential bat hibernacula were identified within the Project area or its vicinity (Figure 4; Appendix A). No potential hibernacula were observed within the Project area. **Avoidance Dates:** April 1 – September 30

Common Name/ Scientific Name	State Listed Status[1,2]	Federally Listed Status[1,3]	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
					subsurface disturbance buffer be established around the potential hibernaculum entrance. However, limited summer or winter tree cutting may be acceptable after consultation with the ODNR. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this Project is not likely to impact this species. **USFWS** - No comments received.	
Tricolored Bat/*Perimyotis subflavus*	E	PE	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 winter hibernacula and/or summer night roosts between foraging (NatureServe 2022).	Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. No potential hibernacula were observed within the Project area.	**ODNR** - This Project lies within the range of the tricolored bat. Therefore, if suitable habitat occurs within the Project area and trees need to be cut, the ODNR recommends cutting only occur between October 1 and March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with dbh ≥ 20 inches if possible. If trees are present within the project area, and trees must be cut during the summer months, the ODNR recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. If state listed bats are documented, ODNR recommends cutting only occur from October 1 through March 31. In addition, the ODNR recommends a desktop habitat assessment, followed by field a field assessment if needed, is conducted to determine if there are potential hibernacula present within the Project area. If a habitat assessment finds that a potential hibernaculum is present within the Project area or 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 ODNR recommends a 0.25-mile tree cutting and subsurface disturbance buffer be established around the potential hibernaculum entrance. However, limited summer or winter tree cutting may be acceptable after consultation with the ODNR. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this Project is not likely to impact this species. **USFWS -** No comments received.	Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. A desktop bat hibernacula habitat assessment was completed by Stantec and no potential bat hibernacula were identified within the Project area or its vicinity (Figure 4; Appendix A). No potential hibernacula were observed within the Project area. **Avoidance Dates:** April 1 – September 30

Common Name/ Scientific Name	State Listed Status[1,2]	Federally Listed Status[1,3]	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
Birds						
Northern Harrier/*Circus hudsonius*	E	N/A	Harriers hunt low over grasslands, with wings held in a distinctive dihedral (V-shape). This is a common migrant and winter species; nesters are much rarer, although they occasionally breed in large marshes and grasslands (ODNR 2018). Northern harriers appear to be associated with large tracts of undisturbed habitat. They are uncommon in blocks of contiguous grassland less than 100 hectares (Slater and Rock 2005).	No suitable nesting habitat was observed within the Project area.	**ODNR** – The Project is within the range of the northern harrier. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this habitat will not be impacted, this Project is not likely to impact this species. **USFWS** - No comments received.	Northern harriers require large tracts of wetlands and/or grasslands that are 100 hectares (247 acres) or more for suitable breeding/nesting habitat (Slater and Rock 2005). No suitable nesting habitat (large tracts of wetlands and/or grasslands) were observed within the Project area. Therefore, no impacts are anticipated and avoidance dates are not applicable.
Mussels						
Northern Riffleshell/ *Epioblasma torulosa rangiana*	E	E	This mussel is found in a wide variety of streams from small to large. Habitat for this species includes riffles and firmly packed substrates of fine to coarse gravel. This mussel needs highly oxygenated water (NatureServe 2022).	No suitable habitat was observed within the Project area.	**ODNR** – The Project area is within the range of the northern riffleshell. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. **USFWS** – Due to the project type, size, and location, we do not anticipate adverse effects to this species.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Rabbitsfoot/*Quadrula cylindrica*	E	T	Typical habitat for this species is small to medium-sized rivers with moderate to swift currents, and in smaller streams it inhabits bars or gravel and cobble close to the fast current. Rabbitsfoot are also found in medium to large rivers in sand and gravel (NatureServe 2022).	No suitable habitat was observed within the Project area.	**ODNR** – The Project area is within the range of the rabbitsfoot. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. **USFWS** – Due to the project type, size, and location, we do not anticipate adverse effects to this species.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Snuffbox/*Epioblasma triquetra*	E	E	The snuffbox occurs in medium-sized streams to large rivers, generally on mud, rocky, gravel, or sand substrates in flowing water. They are often deeply buried in substrate and overlooked by collectors (NatureServe 2022). It is found in a wide range of particle sized substrates; however, swift shallow riffles with sand and gravel are where it is typically found	No suitable habitat was observed within the Project area.	**ODNR** – The Project area is within the range of the snuffbox. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. **USFWS** – Due to the project type, size, and location, we do not anticipate adverse effects to this species.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.

Common Name/ Scientific Name	State Listed Status[1,2]	Federally Listed Status[1,3]	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
			(Parmalee and Bogan 1998; Watters et al. 2009).			
Rayed Bean/*Villosa fabalis*	E	E	Habitat includes gravel or sandy substrate, especially in areas of thick roots of aquatic plants, increased 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).	No suitable habitat was observed within the Project area.	**ODNR** – The Project area is within the range of the rayed bean. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. **USFWS** – Due to the project type, size, and location, we do not anticipate adverse effects to this species.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Clubshell/*Pleurobema clava*	E	E	The clubshell occurs in medium to small rivers and streams, containing clean, coarse sand and cobble substrates (USFWS 1994). The clubshell is usually found within the current, where it may live several inches underneath the surface. It is most common in the downstream ends of riffles and islands (Watters et al. 2009). The clubshell is mostly considered an Ohio River system species, including the Tennessee, Cumberland, Kanawha, and Wabash river drainages. However, it is also found within the Maumee River system of Lake Erie. Although historically the clubshell was originally described as occurring within Lake Erie, only one record of its occurrence there has been found (Watters et al. 2009).	No suitable habitat was observed within the Project area	**ODNR** – The Project area is within the range of the clubshell mussel. 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 this species.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Elephant-ear/*Elliptio crassidens crassidens*	E	N/A	This mussel is found in muddy sand, sand, and rocky substrates in moderate currents. In some areas, it is common in large creeks to rivers with moderate to swift currents primarily on sand and limestone or rock substrates (NatureServe 2022).	No suitable habitat was observed within the Project area.	**ODNR** – The Project area is within the range of the elephant-ear. 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.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.

Common Name/ Scientific Name	State Listed Status[1,2]	Federally Listed Status[1,3]	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
Pondhorn/*Uniomerus tetralasmus*	T	N/A	This species typically inhabits the quiet or slow-moving, shallow waters of sloughs, borrow pits, ponds, ditches, and meandering streams. It is tolerant of poor water conditions and can be found well buried in a substrate of fine silt and/or mud. It has been known to survive for extended periods of time when a pond or slough has temporarily dried up by burying itself deep into the substrate (NatureServe 2022).	No suitable habitat was observed within the Project area.	**ODNR** – The Project area is within the range of the pondhorn. 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.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.

[1]E=Endangered; T=Threatened; N/A= Not Applicable
[2]According to ODNR, State Listed Wildlife and Plant Species by County (ODNR 2022a).
[3]According to Information for Planning and Consultation website (USFWS 2022a).

4.0 CONCLUSIONS AND RECOMMENDATIONS

Stantec conducted a wetland and waterbody delineation and a preliminary habitat assessment for threatened and endangered species within the Project area on January 5, 2023. One palustrine emergent (PEM) wetland (Wetland 1) totaling approximately 0.05 acres was identified within the Project area. Additionally, one ephemeral stream (Stream 1) totaling approximately 65 linear feet in length was identified within the Project area. Completed data forms for the identified stream and wetland features are provided in Appendix D and representative photographs are provided in Appendix C.

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 5, 2022. The ODNR Office of Real Estate response dated January 10, 2023 (Appendix B) states that there are no records of state or federally listed plants or animals within one mile of the Project area.

The ODNR stated that the entire state of Ohio is within the range of the state-listed endangered Indiana bat, northern long-eared bat, little brown bat, and tricolored bat. If trees are present within the Project area, and trees must be cut, the ODNR 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. If trees are present within the Project area and trees must be cut during the summer months, the ODNR recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. If state listed bats are documented, the ODNR recommends cutting only occur from October 1 through March 31.

The ODNR also recommended that a desktop habitat assessment be conducted, followed by a field assessment if needed, to determine if there are potential bat hibernacula present within 0.25 miles of the Project area. Stantec completed a desktop habitat desktop assessment in accordance with the 2022 Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines (USFWS 2022b) utilizing available ODNR websites, including data on known abandoned or active mines (ODNR 2022b) and locations of known or suspected karst geology (ODNR 2022c). The desktop assessment did not identify any caves, abandoned underground mines, active underground mines, or other potential bat hibernacula within the Project area or a 3-mile buffer of it (Figure 4, Appendix A). Additionally, no potential bat hibernacula were identified within the Project area. Potentially suitable summer roosting habitat was identified within the Project area. AEP intends to conduct any necessary tree clearing between October 1 and March 31. If any tree clearing is required outside of that timeframe, AEP will conduct the required agency coordination and proceed accordingly with agency recommendations.

The ODNR states that the Project is within the range of the following federally listed and/or state-listed threatened and endangered mussel species: snuffbox, clubshell, northern riffleshell, rayed bean, rabbitsfoot, elephant-ear, and pondhorns. Furthermore, the ODNR states that this Project must not have an impact on freshwater native mussels at the Project site and this applies to both listed and non-listed mussel species. Per the Ohio Mussel Survey Protocol (ODNR and USFWS 2020), all Group 2, 3, and 4 streams require a mussel survey if impacts to them will be required for construction of the Project. Additionally, Group 1 streams and unlisted streams with a watershed of 5 square miles or larger above the point of impact should be assessed using the *Reconnaissance Survey for Unionid Mussels* (ODNR and USFWS 2020) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the ODNR recommends the applicant provide information to indicate no mussel impacts will occur. If impacts are unavoidable, a professional malacologist is recommended to conduct a mussel survey in the Project area. If mussels that cannot be avoided are found in the Project area, those mussels are to be collected and relocated by a professional malacologist and done in accordance with the Ohio Mussel Survey Protocol. Since no in-water work is proposed by AEP in a perennial stream, impacts to the above listed mussel species are not anticipated. As stated, no perennial streams were identified within the Project area.

The ODNR states that the Project is within the range of the state-listed endangered northern harrier. The northern harrier occasionally nests in large marshes and grasslands in Ohio. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this habitat will not be impacted, the project is not likely to impact this species. However, no potentially suitable nesting habitat is present within the Project area for this species. Therefore, this Project is not likely to impact this species and nesting season avoidance dates are not applicable.

A technical assistance request letter was submitted to the USFWS on December 5, 2022. The USFWS response letter dated December 16, 2022, recommends that impacts to wetlands and other water resources be avoided or minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation (Appendix B).

According to the USFWS response, all projects in the State of Ohio lie within range of the federally endangered Indiana bat and the federally threatened northern long-eared bat. In Ohio, presence of these species is assumed wherever suitable habitat occurs unless a presence/probable absence survey has been performed to document probable absence. The USFWS response letter states that, should the Project site contain trees ≥3 inches dbh, the USFWS recommends trees be saved whenever possible. If any caves or abandoned mines may be disturbed, further coordination is requested. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, the USFWS recommends that removal of trees ≥3 inches dbh only occur between October 1 and March 31 in order to avoid adverse effects to these species. If implementation of seasonal tree clearing is not possible, the USFWS recommended that summer presence/probable absence surveys be conducted between June 1 and August 15.

Additionally, the USFWS states 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.

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Appendix A FIGURES

A.1 FIGURE 1 – PROJECT LOCATION MAP

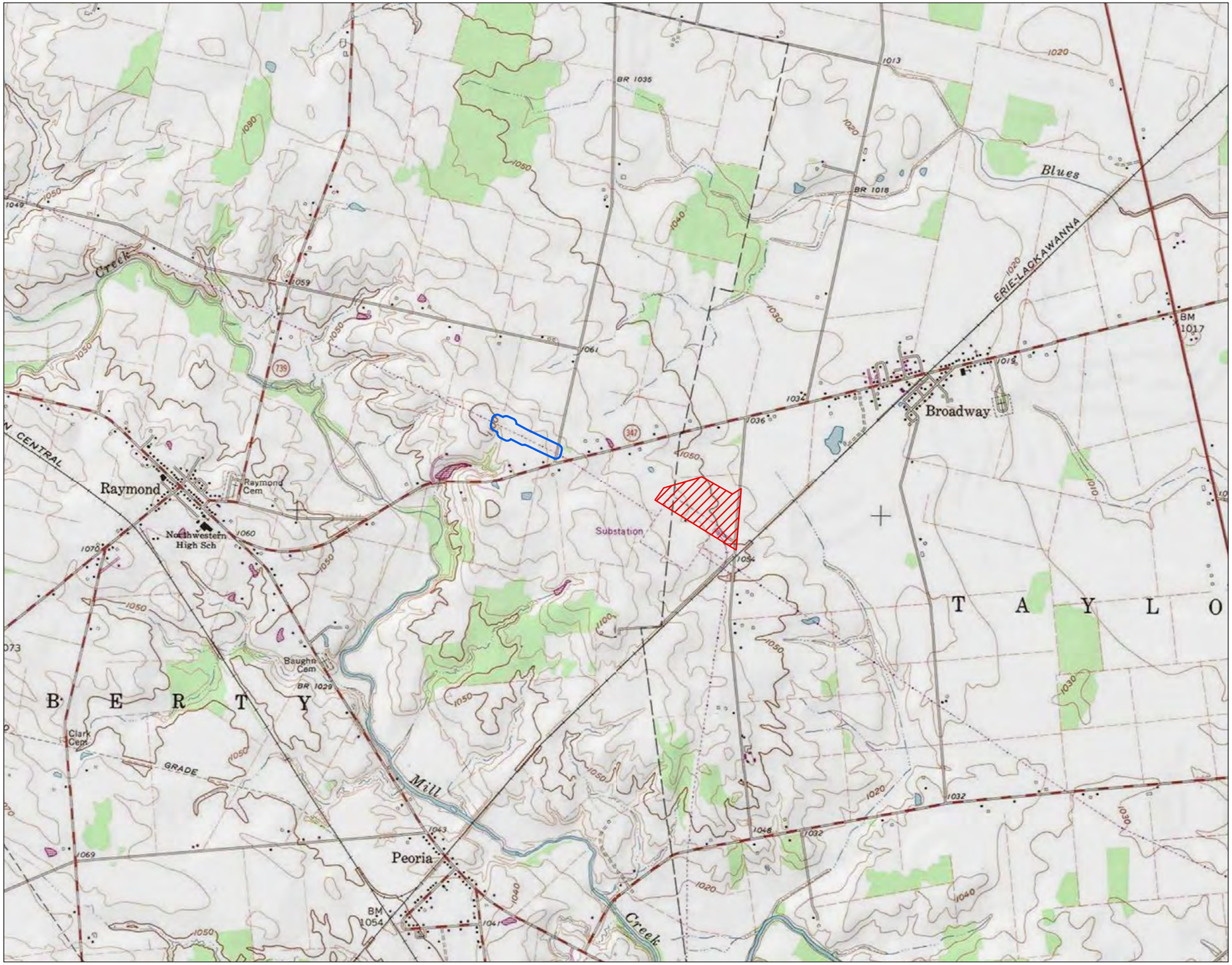


Figure No.

1

Title

Project Location Map

Client/Project 193709207

AEP Ohio Transmission Company, Inc.
MYR Energy Services, Inc.
Marysville-Union County Solar Generation Tie Line Project

Project Location
Union County,
Ohio

Prepared by JDS on 2023-01-24
TR by AJK on 2023-01-24
IR by DJG on 2023-01-24

N

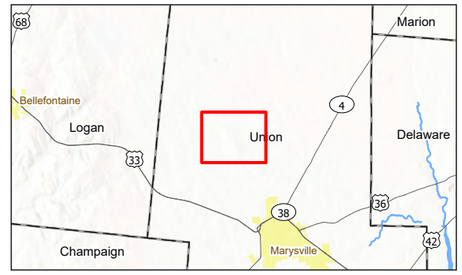
0 1,000 2,000 Feet

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

Legend

Status

- Project Area
- Area Previously Surveyed



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, AEP, MYR, USGS, NADS
3. Background: USGS 7.5' Topographic Quadrangles

Stantec

A.2 FIGURE 2 – WETLAND AND WATERBODY DELINEATION MAP

Figure No.
2

Title
Wetland and Waterbody Delineation Map

Client/Project
AEP Ohio Transmission Company, Inc.
MYR Energy Services, Inc.
Marysville-Union County Solar Generation Tie Line Project

193709207

Project Location
Union County, Ohio

Prepared by JDS on 2023-01-10
TR by AJK on 2023-01-24
IR by DJG on 2023-01-24

N

0 225 450 Feet
(At original document size of 11x17)
1:5,400

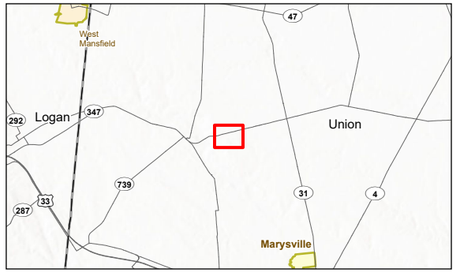
Legend

Status
- Project Area
- Area Previously Surveyed
- Photo Location
- Wetland Determination Sample Point
- Existing Culvert
- Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Emergent Wetland
- National Wetlands Inventory Feature

National Hydrography Dataset
- Perennial Stream*
- Intermittent Stream
- Waterbody

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

*No features within data frame



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, AEP, USGS, USFWS, FEMA, NADS, OGRIP
3. Orthophotography: 2021 NAIP

Stantec

A.3 FIGURE 3 – HABITAT ASSESSMENT MAP

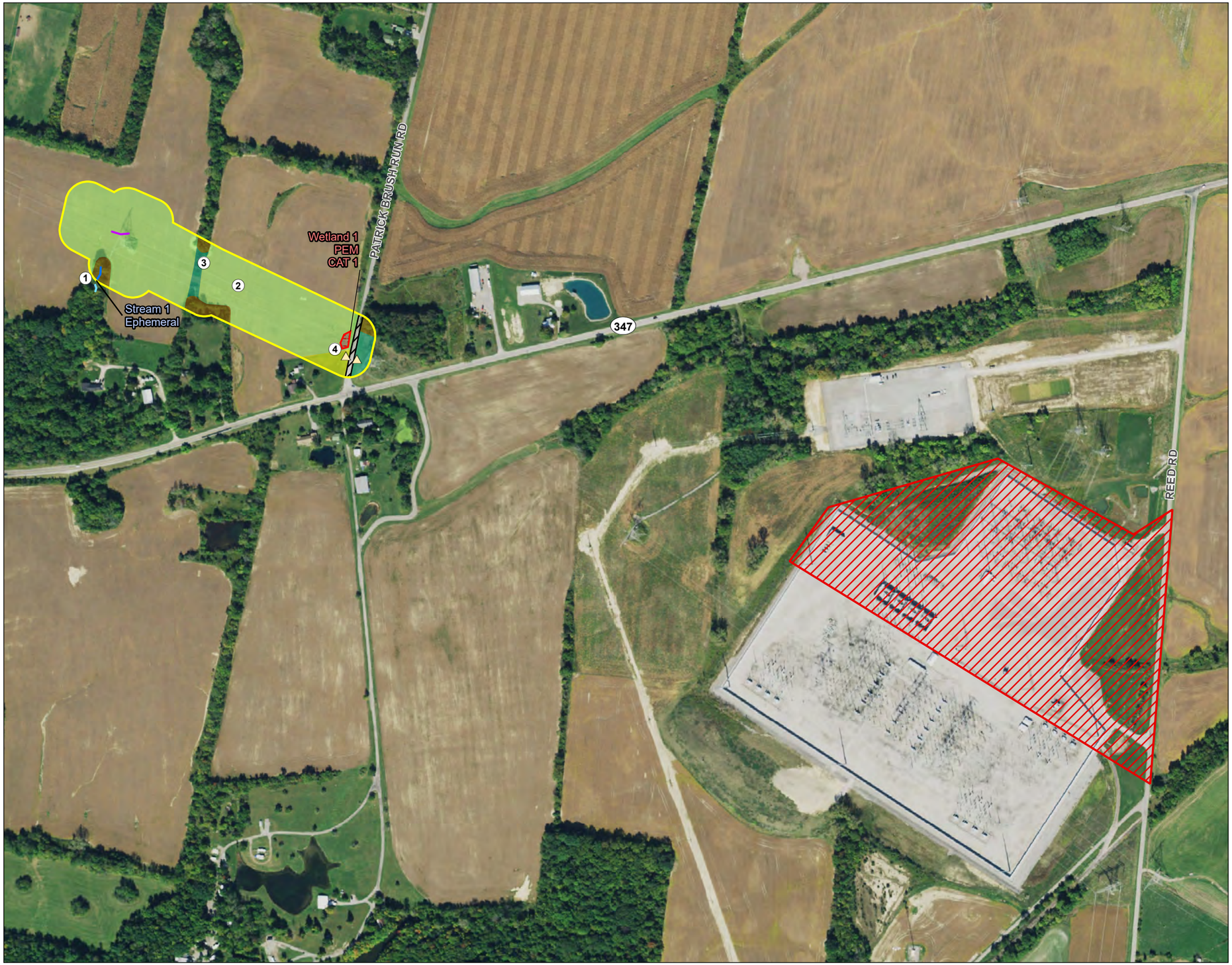


Figure No.
3

Title
Habitat Assessment Map

Client/Project 193709207
AEP Ohio Transmission Company, Inc.
MYR Energy Services, Inc.
Marysville-Union County Solar Generation Tie Line Project

Project Location
Union County, Ohio

Prepared by SWT on 2023-01-11
TR by AJK on 2023-01-24
IR by DJG on 2023-01-24

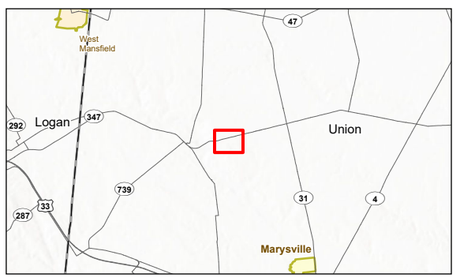
N

0 225 450 Feet
(At original document size of 11x17)
1:5,400

Legend
- Project Area
- Area Previously Surveyed
- Photo Location
- Existing Culvert
- Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Emergent Wetland

Habitat Area
- Agricultural Field
- Residential Lawn
- Old Field
- Mixed Early Successional/Second Growth Deciduous Forest
- Existing Road

*No features within data frame



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, AEP, USGS, NADS, OGRIP
3. Orthophotography: 2021 NAIP

Stantec

A.4 FIGURE 4 – BAT HIBERNACULA DESKTOP STUDY MAP

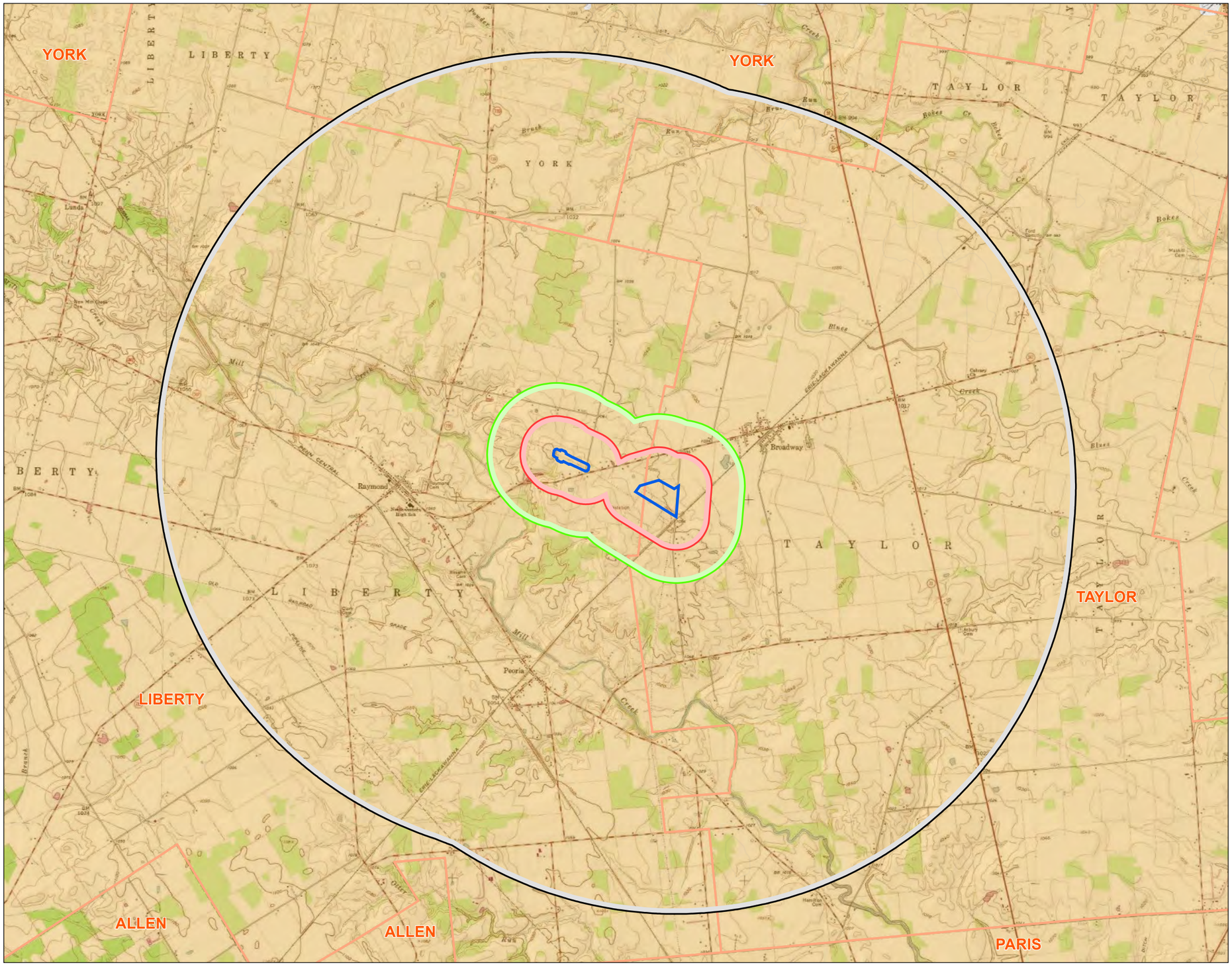


Figure No.
4

Title
Bat Hibernacula Desktop Study Map

Client/Project 193709207
AEP Ohio Transmission Company, Inc.
MYR Energy Services, Inc.
Marysville-Union County Solar Generation Tie Line Project

Project Location
Union County, Ohio

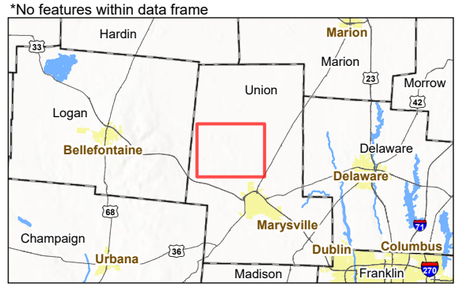
Prepared by JDS on 2023-01-10
TR by AJK on 2023-01-24
IR by DJG on 2023-01-24

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
- Township Boundary
- Municipal Boundary
- 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

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Appendix B AGENCY CORRESPONDENCE

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 10, 2023

Daniel Godec
Stantec Consulting Services Inc.
11687 Lebanon Road
Cincinnati, OH 45241

Re: 22-1237; Marysville-Union County Solar Generation Tie Line Project

Project: The proposed project involves facilitating the interconnection of the Cadence Solar generating facility and storage facility into AEP's existing Marysville 345 kV Station facility.

Location: The proposed project is located in Taylor and Liberty Townships, Union 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: A review of the Ohio Natural Heritage Database indicates there are no records of state or federally listed plants or animals within one mile of the specified project area. 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.

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 ≥ 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 Eileen Wyza at Eileen.Wyza@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 & NORTHERN LONG-EARED 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 Eileen Wyza 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
snuffbox (*Epioblasma triquetra*)
clubshell (*Pleurobema clava*)
Northern riffleshell (*Epioblasma torulosa rangiana*)
rayed bean (*Villosa fabalis*)

Federally Threatened
rabbitsfoot (*Quadrula cylindrica cylindrica*)

State Endangered
elephant-ear (*Elliptio crassidens crassidens*)

State Threatened
pondhorn (*Uniomerus tetralasmus*)

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

The project is within the range of the northern harrier (*Circus hudsonis*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this habitat will not be impacted, the 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.

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

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / FAX (614) 416-8994

December 16, 2022

Project Code: 2023-0021802

Reference: Marysville-Union County Solar Generation Tie Line project

Dear Mr./Ms,

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 https://ecos.fws.gov/ecp/species/9045), 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.

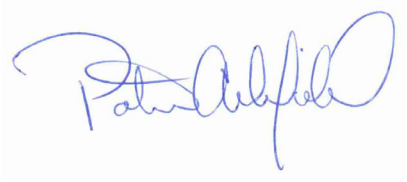
Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing 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
Eileen Wyza, ODNR-DOW

Appendix C REPRESENTATIVE PHOTOGRAPHS

C.1 WETLAND AND WATERBODY PHOTOGRAPHS

Photograph Location 1. View of Stream 1. Photograph taken facing upstream/north.

Photograph Location 1. View of Stream 1. Photograph taken facing downstream/south.

Photograph Location 1. View of substrates of Stream 1.

Photograph Location 2. View of upland (agricultural field) at wetland determination sample point location SP01. Photograph taken facing east.

Photograph Location 2. View of upland (agricultural field) at wetland determination sample point location SP01. Photograph taken facing west.

Photograph Location 2. View of soil profile at wetland determination sample point location SP01.

Photograph Location 3. Representative view of an upland drainage feature within the Project area. Photograph taken facing east.

Photograph Location 3. Representative view of an upland drainage feature within the Project area. Photograph taken facing west.

Photograph Location 4. View of upland (old field habitat) at wetland determination sample point location SP02. Photograph taken facing north.

Photograph Location 4. View of upland (agricultural field) at wetland determination sample point location SP02. Photograph taken facing south.

Photograph Location 4. View of soil profile at wetland determination sample point location SP02.

Photograph Location 5. Representative view of existing culvert within the Project area. Photograph taken facing east.

Photograph Location 5. Representative view of existing culvert within the Project area. Photograph taken facing west.

Photograph Location 6. View of Wetland 1. Photograph taken facing north.

Photograph Location 6. View of Wetland 1. Photograph taken facing east.

Photograph Location 6. View of Wetland 1 and residential lawn habitat located south of it. Photograph taken facing south.

Photograph Location 6. View of Wetland 1. Photograph taken facing west.

Photograph Location 6. View of soil profile at wetland determination sample point location SP03.

Photograph Location 7. View upland (agricultural field) at wetland determination sample point location SP04. Photograph taken facing southeast.

Photograph Location 7. View upland (agricultural field) at wetland determination sample point location SP04. Photograph taken facing northwest.

AEP Ohio Transmission Company, Inc.
Marysville-Union County Solar Generation Tie Line Project
Liberty Township, Union County, Ohio

Photograph Location 7. View of soil profile at wetland determination sample point location SP04.

C.2 HABITAT PHOTOGRAPHS

Photograph Location 1. Representative view of mixed early successional/second growth deciduous forest habitat within the Project area. Photograph taken facing northwest.

Photograph Location 1. Representative view of mixed early successional/second growth deciduous forest habitat within the Project area. Photograph taken facing southeast.

Photograph Location 2. Representative view of agricultural field habitat within the Project area. Photograph taken facing southeast.

Photograph Location 2. Representative view of agricultural field habitat within the Project area. Photograph taken facing south.

Photograph Location 3. Representative view of old field habitat within the Project area. Photograph taken facing north.

Photograph Location 3. Representative view of old field habitat within the Project area. Photograph taken facing west

AEP Ohio Transmission Company, Inc.
Marysville-Union County Solar Generation Tie Line Project
Liberty Township, Union County, Ohio

Photograph Location 4. Representative view of residential lawn and agricultural field habitats within the Project area. Photograph taken facing south.

Appendix D DATA FORMS

D.1 WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville-Union County Solar Generation Tie Line Project	Stantec Project #:	193709207
Applicant:	AEP Ohio Transmission Company, Inc.		
Investigator #1:	Cyrus Chastain	Investigator #2:	Matt Denzler
Soil Unit:	Gwe1B2 - Glynwood silt loam, end moraine, 2-6% slopes	NWI/WWI Classification:	NA
Landform:	Dip	Local Relief:	Concave
Slope (%):	0-2%	Latitude: 40.33807	Longitude: -83.443714
Datum:	--		

Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) ☑ Yes ☐ No

Are Vegetation ☑, Soil ☑, or Hydrology ☐ significantly disturbed?
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?

Are normal circumstances present? ☑ Yes ☐ No

Date:	01/05/23
County:	Union
State:	Ohio
Wetland ID:	N/A
Sample Point:	**SP01**
Community ID:	UPL
Section:	--
Township:	--
Range:	-- Dir: --

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☐ Yes ☑ No	Hydric Soils Present?	☐ Yes ☑ No
Wetland Hydrology Present?	☐ Yes ☑ No	Is This Sampling Point Within A Wetland?	☐ **Yes** ☑ **No**

Remarks: Ag Field

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ☑)

Primary:
- ☐ A1 - Surface Water
- ☐ A2 - High Water Table
- ☐ A3 - Saturation
- ☐ B1 - Water Marks
- ☐ B2 - Sediment Deposits
- ☐ B3 - Drift Deposits
- ☐ B4 - Algal Mat or Crust
- ☐ B5 - Iron Deposits
- ☐ B7 - Inundation Visible on Aerial Imagery
- ☐ B8 - Sparsely Vegetated Concave Surface
- ☐ B9 - Water-Stained Leaves
- ☐ B13 - Aquatic Fauna
- ☐ B14 - True Aquatic Plants
- ☐ C1 - Hydrogen Sulfide Odor
- ☐ C3 - Oxidized Rhizospheres on Living Roots
- ☐ C4 - Presence of Reduced Iron
- ☐ C6 - Recent Iron Reduction in Tilled Soils
- ☐ C7 - Thin Muck Surface
- ☐ D9 - Gauge or Well Data
- ☐ Other (Explain in Remarks)

Secondary:
- ☐ B6 - Surface Soil Cracks
- ☐ B10 - Drainage Patterns
- ☐ C2 - Dry-Season Water Table
- ☐ C8 - Crayfish Burrows
- ☐ C9 - Saturation Visible on Aerial Imagery
- ☑ D1 - Stunted or Stressed Plants
- ☐ D2 - Geomorphic Position
- ☐ D5 - FAC-Neutral Test

Field Observations:

Surface Water Present?	☐ Yes ☑ No	Depth:	0	(in.)
Water Table Present?	☐ Yes ☑ No	Depth:	0	(in.)
Saturation Present?	☐ Yes ☑ No	Depth:	0	(in.)

Wetland Hydrology Present? ☐ Yes ☑ No

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

Remarks:

SOILS

Map Unit Name: Gwe1B2 - Glynwood silt loam, end moraine, 2-6% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	6	1	10YR 4/2	100	--	--	--	--	silty clay loam
6	14	2	10YR 5/2	60	10YR 4/6	40	C	M	clay
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ☑)
- ☐ A1- Histosol
- ☐ A2 - Histic Epipedon
- ☐ A3 - Black Histic
- ☐ A4 - Hydrogen Sulfide
- ☐ A5 - Stratified Layers
- ☐ A10 - 2 cm Muck
- ☐ A11 - Depleted Below Dark Surface
- ☐ A12 - Thick Dark Surface
- ☐ S1 - Sandy Muck Mineral
- ☐ S3 - 5 cm Mucky Peat or Peat
- ☐ S4 - Sandy Gleyed Matrix
- ☐ S5 - Sandy Redox
- ☐ S6 - Stripped Matrix
- ☐ F1 - Loamy Muck Mineral
- ☐ F2 - Loamy Gleyed Matrix
- ☐ F3 - Depleted Matrix
- ☐ F6 - Redox Dark Surface
- ☐ F7 - Depleted Dark Surface
- ☐ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ☐ A16 - Coast Prairie Redox
- ☐ S7 - Dark Surface
- ☐ F12 - Iron-Manganese Masses
- ☐ TF12 - Very Shallow Dark Surface
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: Compacted Clay Depth: 14

Hydric Soil Present? ☐ Yes ☑ No

Remarks: Redox features may be fill

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville-Union County Solar Generation Tie Line Project | Wetland ID: N/A | Sample Point: SP01

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Glycine max*	60	Y	UPL
2.	*Draba verna*	5	N	UPL
3.	*Leucanthemum vulgare*	10	N	UPL
4.	--	--	--	--
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	75		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

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

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL spp.	0	x 1 =	0
FACW spp.	0	x 2 =	0
FAC spp.	0	x 3 =	0
FACU spp.	0	x 4 =	0
UPL spp.	75	x 5 =	375
Total	75 (A)		375 (B)

Prevalence Index = B/A = *5.000*

Hydrophytic Vegetation Indicators:

- ☐ Yes ☑ No Rapid Test for Hydrophytic Vegetation
- ☐ Yes ☑ No Dominance Test is > 50%
- ☐ Yes ☑ No Prevalence Index is ≤ 3.0 *
- ☐ Yes ☑ No Morphological Adaptations (Explain) *
- ☐ Yes ☑ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Additional Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville - Union County Solar Generation Tie Line Project	Stantec Project #:	193709207
Applicant:	AEP Ohio Transmission Company, Inc.		
Investigator #1:	Cyrus Chastain	Investigator #2:	Matt Denzler
Soil Unit:	Ble1A1 - Blount silt loam, end moraine, 0-2% slopes	NWI/WWI Classification:	NA
Landform:	Depression	Local Relief:	Concave
Slope (%):	0-1%	Latitude: 40.33758	Longitude: -83.442324
Datum:	--		

Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) ☑ Yes ☐ No

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?

Are normal circumstances present? ☑ Yes ☐ No

Date:	01/05/23
County:	Union
State:	Ohio
Wetland ID:	N/A
Sample Point:	**SP02**
Community ID:	UPL
Section:	--
Township:	--
Range:	-- Dir: --

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☐ Yes ☑ No	Hydric Soils Present?	☐ Yes ☑ No
Wetland Hydrology Present?	☐ Yes ☑ No	Is This Sampling Point Within A Wetland?	☐ **Yes** ☑ **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ☑)

Primary:
- ☐ A1 - Surface Water
- ☐ A2 - High Water Table
- ☐ A3 - Saturation
- ☐ B1 - Water Marks
- ☐ B2 - Sediment Deposits
- ☐ B3 - Drift Deposits
- ☐ B4 - Algal Mat or Crust
- ☐ B5 - Iron Deposits
- ☐ B7 - Inundation Visible on Aerial Imagery
- ☐ B8 - Sparsely Vegetated Concave Surface
- ☐ B9 - Water-Stained Leaves
- ☐ B13 - Aquatic Fauna
- ☐ B14 - True Aquatic Plants
- ☐ C1 - Hydrogen Sulfide Odor
- ☐ C3 - Oxidized Rhizospheres on Living Roots
- ☐ C4 - Presence of Reduced Iron
- ☐ C6 - Recent Iron Reduction in Tilled Soils
- ☐ C7 - Thin Muck Surface
- ☐ D9 - Gauge or Well Data
- ☐ Other (Explain in Remarks)

Secondary:
- ☐ B6 - Surface Soil Cracks
- ☐ B10 - Drainage Patterns
- ☐ C2 - Dry-Season Water Table
- ☐ C8 - Crayfish Burrows
- ☐ C9 - Saturation Visible on Aerial Imagery
- ☐ D1 - Stunted or Stressed Plants
- ☐ D2 - Geomorphic Position
- ☐ D5 - FAC-Neutral Test

Field Observations:

Surface Water Present?	☐ Yes ☑ No	Depth:	0	(in.)
Water Table Present?	☐ Yes ☑ No	Depth:	0	(in.)
Saturation Present?	☐ Yes ☑ No	Depth:	0	(in.)

Wetland Hydrology Present? ☐ Yes ☑ No

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

Remarks:

SOILS

Map Unit Name: Ble1A1 - Blount silt loam, end moraine, 0-2% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	4	1	10YR 4/2	100	--	--	--	--	silty clay loam
4	10	2	10YR 4/2	95	10YR 3/6	5	C	M	silty clay loam
10	14	3	10YR 4/2	50	--	--	--	--	silty clay loam
--	--	--	10YR 4/6	50	--	--	--	--	silty clay loam
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ☑)
- ☐ A1- Histosol
- ☐ A2 - Histic Epipedon
- ☐ A3 - Black Histic
- ☐ A4 - Hydrogen Sulfide
- ☐ A5 - Stratified Layers
- ☐ A10 - 2 cm Muck
- ☐ A11 - Depleted Below Dark Surface
- ☐ A12 - Thick Dark Surface
- ☐ S1 - Sandy Muck Mineral
- ☐ S3 - 5 cm Mucky Peat or Peat
- ☐ S4 - Sandy Gleyed Matrix
- ☐ S5 - Sandy Redox
- ☐ S6 - Stripped Matrix
- ☐ F1 - Loamy Muck Mineral
- ☐ F2 - Loamy Gleyed Matrix
- ☐ F3 - Depleted Matrix
- ☐ F6 - Redox Dark Surface
- ☐ F7 - Depleted Dark Surface
- ☐ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ☐ A16 - Coast Prairie Redox
- ☐ S7 - Dark Surface
- ☐ F12 - Iron-Manganese Masses
- ☐ TF12 - Very Shallow Dark Surface
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: N/A Depth: N/A

Hydric Soil Present? ☐ Yes ☑ No

Remarks: 10-14 had high percentage of fill

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville - Union County Solar Generation Tie Line Project | Wetland ID: N/A | Sample Point: SP02

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Rubus allegheniensis*	10	N	FACU
2.	*Dipsacus fullonum*	20	Y	FACU
3.	*Solidago canadensis*	15	N	FACU
4.	*Lamium purpureum*	40	Y	UPL
5.	*Setaria faberi*	20	Y	FACU
6	*Apocynum cannabinum*	5	N	FAC
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	110		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

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

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL spp.	0	x 1 =	0
FACW spp.	0	x 2 =	0
FAC spp.	5	x 3 =	15
FACU spp.	65	x 4 =	260
UPL spp.	40	x 5 =	200
Total	110 (A)		475 (B)

Prevalence Index = B/A = *4.318*

Hydrophytic Vegetation Indicators:

- ☐ Yes ☑ No Rapid Test for Hydrophytic Vegetation
- ☐ Yes ☑ No Dominance Test is > 50%
- ☐ Yes ☑ No Prevalence Index is ≤ 3.0 *
- ☐ Yes ☑ No Morphological Adaptations (Explain) *
- ☐ Yes ☑ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Additional Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville - Union County Solar Generation Tie Line Project	Stantec Project #:	193709207
Applicant:	AEP Ohio Transmission Company, Inc.		
Investigator #1:	Cyrus Chastain	Investigator #2:	Matt Denzler
Soil Unit:	Ble1B1 - Blount silt loam, end moraine, 2-4% slopes	NWI/WWI Classification:	NA
Landform:	Depression	Local Relief:	Linear
Slope (%):	0-2%	Latitude: 40.33675	Longitude: -83.439916 Datum: --

Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) ☑ Yes ☐ No

Are Vegetation ☐, Soil ☑, or Hydrology ☐ significantly disturbed?
Are Vegetation ☐, Soil ☑, or Hydrology ☐ naturally problematic?

Are normal circumstances present? ☑ Yes ☐ No

Date:	01/05/23
County:	Union
State:	Ohio
Wetland ID:	Wetland 1
Sample Point:	**SP03**
Community ID:	PEM
Section:	--
Township:	--
Range:	-- Dir: --

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☑ Yes ☐ No	Hydric Soils Present?	☑ Yes ☐ No
Wetland Hydrology Present?	☑ Yes ☐ No	Is This Sampling Point Within A Wetland?	☑ **Yes** ☐ **No**

Remarks: Farmed wetland

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ☑)

Primary:
- ☑ A1 - Surface Water
- ☑ A2 - High Water Table
- ☑ A3 - Saturation
- ☐ B1 - Water Marks
- ☐ B2 - Sediment Deposits
- ☐ B3 - Drift Deposits
- ☐ B4 - Algal Mat or Crust
- ☐ B5 - Iron Deposits
- ☐ B7 - Inundation Visible on Aerial Imagery
- ☑ B8 - Sparsely Vegetated Concave Surface
- ☐ B9 - Water-Stained Leaves
- ☐ B13 - Aquatic Fauna
- ☐ B14 - True Aquatic Plants
- ☐ C1 - Hydrogen Sulfide Odor
- ☐ C3 - Oxidized Rhizospheres on Living Roots
- ☐ C4 - Presence of Reduced Iron
- ☐ C6 - Recent Iron Reduction in Tilled Soils
- ☐ C7 - Thin Muck Surface
- ☐ D9 - Gauge or Well Data
- ☐ Other (Explain in Remarks)

Secondary:
- ☐ B6 - Surface Soil Cracks
- ☐ B10 - Drainage Patterns
- ☐ C2 - Dry-Season Water Table
- ☐ C8 - Crayfish Burrows
- ☐ C9 - Saturation Visible on Aerial Imagery
- ☑ D1 - Stunted or Stressed Plants
- ☑ D2 - Geomorphic Position
- ☐ D5 - FAC-Neutral Test

Field Observations:

Surface Water Present?	☑ Yes ☐ No	Depth:	2	(in.)
Water Table Present?	☑ Yes ☐ No	Depth:	0	(in.)
Saturation Present?	☑ Yes ☐ No	Depth:	0	(in.)

Wetland Hydrology Present? ☑ Yes ☐ No

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

Remarks:

SOILS

Map Unit Name: Ble1B1 - Blount silt loam, end moraine, 2-4% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	3	1	10YR 4/2	100	--	--	--	--	silty clay loam
3	7	2	10YR 3/2	98	10YR 3/6	2	C	M	clay
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ☑)
- ☐ A1- Histosol
- ☐ A2 - Histic Epipedon
- ☐ A3 - Black Histic
- ☐ A4 - Hydrogen Sulfide
- ☐ A5 - Stratified Layers
- ☐ A10 - 2 cm Muck
- ☐ A11 - Depleted Below Dark Surface
- ☐ A12 - Thick Dark Surface
- ☐ S1 - Sandy Muck Mineral
- ☐ S3 - 5 cm Mucky Peat or Peat
- ☐ S4 - Sandy Gleyed Matrix
- ☐ S5 - Sandy Redox
- ☐ S6 - Stripped Matrix
- ☐ F1 - Loamy Muck Mineral
- ☐ F2 - Loamy Gleyed Matrix
- ☑ F3 - Depleted Matrix
- ☐ F6 - Redox Dark Surface
- ☐ F7 - Depleted Dark Surface
- ☐ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ☐ A16 - Coast Prairie Redox
- ☐ S7 - Dark Surface
- ☐ F12 - Iron-Manganese Masses
- ☐ TF12 - Very Shallow Dark Surface
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: Compacted Clay Depth: 7

Hydric Soil Present? ☑ Yes ☐ No

Remarks: Water perched on compacted clay layer, farm till prevents redox features from forming.

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville - Union County Solar Generation Tie Line Project | Wetland ID: Wetland 1 | Sample Point: SP03

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Packera glabella*	40	Y	FACW
2.	*Amaranthus retroflexus*	5	N	FACU
3.	*Ranunculus sceleratus*	10	N	OBL
4.	*Lamium purpureum*	5	N	UPL
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	60		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

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

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL spp.	10	x 1 =	10
FACW spp.	40	x 2 =	80
FAC spp.	0	x 3 =	0
FACU spp.	5	x 4 =	20
UPL spp.	5	x 5 =	25
Total	60 (A)		135 (B)

Prevalence Index = B/A = ***2.250***

Hydrophytic Vegetation Indicators:

- ☑ Yes ☐ No Rapid Test for Hydrophytic Vegetation
- ☑ Yes ☐ No Dominance Test is > 50%
- ☑ Yes ☐ No Prevalence Index is ≤ 3.0 *
- ☐ Yes ☑ No Morphological Adaptations (Explain) *
- ☐ Yes ☑ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Additional Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville - Union County Solar Generation Tie Line Project	Stantec Project #:	193709207
Applicant:	AEP Ohio Transmission Company, Inc.		
Investigator #1:	Cyrus Chastain	Investigator #2:	Matt Denzler
Soil Unit:	Ble1B1 - Blount silt loam, end moraine, 2-4% slopes	NWI/WWI Classification:	NA
Landform:	Terrace	Local Relief:	Linear
Slope (%):	0-1%	Latitude: 40.3368	Longitude: -83.440045 Datum: --

Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) ☑ Yes ☐ No

Are Vegetation ☑, Soil ☑, or Hydrology ☐ significantly disturbed?
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?

Are normal circumstances present? ☑ Yes ☐ No

Date:	01/05/23
County:	Union
State:	Ohio
Wetland ID:	N/A
Sample Point:	**SP04**
Community ID:	UPL
Section:	--
Township:	--
Range:	-- Dir: --

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☐ Yes ☑ No	Hydric Soils Present?	☐ Yes ☑ No
Wetland Hydrology Present?	☐ Yes ☑ No	Is This Sampling Point Within A Wetland?	☐ **Yes** ☑ **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ☑)

Primary:
- ☐ A1 - Surface Water
- ☐ A2 - High Water Table
- ☐ A3 - Saturation
- ☐ B1 - Water Marks
- ☐ B2 - Sediment Deposits
- ☐ B3 - Drift Deposits
- ☐ B4 - Algal Mat or Crust
- ☐ B5 - Iron Deposits
- ☐ B7 - Inundation Visible on Aerial Imagery
- ☐ B8 - Sparsely Vegetated Concave Surface
- ☐ B9 - Water-Stained Leaves
- ☐ B13 - Aquatic Fauna
- ☐ B14 - True Aquatic Plants
- ☐ C1 - Hydrogen Sulfide Odor
- ☐ C3 - Oxidized Rhizospheres on Living Roots
- ☐ C4 - Presence of Reduced Iron
- ☐ C6 - Recent Iron Reduction in Tilled Soils
- ☐ C7 - Thin Muck Surface
- ☐ D9 - Gauge or Well Data
- ☐ Other (Explain in Remarks)

Secondary:
- ☐ B6 - Surface Soil Cracks
- ☐ B10 - Drainage Patterns
- ☐ C2 - Dry-Season Water Table
- ☐ C8 - Crayfish Burrows
- ☐ C9 - Saturation Visible on Aerial Imagery
- ☐ D1 - Stunted or Stressed Plants
- ☐ D2 - Geomorphic Position
- ☐ D5 - FAC-Neutral Test

Field Observations:

Surface Water Present?	☐ Yes ☑ No	Depth:	0	(in.)
Water Table Present?	☐ Yes ☑ No	Depth:	0	(in.)
Saturation Present?	☐ Yes ☑ No	Depth:	0	(in.)

Wetland Hydrology Present? ☐ Yes ☑ No

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

Remarks: Ag Field

SOILS

Map Unit Name: Ble1B1 - Blount silt loam, end moraine, 2-4% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	16	1	10YR 3/2	100	-- --	--	--	--	clay loam
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ☑)
- ☐ A1- Histosol
- ☐ A2 - Histic Epipedon
- ☐ A3 - Black Histic
- ☐ A4 - Hydrogen Sulfide
- ☐ A5 - Stratified Layers
- ☐ A10 - 2 cm Muck
- ☐ A11 - Depleted Below Dark Surface
- ☐ A12 - Thick Dark Surface
- ☐ S1 - Sandy Muck Mineral
- ☐ S3 - 5 cm Mucky Peat or Peat
- ☐ S4 - Sandy Gleyed Matrix
- ☐ S5 - Sandy Redox
- ☐ S6 - Stripped Matrix
- ☐ F1 - Loamy Muck Mineral
- ☐ F2 - Loamy Gleyed Matrix
- ☐ F3 - Depleted Matrix
- ☐ F6 - Redox Dark Surface
- ☐ F7 - Depleted Dark Surface
- ☐ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ☐ A16 - Coast Prairie Redox
- ☐ S7 - Dark Surface
- ☐ F12 - Iron-Manganese Masses
- ☐ TF12 - Very Shallow Dark Surface
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: N/A Depth: N/A

Hydric Soil Present? ☐ Yes ☑ No

Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville - Union County Solar Generation Tie Line Project | Wetland ID: N/A | Sample Point: SP04

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Glycine max*	80	Y	UPL
2.	*Cardamine hirsuta*	20	Y	FACU
3.	--			--
4.	--	--	--	--
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	100		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

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 spp.	0	x 1 =	0
FACW spp.	0	x 2 =	0
FAC spp.	0	x 3 =	0
FACU spp.	20	x 4 =	80
UPL spp.	80	x 5 =	400
Total	100 (A)		480 (B)

Prevalence Index = B/A = *4.800*

Hydrophytic Vegetation Indicators:

- ☐ Yes ☑ No Rapid Test for Hydrophytic Vegetation
- ☐ Yes ☑ No Dominance Test is > 50%
- ☐ Yes ☑ No Prevalence Index is ≤ 3.0 *
- ☐ Yes ☑ No Morphological Adaptations (Explain) *
- ☐ Yes ☑ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Remarks:

Additional Remarks:

D.2 ORAM DATA FORM

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.

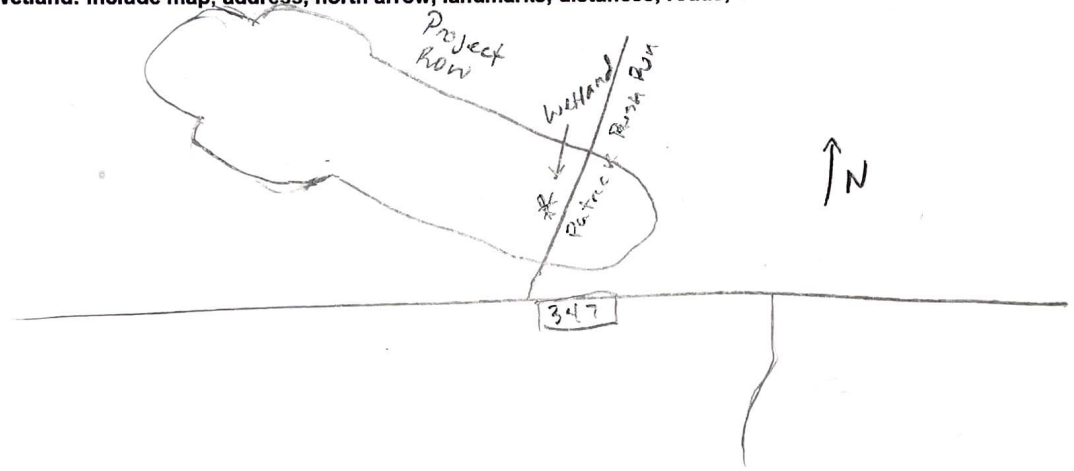
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual 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:	Cyms Chastain
Date:	11/5/2023
Affiliation:	Stantec Consulting Services, Inc
Address:	10200 Alliance Road, Suite 300 Cincinnati, OH 45242
Phone Number:	513-913-9115
e-mail address:	Cyms.Chastain@stantec.com
Name of Wetland:	Wetland 1
Vegetation Communit(ies):	PEM
HGM Class(es):	depressional

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

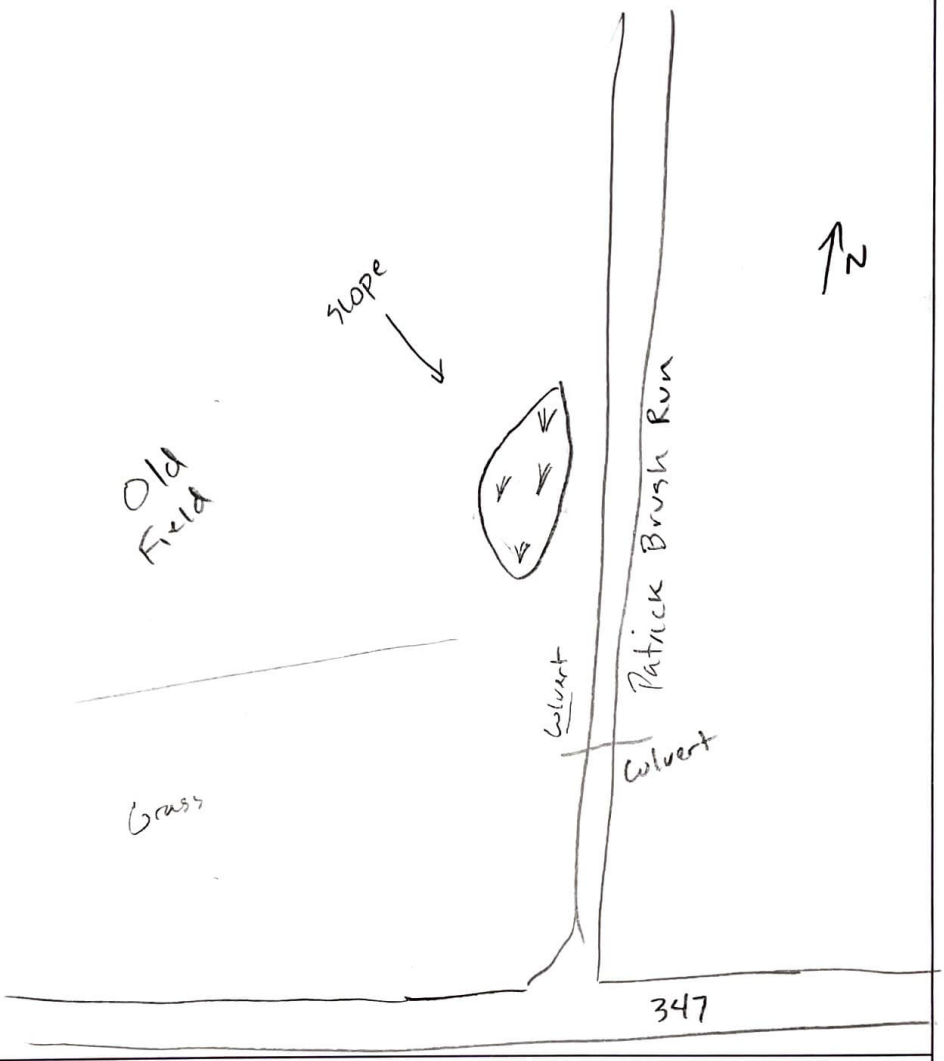


Lat/Long or UTM Coordinate	40.336754 -83.439916
USGS Quad Name	Richwood, Ohio
County	Union County
Township	Liberty
Section and Subsection	N/A
Hydrologic Unit Code	050600010603
Site Visit	11/5/2022
National Wetland Inventory Map	N/A
Ohio Wetland Inventory Map	N/A
Soil Survey	Ble1B1 - Blount Silt Loam, end moraine, 2 to 4 percent slopes
Delineation report/map	See Ecological Resources Inventory Report

Name of Wetland: Wetland 1

Wetland Size (acres, hectares): 0.05 ac

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



Comments, Narrative Discussion, Justification of Category Changes:

Final score : 14 **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.

#	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.

#	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	Oak 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: Wetland 1	Rater(s): Cyrus Chastain	Date: 1/5/2023

Metric 1. Wetland Area (size).

0 (max 6 pts.) | 0 (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.

1 (max 14 pts.) | 1 (subtotal)

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.

- [ ] 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)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

6 (max 30 pts.) | 7 (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)
- [x] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [ ] 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
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [x] other Ag

Metric 4. Habitat Alteration and Development.

3 (max 20 pts.) | 10 (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)
- [ ] Poor to fair (2)
- [x] 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

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

10 (subtotal this page)

last revised 1 February 2001 jjm

Site: Wetland 1	Rater(s): Cyrus Chastian	Date: 1/5/2023

10
subtotal first page

Metric 5. Special Wetlands.

0 max 10 pts. | 10 subtotal

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)

Metric 6. Plant communities, interspersion, microtopography.

4 max 20 pts. | 14 subtotal

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

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

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

- [ ] High (5)
- [ ] Moderately high(4)
- [X] 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)
- [X] 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

14

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES (NO)	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES (NO)	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES (NO)	If yes, Category 3.
	Question 4. Significant bird habitat	YES (NO)	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES (NO)	If yes, Category 1.
	Question 6. Bogs	YES (NO)	If yes, Category 3.
	Question 7. Fens	YES (NO)	If yes, Category 3.
	Question 8a. Old Growth Forest	YES (NO)	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES (NO)	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES (NO)	If yes, Category 3
	Question 11. Relict Wet Prairies	YES (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	1	
	Metric 3. Hydrology	6	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	4	
	TOTAL SCORE	14	Category based on score breakpoints 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

End of Ohio Rapid Assessment Method for Wetlands.

D.3 HHEI DATA FORM

Primary Headwater Habitat Field Evaluation Form

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

SITE NAME/LOCATION Marysville - Union County Solar Generation Tie Line
SITE NUMBER Stream 1 RIVER BASIN Ohio RIVER CODE _____ DRAINAGE AREA (mF) <0.1 mi
LENGTH OF STREAM REACH (ft) 65 LAT 40.337532 LONG -83.443837 RIVER MILE _____
DATE 01/05/2023 SCORER MD COMMENTS Ephemeral stream from Ag Drainage

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

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

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]		☒	SILT [3 pt]	40
☐	BOULDER (>256 mm) [16 pts]		☐	LEAF PACK/WOODY DEBRIS [3 pts]	50
☐	BEDROCK [16 pts]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]		☐	CLAY or HARDPAN [0 pt]	
☐	GRAVEL (2-64 mm) [9 pts]		☐	MUCK [0 pts]	
☐	SAND (<2 mm) [6 pts]	5	☐	ARTIFICIAL [3 pts]	5

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

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

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]
- ☐ > 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): 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]
- ☐ > 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 TOBH: 0.5' TOBW: 2.0' OHWMH: 0.25' OHWMW: 1.5' AVERAGE BANKFULL WIDTH (meters) 0.15

Bankfull Width Max=30
5

This information must also be completed

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

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

COMMENTS _____

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

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

COMMENTS _____

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: Mill Creek Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: Peoria, Ohio NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Union Township/City: Liberty

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 01/03/2023 Quantity: _____

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 50

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) _____

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): _____

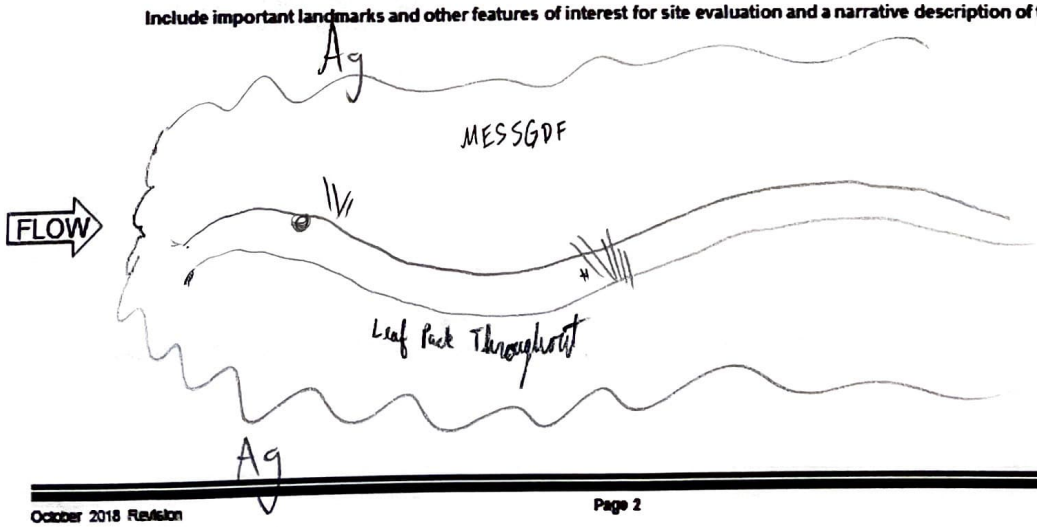
Salamanders Observed? (Y/N) N Species observed (if known): _____

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



Summary: Notice Construction Notice electronically filed by Hector Garcia-Santana on behalf of Ohio Power Company.