

**CONSTRUCTION NOTICE
FOR THE**

State Route 63 Transmission Line Relocation

Duke Energy Ohio, Inc.

OPSB Case No. 22-11-EL-BNR

Submitted to:

The Ohio Power Siting Board

Pursuant to OAC 4906-06-05

Submitted by:

Duke Energy Ohio, Inc.

January 2022



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CONSTRUCTION NOTICE

This Construction Notice has been prepared by Duke Energy Ohio, Inc. (hereafter "Duke Energy Ohio") in accordance with Ohio Administrative Code (OAC) Section 4906-6-05 for the review of Accelerated Certificate Applications for the State Route 63 Transmission Line Relocation Project (Project). The following sections correspond to the administrative code sections for the requirements of a Construction Notice.

4906-6-5(B) GENERAL INFORMATION

4906-6-05(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.

Name of Project:

Duke Energy Ohio State Route 63 Transmission Line Relocation Project (Project)

Reference Numbers:

<u>OPSB Filing Number:</u>	The Project has been assigned Ohio Power Siting Board (OPSB) Case Number 22-11-EL-BNR.
<u>PJM Number:</u>	Construction of the Project will not change the model significantly. It therefore does not need to be reported.
<u>2021 LTFR:</u>	FE-T9 forms for this project are on pages 85 and 86 of the 2021 ELTFR
<u>Circuit Reference:</u>	This Project relates to Transmission Circuits F5485, a 138 kV transmission line, and F4515, a 345 kV transmission line.

Brief Description of the Project:

The Ohio Department of Transportation (ODOT) plans to widen State Route 63 in Turtle Creek Township, Warren County, Ohio. As a result of that road project, an existing 69 kV line will be relocated and rebuilt, using poles that will be taller than the ones currently in place. The Project for consideration by the OPSB is based on the need to allow for appropriate electrical clearances where two transmission lines cross the 69 kV line. Specifically, the Project involves replacing two transmission line lattice tower structures along circuit F5485 (138 kV) and circuit F4515 (345 kV) with three new steel monopole structures with foundations. The existing circuits will be transferred to the new poles. New conductoring work is not planned. The work will be completed within existing right-of-way (ROW).

The Project meets the requirements for a Construction Notice, as set forth in Appendix A to OAC Rule 4906-1-01:

(5) Replacement or relocation of an electric power transmission line and associated facilities where the Project is required by publicly funded entities and is located on or adjacent to right-of-way or land owned by the public entity requiring the Project.

4906-6-05(B)(2) Statement of Need

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

The Ohio Department of Transportation (ODOT) plans to widen State Route 63 in Turtle Creek Township, Warren County, Ohio. As a result of that road project, an existing 69 kV line will be relocated and rebuilt, using poles that will be taller than the ones currently in place. The project for consideration by the OPSB is based on the need to allow for appropriate electrical clearances where two transmission lines cross the 69 kV line. Specifically, the project involves replacing two transmission line lattice tower structures along circuit F5485 (138 kV) and circuit F4515 (345 kV) with three new steel monopole structures with foundations. The existing circuits will be transferred to the new poles.

4906-6-05(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 is depicted in Attachment A – Figures. Figure 1 depicts the general Project vicinity on a USGS quadrangle topographic map. Figure 2 depicts the planned structure replacements in relation to the existing and proposed facilities in the vicinity of the proposed State Route 63 widening.

4906-6-05(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 proposed Project will occur entirely within Duke Energy Ohio's ROW. No additional long-term impacts to adjacent properties are anticipated as a result of the Project. Therefore, the current structure replacements are the only reasonable alternative available and no other alternatives were considered.

4906-6-05(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.

Information on the ongoing status of this Project and other Duke Energy Ohio Projects can be found at the following website: www.duke-energy.com/SR63relo. Duke Energy Ohio will provide written notice to adjacent property owners prior to beginning construction activity.

4906-6-05(B)(6) Construction Schedule

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

Construction is scheduled to begin May 2022, pending approval of this Construction Notice. The Project is anticipated to be completed and in service by October 2022.

4906-6-05(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.

Attachment A – Figures depicts the general location of the Project. Figure 1 depicts the general Project vicinity on a USGS quadrangle topographic map. Figure 2 depicts the planned structure replacements in relation to the existing transmission line and road widening Project.

4906-6-05(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 electric transmission towers to be replaced are located on Parcels 12364000035 and 1229100002, which are owned by the State of Ohio. The existing and proposed structures are within existing ROW. No change in ROW is planned.

4906-6-05(B)(9) Technical Features

The applicant shall describe the following information regarding the technical features of the project:

4906-6-05(B)(9)(a) Operating characteristics, estimated number and types of structures required, and right-of-way and/or land requirements.

This Project consists of replacing two steel lattice towers with three new steel monopoles with foundations to accommodate the widening of State Route 63 by ODOT.

Voltage:	138 kV (Circuit 5485) & 345 kV (Circuit 5415)
Structure Type:	Replacing two lattice towers (160-ft and 155-ft in height) with three steel monopoles with foundations (180-ft in height)
Conductors:	Transfer of existing 954 ACSR 45/7 'RAIL'
Static Wire:	Two (2) Wires; One per circuit - 7NO8 Alumoweld
Insulators:	Replacing 138 kV and 345 kV porcelain insulators with glass insulators
ROW:	Duke Energy Easement/ROW

4906-6-05(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 residences or institutions are within 100 feet of the Project. This section is not applicable.

4906-6-05(B)(9)(c) Project Cost

The estimated capital cost of the project.

The estimated capital cost of the Project is \$3,282,095.

4906-6-05(B)(10) Social and Economic Impacts

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

4906-6-05(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.

The Project is located in Turtle Creek Township, Warren County, Ohio. The existing electric transmission structures proposed for replacement are located on land owned by the State of Ohio within landscaped or fallow ROW. No changes in land use are proposed.

4906-6-05(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.

Neither steel lattice tower proposed for replacement is located in an area used for agricultural purposes. The structures are not located on Agricultural District Land parcels. There will be no anticipated impacts to agricultural land as a result of the Project.

4906-6-05(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.

A review of the Ohio Historic Preservation Office (OHPO) Online Mapping System indicated no known archaeological resources within the area of proposed ground disturbance. No structures listed on the national Register of Historic Places (NRHP) were identified within 0.5 mile of the Project. A Project Summary Form and corresponding report were submitted to OHPO requesting concurrence that no historic properties will be affected. OHPO provided concurrence on November 22, 2021. A copy of the concurrence is provided in Attachment B.

4906-6-05(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.

No federal or state agencies are anticipated to have jurisdiction over the Project. No local permits are expected to be necessary.

4906-6-05(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.

The United States Fish and Wildlife Service (USFWS) Ohio County Distribution of Federally Listed Threatened, Endangered, Proposed, and Candidate Species (available at <https://www.fws.gov/midwest/Endangered/lists/ohio-cty.html>) was reviewed to identify the threatened and endangered species known to occur in Warren County. This USFWS publication lists the Indiana bat (*Myotis sodalis*; federally endangered), northern long-eared bat (*Myotis septentrionalis*; federally threatened), eastern massasauga (*Sistrurus catenatus*; federally threatened), and rayed bean (*Villosa fabalis*; federally endangered). Coordination with the USFWS and Ohio Department of Natural Resources (ODNR) was initiated on November 3, 2021, to identify the Project's potential effect on any federally listed threatened or endangered species or critical habitat. A response from USFWS was received on November 17. USFWS identified the Project area within the range of the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*). Correspondence indicated that if any trees of more than three inches DBH are to be removed, tree removal must take place between 1 October and 31 March.

A response was received from ODNR on November 24, 2021. ODNR correspondence indicated that the little brown bat (*Myotis lucifugus*) has been recorded in the Project vicinity. Because of the presence of state endangered bat species has been established in the area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area. However, limited summer tree cutting inside this buffer may be acceptable after further consultation with ODNR. Further, ODNR recommended a desktop habitat assessment to determine if potential hibernaculum is present within the Project area. Based on a review of GIS data showing mines and karst topography, no potential bat hibernacula were identified within the Project vicinity. No tree clearing is proposed as part of the Project. Therefore, impacts to bat species are not anticipated.

ODNR identified the Lark Sparrow (*Chondestes grammacus*) and Northern Harrier (*Circus hudsonis*), state endangered birds, as species with the potential to inhabit the Project area. The Lark Sparrow nests in grassland habitats with scattered shrub layers, disturbed open areas, as well as patches of bare soil. The nesting period for this bird is 1 May to 31 July. The Northern Harrier is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. The female builds a nest out of sticks on the ground, often on top of a mound. The nesting period is 15 April

to 31 July. Much of the Project area is grassland with larger tracts of similar habitat extending beyond the Project area. ODNR recommends that construction should be avoided during the nesting period in this habitat type. Typically, ODNR may allow construction to continue through the nesting period as long as access roads and work areas are disturbed prior to the nesting periods. If construction of access roads and other work areas cannot occur outside of the nesting period, presence/absence surveys for the Lark Sparrow and Northern Harrier may be warranted. Because Duke Energy Ohio will not have access available prior to the nesting period, the Company expects to perform surveys prior to construction to ensure that no Lark Sparrows or Northern Harriers have nests in the Project area.

Seven mussel species and eight fish species were identified with a range in the Project vicinity. ODNR recommends no in-water work in perennial streams from 15 March through 30 June to reduce impacts to these species. Based on the lack of in-water work, ODNR indicated the Project is not likely to impact aquatic species.

ODNR also identified eastern massasauga (*Sistrurus catenatus*), spotted turtle (*Clemmys guttata*), Kirtland's snake (*Clonophis kirtlandii*), Least Bittern (*Ixobrychus exilis*), Loggerhead Shrike (*Lanius ludovicianus*), and Sandhill Crane (*Grus canadensis*) as state endangered or threatened species with the potential to inhabit the Project area. However, based on lack of suitable habitat observed during the site reconnaissance, these species are not expected to be impacted by the Project. The agency correspondence is included in Attachment C – Natural Resource Assessment.

4906-6-05(B)(10)(f) Areas of Ecological Concern

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

As a part of the investigation, V3 Companies conducted an investigation for areas of ecological concern within a study area beyond the span between structures to be replaced and likely construction access roads. One wetland and one stream were identified within this extended study area. These features will be avoided during construction. No impacts are proposed. No other areas of ecological concern were identified. V3 Companies' field investigation can be found in Attachment C – Natural Resource Assessment. A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) revealed that no portion of the Project Area lies within a 100-year floodplain and/or floodway. The Public Areas Database of the United States (PADUS) was also reviewed to locate potentially ecologically sensitive properties in the Project vicinity. No such properties were identified within one mile from the Project. Based on the field investigation and review of publicly available data, impacts to areas of ecological concern are not anticipated.

4906-6-05(B)(10)(g) Unusual Conditions

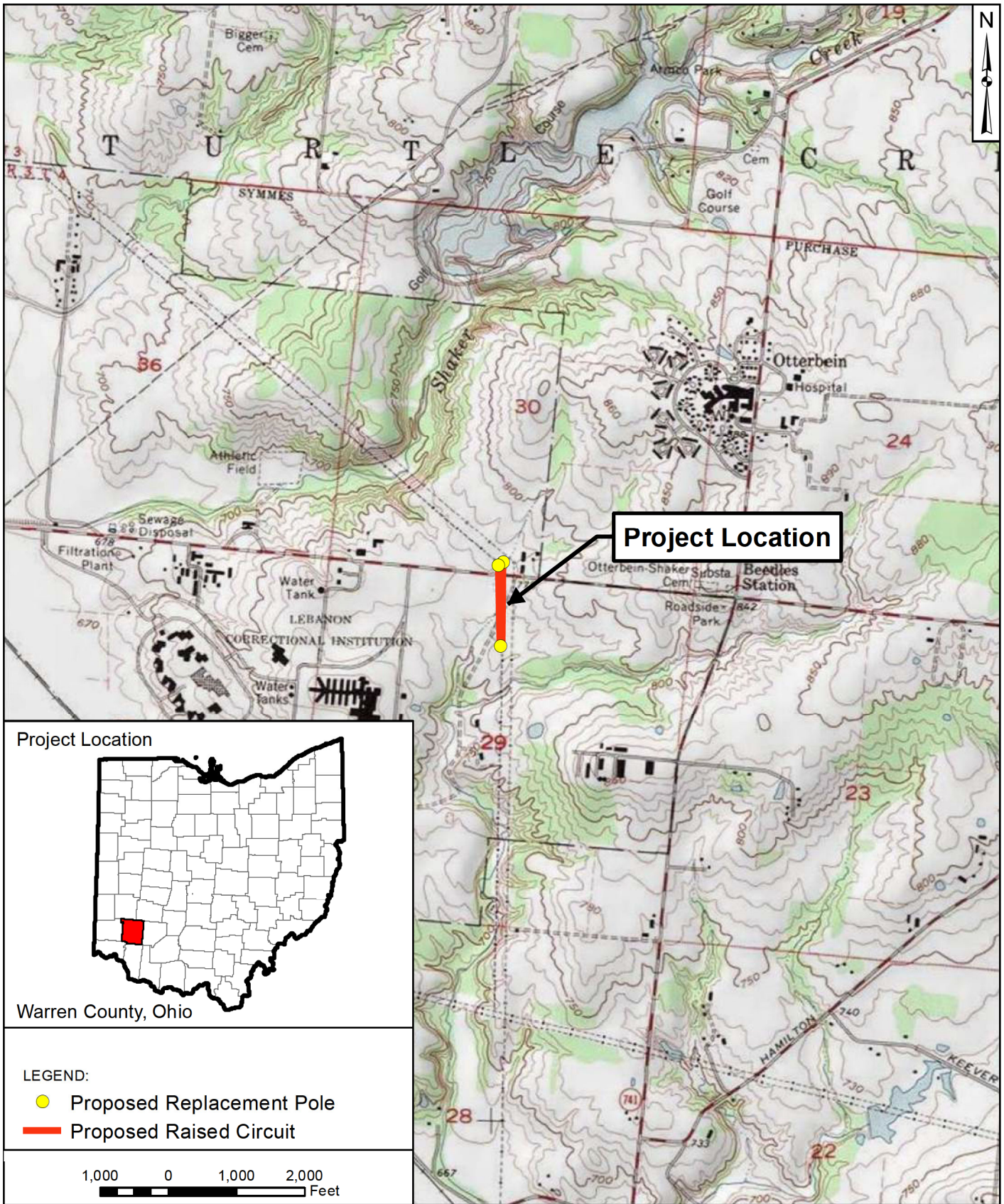
Provide any known additional information that will describe any unusual conditions resulting in significant environmental, social, health, or safety impacts.

To the best of Duke Energy Ohio's knowledge, no unusual conditions exist that would result in environmental, social, health, or safety impacts. Construction and operation of the proposed Project will meet all applicable safety standards established by the Occupational Safety and Health Administration and will be in accordance with the requirements specified in the latest revision of the National Electric Code as adopted by the Public Utilities Commission of Ohio.

4906-6-07 Service and public distribution of accelerated certificate applications.

Copies of the Construction Notice have been sent to the appropriate public officials for Warren County and Turtle Creek Township, as well as to the Lebanon Public Library. Information on how to request an electronic or paper copy of the Construction Notice as well as additional information on the ongoing status of this Project can be found at the following website: www.duke-energy.com/SR63relo.

ATTACHMENT A – FIGURES

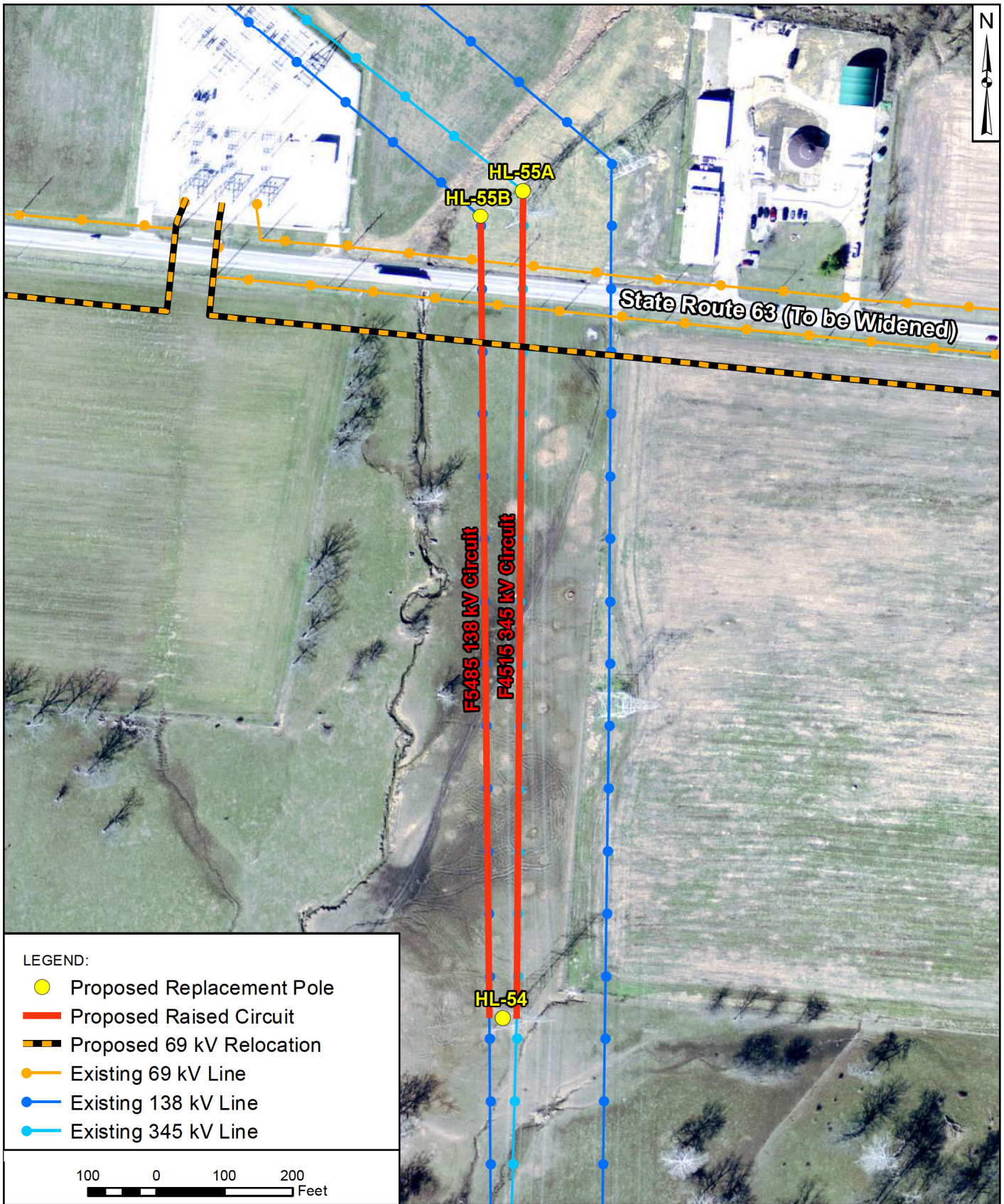


LEGEND:

- Proposed Replacement Pole
- Proposed Raised Circuit

1,000 0 1,000 2,000
Feet



 <p>312 Walnut Street Suite 1600 Cincinnati, Ohio 45202 513-800-3622 phone www.v3co.com</p> <p>Visio, Vertere, Virtute... "The Vision To Transform with Excellence"</p>	PROJECT NO.: 20568.022		TITLE: PROJECT LOCATION	
	CREATED BY: ARG		BASE LAYER: ESRI USA Topo Maps 2013	SITE: State Route 63 Line Relocation Warren County, Ohio
	DATE: 01/07/2022			
	SCALE: See Scale Bar			



LEGEND:

- Proposed Replacement Pole
- Proposed Raised Circuit
- Proposed 69 kV Relocation
- Existing 69 kV Line
- Existing 138 kV Line
- Existing 345 kV Line



 312 Walnut Street Suite 1600 Cincinnati, Ohio 45202 513-800-3622 phone www.v3co.com	PROJECT NO.: 20568.022		TITLE: PROJECT LAYOUT	
	CREATED BY: ARG		DATE: 01/07/2022	BASE LAYER: OSIP 2014
Visio, Vertere, Virtute... "The Vision To Transform with Excellence"	SCALE: See Scale Bar	State Route 63 Line Relocation Warren County, Ohio		

ATTACHMENT B – CULTURAL RESOURCES COORDINATION



In reply refer to
2021-WAR-53099

November 22, 2021

Aaron Geckle
V3 Companies
312 Walnut Street, Suite 1600
Cincinnati, Ohio 45202

Dear Mr. Geckle:

RE: Duke Energy SR 63 345/138kV Pole Replacement, Turtle Creek Township, Warren County, Ohio

This is in response to the receipt of correspondence, on November 12, 2021, regarding the proposed transmission pole replacements in Warren County, Ohio. The comments of the Ohio Historic Preservation Office are submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended.

Based on the information submitted, it is my opinion that the proposed undertaking will have no effect on properties listed in or eligible for listing in the National Register of Historic Places. No further coordination is required unless the project changes or archaeological remains are discovered during the course of the project. In such a situation, this office should be contacted as per 36 CFR 800.13.

Please be advised that this is a Section 106 decision. This review decision may not extend to other SHPO programs. If you have any questions, please contact me at (614) 298-2000, or by email at nyoung@ohiohistory.org. Please note the Ohio SHPO now accepts electronic-only submissions for state and/or federal review under Section 106 and ORC 149.53. Please send your submissions to section106@ohiohistory.org. We have also updated our [Survey Report Submission Standards](#).

Sincerely,

A handwritten signature in blue ink that reads "Nathan J. Young".

Nathan J. Young, Project Reviews Manager
Resource Protection and Review

ATTACHMENT C – NATURAL RESOURCES ASSESSMENT

**STATE ROUTE 63 345/138 kV
STRUCTURE REPLACEMENTS
NATURAL RESOURCE ASSESSMENT**



PROJECT SITE:

**State Route 63 Crossing of Circuits
F4515 345 kV and F5485 138 kV
Turtle Creek Township, Warren County, Ohio**

PREPARED FOR:

Duke Energy
315 Main Street
Cincinnati, Ohio 45202



PREPARED BY:

V3 Companies, Ltd.
619 North Pennsylvania Street
Indianapolis, Indiana 46204
(317) 423-0690



December 2021

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EXECUTIVE SUMMARY

V3 Companies, Ltd. (V3) performed a natural resource assessment (NRA) and wetland delineation for the proposed State Route 63 345/138 kV Structure Replacements situated along State Route 63 approximately 0.6 mile west of State Route 741 in Turtle Creek Township, Warren County, Ohio (SITE), on 4 November 2021.

V3 reached the following conclusions based on review of available and reasonably ascertainable federal, state, and local resources, and a SITE inspection conducted on the date referenced above.

- One Category I palustrine, emergent (PEM) wetland (Wetland A) is situated within the SITE area. Wetland A did not appear to qualify as a federally jurisdictional “Water of the U.S.,” and would likely be regulated as an isolated wetland subject to Ohio Environmental Protection Agency (OEPA) authority alone.
- One stream, Stream 1, is situated within the SITE. Stream 1 is an intermittent stream and exhibited an ordinary high-water mark (OHWM) and would likely qualify as a federally jurisdictional “Water of the U.S.” subject to U.S. Army Corps of Engineers (USACE) and OEPA.
- V3 contacted the United States Fish and Wildlife Service (USFWS) and Ohio Department of Natural Resources (ODNR) for endangered, threatened, and rare (ETR) species coordination. USFWS correspondence indicated that the SITE is situated within the range of the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*). Correspondence indicated that if any trees of more than three inches DBH are to be removed, tree removal must take place between 1 October and 31 March. ODNR indicated that the little brown bat (*Myotis lucifugus*) has been recorded within the vicinity of the project. Summer tree cutting is not recommended and additional summer surveys would not constitute presence/absence in the area. Tree clearing does not appear necessary for the project. Based on desktop review of mining areas and karst topography, no potential hibernacula were identified within 0.5 mile of the SITE. Therefore, impacts to bat species are not anticipated.
- ODNR identified the Lark Sparrow (*Chondestes grammacus*) and Northern Harrier (*Circus hudsonis*), state endangered birds, as species with the potential to inhabit the SITE. The Lark Sparrow nests in grassland habitats with scattered shrub layers, disturbed open areas, as well as patches of bare soil. The nesting period for this bird is 1 May to 31 July. The Northern Harrier is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. The female builds a nest out of sticks on the ground, often on top of a mound. The nesting period is 15 April to 31 July. Much of the Project area is grassland with larger tracts of similar habitat extending beyond the Project area. ODNR recommends that construction should be avoided during the nesting period in this habitat type. ODNR may allow construction through the nesting period as long as access roads and work areas are disturbed prior to the nesting periods. Presence/absence surveys for these species may be warranted if construction of the access roads and other work areas cannot be completed outside of the nesting period.
- A Storm Water Pollution Prevention Plan (SWP3) for the construction site is required for land disturbance activities greater than one acre.

Wetland A did not appear to exhibit a hydrologic connection to any “Waters of the U.S.,” and would likely be considered isolated and subject to regulation by the OEPA. Isolated wetland permitting necessitates classification of the wetlands based on current site conditions. Wetland A qualified as a



Category 1. Pending the area of impacts, mitigation for Category 1 wetlands and would likely require mitigation at a 1.5:1 to 2:1 ratio. Stream 1 is likely to be a federally jurisdictional "Water of the U.S." subject to USACE and OEPA authority. If impacts to Stream 1 are proposed, a USACE NWP #57 (Electric Utility Line and Telecommunications Activities) will likely be necessary. Under the USACE NWP, stream bed impacts of more than 0.03 acre require compensatory mitigation at a minimum ratio of 1:1 with a pre-construction notification (PCN) submittal to the USACE.

If greater than one acre of ground disturbance is proposed, the project will be subject to OEPA General Permit Authorization for Stormwater Discharges Associated with Construction Activity (OEPA Permit No. OHC000005) and the U.S. Environmental Protection Agency (EPA), National Pollutant Discharge Elimination System (NPDES) permit program. A Notice of Intent (NOI) form will need to be submitted to OEPA. A SWP3 will be submitted to the Warren County Soil and Water Conservation District for approval.

No 100-year flood zones are mapped on-SITE. Floodplain permitting is not expected to be necessary.

If proposed SITE development activities would result in impacts to any aquatic feature, V3 recommends that the final report and associated figures be submitted to the USACE for Jurisdictional Determination (JD). However, in some circumstances, a Preliminary JD may be considered to expedite the JD process.



CHAPTER 1 INTRODUCTION

This report has been prepared solely in accordance with an agreement between Duke Energy (“CLIENT”) and V3 Companies (“V3”), Ltd.

The services performed by V3 have been conducted in a manner consistent with the level of quality and skill generally exercised by members of its profession and consulting practices relating to this type of engagement.

This report is solely for the use of CLIENT and was prepared based upon an understanding of CLIENT’s specific objective(s) and based upon information obtained by V3 in furtherance of CLIENT’s specific objective(s). Any reliance of this report by third parties shall be at such third party's sole risk as this report may not contain, or be based upon, sufficient information for purposes of other parties, for their objectives, or for other uses. This report shall only be presented in full and may not be used to support any other objectives than those for CLIENT as set out in the report, except where written approval and consent are expressly provided by CLIENT and V3.

1.1 INTRODUCTION

The purpose of this investigation was to conduct an NRA and wetland delineation of the SITE to evaluate potential land development permitting requirements regarding natural resources. In this report, V3 provides a detailed description of the information reviewed and collected as part of the scope of work for this project. V3 summarizes the jurisdictional framework applicable to this project, provides a desktop review of relevant and publicly available documents, and details information collected during the SITE reconnaissance including a wetlands determination, an evaluation of the potential presence of other natural resources within the SITE boundary, and a discussion of endangered, threatened, and rare (ETR) species and habitat. The Conclusions section summarizes V3’s findings, addresses potential areas of concern and permitting, regulatory, and other relevant issues.

The SITE is situated along State Route 63 approximately 0.6 mile west of State Route 741 in Turtle Creek Township, Warren County, Ohio (Figure 1).



CHAPTER 2 JURISDICTIONAL RESOURCES

2.1 U.S. ARMY CORPS OF ENGINEERS

Through the Clean Water Act (CWA) of 1972, Section 404, the U.S. Army Corps of Engineers (USACE) maintains authority over “Waters of the U.S.” as defined in 33 CFR §328.3. A detailed discussion of “Waters of the U.S.” can be referenced in Section 2.1.1 of this report.

The USACE must issue a Section 404 permit before any fill or dredging activities can be conducted within a “Water of the U.S.,” including federally jurisdictional wetlands. There are three types of USACE Section 404 permits: nationwide permits (NWP), individual permits (IPs), and regional general permits (RGPs). The OEPA must also issue a Section 401 Water Quality Certification (WQC) concurrently with the Section 404 permit(s) unless certain conditions are met (Section 2.3.1). Section 401 WQC from the OEPA is discussed in more detail in Section 2.3.1 of this report.

- Nationwide Permits (NWP) are for proposed stream impacts of 300 LF or less, and/or proposed wetland impacts of 0.50 acre or less. Only certain types of projects, as outlined in USACE guidance,¹ are eligible for the NWP. The NWP streamlines the permit process for smaller, repetitive, low impact projects.
- Individual Permits (IP) are for proposed stream impacts of 300 LF or more, and/or proposed wetland impacts of 0.50 acre or more. The review process for the IP may take up to one year due to the higher level of scrutiny by the regulatory agencies.
- Regional General Permits (RGP) are for projects that have minimal individual and cumulative impacts on aquatic resources, but which not qualify for the NWP. The USACE Huntington District issues four types of RGPs, three of which are issued only in West Virginia, and one of which is issued only in Ohio. The Ohio RGP is issued only for projects associated with the State of Ohio Department of Transportation (ODOT).

USACE guidelines require stream and wetland characterizations for all drainage features and wetlands proposed to be impacted. Permit applications must contain extensive detail of the proposed impact sites, the proposed mitigation sites, and information regarding the construction and monitoring of the mitigation sites.

Impacts to USACE jurisdictional wetlands or other “Waters of the U.S.” require in-kind mitigation. The USACE and the OEPA prefer the mitigation to be on-site, but may allow off-site mitigation in some cases due to constraints.

2.1.1 Waters of the U.S.

Executive Order 13,990² was issued 20 January 2021. This executive order directs federal agencies, including the U.S. Environmental Protection Agency (USEPA) and the USACE, to review the Navigable Waters Protection Rule (NWPR) of 2020. To comply with Executive Order 13,990, the USEPA and the USACE announced their intent to revise the definition of “Waters of the U.S.” used since the NWPR was issued.

¹ USACE, Nationwide Permits for the State of Ohio, USACE Huntington District. Public notice in reply to Public Notice No. LRH-2016-00006-OH, Huntington, WV: USACE, Huntington District, 2017. Accessed online, July 2020. Available: <https://epa.ohio.gov/Portals/35/401/2017%20Nationwide%20Permits%20for%20Ohio.pdf>

² 86 FR 7,037



On 31 August 2021, while the agencies were still developing a revised definition of “Waters of the U.S.,” the U.S. District Court for the District of Arizona issued an order to vacate the NWPR. This order was the outcome of the 2021 *Pascua Yaqui Tribe v. U.S. Environmental Protection Agency* case.

In response to this court order, on 9 June 2021, the USEPA announced that, until further notice, it would recognize only the definition of “Waters of the U.S.” found in the pre-2015 regulatory regime. The pre-2015 regulatory regime uses the 1986 definition of “Waters of the U.S.” Under this³ definition, “Waters of the U.S.” includes:

- The territorial seas, and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide
- Tributaries
- Lakes and ponds, and impoundments of jurisdictional waters
- Adjacent wetlands, as defined in 40 CFR § 120.2(3)(i)

The pre-2015 regulatory regime also uses guidance established in the *Rapanos/Carabell*^{4,5} U.S. Supreme Court cases. Wetlands with a “significant nexus” to a traditional navigable water, non-navigable/non-permanent tributary, and/or relatively permanent non-navigable tributary are “Waters of the U.S.” subject to federal authority. Surveyors can determine the presence of a “significant nexus” by assessing hydrological factors, especially those related to hydrologic connectivity with a tributary, or ecological factors such as aquatic habitat provision, pollution treatment, and flood storage.⁶

2.1.2 Wetlands

Wetlands offer a variety of functions and values that may include, but are not limited to, groundwater recharge/discharge, flood flow alteration, sediment/toxicant retention, and fish and wildlife habitat. Because of the perceived functions and values of wetlands, USACE developed the Wetlands Delineation Manual, (*1987 Manual*)⁷ to identify wetlands.

Wetlands are defined in the *1987 Manual* as, “Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.”² The *1987 Manual* outlines the protocol for distinguishing wetland areas from “upland” areas. Wetland areas are delineated according to three primary criteria: vegetation, soil, and hydrology. An area is determined to qualify as a wetland if it meets the following “general diagnostic environmental characteristics:”

- Hydrophytic vegetation
- Hydrology
- Hydric Soil

³ 40 CFR § 120.2(1)

⁴ U.S. Supreme Court (USSC). 2006. *Rapanos v United States*, 04-1034.

⁵ USSC. 2004. *Carabell v United States Army Corps of Engineers*, 03-1700

⁶ U.S. Environmental Protection Agency (USEPA), *Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in Rapanos v. United States & Carabell v. United States*, by BH Grumbles and JP Woodley, Jr. United States: USEPA, 2008.

⁷ USACE. Waterways Experiment Station. Wetlands Research Program. “Corps of Engineers Wetlands Delineation Manual.” Vicksburg, MS: Environmental Laboratory, 1987



Hydrophytic Vegetation

The *1987 Manual* defines hydrophytic vegetation as, "...the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present..."

The USFWS and the National Wetland Plant List Panel developed the following categories to establish the relative probability of species occurring within the ranges between upland and wetland. The list was updated by USACE with cooperation with other federal agencies in 2016. The following list is the categories for plant species:

- *Obligate Wetland Plants* (OBL) – Probability of >99% occurrence in wetlands with a 1% probability of occurrence in upland areas.
- *Facultative Wetland Plants* (FACW) – Probability of 67% - 99% occurrence in wetlands with a 1% - 33% probability of occurrence in upland areas.
- *Facultative Plants* (FAC) - Probability of 34% - 66% occurrence in either wetlands or upland areas.
- *Facultative Upland Plants* (FACU) - Probability of 67% - 99% occurrence in upland areas with a 1% - 33% probability of occurrence in wetland areas.
- *Obligate Upland Plants* (UPL) - Probability of >99% occurrence in upland areas with a 1% probability of occurrence in wetland areas.

The hydrophytic vegetation criterion is met if greater than 50% of dominant species are FAC, FACW, or OBL.

Hydrology

Areas which are inundated or saturated to the surface for a significant time during the growing season will typically exhibit characteristics of wetland hydrology. Careful examination of the site conditions is needed to adequately identify wetland areas. The anaerobic and reducing conditions in inundated or saturated soils influence the plant community and may favor a dominance of hydrophytic species. It should be noted that the *1987 Manual* further defines the growing season and methodology for determining evidence of hydrology.

There are two types of hydrologic indicators: primary and secondary. Primary indicators of hydrology are discussed in the *1987 Manual* and include, but are not limited to, inundation, and saturation within the upper 12 inches of soil, water marks, drift lines, sediment deposits, and drainage patterns. Secondary indicators include, but are not limited to, oxidized root channels, water-stained leaves, local soil survey data, FAC-Neutral test, etc. One primary or two secondary indicators are required to meet this criterion.

Hydric Soil

"A hydric soil is formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part."⁸ All organic soils (except Folists) are considered hydric, while mineral soils must be carefully examined to qualify as hydric. There are several indicators that suggest a soil is hydric. An inspection of the soil profile to a minimum depth of

⁸ U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS). *Hydric Soils Technical Note 1. Proper Use of Hydric Soil Terminology*. Accessed January 2018. <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/use/hydric/>

⁹ U. S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)*. ERDC/EL TR-12-9. Vicksburg, MS: U.S. Army Engineer Research and Development Center



16 inches below ground surface is required in order to make this determination. The soil data used is the horizon of soil immediately below the A-horizon, or at 10 inches below the soil surface. Hydric soils may be present in an upland position; however, there may be insufficient evidence of hydrology or vegetation for the area to qualify as wetland.

2.1.3 Regional Supplement Manuals

A series of regional supplements⁹ to the 1987 manual are developed by the Army Engineer Research and Development Center (ERDC) to be more specific to regionally geographical conditions. Each supplement manual is developed to account for regional differences in climate, geology, soils, hydrology, plant and animal communities, etc. The intent of the regional supplements is to update the 1987 Manual with current information and technology rather than change the definition or manner that wetlands were delineated. The procedures for completing a wetland delineation is to use a combination of the 1987 Manual and the correct regional supplement manual.

Table 1: Summary of Replacement Sections in the 1987 Manual for the Midwest Region

Item	Replaced Portions of the 1987 Manual	Replacement Guidance
Hydrophytic Vegetation Indicators	Paragraph 35, all subparts, and all reference to specific indicators in Part IV.	Chapter 2
Hydric Soil Indicators	Paragraphs 44 and 45, all subparts, and all references to specific indicators in Part IV.	Chapter 3
Wetland Hydrology Indicators	Paragraph 49(b), all subparts, and all references to specific indicators in Part IV.	Chapter 4
Growing Season Definition	Glossary	Chapter 4, Growing Season; Glossary
Hydrology Standard for Highly Disturbed or Problematic Wetland Situations	Paragraph 48, including Table 5 and the accompanying User note in the online version of the Manual.	Chapter 5, Wetlands that Periodically Lack Indicators of Wetland Hydrology, Procedure item 3(f).

Regional Supplement Manuals will continue to be developed and revised electronically with the improvement of technology and procedures.

2.2 UNITED STATES FISH AND WILDLIFE SERVICE

The Endangered Species Act (ESA) of 1973 intends to conserve the habitats of federally endangered or threatened species and to assist in the recovery of species listed. The USFWS is the regulating authority for this act and works with the states to provide additional conservation measures. The USFWS¹⁰ defines two classifications of protected species, endangered and threatened. An endangered species is an organism that is in danger of extinction throughout all or a significant portion of its range. A threatened species is an organism that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. All species of plants and animals are eligible for listing.

Any activity that may incidentally harm federally threatened or endangered species is prohibited by the ESA. For proposed development areas that contain listed species, private landowners may create a Habitat Conservation Plan to minimize the impact on the listed species. This plan should include the protection of breeding, foraging, and shelter requirements for the listed species. The USFWS may then

¹⁰ U.S. Fish and Wildlife Service (USFWS). Endangered Species Program. *ESA Basics*. Arlington, VA: USFWS, 2004. Accessed January 2018. https://www.fws.gov/endangered/esa-library/pdf/ESA_basics.pdf



grant an Incidental Take Permit for the project. In the event that any person knowingly violates any provision of the Act or Permit, the person may be assessed penalties.

Projects that involve federal funding or permitting on a site where endangered or threatened species are known to occur or where significant habitat is present will require an alternatives analysis and extensive documentation of agency coordination.

2.3 OHIO ENVIRONMENTAL PROTECTION AGENCY

The OEPA is responsible for administering Section 401 of the CWA (Ohio Administrative Code [OAC] 3745-32), classifying wetlands and determining mitigation ratios in accordance with the Wetland Anti-Degradation Rule (OAC 3745-1-51 through OAC 3745-1-54), and issuing permits for impacts to isolated wetlands (Ohio Revised Code [ORC] 6111.02 through ORC 6111.029). OEPA also administers Permit No. OHC000005 as part of the NPDES permit program for stormwater runoff at construction sites.

2.3.1 Section 401 Water Quality Certification

If impacts to “Waters of the U.S.” are considered under a USACE NWP, the OEPA authorizes a Section 401 WQC if certain conditions are met. These conditions are described in the NWP guidance for the State of Ohio.¹¹ If impacts to “Waters of the U.S.” are considered under a USACE IP, then a Section 401 WQC from the OEPA is always required.

The OEPA Section 401 WQC process requires an alternatives analysis that consists of a review of off-site alternatives, a preferred on-site plan, a minimal degradation plan, and a non-degradation plan. The OEPA reviews these alternatives for biological and water quality impacts and for social and economic benefits. The OEPA may, at their discretion, choose the minimal degradation plan, so the minimal degradation plan should be a feasible, developable alternative. The review process for this type of permit may take up to one year due to the higher level of regulatory review and due to the public notice process.

As outlined in OAC 3745-1-54(D)(1), applicants for a Section 401 WQC from the OEPA must demonstrate:

- Avoidance – There must be no practicable alternative with less impact as determined through an off-site and on-site alternative analysis. For Category 3 Wetlands, the OEPA presumes that less-damaging alternatives are available unless it is clearly demonstrated that they are not.
- Minimization – Steps must be taken to minimize impacts on the wetland ecosystem. Direct and indirect impacts are considered.
- That the lowering of water quality is necessary to accommodate important social and economic development in the area in which the water body is located.
- That storm water and water quality controls will be installed in accordance with OAC 3745-1-50(D)(2).
- That the wetland is not scarce regionally or statewide, or if the wetland is scarce, that the project will cause only a short-term disturbance of water quality that will not cause long-term detrimental effects.
- Compensatory Mitigation – The designated use of the wetland must be replaced in accordance with the established mitigation ratios.

¹¹ USACE, 2017.



For projects involving impacts to Category 3 wetlands (Section 2.3.3), the applicant must also demonstrate a “public need.” As per OAC 3745-1-50(MM), a project has a “public need” if it is “an activity or project that provides important tangible and intangible gains to society, that satisfies the expressed or observed needs of the public where accrued benefits significantly outweigh reasonably foreseeable detriments.”

2.3.2 Ephemeral Streams in Ohio

The OEPA authorizes impacts to ephemeral streams by issuing the Ephemeral Stream and Isolated Wetland General Permit (ESIWGP). The ESIWGP has been in place since 25 June 2020. Pursuant to ORC 6111.021 and 6111.03(J)(1), the ESIWGP authorizes impacts to ephemeral streams not subject to regulation under the CWA.¹²

The ESIWGP application must include a pre-activity notice (PAN) only if proposed ephemeral stream impacts exceed 300 LF. A stream physical habitat assessment, whether by the headwater habitat evaluation index (HHEI) or qualitative habitat evaluation index (QHEI) or a similar metric, must be included in the PAN.

Compensatory mitigation is required only if proposed impacts to ephemeral streams exceed 300 LF. Mitigation ratios for impacts to ephemeral streams are dependent upon the impacted stream’s substrate type (Table 2).

Table 2: Mitigation Ratios for Impacts to Ephemeral Streams in Ohio

Type of Ephemeral Stream	Extent of Impacts Proposed	Pre-Activity Notification (PAN) Required	Compensatory Mitigation Required	Mitigation Ratio
Ephemeral stream with sand/silt/muck/clay dominated substrate	Less than 300 LF	No	No	N/A
	More than 300 LF	Yes	Yes	1:1
Ephemeral stream with, bedrock/boulder/cobble/gravel/sand mixed substrates	Less than 300 LF	No	No	N/A
	More than 300 LF	Yes	Yes	1.5:1

If proposed ephemeral stream impacts are temporary, the ESIWGP requires restoration to conditions resembling the pre-impact condition. The restoration must not rely on human interventions within 12 months following completion of the temporary impact.

2.3.3 Isolated Wetlands in Ohio

An OEPA permit is required for impacts to isolated wetlands in Ohio, but the type of permit required varies depending on the type of wetland and the extent of impacts proposed.

To determine the appropriate permitting requirements for impacts to isolated wetlands in Ohio, the quality of the impacted wetland(s) must be determined using the Ohio Rapid Assessment Method (ORAM). The ORAM assigns wetlands to Category 1, Category 2, or Category 3, corresponding to wetlands of low, medium, and high quality, respectively (see Section 2.3.4 for a detailed summary of the ORAM). Once the category of the isolated wetland is determined through an ORAM, the appropriate permit may be determined using Table 3. Available OEPA permits include the ESIWGP, the Isolated Wetland General Permit (IWGP) Level 2, and the IWGP Level 3.

¹² OEPA, Ohio General Permit for Filling Category 1 and Category 2 Isolated Wetlands and Ephemeral Streams, OEPA.

Accessed online, July 2020. Available:

<https://epa.ohio.gov/Portals/35/401/Ephemeral%20Stream%20and%20L1%20IW%20General%20Permit.docx.pdf?ver=2020-06-26-004725-563>



Table 3: OEPA Permitting Summary

Wetland Category	Acres of Impact Proposed (acres)	Public Notice Required	Mandatory Public Hearing	Review Period	Type of Permit Required
1 or 2	0.50 or less	No	No	30 days	ESIWGP
1	0.50 or more	Yes	No	90 days	IWGP Level 2
2	0.50 to 3.00	Yes	No	180 days	IWGP Level 2
2	More than 3.00	Yes	No	180 days	IWGP Level 3
3	Any	Yes	Yes	180 days	IWGP Level 3

The OEPA requires compensatory mitigation for all impacts to isolated wetlands in Ohio. The OEPA's first preference is for mitigation at a wetland mitigation bank within the USACE district where impacts are proposed. If this is not possible, in-lieu fee mitigation through the Ohio Stream and Wetland In Lieu Fee Mitigation Program is preferred. If neither mitigation banking nor in-lieu fee mitigation are possible, off-SITE permittee-responsible mitigation is preferred.

The ratio of proposed impacts to compensatory mitigation required depends on the type of impacts and mitigation proposed (Table 4).

Table 4: Ohio Isolated Wetland Mitigation Ratios

Category of Impacted Wetland	Mitigation Banking and In-Lieu Fee Mitigation Ratio	Permittee-Responsible Mitigation Ratio			
		Category of Replacement Wetland	Permittee-Responsible On-Site Mitigation Ratio	Permittee-Responsible Off-Site Mitigation Ratio	Compensatory Mitigation Location if Off-Site
Category 1	2.0:1	Category 2 or 3	1.5:1	1.5:1	Within the USACE District
Category 2 (Non-Forested)	2.0:1	Category 2 or 3	1.5:1	2:1	Within Watershed
Category 2 (Forested)	2.5:1	Category 2 or 3	2:1	2.5:1	Within Watershed
Category 3 (Non-Forested)	2.5:1	Category 3	2:1	2.5:1	Within Watershed
Category 3 (Forested)	3.0:1	Category 3	2.5:1	3:1	Within Watershed

2.3.4 Ohio Rapid Assessment Method (ORAM)

Under the Ohio Administrative Code 3745-1-54 Wetland anti-degradation rule a "category will be assigned based on the wetland's relative functions and values, sensitivity to disturbance, rarity, and potential to be adequately compensated for by wetland mitigation." The ORAM can be used to determine the category. Once a category has been established and verified, the type of permit to be submitted and subsequent mitigation requirements will be determined as previously stated.

The categories are:

- Category I – dominated by low diversity, non-native species, minimal or degraded habitat, hydrological, and recreational functions, and is unlikely to support endangered, threatened, or rare species.

- Category II – dominated by native species of moderate quality and diversity, functional hydrologically and recreationally, unlikely to support endangered, threatened, or rare species, minimal habitat disturbance. Sometimes includes category I wetlands that are restorable.
- Category III – superior habitat, hydrological, and recreational functions, highly diversified, likely to support endangered, threatened, or rare species, minimal habitat disturbance.






The point system is intended to cover a wide range of wetland types and situations in order to give the most comprehensive description possible. Some wetlands are automatically considered Category I when they are less than 1 acre in size, hydrologically isolated, and consist principally of common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), or reed canary grass (*Phalaris arundinacea*). Also, some wetlands may be considered Category III if they are found to be bogs, fens, vernal pools, or high quality mature forested wetlands. The season that the wetland is evaluated may have some effect on the scores, as well as years of drought or flooding. Reassessment or confirmation may be required if a score is near a breakpoint in the Score Calibration.

In addition to the Quantitative Rating, which uses the Scoring forms and site visit to determine category, the Narrative Rating is meant to complete the assessment through a “literature review.” The USFWS and ODNR should be contacted about the presence of endangered, threatened, and rare species, high quality wetland, or significant breeding/non-breeding bird concentration areas documented for the project area.

2.3.4 Qualitative Habitat Evaluation Index (QHEI)

The QHEI was developed by the OEPA as a rapid assessment method for streams with a drainage area greater than 1 square mile. Streams are scored in the field and classified based on substrate, habitat characteristics, channel morphology, and riparian zone quality. Streams are rated on a scale of 100 points; the score is used to assign a general narrative quality rating from very poor to excellent. The table below is excerpted from the QHEI manual¹³ and shows the correspondence between numeric and narrative scores (Table 5).

Table 5: General Narrative Ranges Assigned to QHEI Scores¹⁴

Ranges vary slightly in headwater (≤ 20 sq mi) vs. larger waters.			
Narrative Rating		QHEI Range	
		Headwaters	Larger Streams
Excellent		≥ 70	≥ 75
Good		55 to 69	60 to 74
Fair		43 to 54	45 to 59
Poor		30 to 42	30 to 44
Very Poor		< 30	< 30

2.3.5 Primary Headwater Habitat Evaluation Index (HHEI)

The primary headwater streams are quite small, less than 1.0 mi² drainage area. Many of them would not show up as blue lines on USGS 1:24,000 quadrangle maps, although almost all of them would be visible and marked on county soil maps. These streams are not often defined or assigned beneficial uses in Ohio water quality standards. The sampling methods, and concurrent biological and habitat indices now used by OEPA to classify waterways for existing water quality (e.g., IBI, ICI, QHEI) are

¹³ Ohio Environmental Protection Agency (OEPA), *Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI)*, State of Ohio Environmental Protection Agency Division of Surface Water, Ecological Assessment Section. OHIO EPA Technical Bulletin EAS/2006-06-01, Groveport, Ohio: State of Ohio, 2006.

¹⁴ OEPA, *Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI)*.



oriented toward larger streams. Because these "index of biotic integrity" assessment systems are watershed size dependent, they often cannot be used to identify the well-being of the native fauna that survive and reproduce in small headwater stream ecosystems.

This primary headwater stream classification methodology outlines a predictable three-tiered protocol that can be used to conduct rapid assessment of headwater stream quality. The lowest level of field effort is a relatively rapid habitat evaluation procedure known as the "Headwater Habitat Evaluation Index" (HHEI). It is based on three physical measurements that have been found to correlate well with biological measures of stream quality. Two levels of biological assessment, one at an order-family level of taxonomic identification, the second to genus species, provide flexibility in reaching a final decision on the appropriate aquatic life use designation needed to classify a primary headwater stream.

2.3.6 NPDES General Permit Authorization

If greater than one acre of ground disturbance is proposed, the project will be subject to OEPA General Permit Authorization for Stormwater Discharges Associated with Construction Activity (OEPA Permit No. OHC000005) and the U.S. Environmental Protection Agency (EPA), National Pollutant Discharge Elimination System (NPDES) permit program. A Notice of Intent (NOI) form will need to be submitted to OEPA at least 21 days prior to the start of construction.

2.4 WARREN COUNTY SOIL AND WATER CONSERVATION DISTRICT

The Warren County Soil and Water Conservation District authorizes earth disturbance construction activities through issuance of an Earth Disturbance Permit (EDP). An EDP application and associate SWPPP are submitted to the Warren County Soil and Water Conservation District via an online portal (<https://www.warrenswcd.com/earth-disturbing-permit-application.html>).



CHAPTER 3 DESKTOP REVIEW

V3 reviewed applicable, readily available, and accessible historical information for the potential presence of wetlands, “Waters of the U.S.,” and other natural resources.

3.1 PROJECT LOCATION MAP

The SITE is located along State Route 63 approximately 0.6 mile west of State Route 741 in Turtle Creek Township, Warren County, Ohio (Figure 1).

3.2 NATIONAL WETLANDS INVENTORY MAP

National Wetlands Inventory (NWI) maps were developed to meet a USFWS mandate to map the wetland and deepwater habitats of the U.S. These maps were developed using high altitude aerial photographs and USGS Quadrangle maps as a topographic base. Indicators that exhibited pre-determined wetland characteristics, visible in the photographs, were identified according to a detailed classification system. The NWI map retains some of the detail of the Quadrangle map; however, it is used primarily for demonstration of wetland areas identified by the agency. The maps are accurate to a scale of 1:24,000. In general, the NWI information requires field verification.

NWI data is shown projected over the USGS 7.5-Minute Quadrangle Map in Figure 2. One NWI feature is mapped partially within the SITE area. A riverine, intermittent, streambed, seasonally flooded (R4SBC) feature across the western portions of the SITE, extending off-SITE. The presence of NWI feature mapped within the SITE area suggests the potential presence of aquatic features on-SITE.

3.3 UNITED STATES GEOLOGICAL SURVEY 7.5-MINUTE QUADRANGLE MAP

A USGS 7.5-Minute Quadrangle map displays contour lines to portray the shape and elevation of the land surface. Quadrangle maps render the three-dimensional changes in elevation of the terrain on a two-dimensional surface. The maps usually portray both manmade and natural topographic features. Although they show lakes, rivers, various surface water drainage trends, vegetation, etc., they typically do not provide the level of detail needed for accurate evaluation of wetlands. However, the existence of these features may suggest the potential presence of wetlands.

The SITE is situated in the Monroe, Ohio, USGS 7.5-Minute Quadrangle Map. V3 evaluated the topography and concluded that the SITE elevation ranges from approximately 760 to 780 feet above mean sea level. An intermittent stream is mapped across the western portion of the SITE area indicating the potential presence of aquatic features (Figure 3).

3.4 FLOOD INSURANCE RATE MAP

The Federal Emergency Management Agency (FEMA) was developed in 1979 to reform disaster relief and recovery, civil defense, and to prepare and mitigate for natural hazards. The Mitigation Division of FEMA manages the National Flood Insurance Program which provides guidance on how to lessen the impact of disasters on communities through flood insurance, floodplain management, and flood hazard mapping. Proper floodplain management can minimize the extent of flooding and flood damage and improve stormwater quality by reducing stormwater velocities and erosion. The one percent annual chance flood (100-year flood) boundary must be kept free of encroachment as the national standard for the program.



V3 reviewed digital Flood Insurance Rate Map (FIRM) data from the FEMA Flood Map Service Center and National Flood Hazard Zone data for Warren County, Ohio. No portion of the SITE is situated in an area mapped as floodway (Figure 4).

3.5 UNITED STATES DEPARTMENT OF AGRICULTURE SOIL SURVEY

V3 reviewed the soils mapped on-SITE in the Natural Resource Conservation Service (NRCS) digital soil survey data for Warren County, Ohio. This data is projected over aerial photography, illustrating distinct soil map unit boundaries, in Figure 5. Eight soil units are classified on-SITE.

Table 6 : Soil Units On-SITE

Map Soil Symbol	Description	Hydric Soil
DaA	Dana silt loam, 0 to 2 percent slopes	No
FhA	Fincastle silt loam, Southern Ohio Till Plain, 0 to 2 percent slopes	No
HmE2	Hennepin-Miamian silt loams, 18 to 25 percent slopes, moderately eroded	No
RvB	Russell-Miamian silt loams, 2 to 6 percent slopes	No
RvB2	Russell-Miamian silt loams, 2 to 6 percent slopes, moderately eroded	No
Sh	Shoals silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	No
XeA	Xenia silt loam, Southern Ohio Till Plain, 0 to 2 percent slopes	No
XeB	Xenia silt loam, Southern Ohio Till Plain, 2 to 6 percent slopes	No

No soil units mapped within the SITE area are considered hydric in Warren County, Ohio. Soils are considered hydric if more than 50 percent of the soil contains hydric components according to the NRCS Web Soil Survey.

3.6 ENDANGERED, THREATENED, AND RARE SPECIES EVALUATION

V3 contacted the USFWS and the ODNR to request documentation of any ETR species on-SITE. Copies of agency correspondence can be referenced in Appendix A.

USFWS correspondence indicated that the SITE is situated within the range of the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*). Correspondence indicated that if any trees of more than three inches DBH are to be removed, tree removal must take place between 1 October and 31 March.

ODNR correspondence indicated that the little brown bat (*Myotis lucifugus*) has been recorded in the project vicinity. Because of the presence of state endangered bat species has been established in the area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area. However, limited summer tree cutting inside this buffer may be acceptable after further consultation with ODNR. Further, ODNR recommended a desktop habitat assessment to determine if potential hibernaculum is present within the project area. Based on a review of GIS data showing mines and karst topography, no potential bat hibernacula were identified within the project vicinity.

ODNR identified the Lark Sparrow and Northern Harrier, state endangered birds, as species with the potential to inhabit the Project area. The Lark Sparrow nests in grassland habitats with scattered shrub layers, disturbed open areas, as well as patches of bare soil. The nesting period for this bird is 1 May 1 to 31 July. The Northern Harrier is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. The female builds a nest out of sticks on the ground, often on top of a mound. The nesting period is 15 April to 31 July. Much of the Project area is grassland with larger tracts of similar habitat extending beyond the Project area. ODNR



recommends that construction should be avoided during the nesting period in this habitat type. Typically, ODNR may allow construction to continue through the nesting period as long as access roads and work areas are disturbed prior to the nesting periods. If construction of access roads and other work areas cannot occur outside of the nesting period, presence/absence surveys for the Lark Sparrow and Northern Harrier may be warranted.

Seven mussel species and eight fish species were identified with a range in the project vicinity. The mussel species include the federally endangered clubshell (*Pleurobema clava*), rayed bean (*Villosa fabalis*), and snuffbox (*Epioblasma triquetra*); the state endangered washboard (*Megaloniais nervosa*); and state threatened black sandshell (*Ligumia recta*), fawnsfoot (*Truncilla donaciformis*), and threehorn wartyback (*Obliquaria reflexa*). The fish species include the state endangered bigeye shiner (*Notropis boops*), goldeye (*Hiodon alosoides*), mountain brook lamprey (*Ichthyomyzon fossor*), and northern madtom (*Noturus stigmosus*) as well as the state threatened American eel (*Anguilla rostrata*), mountain madtom (*Noturus eleutherus*), and paddlefish (*Polyodon spathula*). ODNR recommends no in-water work in perennial streams from 15 March through 30 June to reduce impacts to these species. Based on the lack of in-water work, ODNR indicated the project is not likely to impact aquatic species.

ODNR also identified eastern massasauga (*Sistrurus catenatus*), spotted turtle (*Clemmys guttata*), Kirtland's snake (*Clonophis kirtlandii*), Least Bittern (*Ixobrychus exilis*), Loggerhead Shrike (*Lanius ludovicianus*), and Sandhill Crane (*Grus canadensis*) as state endangered or threatened species with the potential to inhabit the project area. However, based on lack of suitable habitat observed during the site reconnaissance, these species are not expected to be impacted by the project.

CHAPTER 4 SITE RECONNAISSANCE

4.1 METHODOLOGY

V3 conducted a field investigation at the SITE on 4 November 2021. During this investigation, V3 noted the presumed land use of the SITE and surrounding area and evaluated the SITE for the potential presence of wetlands, “waters of the U.S.,” and natural resources using the findings of the desktop review and field observations. Photographs were taken during the field investigation and are provided in Appendix B.

V3 used the Routine Determination Method (RDM) with an established baseline and transects as described in the *1987 Manual* for typical sites over five acres. V3 recorded data from a number of data points (DP) along the transect as a function of diversity of vegetation, property size, soil types, habitat variability, and other SITE features as deemed appropriate by V3. Where evidence of a wetland was suspected, three wetland criteria were applied to determine if the area in question was representative of a wetland using the methodology set forth by USACE. More specifically, V3 visually examined and recorded the dominant vegetation, recorded soil properties such as texture and color using the Munsell Soil Color Chart (Munsell Color Chart), excavated soil pits, and evaluated the primary and secondary hydrologic indicators as discussed in Section 2.1.2.

If all three criteria were met, i.e. vegetation, soil properties, and hydrologic indicators, a second DP was established adjacent to the wetland DP in an area outside of the presumed wetland boundary for the purpose of delineating between the wetland and non-wetland areas. Once delineated, V3 continued the RDM to evaluate the remainder of the SITE.

4.2 SITE AND ADJACENT PROPERTY LAND USE

Land use on-SITE is dominated by existing electric transmission line right-of-way (ROW) and fallow land. State Route 63 traverses the northern portion of the SITE, running east and west. Adjacent land use includes an electrical substation, an ODOT road maintenance facility, agricultural fields, and other state-owned fallow areas.

4.3 WETLAND SUMMARY

One wetland was identified during this investigation based upon methodology set forth in the *1987 Manual* and the *Midwest Regional Supplement*. Information that V3 collected at each DP on 4 November 2021 is described in the following section. This information is summarized on data forms provided in Appendix C. DP locations are depicted in Figure 6.

4.3.1 Wetland A – (± 0.03 PEM)

Wetland A is situated in the northern portion of the SITE. Wetland A is approximately 0.02 acre and is classified as a palustrine, emergent wetland (PEM). Wetland A did not appear to qualify as a federally jurisdictional “Water of the U.S.,” and as such would likely be considered isolated and subject to regulation by the OEPA alone.

DP A1

This DP was collected within Wetland A. The dominant vegetation present consisted of narrowleaf cattail (*Typha angustifolia*, OBL), lamp rush (*Juncus effusus*, FACW), and barnyard grass (*Echinochloa crus-galli*, FACW), meeting the hydrophytic vegetation criterion. Examination of the soil profile using the Munsell Color Chart revealed a matrix color of 10YR 3/1 to a depth of two inches and 10YR 3/1 with 7.5YR 4/6 redox concentrations from two to 18 inches, meeting the hydric soil criterion with the Redox Dark Surface (F6) indicator. Evidence of hydrologic features observed included Geomorphic Position



(D2) and the FAC-Neutral Test (D5), meeting the hydrology criterion. Since all three criteria were met, this area qualified as a wetland.

DP A2

This DP was collected north of Wetland A. The dominant vegetation present consisted of tall false rye grass (*Schedonorus arundinaceus*, FACU) and yellow foxtail (*Setaria pumila*, FAC), which did not meet the hydrophytic vegetation criterion. Examination of the soil profile using the Munsell Color Chart revealed a matrix color of 10YR 3/1 to a depth of 18 inches, which did not meet the hydric soil criterion. No evidence of hydrologic features was observed. Since all three criteria were not met, this area did not qualify as a wetland.

4.4 DATA POINT SUMMARY

Following is a description of the information collected at each additional DP during the 4 November 2021 field investigations. Information that was collected at each DP is summarized on the forms provided in Appendix C. DP placement is depicted in Figure 6.

DP 1

This DP was collected in the north-central portion of the SITE. The dominant vegetation present consisted of tall false rye grass (FACU), yellow foxtail (FAC), English plantain (*Plantago lanceolata*, FACU), and orchardgrass (*Dactylis glomerata*, FACU), which did not meet the hydrophytic vegetation criterion. Examination of the soil profile using the Munsell Color Chart revealed a matrix color of 10YR 3/1 and 10YR 4/1 to a depth of 18 inches, which did not meet the hydric soil criterion. No evidence of hydrologic features was observed. Since all three criteria were not met, this area did not qualify as a wetland.

DP 2

This DP was collected in the south-central portion of the SITE. The dominant vegetation present consisted of tall false rye grass (*Schedonorus arundinaceus*, FACU) and Canada thistle (*Cirsium arvense*, FACU), which did not meet the hydrophytic vegetation criterion. Examination of the soil profile using the Munsell Color Chart revealed a matrix color of 10YR 3/2 to a depth of 18 inches, which did not meet the hydric soil criterion. No evidence of hydrologic features was observed. Since all three criteria were not met, this area did not qualify as a wetland.

4.5 DRAINAGE FEATURES, STREAMS, AND OTHER POTENTIAL “WATERS OF THE U.S.”

Stream 1, an intermittent stream, with a length of approximately 1,190 LF on-SITE and situated along the western SITE boundary. Stream 1 appeared to convey water south-southwest. Stream 1 to exhibit an OHWM and would likely qualify as a federal “Water of the U.S.” subject to regulation by the USACE and OEPA. Figure 6 depicts the placement of Stream 1.

No additional drainage features, streams, or other potential “Waters of the U.S.” were observed on-SITE.

CHAPTER 5 CONCLUSIONS

On 4 November 2021, V3 performed an NRA and wetland delineation for the SITE situated in North Bend, Warren County, Ohio. One PEM wetland and one ephemeral stream were identified within the SITE area.

Table 7: Aquatic Features On-SITE

Feature	Feature Type	Size (On-SITE)	Anticipated Regulatory Status
Wetland A	PEM Wetland	±0.02 ac	OEPA
Stream 1	Intermittent Stream	±1,190 lf	USACE/OEPA

Wetland A did not appear to exhibit a hydrologic connection to any “Waters of the U.S.,” and would likely be considered isolated and subject to regulation by the OEPA under the state wetland program. Isolated wetland permitting necessitates classification of the wetlands based on current site conditions. Wetland A qualified as a Category 1. Pending the area of impacts, mitigation for Category 1 wetlands and would likely require mitigation at a 1.5:1 to 2.0:1 ratio.

Stream 1 is likely to be verified as federally jurisdictional “Waters of the U.S.” subject to USACE and OEPA authority. If impacts are proposed for Stream 1, a USACE NWP 57 will likely be necessary. Mitigation for impacts that exceed the maximum fill threshold to Stream 1 will likely be required at a minimum of a 1:1 ratio.

USFWS and ODNR correspondence indicated that the SITE is within the range of the federally endangered Indiana bat and the federally threatened northern long-eared bat. Furthermore, ODNR indicated that records of these bat species have been recorded in the SITE vicinity. Tree clearing does not appear likely however if trees are proposed to be cleared, then trees should be cleared in the winter months to avoid any additional presence/absence surveys. Desktop review of mining and karst areas did not identify any potential bat hibernacula in the SITE vicinity. Impacts to bat species appear unlikely.

ODNR identified the Lark Sparrow and Northern Harrier, state endangered birds, as species with the potential to inhabit the Project area. The Lark Sparrow nests in grassland habitats with scattered shrub layers, disturbed open areas, as well as patches of bare soil. The nesting period for this bird is 1 May to 31 July. The Northern Harrier is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. The female builds a nest out of sticks on the ground, often on top of a mound. The nesting period is 15 April to 31 July. Much of the Project area is grassland with larger tracts of similar habitat extending beyond the Project area. ODNR recommends that construction should be avoided during the nesting period in this habitat type. ODNR may allow construction through the nesting period as long as access roads and work areas are disturbed prior to the nesting periods. Presence/absence surveys for these species may be warranted if construction of the access roads and other work areas cannot be completed outside of the nesting period.

Based on lack of habitat observed on-SITE, no additional species of concern were identified.

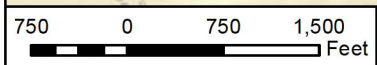
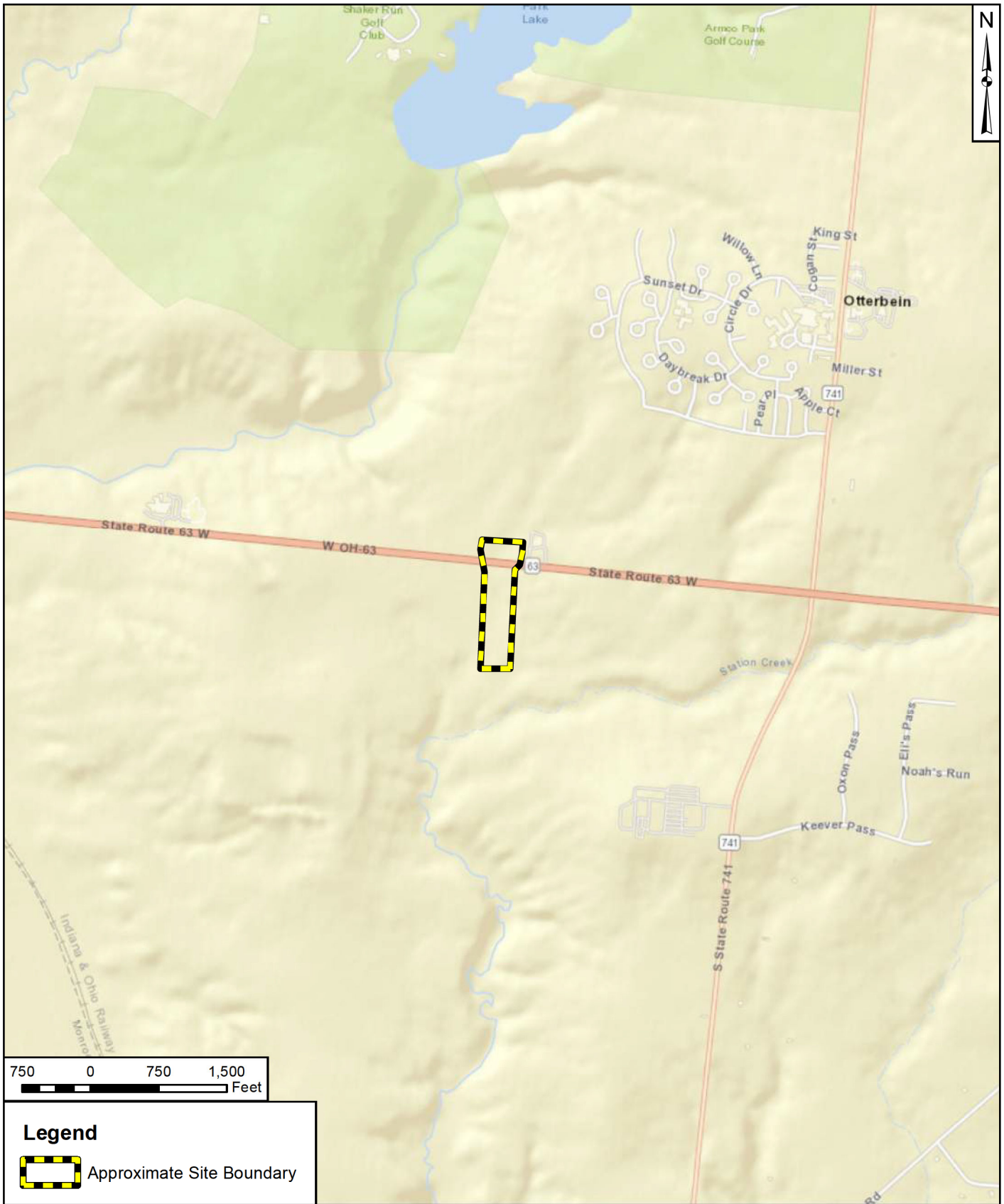
If proposed development activities will disturb one or more acres of land, then a SWP3 will be required to be submitted to the Warren County Soil and Water Conservation District for approval.


No 100-year flood zones are mapped on-SITE. Floodplain permitting is not expected to be necessary.




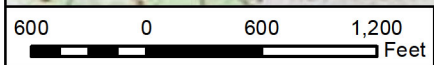
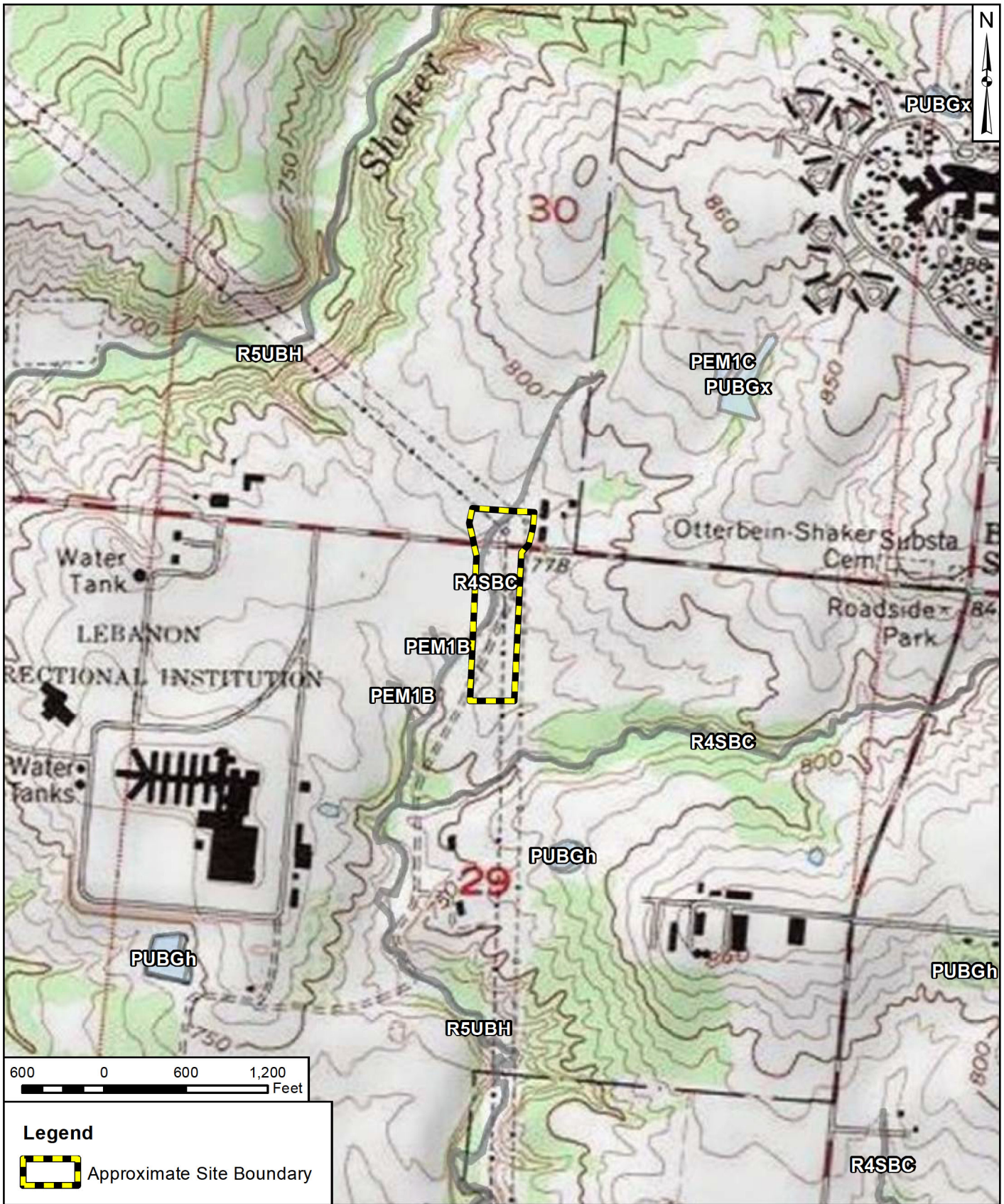
If proposed development activities will impact any of the aquatic features described above, V3 recommends that the final report and associated figures be submitted to the USACE for JD. However, in some circumstances, a Preliminary JD may be considered to expedite the JD process.








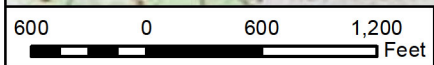
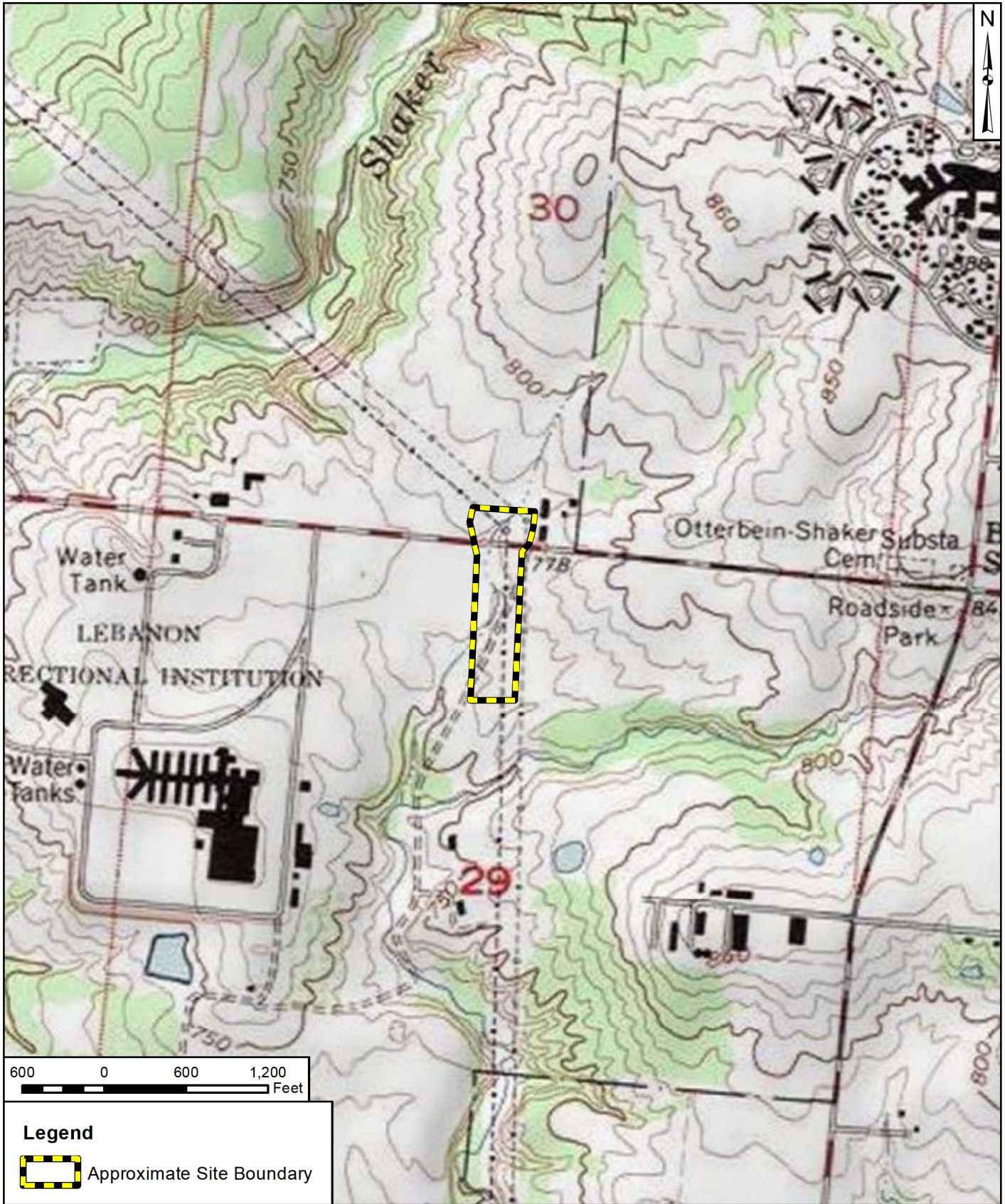
Legend	
	Approximate Site Boundary


 312 Walnut Street Suite 1600 Cincinnati, Ohio 45202 513-800-3622 phone www.v3co.com	PROJECT NO.: 20568.022	CLIENT: 	TITLE: PROJECT LOCATION MAP	
	CREATED BY: ARG	DATE: 11/24/2021	BASE LAYER: ESRI World Street Map	SITE: SR 63 345/138 kV Structure Replacements Turtle Creek Twp, Warren County, Ohio
Visio, Vertere, Virtute... "The Vision To Transform with Excellence"	SCALE: See Scale Bar			





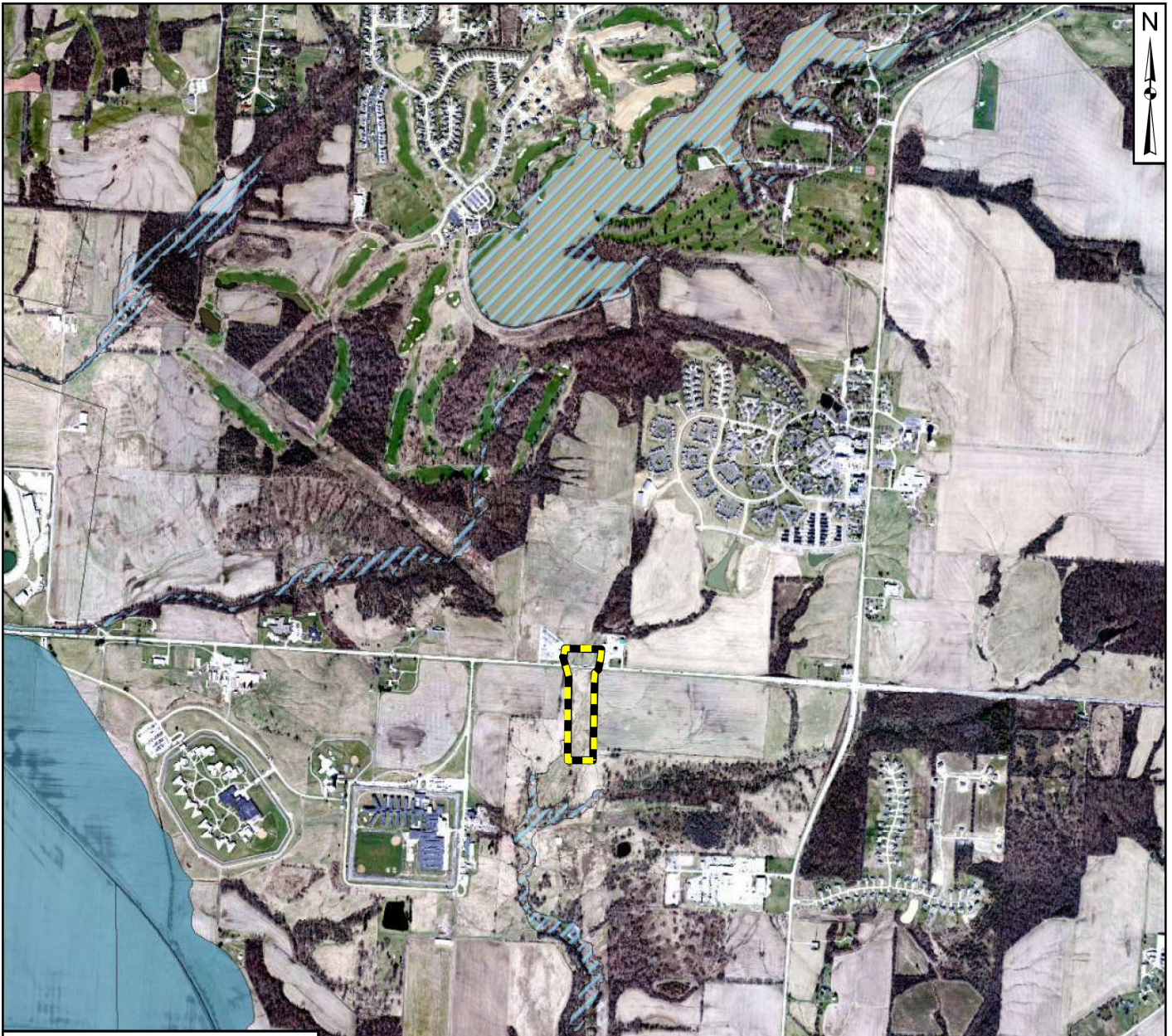
Legend	
	Approximate Site Boundary

 <p>312 Walnut Street Suite 1600 Cincinnati, Ohio 45202 513-800-3622 phone www.v3co.com</p> <p>Visio, Vertere, Virtute... "The Vision To Transform with Excellence"</p>	PROJECT NO.: 20568.022 CREATED BY: ARG DATE: 11/24/2021 SCALE: See Scale Bar	CLIENT:  BASE LAYER: USGS Topographic Map Monroe, OH Quadrangle	TITLE: NATIONAL WETLANDS INVENTORY MAP SR 63 345/138 kV Structure Replacements Turtle Creek Twp, Warren County, Ohio	FIGURE: 2
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Legend	
	Approximate Site Boundary






 312 Walnut Street Suite 1600 Cincinnati, Ohio 45202 513-800-3622 phone www.v3co.com Visio, Vertere, Virtute... "The Vision To Transform with Excellence"	PROJECT NO.: 20568.022 CREATED BY: ARG	CLIENT: 	TITLE: USGS TOPOGRAPHIC MAP	FIGURE: 3
	DATE: 11/24/2021 SCALE: See Scale Bar	BASE LAYER: USGS Topographic Map Monroe, OH Quadrangle	SITE: SR 63 345/138 kV Structure Replacements Turtle Creek Twp, Warren County, Ohio	



Legend

 Approximate Site Boundary

Ohio Flood Zones (2020)


-  Zone A
-  Zone AE
-  Zone AH
-  0.2% Annual Chance Flood Hazard
-  Zone X



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CREATED BY: ARG
DATE: 11/24/2021
SCALE: See Scale Bar



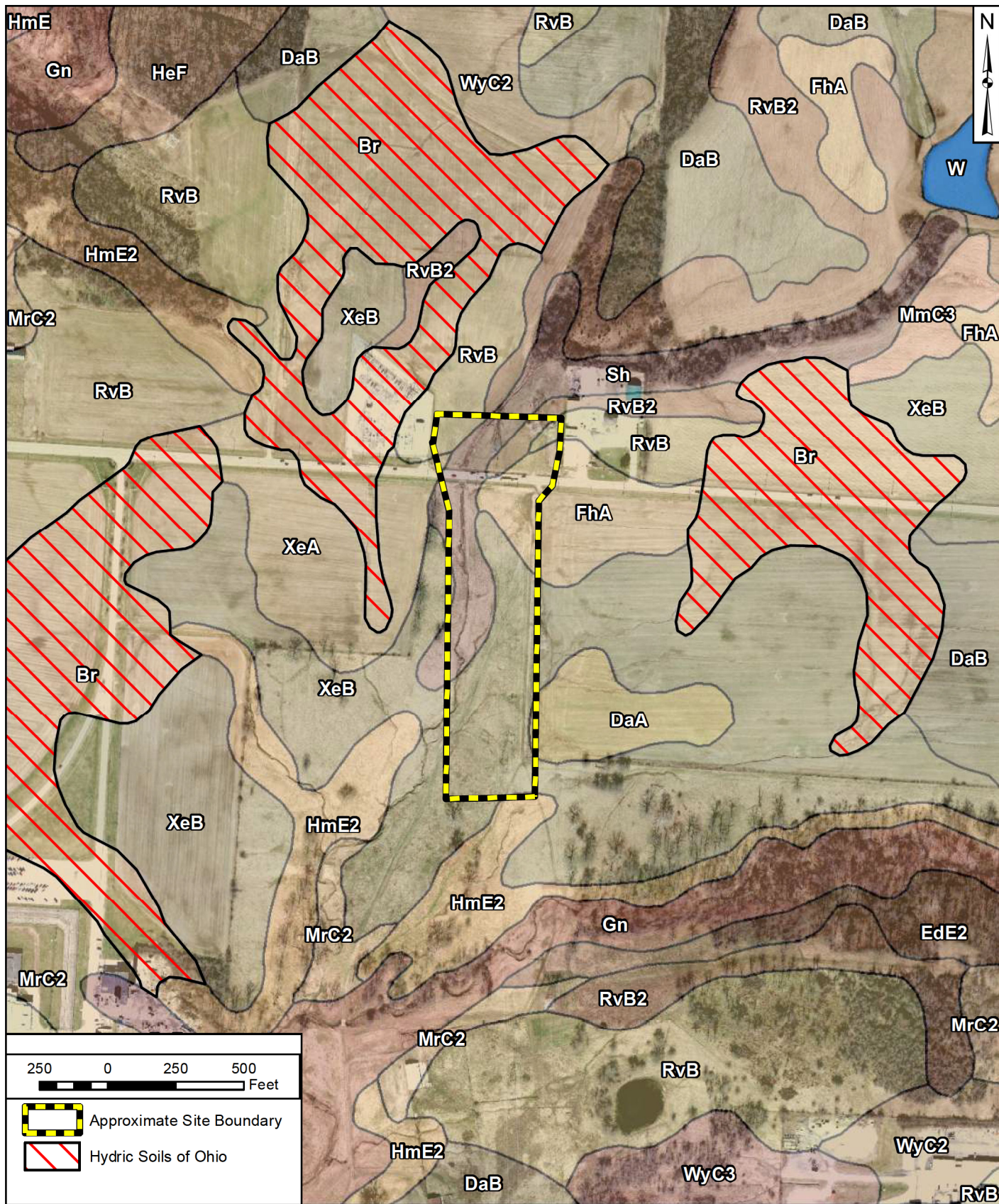
CLIENT: DUKE ENERGY

BASE LAYER: Ohio Statewide Imagery Program (OSIP) (2018)

TITLE: FLOOD ZONES OF WARREN COUNTY, OHIO (2020) MAP

SITE: SR 63 345/138 kV Structure Replacements Turtle Creek Twp, Warren County, Ohio

FIGURE: 4



250 0 250 500 Feet

Approximate Site Boundary

Hydic Soils of Ohio



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DATE:
11/24/2021

SCALE:
See Scale Bar



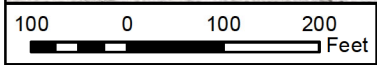
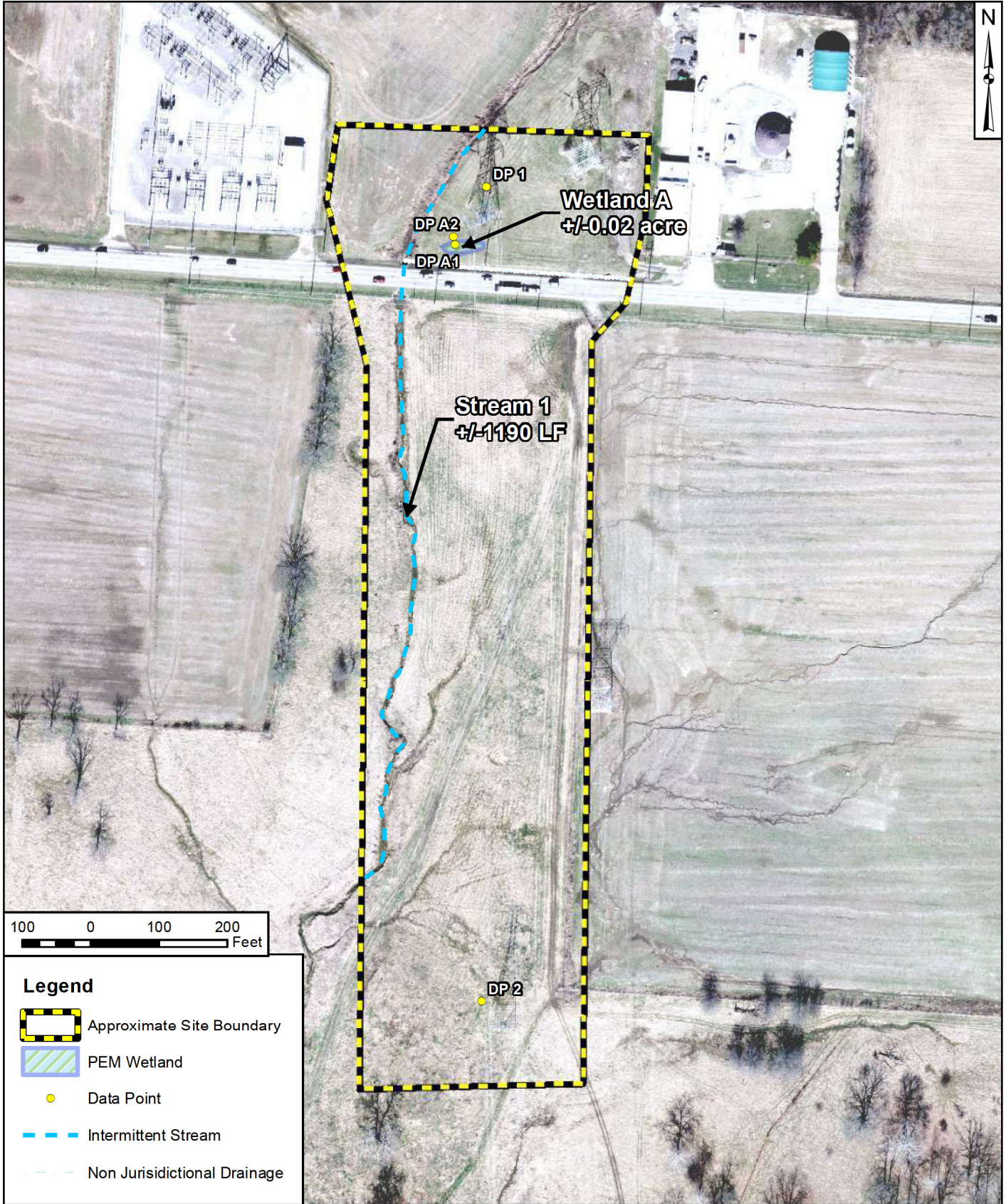
CLIENT:
DUKE ENERGY

BASE LAYER:
Ohio Statewide Imagery Program (OSIP) (2018)


TITLE:
SOIL SURVEY OF WARREN COUNTY, OHIO (2020) MAP

SITE:
SR 63 345/138 kV Structure Replacements
Turtle Creek Twp, Warren County, Ohio

FIGURE:
5



Legend	
	Approximate Site Boundary
	PEM Wetland
	Data Point
	Intermittent Stream
	Non Jurisdictional Drainage

 <p>312 Walnut Street Suite 1600 Cincinnati, Ohio 45202 513-800-3622 phone www.v3co.com</p> <p>Visio, Vertere, Virtute... "The Vision To Transform with Excellence"</p>	PROJECT NO.: 20568.022 CREATED BY: ARG DATE: 11/24/2021 SCALE: See Scale Bar	CLIENT:  BASE LAYER: Ohio Statewide Imagery Program (OSIP) (2018)	TITLE: WETLAND DELINEATION MAP SITE: SR 63 345/138 kV Structure Replacements Turtle Creek Twp, Warren County, Ohio	FIGURE: 6
	J:\2020\20568\20568_022_SR63\ArcGIS\NRA_FIG6delin20568.022.mxd			

Appendix A

ETR Species Correspondence



Aaron Geckle

From: Ohio, FW3 <ohio@fws.gov>
Sent: Wednesday, November 17, 2021 9:59 AM
To: Aaron Geckle
Cc: nathan.reardon@dnr.state.oh.us; Parsons, Kate; Giesler, Dustin
Subject: Duke Energy State Route 63 Electric line adjustments, Warren County, Ohio

CAUTION: This email originated from outside of V3. Do not click links or open attachments unless you trust the sender.



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



TAILS# 03E15000-2022-TA-0220

Dear Mr. Geckle,

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

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

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

If implementation of this seasonal tree cutting recommendation is not possible, a summer presence/absence survey may be conducted for Indiana bats. If Indiana bats are not detected during the survey, then tree clearing may occur at any time of the year. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Ohio Field Office. Surveyors must have a valid federal permit. Please note that in Ohio summer mist net surveys may only be conducted between June 1 and August 15.

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

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

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, coordination with the Service should be initiated to assess any potential impacts.

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

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

Sincerely,



Patrice Ashfield
Field Office Supervisor

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



Ohio Department of Natural Resources

MIKE DEWINE, GOVERNOR

MARY MERTZ, DIRECTOR

Office of Real Estate

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

November 24, 2021

Aaron Geckle
V3 Companies
312 Walnut Street, Suite 1600
Cincinnati, OH 45202

Re: 21-1015; Duke Energy State Route 63 Electric Transmission Line Adjustments

Project: The proposed project involves the relocation or adjustment of electric transmission lines in order to accommodate a proposed road widening project on State Route 63.

Location: The proposed project is located in Turtle Creek Township, Warren County, Ohio.

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

Natural Heritage Database: The Natural Heritage Database has no records at or within a one-mile radius of the project area.

A review of the Ohio Natural Heritage Database indicates there are no other records of state endangered or threatened plants or animals within the project area. There are also no records of state potentially threatened plants, special interest or species of concern animals, or any federally listed species. In addition, we are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, state nature preserves, state or national parks, state or national forests, national wildlife refuges, or other protected natural areas within the project area. The review was performed on the project area you specified in your request as well as an additional one-mile radius. Records searched date from 1980.

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

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

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that Best Management Practices be utilized to minimize erosion and sedimentation.

The western half of the project area is within the vicinity of records for the little brown bat (*Myotis lucifugus*), a state endangered species. Because presence of state endangered bat species has been established in the area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area. However, limited summer tree cutting inside this buffer may be acceptable after further consultation with DOW (contact Erin Hazelton at Erin.hazelton@dnr.ohio.gov).

In addition, 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 bat species 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. The DOW recommends tree 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.

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

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

Federally Endangered

clubshell (*Pleurobema clava*)

rayed bean (*Villosa fabalis*)

snuffbox (*Epioblasma triquetra*)

State Endangered

washboard (*Megaloniaias nervosa*)

State Threatened

black sandshell (*Ligumia recta*)

fawnsfoot (*Truncilla donaciformis*)

threehorn wartyback (*Obliquaria reflexa*)

This project must not have an impact on freshwater native mussels at the project site. This applies to both listed and non-listed species. Per the Ohio Mussel Survey Protocol (2020), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) 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 (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. This is further explained within the Ohio Mussel Survey Protocol. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, as a last resort, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the Ohio Mussel Survey Protocol. The Ohio Mussel Survey Protocol (2020) can be found at: <https://ohiodnr.gov/static/documents/wildlife/permits/dow-protocol-ohio-mussel-survey.pdf>

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

State Endangered

bigeye shiner (*Notropis boops*)
goldeye (*Hiodon alosoides*)
mountain brook lamprey (*Ichthyomyzon greeleyi*)
northern brook lamprey (*Ichthyomyzon fossor*)
northern madtom (*Noturus stigmosus*)

State Threatened

American eel (*Anguilla rostrata*)
mountain madtom (*Noturus eleutherus*)
paddlefish (*Polyodon spathula*)

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

The project is within the range of the eastern massasauga (*Sistrurus catenatus*), a state endangered and federally threatened snake species. The eastern massasauga uses a range of habitats including wet prairies, fens, and other wetlands, as well as drier upland habitat. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the spotted turtle (*Clemmys guttata*), a state threatened species. This species prefers fens, bogs and marshes, but is also known to inhabit wet prairies, meadows, pond edges, wet woods, and the shallow sluggish waters of small streams and ditches. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the Kirtland's snake (*Clonophis kirtlandii*), a state threatened species. This secretive species prefers wet meadows and other wetlands. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the lark sparrow (*Chondestes grammacus*), a state endangered bird. This sparrow nests in grassland habitats with scattered shrub layers, disturbed open areas, as well as patches of bare soil. These summer residents normally migrate out of Ohio shortly after their young fledge or leave the nest. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the least bittern (*Ixobrychus exilis*), a state threatened bird. This secretive marsh species prefers dense emergent wetlands with thick stands of cattails, sedges, sawgrass or other semiaquatic vegetation interspersed with woody vegetation and open water. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the loggerhead shrike (*Lanius ludovicianus*), a state endangered bird. The loggerhead shrike nests in hedgerows, thickets and fencerows. They hunt over hayfields, pastures, and other grasslands. If thickets or other types of dense shrubbery habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 1 through July 31. If this habitat will not be impacted, this project is not likely to impact this 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, this project is not likely to impact this species.

The project is within the range of the sandhill crane (*Grus canadensis*), a state threatened species. Sandhill cranes are primarily a wetland-dependent species. On their wintering grounds, they will utilize agricultural fields; however, they roost in shallow, standing water or moist bottomlands. On breeding grounds they require a rather large tract of wet meadow, shallow marsh, or bog for nesting. If grassland, prairie, or wetland habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 1 through August 31. If this habitat will not be impacted, this project is not likely to have an impact on this species.

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

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

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

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

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

Mike Pettegrew
Environmental Services Administrator (Acting)

Appendix B

SITE Photographs



Photo: 1

Data Point 1

Direction of View:

South

Date:

4 November2021



Photo: 2

Data Point 2

Direction of View:

North

Date:

4 November2021



Photo: 3

Data Point A2

Direction of View:

East

Date:

4 November2021



Photo: 4

Wetland A

Direction of View:

North

Date:

4 November2021



Photo: 5

Wetland A

Direction of View:

East

Date:

4 November2021



Photo: 6

Wetland A

Direction of View:

South

Date:

4 November2021



Photo: 7

Wetland A

Direction of View:

West

Date:

4 November2021



Photo: 8

Stream 1

Direction of View:

South

Date:

4 November2021



Photo: 9

Stream 1

Direction of View:

North

Date:

4 November2021



Appendix C

Data Forms



WETLAND DETERMINATION FORM-MIDWEST REGION

Site: State Road 63 City/County: Warren County Date: 4 Nov 2021 Data Point: DP A1
 Client: Duke Energy State: OH Section, Township, Range: Sec 30, T 4E, R 3N
 Investigator(s): N. Houk, A. Geckle Landform Flood Plains Local Relief Concave
 Slope (%): 1-3 Lat. 39.438880 Long. -84.291737 Datum NAD 82 NWI Class: PEM
 Soil Map Unit Name: Shoals silt loam, 0 to 2 percent slopes, frequently flooded, brief duration
 Climatic/hydrologic conditions typical for time of year? Y/N Y
 Vegetation _____, Soil _____ or Hydrology _____ significantly disturbed
 Vegetation _____, Soil _____ or Hydrology _____ naturally problematic
 Are Normal Circumstances Present? Yes No

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hydic Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the DP within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Meets all wetland criteria			

VEGETATION

Tree Stratum	Plot size:	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test Worksheet Number of dominant species that are OBL, FACW, or FAC: 3 Total number of dominant species across all strata: 3 Percent of dominant species that are OBL, FACW, or FAC: 100.00
1. _____	30'				
2. _____					
3. _____					
4. _____					
5. _____		0	Total Cover		
Shrub Stratum	Plot size:	Absolute % Cover	Dominant Species	Indicator Status	Prevalence Index Worksheet Total % cover of: OBL species 60 x 1 = 60 FACW species 40 x 2 = 80 FAC species 0 x 3 = 0 FACU species 0 x 4 = 0 UPL species 0 x 5 = 0 Total 100 = 140 Prevalence Index: 1.40
1. _____	15'				
2. _____					
3. _____					
4. _____					
5. _____		0	Total Cover		
Herb Stratum	Plot size:	Absolute % Cover	Dominant Species	Indicator Status	Hydrophytic Vegetation Indicators: Rapid Test for Hydrophytic Veg. x Dominance Test is >50% x Prevalence Index is <3.0* Morphological Adaptations* Problematic Hydrophytic Vegetation* *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <i>Typha angustifolia</i>	5'	60	Y	OBL 1	
2. <i>Echinochloa crus-galli</i>		20	Y	FACW 2	
3. <i>Cyperus esculentus</i>		20	Y	FACW 2	
4. _____					
5. _____					
6. _____					
7. _____					
8. _____		100	Total Cover		
Woody Vine Stratum	Plot size:	Absolute % Cover	Dominant Species	Indicator Status	
1. _____	5'				
2. _____		0	Total Cover		
Remarks: _____					

SOIL

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

Depth (inches)	Matrix		Redox Features					Texture	Remarks
	Color	%	Color	%	Type*	Loc**			
0-2	10YR 3/1	100						SiCL	
2-18	10YR 3/1	95	7.5YR 4/6	5	C		M	SiCL	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand grains **Location: PL=Pore Lining, M=Matrix

Hydic Soil Indicators:

Histosol (A1)	Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/>	Redox Dark Surface (F6)
Histic Epipedon (A2)	5cm Mucky Peat or Peat	<input type="checkbox"/>	Depleted Dark Surface (F7)
Black Histic (A3)	Sandy Gleyed Matrix (S4)	<input type="checkbox"/>	Redox Depressions (F8)
Hydrogen Sulfide (A4)	Sandy Redox (S5)	<input type="checkbox"/>	Indicators for Problematic Hydric Soils
Stratified Layers (A5)	Stripped Matrix (S6)	<input type="checkbox"/>	Coast Prairie Redox (A16)
2 cm Muck (A10)	Loamy Mucky Mineral (F1)	<input type="checkbox"/>	Iron-Manganese Masses (F12)
Depleted Below Dark Surface (A11)	Loamy Gleyed Matrix (F2)	<input type="checkbox"/>	Very Shallow Dark Surface (F12)
Thick Dark Surface (A12)	Depleted Matrix (F3)	<input type="checkbox"/>	Other

Restrictive Layer (if observed): Type: _____ Depth (Inches): _____

Remarks: _____

Hydic Soil Present? Yes No

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (check all that apply)		Secondary Indicators	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soil (C6)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface	<input type="checkbox"/> Other		

Field Observations: Surface Water Present? Yes No Depth (inches) _____
 Water Table Present? Yes No Depth (inches) _____
 Saturation Present? Yes No Depth (inches) _____

Hydrology Indicators Present? Yes No

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

WETLAND DETERMINATION FORM-MIDWEST REGION

Site: State Road 63 City/County: Warren County Date: 4 Nov 2021 Data Point: DP A2
 Client: Duke Energy State: OH Section, Township, Range: Sec 30, T 4E, R 3N
 Investigator(s): N. Houk, A. Geckle Landform Flood Plains Local Relief Convex
 Slope (%): 1-3 Lat. 39.438910 Long. -84.291744 Datum NAD 82 NWI Class: N/A
 Soil Map Unit Name: Shoals silt loam, 0 to 2 percent slopes, frequently flooded, brief duration
 Climatic/hydrologic conditions typical for time of year? Y/N Y
 Vegetation, Soil or Hydrology significantly disturbed
 Vegetation, Soil or Hydrology naturally problematic
 Are Normal Circumstances Present? Yes X No

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the DP within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: Does not meet all wetland criteria	

VEGETATION

Tree Stratum	Plot size:	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test Worksheet Number of dominant species that are OBL, FACW, or FAC: 1 Total number of dominant species across all strata: 2 Percent of dominant species that are OBL, FACW, or FAC: 50.00 Prevalence Index Worksheet Total % cover of: OBL species 0 x 1 = 0 FACW species 0 x 2 = 0 FAC species 30 x 3 = 90 FACU species 70 x 4 = 280 UPL species 0 x 5 = 0 Total 370 Prevalence Index: 3.70
1.	30'				
2.					
3.					
4.					
0 Total Cover					
Shrub Stratum	Plot size:	Absolute % Cover	Dominant Species	Indicator Status	Hydrophytic Vegetation Indicators: Rapid Test for Hydrophytic Veg. Dominance Test is >50% Prevalence Index is <3.0* Morphological Adaptations* Problematic Hydrophytic Vegetation* *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
1.	15'				
2.					
3.					
4.					
0 Total Cover					
Herb Stratum	Plot size:	Absolute % Cover	Dominant Species	Indicator Status	Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
1.	5'	50	Schedonorus arundinaceus Y	FACU 4	
2.		30	Setaria pumila Y	FAC 3	
3.		10	Plantago lanceolata N	FACU 4	
4.		10	Glechoma hederacea N	FACU 4	
5.					
6.					
7.					
100 Total Cover					
Woody Vine Stratum	Plot size:	Absolute % Cover	Dominant Species	Indicator Status	Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
1.	5'				
2.					
0 Total Cover					
Remarks:					

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color	%	Color	%	Type*	Loc**		
0-18	10YR 3/1	100					SiCL	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand grains **Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:		
___	Histosol (A1)	Sandy Mucky Mineral (S1)
___	Histic Epipedon (A2)	5cm Mucky Peat or Peat
___	Black Histic (A3)	Sandy Gleyed Matrix (S4)
___	Hydrogen Sulfide (A4)	Sandy Redox (S5)
___	Stratified Layers (A5)	Stripped Matrix (S6)
___	2 cm Muck (A10)	Loamy Mucky Mineral (F1)
___	Depleted Below Dark Surface (A11)	Loamy Gleyed Matrix (F2)
___	Thick Dark Surface (A12)	Depleted Matrix (F3)
___		Redox Dark Surface (F6)
___		Depleted Dark Surface (F7)
___		Redox Depressions (F8)
___		Indicators for Problematic Hydric Soils
___		Coast Prairie Redox (A16)
___		Iron-Manganese Masses (F12)
___		Very Shallow Dark Surface (F12)
___		Other

Restrictive Layer (if observed): Type: _____ Depth (Inches): _____

Hydric Soil Present? Yes No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (check all that apply)				Secondary Indicators		
___	Surface Water (A1)	___	Water Stained Leaves (B9)	___	Surface Soil Cracks (B6)	
___	High Water Table (A2)	___	Aquatic Fauna (B13)	___	Drainage Patterns (B10)	
___	Saturation (A3)	___	True Aquatic Plants (B14)	___	Dry-Season Water Table (C2)	
___	Water Marks (B1)	___	Hydrogen Sulfide Odor (C1)	___	Crayfish Burrows (C8)	
___	Sediment Deposits (B2)	___	Oxidized Rhizospheres on Living Roots	___	Saturation Visible on Aerial Imagery (C9)	
___	Drift Deposits (B3)	___	Presence of Reduced Iron (C4)	___	Stunted or Stressed Plants (D1)	
___	Algal Mat or Crust (B4)	___	Recent Iron Reduction in Tilled Soil (C6)	___	Geomorphic Position (D2)	
___	Iron Deposits (B5)	___	Thin Muck Surface (C7)	___	FAC-Neutral Test (D5)	
___	Inundation Visible on Aerial Imagery (B7)	___	Gauge or Well Data (D9)			
___	Sparsely Vegetated Concave Surface	___	Other			
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches) _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches) _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches) _____				Hydrology Indicators Present? Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						

WETLAND DETERMINATION FORM-MIDWEST REGION

Site: State Road 63 City/County: Warren County Date: 4 Nov 2021 Data Point: DP 1
 Client: Duke Energy State: OH Section, Township, Range: Sec 30, T 4E, R 3N
 Investigator(s): N. Houk, A. Geckle Landform: Flood Plains Local Relief: Convex
 Slope (%): 1-3 Lat. 39.439115 Long. -84.291470 Datum: NAD 82 NWI Class: N/A
 Soil Map Unit Name: Shoals silt loam, 0 to 2 percent slopes, frequently flooded, brief duration
 Climatic/hydrologic conditions typical for time of year? Y/N Y
 Vegetation, Soil or Hydrology significantly disturbed
 Vegetation, Soil or Hydrology naturally problematic
 Are Normal Circumstances Present? Yes X No

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the DP within a Wetland?
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: Does not meet all wetland criteria	

VEGETATION

Tree Stratum	Plot size: 30'	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test Worksheet Number of dominant species: 1 that are OBL, FACW, or FAC: Total number of dominant species across all strata: 4 Percent of dominant species that are OBL, FACW, or FAC: 25.00 Prevalence Index Worksheet Total % cover of: OBL species: 0 x 1 = 0 FACW species: 0 x 2 = 0 FAC species: 20 x 3 = 60 FACU species: 80 x 4 = 320 UPL species: 0 x 5 = 0 Total: 100 = 380 Prevalence Index: 3.80
1.					
2.					
3.					
4.					
5.					
0 Total Cover					
Shrub Stratum	Plot size: 15'				
1.					
2.					
3.					
4.					
5.					
0 Total Cover					
Herb Stratum	Plot size: 5'				
1.	<i>Schedonorus arundinaceus</i>	30	Y	FACU 4	
2.	<i>Dactylis glomerata</i>	30	Y	FACU 4	
3.	<i>Plantago lanceolata</i>	20	Y	FACU 4	
4.	<i>Setaria pumila</i>	20	Y	FAC 3	
5.					
6.					
7.					
8.					
100 Total Cover					
Woody Vine Stratum	Plot size: 5'				
1.					
2.					
0 Total Cover					
Remarks:					
Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>					

SOIL

Profile Description: (Describe to depth needed to document the indicator or confirm absence of indicators.)									
Depth (inches)	Color	Matrix %	Color	%	Type*	Loc**	Texture	Remarks	
0-18	10YR 3/1	40					SiCL		
	10YR 4/1	60					SiCL		
*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand grains **Location: PL=Pore Lining, M=Matrix									
Hydric Soil Indicators:									
Histosol (A1)						Sandy Mucky Mineral (S1)	Redox Dark Surface (F6)		
Histic Epipedon (A2)						5cm Mucky Peat or Peat	Depleted Dark Surface (F7)		
Black Histic (A3)						Sandy Gleyed Matrix (S4)	Redox Depressions (F8)		
Hydrogen Sulfide (A4)						Sandy Redox (S5)	Indicators for Problematic Hydric Soils		
Stratified Layers (A5)						Stripped Matrix (S6)			
2 cm Muck (A10)						Loamy Mucky Mineral (F1)	Coast Prairie Redox (A16)		
Depleted Below Dark Surface (A11)						Loamy Gleyed Matrix (F2)	Iron-Manganese Masses (F12)		
Thick Dark Surface (A12)						Depleted Matrix (F3)	Very Shallow Dark Surface (F12)		
Other									
Restrictive Layer (if observed): Type:						Hydric Soil Present?			
Depth (Inches):						Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>			
Remarks:									

HYDROLOGY

Wetland Hydrology Indicators:											
Primary Indicators (check all that apply)					Secondary Indicators						
<input type="checkbox"/>	Surface Water (A1)	<input type="checkbox"/>	Water Stained Leaves (B9)	<input type="checkbox"/>	Surface Soil Cracks (B6)	<input type="checkbox"/>	High Water Table (A2)	<input type="checkbox"/>	Aquatic Fauna (B13)	<input type="checkbox"/>	Drainage Patterns (B10)
<input type="checkbox"/>	Saturation (A3)	<input type="checkbox"/>	True Aquatic Plants (B14)	<input type="checkbox"/>	Dry-Season Water Table (C2)	<input type="checkbox"/>	Water Marks (B1)	<input type="checkbox"/>	Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	Crayfish Burrows (C8)
<input type="checkbox"/>	Sediment Deposits (B2)	<input type="checkbox"/>	Oxidized Rhizospheres on Living Roots	<input type="checkbox"/>	Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/>	Drift Deposits (B3)	<input type="checkbox"/>	Presence of Reduced Iron (C4)	<input type="checkbox"/>	Stunted or Stressed Plants (D1)
<input type="checkbox"/>	Algal Mat or Crust (B4)	<input type="checkbox"/>	Recent Iron Reduction in Tilled Soil (C6)	<input type="checkbox"/>	Geomorphic Position (D2)	<input type="checkbox"/>	Iron Deposits (B5)	<input type="checkbox"/>	Thin Muck Surface (C7)	<input type="checkbox"/>	FAC-Neutral Test (D5)
<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Guage or Well Data (D9)	<input type="checkbox"/>	Other	<input type="checkbox"/>	Sparsely Vegetated Concave Surface	<input type="checkbox"/>	Other		
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>					Hydrology Indicators Present?						
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>					Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>						
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>											
Describe Recorded Data (stream guage, monitoring well, aerial photos, previous inspections), if available:											

WETLAND DETERMINATION FORM-MIDWEST REGION

Site: State Road 63 City/County: Warren County Date: 4 Nov 2021 Data Point: DP 2
 Client: Duke Energy State: OH Section, Township, Range: Sec 30, T 4E, R 3N
 Investigator(s): N. Houk, A. Geckle Landform: Till Plains Local Relief: Convex
 Slope (%): 1-3 Lat. 39.135841 Long. -84.291666 Datum: NAD 82 NWI Class: N/A
 Soil Map Unit Name: Xenia silt loam, Southern Ohio till plain, 2 to 6 percent slopes
 Climatic/hydrologic conditions typical for time of year? Y/N Y
 Vegetation, Soil or Hydrology significantly disturbed
 Vegetation, Soil or Hydrology naturally problematic
 Are Normal Circumstances Present? Yes X No

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the DP within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: Does not meet all wetland criteria	

VEGETATION

Tree Stratum	Plot size:	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test Worksheet Number of dominant species that are OBL, FACW, or FAC: 0 Total number of dominant species across all strata: 2 Percent of dominant species that are OBL, FACW, or FAC: 0.00 Prevalence Index Worksheet Total % cover of: OBL species 0 x 1 = 0 FACW species 0 x 2 = 0 FAC species 0 x 3 = 0 FACU species 100 x 4 = 400 UPL species 0 x 5 = 0 Total 100 = 400 Prevalence Index: 4.00 Hydrophytic Vegetation Indicators: Rapid Test for Hydrophytic Veg. Dominance Test is >50% Prevalence Index is <3.0* Morphological Adaptations* Problematic Hydrophytic Vegetation* *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
1. _____	30'				
2. _____					
3. _____					
4. _____					
5. _____		0	Total Cover		
Shrub Stratum	Plot size: 15'				
1. _____					
2. _____					
3. _____					
4. _____					
5. _____		0	Total Cover		
Herb Stratum	Plot size: 5'				
1. <i>Schedonorus arundinaceus</i>		60	Y	FACU 4	
2. <i>Cirsium arvense</i>		20	Y	FACU 4	
3. <i>Arctium minus</i>		10	N	FACU 4	
4. <i>Sorghum halepense</i>		5	N	FACU 4	
5. <i>Plantago lanceolata</i>		5	N	FACU 4	
6. _____					
7. _____					
8. _____		100	Total Cover		
Woody Vine Stratum	Plot size: 5'				
1. _____					
2. _____		0	Total Cover		
Remarks:					

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color	%	Color	%	Type*	Loc**		
0-18	10YR 3/2	100					SiCL	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand grains **Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:		
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Redox Dark Surface (F6)
___ Histic Epipedon (A2)	___ 5cm Mucky Peat or Peat	___ Depleted Dark Surface (F7)
___ Black Histic (A3)	___ Sandy Gleyed Matrix (S4)	___ Redox Depressions (F8)
___ Hydrogen Sulfide (A4)	___ Sandy Redox (S5)	___ Indicators for Problematic Hydric Soils
___ Stratified Layers (A5)	___ Stripped Matrix (S6)	___ Coast Prairie Redox (A16)
___ 2 cm Muck (A10)	___ Loamy Mucky Mineral (F1)	___ Iron-Manganese Masses (F12)
___ Depleted Below Dark Surface (A11)	___ Loamy Gleyed Matrix (F2)	___ Very Shallow Dark Surface (F12)
___ Thick Dark Surface (A12)	___ Depleted Matrix (F3)	___ Other

Restrictive Layer (if observed): Type: _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
Depth (Inches): _____	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (check all that apply)				Secondary Indicators		
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)				
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Drainage Patterns (B10)				
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Dry-Season Water Table (C2)				
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Crayfish Burrows (C8)				
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots	___ Saturation Visible on Aerial Imagery (C9)				
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Stunted or Stressed Plants (D1)				
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soil (C6)	___ Geomorphic Position (D2)				
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ FAC-Neutral Test (D5)				
___ Inundation Visible on Aerial Imagery (B7)	___ Gauge or Well Data (D9)					
___ Sparsely Vegetated Concave Surface	___ Other					
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches)	Hydrology Indicators Present? Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>				
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches)					
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches)					
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						

0	0
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Metric 1. Wetland Area (size).

max 6 pts. subtotal

Select one size class and assign score.

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

3	3
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Metric 2. Upland buffers and surrounding land use.

max 14 pts. subtotal

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

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

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

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

8	11
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Metric 3. Hydrology.

Max 30 pts. subtotal

3a. Sources of Water. Score all that apply

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

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

- >0.7 (27.6in) (3pts)
- 0.4 to 0.7m (15.7 to 27.6in) 2pts)
- <0.4m (<15.7in) (1pts)

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

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

3b. Connectivity. Score all that apply

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

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

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

Check all disturbances observed	
<input type="checkbox"/> Ditch	<input type="checkbox"/> Point source (non-storm water)
<input type="checkbox"/> Tile	<input type="checkbox"/> Filing/grading
<input type="checkbox"/> Dike	<input type="checkbox"/> Road bed/RR track
<input type="checkbox"/> Weir	<input type="checkbox"/> Dredging
<input type="checkbox"/> Storm water input	<input type="checkbox"/> Other _____

4	15
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Metric 4. Habitat Alteration and Development.

Max 20pts. Subtotal

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

- None or none apparent (4pts)
- Recovered (3pts)
- Recovered (2pts)
- Recent or no recovery (1pts)

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

- Excellent (7pts)
- Very good (6pts)
- Good (5pts)
- Moderately good (4pts)
- Fair (3pts)
- Poor to fair (2pts)
- Poor (pts)

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

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

Check all disturbances observed	
<input type="checkbox"/> Mowing	<input type="checkbox"/> Shrub/sapling removal
<input type="checkbox"/> Grazing	<input type="checkbox"/> Herbaceous/aquatic bed removal
<input type="checkbox"/> Clear-cutting	<input type="checkbox"/> Sedimentation
<input type="checkbox"/> Selective cutting	<input type="checkbox"/> Dredging
<input type="checkbox"/> Woody debris removal	<input type="checkbox"/> Farming
<input type="checkbox"/> Toxic pollutants	<input type="checkbox"/> Nutrient enrichment

15

Subtotal this page

15

Subtotal first page

0	15
Max 10pts	Subtotal

Metric 5. Special wetlands.

Check all that apply and score as indicated

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

-3	12
Max 20 pts.	Subtotal

Metric 6. Plant communities, interspersions, micro topography..

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

- | | |
|---|-------------|
| 1 | Aquatic Bed |
| | Emergent |
| | Shrub |
| | Forest |
| | Mudflats |
| | Open Water |
| | Other _____ |

6b. Horizontal (plan view) Interspersion

- Select only one.
- High (5pts)
 - Moderately high (4pts)
 - Moderate (3pts)
 - Moderately low (2pts)
 - Low (1pts)
 - None (0pts)

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

- Extensive >75% cover (-5pts)
- Moderate 25-75% cover (-3pts)
- Sparse 5-25% cover (-1)
- Nearly absent >5% cover (0pts)
- Absent (1pts)

6d. Micro topography
Score all present using 0 to 3 scale.

- | | |
|--|---------------------------------|
| | Vegetated hummocks/tussocks |
| | 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)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Micro topography 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

12	GRAND TOTAL (max 100 pts)
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SITE NAME/LOCATION **State Road 62**

SITE NUMBER **Stream 1** RIVER BASIN _____ DRAINAGE AREA (mi²) **0.28**

LENGTH OF STREAM REACH (ft) **1,190** LAT. **39.43779** LONG. **-84.29199** RIVER CODE _____ RIVER MILE _____

DATE **11/04/21** SCORER **N. Houk** COMMENTS _____

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

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

1. SUBSTRATE (Estimate percent of every type of substrate 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
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	10%
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	80%
<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	5%	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A) Substrate Percentage Check **95%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 0 **TOTAL NUMBER OF SUBSTRATE TYPES: 3**

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

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

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

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters):** _____

HHEI Metric Points

Substrate Max = 40

3

A + B

Pool Depth Max = 30

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

COMMENTS _____

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

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS _____

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)

<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

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

County: Township / City:

MISCELLANEOUS

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

Photograph Information:

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

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

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

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

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

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

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

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

Comments Regarding Biology:

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

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

FLOW 